MEDIA ART SCOPING STUDY SYMPOSIUM PROCEEDINGS

MEDIA ARTS SCOPING STUDY

NATIONAL ORGANISATION OF MEDIA ARTS DATABASE

Media Art Scoping Study Symposium

Media Art Scoping Symposium
Vital Signs: Revisited

Media art education at the intersection of science, technology and culture
July 4th 2009

Location: Faculty of VCA and Music, University of Melbourne

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Media Art Scoping Symposium

Vital Signs: Revisited

Media art education at the intersection of science, technology and culture
Date: July 4th 2009

Location: Faculty of VCA and Music, University of Melbourne

Focus

The media/electronic art scoping symposium seeks to explore the current pioneering educators, artists and scientists who have brought about the dissolution of boundaries that have traditionally existed between the artistic and technological disciplines. The symposium will survey the work of media art educators who have developed new interdisciplinary curricula, facilities and information technologies.

Keynote speaker

Paul Brown is an artist and writer who has specialised in art, science & technology since the late-1960s and in computational & generative art since the mid 1970s.

Aims

The symposium aims to add to the media art scoping study via collaborating between leading universities in Australia currently conducting research and academic teaching and learning programs in new media/electronic arts.
The symposium will explore influential theoretical, scientific and philosophical pedagogies that have influenced the development of media/electronic arts.

It is the ambition of the scoping project to establish the basis for a functional network model. Significantly, the establishment of an online historical database and link to the symposium will provide a body of information to assist development of appropriate infrastructure reflecting an approach to training that is in tune with the distinctive characteristics of the discipline area now and for the future.

The Mass symposium calls for refereed and non referred papers, posters on the following themes
- media art, media art histories and associated pedagogical strategies
- media art in the context of contemporary art education
- examples of media art, descriptions and analysis of science, media art and culture
- creative practice as research in new media
- media art innovations in teaching and learning

These would be based on the introduction and infiltration of digital media, technologies and related pedagogies in disciplines such as Art & Design, Architecture, the Humanities, Arts & Social Sciences; as well as examples of interdisciplinarity through art-science-technology collaborations.

We particularly wish to encourage presentations from and about new developments in teaching Media Art. Proposals are welcomed from academics, artists, theorist, and researchers in media art, media art history, performance studies, literature, film, and science and technology studies.

Symposium Committee

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Co-ordinator Master of Art (Electronic Arts)
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Peer Review Panel

For abstracts and final papers

Cat hope

Jo Law

Colin Black

Gaye Swinn

Vince Dziekan

Brogan Bunt

Peta Clancy

Ross Harley

Jeremy Blank

Ian Haig

Matthew Perkins

Roger Alsop

Media Art Scoping Study Symposium Proceedings

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Media Art Scoping Study Partners

Curtin University of Technology

Aspera

Australian Learning & Teaching Council

ANAT australian network for art & technology

synapse

The University of Melbourne

VCA Victorian College of the Arts

RMIT University

COFA UNSW

ANU The Australian National University

Monash University

University of Wollongong

QUT

Media Art Scoping Study Synopsis

The media/electronic art scoping study is an overview of the current and pioneering educators, artists and scientists who have brought about the dissolution of boundaries that have traditionally existed between the artistic and technological disciplines. The study will establish a symposium to survey the work of media art educators who have developed facilities, new interactive and interdisciplinary curriculum, who have developed information technologies and related influential theoretical, scientific and philosophical pedagogies that have influenced the development of media/electronic arts.

A team of Media Art lectures proposed developing the scoping study of media/electronic art teaching practices. The scoping study will build a historically based network and database of the evolution of Media/electronic arts in universities. The database will support curriculum development and enhancement of course development in media/electronic arts education at universities

The Media Arts Scoping study (MASS) invites all media arts academics, theorists and practitioners to participate in the creation of a national database (NOMAD). NOMAD aims to produce a curricular history of the teaching of media art in Australian higher education, as well as facilitating socially networked exchange of ideas and examples of current practices.

This online resource can promote greater understanding of the national context by providing an overview of developments in the teaching of the digital arts and emerging technologies across media / electronic arts education for Deans, course leaders, academic staff and researchers.

It can reasonably be anticipated that the resulting cross-fertilization of these histories (both formal institutional histories and more personal, anecdotal accounts of courses and workshops are welcomed) will identify interdisciplinary associations (between art, design, science) and demonstrate emergent properties leading on to new knowledge.

Media/electronic art students face the challenge of creating a syncretic art that explores telematics (planetary connectivity), nanotechnology (bottom up construction), quantum computing (augmented cyberception), cognitive science and pharmacology (field consciousness), and esoterica (psychic instrumentality).

The students are currently working in a wide range of artistic practice including digital telecommunications, Internet connectivity, screen-based hypermedia, digital film, multi-media installations, intelligent architecture, smart products, robotics, telepresence systems, computer modelling of behaviour, remote sensing devices, cyberspace and virtual reality, artificial life, popular culture, contemporary music, sonic art, video art and performance.

The contemporary technologically mediated art student is confronted with art practices from; Biology, Microbiology, Animals and Plants, Ecology, and Medicine and the Body Physics, Nonlinear Systems, Nanotechnology, Materials Science, Geology, Astronomy, Space Science, global Positioning System, and Cosmology, Alogarithms, Mathematics, Fractals, Genetic Art, and Artificial Life, etc.

These examples from contemporary art practice demonstrate ways in which art schools need to confront key issues that will define their future. These concepts involve new materials that confront the presentation of art, initiating current debates such as the role of Bio art and new media/electronic art practice within the gallery context.

Dr Paul Thomas: Media Art Scoping study Project leader

MASS Symposium Program

9.00: Introduction Paul Thomas

9.05: Welcome Su Baker

9.15: Keynote Presentation by Paul Brown

10.00: 20 Minute Break

Session Chaired by Paul Thomas
10.20: Presentation 1 Matthew Perkins
10.40: Presentation 2 Peta Clancy
11.00: Presentation 3 Ian Haig
11.20: Presentation 4 Stephen Jones

11.40: 20 Minute Break

Session Chaired by Vince Dziekan
12.00: Presentation 5 Malcolm Riddoch and Cat Hope
12.20: Presentation 6 Roger Alsop and Marsha Berry
12.40: Presentation 7 Brogan Bunt
1.00: Presentation 8 Jane Quon

1.20: 40 Minute Break

Session Chaired by Ross Harley
2.00: Presentation 9 Jo Law
2.20: Presentation 10 Vince Dziekan
2.40: Presentation 11 John Conomos
3.00: Presentation 12 Joel Zika

3.20: 20 Minute Break

Session Chaired by Brogan Bunt
3.40: Presentation 13 Colin Black
4.00: Presentation 14 Gaye Swinn and Jennifer Lade
4.20: Presentation 15 Nancy Mauro-Flude
4.40: Presentation 16 Ross Harley

5:00 **Drinks**
6:00 **End**

MASS Keynote

Paul Brown

Hollow Promises

In the 1960's and 70's, early in my art career, I was an ardent proponent of critical theory and art-as-research. Back then they were pretty thin on the ground. Some of my contemporaries were amongst the first artists to be awarded doctorates for their work. Now, in the twilight of my teaching years I find myself more and more concerned about the preponderance of these aspects of art education. Or, to be more precise, concerned that theory and research – scholarly approaches to the arts – have usurped the teaching of art as an intuitive, studio-based and non-verbal activity. By doing so they have disenfranchised many gifted but semi-literate students who in the past were able to participate in the tertiary education process and attain significant qualifications and reputations in the arts. In this talk I hope to address the historical reasons that have led to this undesirable state of affairs and also suggest possible ways of redressing a more balanced curriculum. In particular I would like to focus on the role of the oxymoronically titled 'new media' (that are now some 70 years old!) as one of the major causes of this undesirable situation and how they might also be one of its possible solutions.
Paul Brown, Brisbane, June 2009

Paul Brown is an artist and writer who has specialised in art, science & technology since the late-1960s and in computational & generative art since the mid 1970s. His early work involved creating large scale lighting works for musicians and performance groups (Meredith Monk, Music Electronica Viva, Pink Floyd, etc…) and he has an international exhibition record that includes the creation of both permanent and temporary public artworks dating from the late 1960s. He later founded the UK's first computer FX companies and then worked in academia designing courses that addressed the emerging field of computing in art and design. As an artist he has participated in shows at major venues like the TATE, Victoria & Albert and ICA in the UK; the Adelaide Festival; ARCO in Spain, the Substation in Singapore and the Venice Biennale. His work is represented in public, corporate and private collections in Australia, Asia, Europe, Russia and the USA.

In 1984 he was the founding head of the United Kingdom's National Centre for Computer Aided Art and Design and in 1994 he returned to Australia after a two-year appointment as Professor of Art and Technology at Mississippi State University to head Griffith University's Multimedia Unit. In 1996 he was the founding Adjunct Professor of Communication Design at Queensland University of Technology.

From 1997-99 he was Chair of the Management Board of the Australian Network for Art Technology and he is a member of the Editorial Advisory Boards for LEA, the e-journal of the International Society for the Arts, Sciences and Technology (MIT Press) and the journal Digital Creativity (Routledge). From 1992 to 1999 he edited fineArt forum, one of the Internet's longest established art 'zines and he is currently Chair of the Computer Arts Society (CAS) and moderator of the DASH (Digital ArtS Histories) and CAS e-lists.

During 2000/2001 he was a New Media Arts Fellow of the Australia Council and he spent 2000 as artist-in-residence at the Centre for Computational Neuroscience and Robotics (CCNR) at the University of Sussex in Brighton, England. From 2002-05 he was a visiting fellow in the School of History of Art, Film and Visual Media at Birkbeck College, University of London, where he worked on the CACHe (Computer Arts, Contexts, Histories, etc…) project and he is currently a visiting professor and artist-in-residence in the CCNR at the University of Sussex.

His most recent book "White Heat Cold Logic" which he co-edited with his colleagues from the CACHe Project has just been published by MIT Press - Leonardo Imprint:
http://mitpress.mit.edu/catalog/item/default.asp?ttype=2&tid=11548

He is currently working on a new book "A Machine That Makes Art", an international history of the early computer arts - 1950-80.

Examples of his artwork and publications are available on his website: http://www.paul-brown.com

MASS Papers

Roger Alsop; School of Performing Arts, VCAM, University of Melbourne

Dr Marsha Berry; School of Creative Media, RMIT University, Melbourne

Sound Design Skills: exploring a blended learning environment for developing practical and conceptual skills

ABSTRACT

The performance arts is an area where many media and human based art practices collaborate and collide to form cohesive works. When developing skills in students, practical knowledge bases are required in order to develop and express concepts. Studio models are often seen as the most efficient and practical teaching methods, but the efficiency of this process is being questioned as student diversity is being acknowledged. Computers and networked technologies are normal tools of performance arts, and, while current students enter university with high levels of computer literacy, they need to learn how to apply these tools within complex cultural contexts and productions.

This paper will discuss the on line course 'Sound Design Skills' as a system through which technological skills and advanced conceptual skills are introduced to students at undergraduate and postgraduate levels. 'Sound Design Skills' will be considered as a case study that explores media as a tool for developing practical, technological and conceptual skills in a blended learning environment that explores concepts of sticky knowledge within a networked media based studio model.

KEYWORDS: Blended learning, sticky knowledge, practical knowledge, conceptual knowledge, networked learning

INTRODUCTION

Being an art form rooted in and dependent on current or developing technologies, the teaching of sound design requires, and assumes, high-level knowledge and facility in computer and electronic technologies. It is also an art form that is often requires collaboration with others whose interests and expertise are elsewhere, and where there are a variety of understandings of the designer's roles and approaches. For some, a sound designer is the sound system designer, who provides a practical, technological, contribution; for others, the sound designer provides a conceptual, compositional, contribution. Often the designers' role and focus sits somewhere between these poles, as do individual designers interests and knowledge bases.

Sound Design Skills (SDS), the courseware being discussed here, is a ten-module course that introduces basic technological and conceptual aspects of the sound design process to students in the technical Production stream offered through the School of Performing Arts at VCAM. The course was first delivered in 2006 and combines virtual and practical teaching, allowing

students to develop concepts and understanding virtually and then to test those concepts in practice.

Terms and goals

Here we see 'blended learning' as the combination of various modes of delivery, styles of teaching and pedagogical models of learning. These learning environments hold many advantages, as they increase the use of strategies that promote active learning (Peterson, Harpe et al. 2007).

We use Kirsten Langkilde's (2008) understanding of 'sticky knowledge' as being "knowledge that has an inherent tendency to stick together as a distinct entity", which contains common understandings and has the capacity to be dynamic and to adhere to new learning. This differs from Gabriel Szulanski's use of the term in "Sticky Knowledge: barriers to knowing in the firm." (2003). Here Szulanski questions why knowledges that may generate best practices might get locally 'stuck' and not spread easily; where, "transfers of knowledge might be 'sticky', i.e. difficult" (2003, p. 11) and "unlike information … [knowledge] is hard to detach" (Brown & Duguid, 2000, p.123).

Network is used in many forms, including: a group of computers; a group of similarly oriented people; interactive, dynamic and static multi-node systems, whatever those nodes may be; and so on; in a meta sense it can be seen as a system of interrelationships. A network can be technology based, made of technological, machine-to-machine, connections, and/or socially based, made of to human-to-human connections. Nowadays there is often a radical inter-twining of both, which can be successfully exploited to design learning environments.

The purpose of Sound Design Skills was to develop blended, networked approaches that both generate Langkilde's understanding and loosen the issues Szulanski sees, creating a process where "transferring … information in a form usable by the recipient" (Szulanski, 2003, p 12) is rapid, end-user oriented, and need not be overly costly for the learner or teacher and sticky.

Blended learning is the learning environment itself - sticky knowledge happens when student's combine theory, learning and reflection, and sensory experience to create knowledge - when bits of, possibly disparate, knowledge stick together; where new learning sticks to previous understandings and common understandings, and these connect dynamically to make new knowledges.

Teaching and learning models

While many methods of developing skills in others exist we have distilled to four basic and generic models, each of which has many variants and interactions:

- lecture, where a teacher presents information to passive students in a lecture type environment;
- guided, where learning is carried out though doing or supervising tasks with students, as seen in the tutorial/laboratory/studio environment;
- heuristic, where students develop their own learning under guidance, both practically and conceptually;
- and self-learning, where learners guide themselves, usually on a 'need to know' basis.

Each of these methods is individually useful and effective, but a best method may use all of the above with equal primacy and value, allowing learners to be introduced to and develop skills that are both universal and idiosyncratic.

When developing SDS certain understandings were attended to, and these fit Wagner's (2005) four points of "e-lessons learned".

- learning is a deeply personal act that is facilitated when learning experiences are relevant, reliable, and engaging;
- different kinds of learning demand appropriate strategies, tools, and resources;
- technology in and of itself may not guarantee better learning;
- the better the experience and the more intentional the results, the greater is the likelihood that learning will occur.
-

Added to this is that what is learned be demonstrably useful to the student soon after the teaching process.

A networked learning environment, in all of the senses listed earlier, is vital to generating these eight points. Here lecture, guided, heuristic and self-learning methods blend to facilitate Wagner's lessons, through virtual and actual learning methods.

Networked technology in blended environments holds many advantages for learning, including increased engagement, collaboration, success, ownership and higher quality learning (Bonk, Kim & Zeng, 2006), and has appeal to Generation Y learners, who are “savvy, blunt, have a desire to be educated and their development years have been accompanied by rapid technological advances. They are goal-oriented, rewards-oriented and seek the shortest path to personal success.” (Flanagan 2003), pp.1074-1075). Self-paced online learning opportunities and environments also satisfy the desire for the shortest path to practical knowledge in acquiring skills.

Technology networks have delivery similarities to lecture and guided methods. Here a set course, with defined information presented in an ordered way, through which students are guided, is a typical method of delivery. An example of this is seen in the Pro Tools Courses and Certification courses (Pro Tools, 2009), or the on line video tutorials available for Logic Studio (Apple, 2009).

This more didactic approach can be very useful when teaching facts and common approaches, such as component names and uses, terminologies, and well recognized practices and procedures. However, this approach does not necessarily facilitate the creation of in-depth understandings in students.

Social networks, where students interact in peer-to-peer learning/teaching environments, provide opportunities for heuristic and self-learning methods. Here problems that may not be anticipated in a more teacher-centric method are approached collaboratively and novel, unanticipated solutions may arise.

Heuristic methods are particularly important in learning performing arts, being connected to experiential learning design where "rules of thumb" or tacit ways of doing are learned through tacit repetition and practice. Through practice students learn to find solutions, developing and inventing problem-solving techniques in different situations. Knowledge acquired thus tends to become sticky, that is, attached to specific problem types and contexts, rather than specific, explicit problems.

Some learners will quickly make associations between practice and knowledge, and these may be best suited to the latter two learning methods, and other learners need the connections made explicit, and they may be best suited to the former two models.

Knowledges

Developing knowledge in the creative arts is a complex combination of different processes. Artists rely on their senses to interpret their surroundings and cultural milieus aesthetically. Aesthetic interpretations in turn lead to further understandings that may result in further artistic expressions, and so on. However, relying on the sensory is not sufficient. Knowledge is also gained through learning and reflection. If the knowledge gained through sensory perceptions and experiences is combined with more formal academic knowledge structures it becomes non-linear and complex (Langkilde, 2008).

In any design process a variety of knowledges is required. Along with developing the sensitivities required to be aware of, interpret, and communicate salient issues in cultural and aesthetic milieus, students must also have well-developed, confident, technological skills in order to express their interpretations.

It is vital that students learn in industry-like models. “Learning to be requires more than just information. It requires the ability to engage in the practice in question.” (Brown & Duguid, 2000, p.128). An explicit intention in the studio model is to replicate industry practice, so that when students move to the workplace they are familiar with real world creative studio practice, and with being members of "learning communities capable of generating, sharing, and deploying highly esoteric knowledge" (Brown & Duguid, 2000, p.127). The studio environment also creates conditions where non-linear, blended, approaches to knowledge acquisition are normal and ongoing, where theory is interspersed with and linked to practice to create common understandings and common and uncommon knowledge develops. Here theory and practice blend to form tangible outcomes with direct relevance to the industry.

Sound Design Skills (SDS)

This course introduces students to the sound design process for the dramatic and performing arts. It focuses on simple sound system design and the related components, developing a critical conceptual framework towards all design aspects, appropriate listening skills, documentation systems, and approaches to the design process. It is considered that to be effective designer skills in the creation of content and in the broadcast and implementation of that content are essential.

Figure 1 below shows the module introduction for the course. Here the learning trajectory is outlined, moving from developing an awareness of the design process and its components, developing basic musical listening skills oriented to sound design, implementing and performing basic sound cues, reading texts for the purpose of sound design, and design processes for a specific text. While the course is incremental, it is not essential that the modules be accessed sequentially.

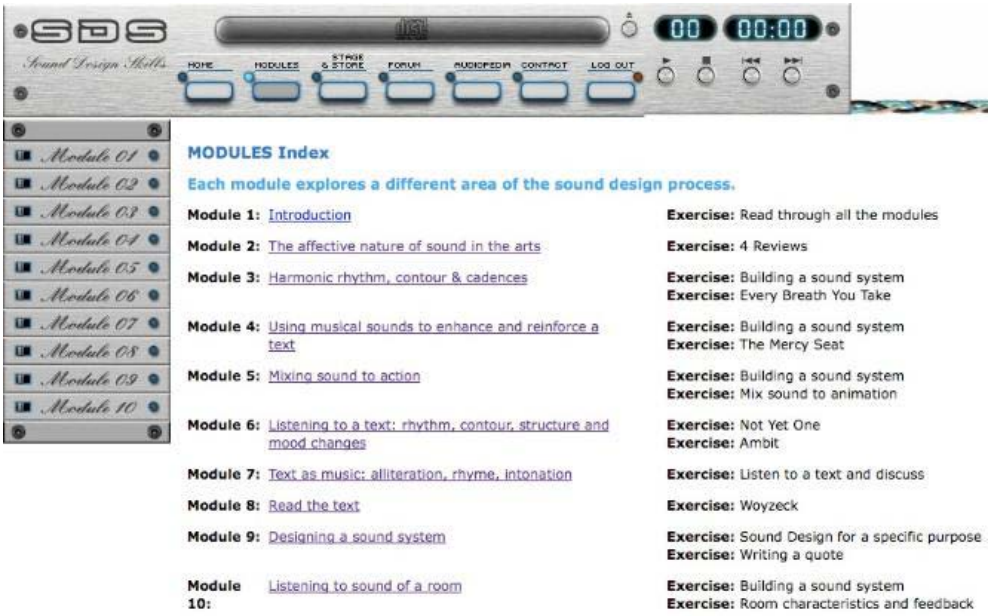

Figure 1, Sound Design Skills module screen; image © University of Melbourne

Delivery methods

Currently course delivered in six four-hour classes over three semesters. Students are divided into two groups, one spending two hours on line, the other in practice; these groups alternate over the four-hour allotment. While in the groups students collaborate in fulfilling required tasks, both in practice and on line, and the majority of this is done face to face with the teacher and with peers. As design for the performing arts is essentially a collaborative, face-to-face, process, this kind of interaction was considered a major requisite when designing the course.

Design inquiry

After an introduction to the course students are first asked to review four works where sound and movement are integral parts, these may be a computer game, a performance, a film, or an installation. Students discuss the role of the sound design, the appropriateness of the sound system the interaction between the sound design and the performance, and the positive and negative aspects of the design. This process requires students attend and review professional, actual, uses of sound in performance, and requires that they articulate their understanding of sound design from technical and conceptual viewpoints.

Students also develop listening skills through the analysis of songs, focusing on the relationship between the text and its musical setting, how the sounds of a text give insights to the author's intent. Here the affect of chords and chord progressions, the role of different instruments and how they create emotional responses in the listener, is explored.

Creating a basic sound system

Students build and test sound systems in the virtual world prior to actually building and testing similar systems in the real world. This is a basic skill for any designer, as the ability to

successfully create the system used to broadcast the design content is essential to broadening employment options and to ensuring that the content is faithfully presented.

Four online tasks require students to build typical sound systems of varying complexity. They gather required equipment from a store, create a signal flow schematic, seen in Figure 2, and then connect each component; an example is seen in Figure 3. Here students see typical plugs and sockets, and the correctness of their wiring is tested.

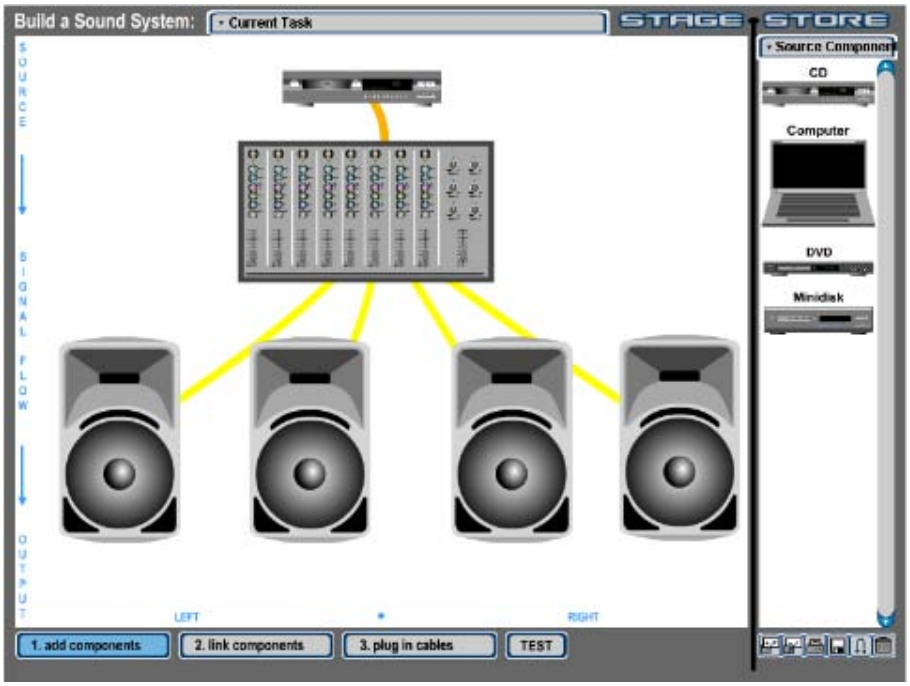

Figure 2, Stage and Store interactive; image © University of Melbourne

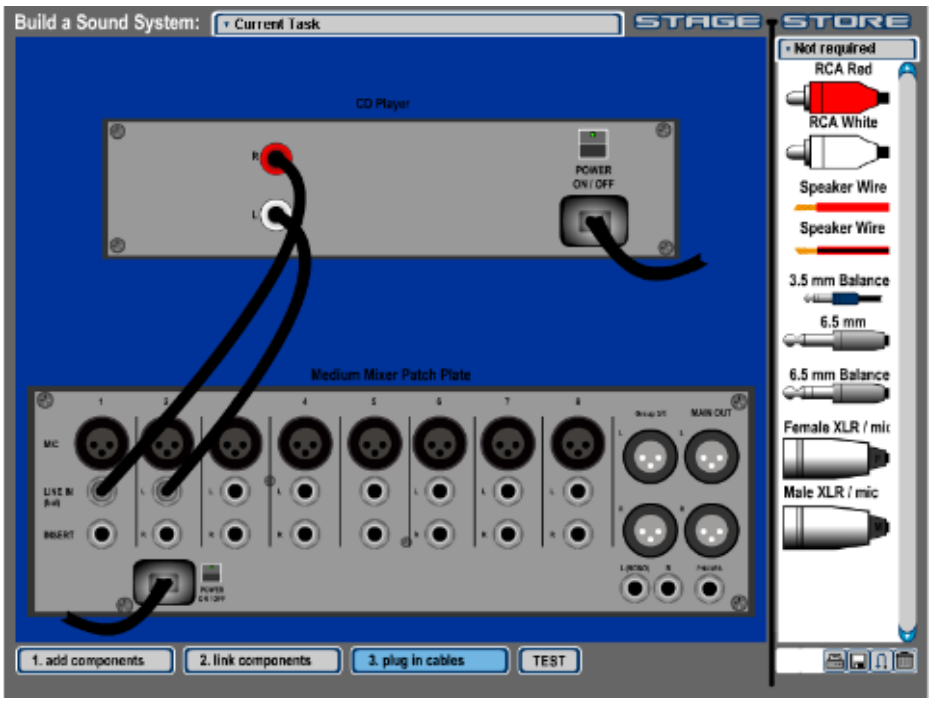

Figure 3, Sound System component back panels; image © University of Melbourne

Listening skills

Two modules focus on musical listening skills. As students often enter this course without learned listening skills, basic skills are introduced in a way that tries to normalize any listing experience or ability. That critical listening is an innate skill was a fundamental tenet when designing the course; however students often confuse not being adept in musical terminologies as not being adept listeners. Listeners usually experience music emotionally, and are unaware that composer and musicians use well known techniques to evoke emotional states in their listeners, and being able to identify these techniques is a valuable skill for a sound designer.

The song "Every Breath You Take" (Sting 1983) was used as an introduction to chord progressions and how these can create a sense of emotional journey for the listener. Here students develop musical recognition skills through specifying when chord changes occur and describing what chords are heard, shown in Figure 4. The focus here is on traditional chord nomenclature and use, and developing a sense of the emotional, and other, characteristics or interpretations also having validity as recognition tools.

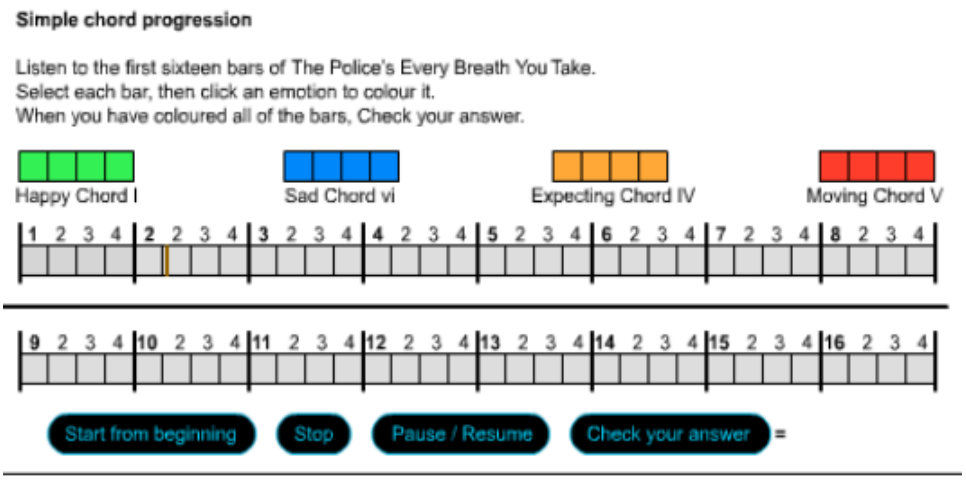

Figure 4 "Every Breath you Take" interactive; image © University of Melbourne

The song 'The Mercy Seat" (Cave and Harvey 1988) is used to explore interrelationships between text and musical sounds. Here students listen to the music and discuss how it makes them feel, both physically and emotionally. They then read the text and list their responses to that, and finally respond to questions relating to the attributes of the piece and the devices the musicians used to create the responses evoked in the listener.

Module five has students play sound to action. Here students play music to accompany animated action using typical theatre protocols. The animations and music change, and students are asked to indicate the change in affect of the various combinations of sound and action. Figure 5 shows the animation.

Figure 5 Mixing sound to action interactive; image © University of Melbourne

Modules six, seven and eight explore different writers approaches to text. Tow poems and a short story are explored sounds, alliteration, assonance, rhythm and rhyme as structural and evocative devices in text. They then design for an excerpt of a play, exploring different process for developing and expanding on ideas, finally presenting and implementing their design in the real and virtual worlds. Module nine has students design and hire a sound system for an event of their choice.

Module ten discusses sound mixing techniques, and the recording space can be used for effect. Here students Listen to David Bowie's, "Heroes" (Bowie 1977) and Alvin Lucier's "I m sitting in a room" (Lucier 1969). Room characteristics are integral to both the pieces; they demonstrate the effect of microphone placement in a room, and standing waves, and both pieces make artistic use of these qualities.

Conceptual and design skills

Developing coherent and individual conceptual and design skills is an ongoing process for any artist. The purpose of SDS is to offer insights that may help a nascent artist in developing questions and approaches that then develop individual, idiosyncratic, and mature approaches to their own work. Learning how to learn is an essential skill in this process, and, by requiring students engage in analysing works, reframe re-existing concepts, and linking technical and conceptual approaches, design skills that are not necessarily teacher prescribed develop.

Conclusion

SDS is developing in both content and delivery design, and considerations such as those of McLoughlin and Marshall (2000), Hampel (2006), Gunn (2001) and others are instrumental in guiding assessment and delivery

To paraphrase McLoughlin and Marshall's understandings regarding on line learning: awareness of one's own thinking and how one comes to conclusions; ability to plan and adjust one's strategies in order to achieve a goal or complete a task through a flexible range of strategies; and an ability to recognize and anticipate problems and areas in need of improvement. These are all requirements of a good designer.

SDS tries to engender

> "the skills often associated with good designers, namely, the ability to: tolerate ambiguity that shows up in viewing design as inquiry or as an iterative loop of divergent-convergent thinking; maintain sight of the big picture by including systems thinking and systems design; handle uncertainty; make decisions; think as part of a team in a social process; and think and communicate in the several languages of design" (Dym, Agogino et al. 2005).

It is often assumed that technical skills are best learned in practice, and that design skills may be better learned in a more conceptual format, allowing student designers to evolve ideas unencumbered by pragmatic needs. By blending face-to-face, peer-to-peer, and online teaching processes, SDS attempts to overcome this dichotomy by facilitating and integrating delivery methods.

Three people have delivered the course since its inception in 2006. Each teacher's skills in sound design and comfort with on line teaching has predictably impacted on student outcomes, indicating that the teacher, through face-to-face contact, strongly impacts on the learning outcomes as a result of student's acceptance of the blended learning process. Co-teaching processes and those that allow students to work unsupervised during allocated class times have been most successful in learning outcomes and in teaching load.

Through blending online and face-to face processes SDS facilitates six of the seven objectives outlined in "Online assessment" (James, McInnis et al. 2002): learner autonomy; group work skills through on-line study groups; understanding of basic concepts through web-based, self-paced, interactive modules; student problem-solving skills through on-line ‘role-play’; ability to think critically and articulate critical analysis through on-line scenarios; learner ability to reflect, and contribute, through rhetorical questions. The understandings and experiences gained by students through this course stick as knowledge that can be applied within the performing arts industries.

A guest account for the course can be accessed at

> URL: http://neo.meu.unimelb.edu.au/login/soundes/
>
> Username: soundes.guest1
>
> Password:

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References
Apple http://www.apple.com/logicstudio/tutorials/ (June 2 2009)

Aycock, A., Garnham, C., & Kaleta, R. (2002). Lessons Learned from the Hybrid Course Project.[Online] Available: http://www.uwsa.edu/ttt/articles/garnham2.htm

Bonk, C.J., Kim, K.J., & Zeng, T. (2006). Future directions of blended learning in higher education and workplace learning settings. In C.J. Bonk & C.R. Graham (Eds.). Handbook of blended learning: Global perspectives, local designs (pp. 550-568). San Francisco, CA: Pfeiffer Publishing.

Boyle, T., Bradley, C., Chalk, P., Jones, R., & Pickard, P. (2003). Using blended learning to improvestudent success rates in learning to program. Journal of Educational Media, 28(2/3), 165-179.

Brown, J. S. & Duguid, P. (2000). The Social Life of Information. Boston: Harvard Business School Press.

Burton-Jones, A. (1999). Knowledge Capitalism. Oxford: Oxford University Press.

Cave, N. and M. Harvey (1988). the Mercy Seat. Tender Prey, Mute Records

Flanagan, R. (2003). Are you a new age manager? The Scotsman.

Graham, C.R. (2006). Chapter 1: Blended learning systems: Definition, current trends, future directions. In C.J. Bonk and C.R. Graham (Eds.). Handbook of blended learning: Global perspectives, local designs (pp. 3-21). San Francisco, CA: Pfeiffer Publishing. [Online] Available: http://www.publicationshare.com/graham

Hinze, A., & Proctor, C. (2004). *Reflections on the use of blended learning*. Paper presented at the Education in a Changing Environment Conference, 13-14 September, University of Salford EDU.

James, R., C. McInnis, et al. (2002). Online Assessment, Centre or teh study of higher education, University of Melbourne.http://www.cshe.unimelb.edu.au/assessinglearning/03/online.html

Langkilde, Karen 2008 A Visual 3D Knowledge Mapping and Generation Tool for Understanding theInnovation Environment, From Art School to Professional Practice – Proceedings, AICA Press,accessed 27/05/09 http://asb.aica-int.org/spip.php?article152

Lucier, A. (1969). I Am Sitting In A Room, Lovely Music, 1990

Peterson, J. F., B. d. l. Harpe, et al. (2007). Digital Publishing and Virtual Mobility in a Creative Knowledge Network. Melbourne, Royal Melbourne Institute of Technlogy.

Pro Tools http://www.digidesign.com/index.cfm?langid=100&navid=42&categoryid=27 accessed (June 2 2009)

Szulanski, G. (2003). Sticky Knowledge Barriers to Knowing in the Firm. Thousand Oaks, CA: SagePublications.

Tutty, J., B. White, et al. (2005). Experiences from a wireless-enabled tablet classroom. 7thAustralasian Computing Education Conference ACE05, Newcastle, NSW, CRPIT.

Sting (1983) Every Breath You Take. Synchronicity. London, A&M Records

Wagner, E. D. (2005). Enabling Mobile Learning. EDUCAUSE Review, 40(3) (May/June), 40–53.Available at http://www.educause.edu/er/erm05/ erm0532.asp?bhcp=1

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Radio Art: An Acoustic Media Art Form

ABSTRACT

Perhaps it's obvious; if we take radio out of radio art then we usually have a sound based art work that is not broadcasted, unicasted and/or multicasted; conversely if we take the 'art' out of radio art then we have radio (in all of its conventional formats) … but do we have radio art if we simply combine radio and art?

This paper explores the idea of radio art as a media based acoustic art form and argues that the Australian works *Journal* (1969) by David Ahern and *Quadrophonic Cocktail* (1986) by Chris Mann are forms of acoustic media art.

Further to this, it asks is there a role for radio art in education?

INTRODUCTION

Surprisingly when searching through the 2006 "New Media Arts Scoping Study Report to the Australia Council for the Arts," (NMASSR) there is no mention of radio art. This is in spite of the fact that it does contain information pertaining to the ABC Radio Fellowship/Residencies with ABC Radio National that 'provides resources for artists to work in a broadcasting environment' and that Arts Tas utilises the Australian Culture and Leisure Classification (ABS) coding system to place media arts 'under Radio, TV/Film & Multimedia'.

What comes immediately vociferating through my mind are Allen Weiss's words, 'If the history of mainstream radio is a suppressed field, the history of experimental radio is utterly repressed' (Weiss 1995, 3). I am also astounded that the 15 years presence of *The Listening Room* (ABC Classic FM from 1988 to 2003) on the Australian media landscape has had no identifiable impact on this peak Australian cultural body, when it comes to identifying/mentioning radio art as a media arts practice within the content of this report.

One could only assume that if 'The aim of the scoping study was to provide an overview and analysis of new media arts [later re-defined as "media arts"] and gain an accurate and comprehensive view of the sector in Australia ... [and] to assist the development of Australian new media arts practice into the future' (Donovan, Miller and Lally 2006, 4) then radio art obviously doesn't play a large part within this 'sector' or plays a large part for its vision.

However, I am aware that I may be overly critical of radio art in the context and scope of this report; and I also acknowledge the problematic nature of defining

media arts when it encompasses such a diverse area of practice. Further to this I agree that radio art could loosely fit within the scope of 'artists working in this field use a combination of existing, new and emergent technology in their creative process … [it] encompass[es] participatory and location-based work … sound art, [and] networked media' (Donovan, Miller and Lally 2006, 9).

Also, if this report is meant as a general overview of the practice then what is puzzling is the fact that the document does mention bio-art, screen-based art, networked media, mixed and virtual realities, nanotech, artificial intelligence, wearable computing, robotics and excludes to mention radio art.

The omission of specifically identifying/mentioning radio art as a media arts practice within the content of this report, I would argue, does clearly identify the need for further discourse pertaining to radio art, increased documentation of Australia's vibrant radio art history and the inclusion of radio art as a focus of study within Australian universities.

This paper initially addresses these issues and offers an insight into the complexities of radio art. The discussion will focus chiefly on radio art practice within the context of media art. It is not within the scope of this paper to undertake the kind of in-depth research and analysis that would normally be required for matters of this complexity, but I hope that this paper will shed some light on some aspects of this practice, raise awareness for the practice and re-initiate debate.

EXPOSITION

Exploring radio art

What is radio art, and is radio art a form of music, media format or is it a form of acoustic media art?

Simplistically, if we break down the elements that usually combine to create radio art (music creation and/or sound design with optional dialogue interfacing with radio broadcasting), then this could also describe some conventional radio programme formats and/or musical styles being broadcast on radio. What has previously been argued as essential to radio art is that it is fundamentally art made by artists specifically exploring and experimenting with the medium of radio. This idea is illustrated in *Kunstradio's* manifesto entitled, "Toward a Definition of Radio Art". The manifesto includes; 'Radio art is not sound art— nor is it music. Radio art is radio … Sound art and music are not radio art just because they are broadcast on the radio ... Radio art is not a combination of radio and art. Radio art is radio by artists'.

Further to this notion is the concept that radio art is explicitly linked to the medium of radio as previously stated in the "Toward a Definition of Radio Art" manifesto ... 'Radio art is radio'. If radio art is so fundamentally tied to the medium of radio then it goes to say that radio art is a form of media based art form that usually reveals itself to the audience sonically. As Sabine Breitsameter has pointed out, 'I think radio art is media art -- an acoustic media art … on the

technical level, by reflecting the use of microphone, tape, loudspeaker, transmitter and receiver' (Leonardson 1995).

I have also previously argued how radio art differs to some other acousmatic forms;

> An important aspect of radio art is that it is fundamentally a form of acoustic media art, as distinguished from other acousmatic forms (e.g., acousmatic forms of electro-acoustic music or acousmatic "tape" music). Whereas acousmatic music focuses chiefly on studio works for diffusion or projection within a concert hall, radio art primarily utilises the audio media of radio broadcast for the complete realisation and/or performance of the work in some way. (Black 2009, 20)

In addition to this, artist Gottfried Bechtold in the 1990s conceived of his radio art as being a radio sculpture and considered 'the radio (broadcast) space as a public sculptural space in which music, sound and language are the material of sculptures' (Grundmann 1994, 137). This idea is also exemplified in the "Toward a Definition of Radio Art" manifesto; 'Radio art is composed of sound objects experienced in radio space' and that 'radio space is all the places where radio is heard'.

R Murray Schafer describes 'radio space' as a form of schizophonia, 'the split between an original sound and its electracoustic transmission or reproduction' (Schafer 1994, 90) where, 'Radio extended the outreach of sound to produce greatly expanded profiles [the area in which a sound can be heard], which were remarkable also because they formed interrupted acoustic spaces' (Schafer 1994, 92).

Extending Bechtold's notion I have argued that, 'I see the radio broadcaster simultaneously generating and curating the [radio art] gallery space' (Castaldi 2007); and with the increased trend to exclusively podcast the more challenging forms of radio, these real time 'galleries spaces' become dismantled (because of the time shifted nature of podcasts).

I am careful to use the word 'usually' in response to Hildergard Westerkamp's statement that radio art is about the 'pushing of radio boundaries' [1], as these boundaries expand, these 'usual' parameters will become challenged. And as artists are at the core of radio art - and by nature continually challenge our notion of art forms, - then it follows that radio art is a dynamic art form continually evolving with technology and culture. Westerkamp's statement continues with what she believes will be the ramification of the pushing of these boundaries, 'you would be, hopefully astonished …' [2].

Contextualising Radio Art as a Form of Media Arts

When contextualising radio art as a form of acoustic media art (a subset of media arts) we start to see the blurring of borders between radio art, telematic art (with acoustic elements) and film and TV soundscape (see figure 1).

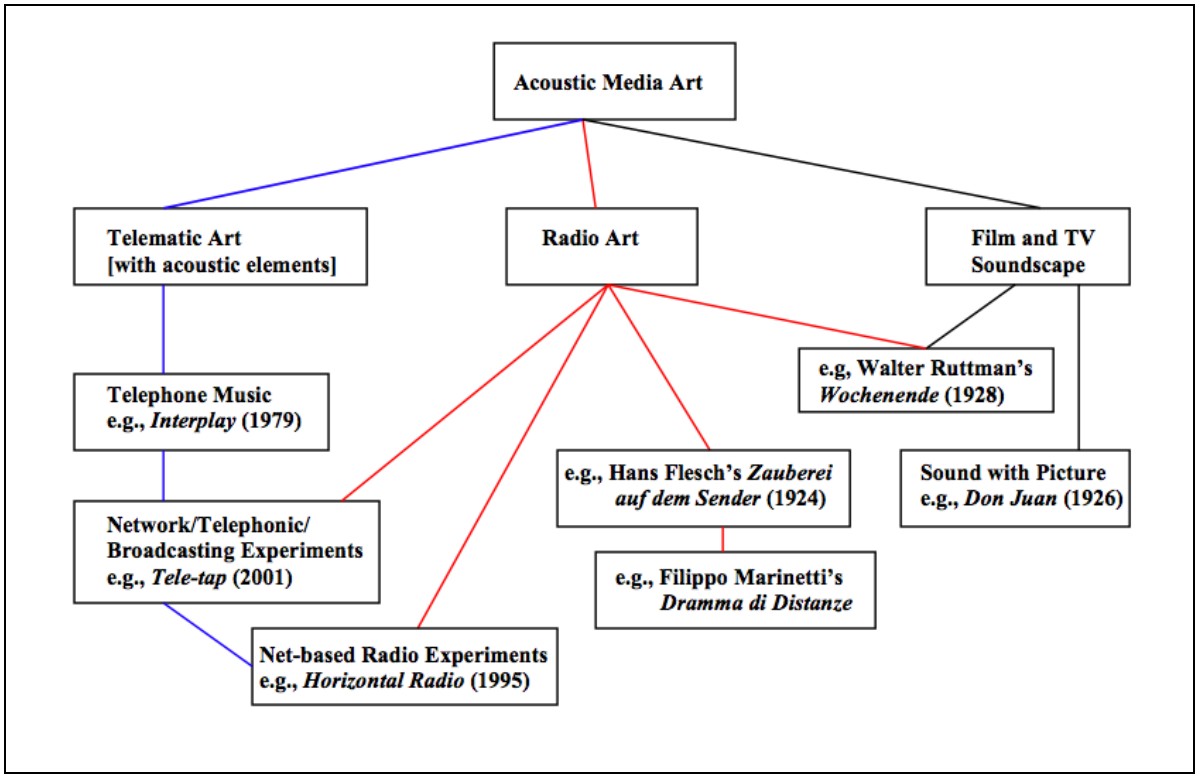

Figure 1. An incomplete, non chronological flow chart of radio art contextualised within acoustic media art (implying a wider contextualisation within media arts).

It is argued that radio art originated from Germany in October 1924 with Hans Flesch's *Zauberei auf dem Sender* (that loosely translates as *Radio Magic*). Unexpectedly a fictional magician intercepts the scheduled broadcast of the *Blue Danube Waltz* and 'With his supernatural powers, he ties together all the sound and radio waves flying through the air, and casts them into a single program' (Breitsameter 2007, 61). Interestingly from its inception, radio art incorporated the concept of 'radio waves flying through the air' or the medium of radio to form the work.

In 1928 Walter Ruttmann is commissioned to make a radio work entitled *Wochende* (*Weekend*) using film technology for broadcast and so this starts the blurring of definitions; is *Wochende* a film without pictures or is it radio art? Aesthetically also the elements of a film soundtrack and the sonic aspect/realisation of a radio art work are similar (both exploring music, sound effects and dialogue). It is not strange, from my experience to hear people describe listening to radio art like watching a film, even with more sonically abstract works that have little or no narrative in the dialogue. Gary Ferrington describes this phenomena as 'theatre of the mind' and argues that listeners draw on their life-based experiences to become directors of their own sonically stimulated idiosyncratic imagined films.

With film attracting large budgets from the twentieth century onwards, Douglas Kahn has identified that when it comes to sound in art, theorists have focused on 'film and media studies to provide examples of how sound and signification could

be approached … [and] that too many matters of concern for artists interested in a more central role for sound were left untreated' (Kahn 1999, 18). As such a much needed codification of the use of sound in radio art also remains under developed. Even with Andrew Crisell's coding of the elements of radio combined with the 'transplanting' of film sound design theories (e.g. Michel Chion). the full range of complexities dealing with the use of sonic elements within radio art arguably still remain unaccounted for.

The blurring of radio art and telematic art is evident with the 1995 *Horizontal Radio,* radio art work. For this work a collaborative network is set up, where 'Participants at each node usually curate their own contribution and the specific on site and/or on air renderings they give to the data circulating in the network.' (Grundmann 2007, 209). This is in effect a 'horizontal' (decentralized) network instead of the usual 'vertical' (hierarchical) network, where no two nodes experience the same collision and/or mix of sound elements.

Roy Ascott argues that with this type of art 'meaning/content is no longer something which is created by artists, then distributed through the network and received by the recipient. Meaning is rather the result of an interaction between the observer/participant and the system, the content of which is in a state of flux, … until it is reconstituted at the interface as image, text or sound.' (Ascott 1990)

Grundmann has described a form of radio art that 'deals with [the] public space of radio' which also encompasses 'electronic space' and 'digital space'. She states that 'Artists working in this realm, in which radio is just one point of reference, are not so much concerned with the recording and representation of sound or music as with delineation, by using lines and channels, of electronic/digital space itself.' (Grundmann 1994, 132) Robert Adrian thinks of this as 'communication as content' and explains that, 'Just the fact of turning the machines on and being present in the [electronic] space was the work. What happened with the work was inconsequential, and basically once the machines were off it was gone anyway … and these things referred into radio.' (Gilfilian 2008, 209)

Examples of this style of radio art includes, Adrian's *Radiation,* Bill Fontana's *Landscape Soundings I,* and Richard Kriesche's *ARTSAT*. With *ARTSAT*, Kriesche utilised a live radio feed from an astronaut on the MIR space station which 'triggered a synthesizer to play the *Blue Danube* waltz, [and] directed an industrial robot to weld a pattern onto a huge steel disc … [which] was also recorded on audio tape' (Grundmann 1994, 133). Ten composers each received the audio recording from which they created short compositions, which were broadcast on radio, while the 'huge steel disc' became a public monument. In this context the resulting sound recording and public monument are not the work but merely seen as documentation from parts of the work (which explored channels of electronic/digital space).

Australia Acoustic Media Art: Spatial Audio Examples

In 1969 the ABC transmitted David Ahern's stereophonic work *Journal* over two channels on separate AM networks simultaneously. One of the main reasons for doing this was the fact that there was no FM network in Australia until 1975. To

hear the work in stereo, the audience needed two identical AM receivers positioned as to roughly form an equilateral triangle with the listener (to create a phantom centre image between the speakers). This set up, I argue would have been very unlikely in most of the components of 'radio space' (interrupted acoustic spaces or listening locations across Australia). Perhaps more likely there would have been a range of bizarre receiver/speaker arrangements set up across Australia in the various locations and homes. It follows that if this is the case then the *Journal* broadcast is arguably closer to a synchronous multi-mono acoustic media arts experiment than a stereophonic broadcast. Sonically the experience of this broadcast (the radio art 'gallery space') could have ranged from the intended stereophonic experience to tonally independent, spatially pluralistic sound sources, interfacing from various rooms (with varying time delays and reverberation between the sound elements). Would this constitute an acoustic media arts event?

Doubling the number of channels in 1986, Chris Mann composed *Quadrophonic Cocktail* for broadcast over two discrete stereo ABC FM networks (Metropolitan, National and Fine Music). Again the range of speaker/receiver set ups would have been vast and not likely to be the suggested quadraphonic speaker arrangement in most locations. Although this time the work benefits from the extended frequency range of FM broadcasting the sonic complexities and variances would have arguably been vast between the components of 'radio space'. Mann may have realised the lack of control he would have had over his radio art 'gallery space' as indicated by Andrew McLennan's writing, 'The audience was invited to "mix your own audio adventure" …' (McLennan 1994) Again I believe that there is a strong case for why this could have been a synchronous multi-mono acoustic media arts experiment than a quadraphonic broadcast.

Australia Acoustic Media Art: Selected Radio Art Milestones

A radio art milestone that sent shockwaves around the world by winning the 1966 Prix Italia (competing against works like Berio's *Laborintus II*) was Nigel Butterley's 'musical collage' for radio, entitled *In the Head the Fire*. Exploring various mystical ideas, Butterley crafted his work from text that includes 'the Dead Sea Scrolls, ancient Irish mystical poetry … the Mass, and passages in Hebrew, Latin and Greek. The texts are sung and spoken, [and combined with musical composition] Through manipulation of some hundred individual recordings, the component parts are layered and woven into a dramatic arch form of a half hour's duration.' (Kerry website)

In 1976 Andrew McLennan with co-producer Jaroslav Kovaricek founded a 6 hour programme running from 6:00pm to midnight airing once every fortnight entitled *360°* Shift. McLennan states, '... we broadcast all kinds of music that was really on the cusp of new music ... We put on everything from soundscapes, sound poetry; we put on all kinds of material …' (Richards 2003, 123). Unfortunately *360°* only lasted until the end of 1976.

Arguably the most notable radio art programme on the Australian and possibly world media landscape was the now defunct ABC Classic FM *The Listening Room*

programme. Airing its first programme in January 1988, *The Listening Room* regularly gained international recognition and averaged one and a half awards for excellence in innovative radio per year. In 1996 Douglas Kahn stated that *The Listening Room* was 'one of the most influential factors for the strength of the new music and sound arts in Australia' (Kahn 1996). In an ABC report McLennan describes the content of *The Listening Room* as a;

> … venue for the exploration, the cross-pollination of radio forms. … you can hear new radio plays, audio essays, acoustic features, sound documentaries, new music, sound-scapes and sculptures, audio installations, acoustic art forms - a whole range of radiophonic means, used to develop a kind of dialogue between radio producers, artists and the audience with the medium, and with ideas…ideas about radio, about performance, about culture [3]

Sadly the ABC decommissioned *The Listening Room* and its last programme was aired on 15th December 2003. With its closure I would argue that the ABC also dismantled a national radio art 'gallery space'; ethically and culturally I find very little differentiation between closing this type of 'gallery' and closing a national visual arts gallery (the result of both actions deny the public access to internationally acclaimed art works).

These examples barely start to scratch the surface of the vast radio art activities of our Australian artists and international guests (with names too many to mention in such a short paper, including Australian artists such as Jon Rose, Robyn Ravlich, Sherre DeLys, John Jacobs, Moya Henderson, Ros Bandt, Andrew Garton …) Please also see http://www.abc.net.au/classic/listeningroom/ for further Australian names and works.

Is There a Role for Radio Art in Education?

Given that radio art can be seen as an interdisciplinary art form that spans aspects of music and media arts augmented by a vibrant - internationally acclaimed - Australian history, then could radio art have a more extensive role to play in education?

While it is not within the scope of this paper to conduct surveys of what is currently being taught within Australian universities, it is intended for the academics reading this paper to ponder the cultural significance and the potential for international partnerships pertaining to this art form. Further to this I would suggest readers of this paper consider how radio art could relate and/or interface with their own area of practice.

If we have such a vibrant Australian history as exemplified by the *Listening Room* archive (ABC Website), then is radio art fertile ground for establishing a more intensive and extensive field of study than is currently being offered by universities and organizations. Interestingly the career paths for radio artists tend to focus on international broadcasters. So if we taught comprehensive studies in radio arts and our students then follow this career path that takes them overseas and to international recognition, then this, in turn can promote radio art in Australian education. Radio art in education would also be one of the lifelines for a sustainable radio art scene by creating a new breed of connoisseurs.

Andrew Garton with his work at *Kunstradio* in Austria [4] is a good example that this career path is achievable, as is Atau Tanaka with his DMA work entitled *Promethee Numerique - Frankensteins Netz,* which was commissioned for radio and internet by Southwest German radio (SWR).

Is there something that radio art can offer education that other disciplines can't? While this is not an in-depth study, radio artist Hildergard Westerkamp has identified a quantity she describes as artistic 'liberation' for practitioners new to radio art from formal music and visual arts backgrounds. Westerkamp, coming from a musical background states, 'a liberation for me for sure and it provided ideas because it wasn't tied to the musical studies that I felt rather restricted to at the time …' [5] She goes on to state;

> I am developing this theory that people who come from the visual arts … come with a similar, sort of [pause] sense of freedom … [having] gone through visual arts studies and to use sound in visual arts for them was a liberation for them, from the restrictions of the studies of visual arts. [6]

Where should radio art be placed within education? Is it the role of music faculties to house radio art or does it belong in design and art departments? Is it an elective subject for media studies? When exploring networked radio art works like *Horizontal Radio* then is it more fitting to study this work within information technology departments?

Is radio art closer to a form of acoustic media art? Could radio art have a place in media art studies and would the inclusion of radio art within media arts studies further strengthen media arts' claim as a vital cultural area of research, formal study and practice?

CONCLUSION

Radio art is a dynamic evolving (acoustic) media art form that has a vibrant Australian history (repeatedly achieving world recognition). The omission of specifically identifying/mentioning radio art as a media arts practice within the NMASSR has been addressed and an initially case has been presented to argue for its inclusion.

Hildergard Westerkamp's anecdotal evidence suggests the possibility of a quality she calls 'liberation' as a commonality amongst practitioners new to radio art from formal music and visual arts backgrounds. This clearly calls for further research to examine this phenomenon in-depth and to reach a conclusive result. Never the less, it is an interesting observation made by a professional practitioner and academic over a period of time.

Given radio art's existing and evolving theories and practices, coupled with its history and potential for international partnerships and outcomes, radio art arguably may currently be under recognised as a fertile field of study within Australian universities. A possible cause for this is the difficulty in clearly categorising this art form within the current defined fields of study. This paper has presented a short case for how radio art can be defined as a form of media arts (an acoustic media art form).

FOOTNOTES

[1] Hildergard Westerkamp, 2008. Interview by author. Sunderland, UK. September 5.
[2] Ibid.
[3] McLennan, Andrew. Report undated and undirected, probably 1990, included in Don Richards, PhD diss., "The Creative Ear (The ABC's The Listening Room and the nurturing of Sound Art in Australia).", 155.
[4] Andrew Garton website, http://agarton.org/category/kunstradio/ (accessed 25 June 2009).
[5] Hildergard Westerkamp, 2008. Interview by author. Sunderland, UK. September 5.
[6] Ibid.

REFERENCES

Ascott, Roy. "Beyond Time-Based Art – ESP, PDP & PU," in *Zeit*, special issue of the magazine *Sterz*, Graz 1990.

Australian Broadcasting Corporation, ABC Classic FM. "The Listening Room (Archived Website)." http://www.abc.net.au/classic/listeningroom/ (accessed 1 June 2009).

Black, Colin. "Radio Art: Broadcast or Outcast," *Music Forum. Journal of the Music Council of Australia*, Vol. 15 No. 2, February - April 2009.

Breitsameter, Sabine. "From Transmission to Procession: Radio In The Age of Digital Networks." In *Radio Territories*. Edited by Erik Granly Jensen and Brandon LaBelle. Los Angeles / Copenhagen: Errant Bodies Press, 2007.

Castaldi, Damian. "Loop interview with Colin Black," *Loop Magazine*, Issue # 5, 2007

Chion, Michel. *Film, a Sound Art*. English ed. New York; Chichester: Columbia University Press, 2009.

Crisell, Andrew. *Understanding Radio*. 2nd ed. Studies in Culture & Communication. London; New York: Routledge, 1994.

Donovan, Andrew, & Sarah Miller, Elaine Lally. "New Media Arts Scoping Study Report to the Australia Council for the Arts," Australia Council, 2006.

Ferrington, Gary. "Audio Design: Creating Multi-Sensory Images for the Mind." *Journal of Visual Literacy*, 1993.

Gilfilian, Daniel. "Networked Radio Space and Broadcast Simultaneity" in *Re-Inventing Radio: Aspects of Radio as Art*. Edited by Elisabeth Zimmermann Heidi Grundmann, Reinhard Braun, Dieter Daniels, Andreas Hirsch, Anne Thurmann-Jajes. Frankfurt/Main: Revolver, 2008.

Grundmann, Heidi. "The Geometry of Silence." In *Radio Rethink*. Edited by Daina Augaitis and Dan Lander. The Banff Centre for the Arts, 1994.

. "Beyond Broadcasting: The WIENCOUVER Series." In *Radio Territories*. Edited by Erik Granly Jensen and Brandon LaBelle. Los Angeles / Copenhagen: Errant Bodies Press, 2007.

Kahn, Douglas. *Noise, Water, Meat: A History of Sound in the Arts*, Cambridge, MA: MIT Press, 1999

———. "The Lyre's Island: Some Australian Music, Sound Art and Design." *Leonardo Music Journal*, 6 (1996): 89-93.

Kerry, Gordon. "Weaving Light – Nigel Butterley At Sixty," http://www.users.bigpond.com/gkerry/Butterley.htm (accessed 21 June 2009).

Leonardson, Eric. "Painting with Waves: An Interview with Sabine Breitsameter on Sound and Radio Art." Chicago Soundweb, 1995. http://www.ericleonardson.org/articles/sabine.html (accessed 5 June 2009).

McLennan, Andrew. "A Brief Topography of Australian Sound Art and Experimental Broadcasting." *Continuum: The Australian Journal of Media & Culture 8, no. 1 (1994): 302-317.*

Österreichischen Rundfunks. *Kunstradio*, "ARTSAT - Kunst aus dem All" http://www.kunstradio.at/1991B/31_10_91.html (accessed 15 June 2009).

———. *Kunstradio*, "Landscape Soundings I" http://kunstradio.at/1990A/17_5_90.html (accessed 15 June 2009).

———. *Kunstradio*, "Toward a Definition of Radio Art" http://www.kunstradio.at/TEXTS/manifesto.html (accessed 15 June 2009).

———. *Kunstradio*, "RADIATION von Robert Adrian X und Norbert Math" http://kunstradio.at/2002A/27_01_02.html (accessed 15 June 2009).

Richards, Don. "The Creative Ear (The ABC's The Listening Room and the nurturing of Sound Art in Australia)." PhD diss., University of Western Sydney, 2003.

Schafer, R. Murray. *The Soundscape : Our Sonic Environment and the Tuning of the World*. Rochester, Vt. [United States]: Destiny Books, 1994.

Tanaka, Atau. "Promethee Numerique - Frankensteins Netz: Hoerspiel for Radio and Internet." D. Mus.A. diss., Stanford University, 2004.

Weiss, Allen S. *Phantasmic Radio*. Durham, [N.C.]: Duke University Press, 1995.

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Porous Boundaries

ABSTRACT
This paper will discuss shifting perceptions of biological boundaries. In order to solve the problem of development, molecular genetics has focused on the genetic material thereby disregarding the rest of the cellular material such as the cytoplasm and nucleus. Bodily boundaries, at all different levels, are perceived as static borders between inside and outside. Whereas according to ideas in relation to Developmental Systems Theory (DST) this understanding of boundaries is problematic because bodily boundaries are active and never sealed. It is necessary for bodily boundaries, on a multitude of levels, to permit different degrees of communication, as Evelyn Fox Keller argues, "cells need to communicate with each other through intercellular signalling".[1] DST offers ways for understanding development without relying on notions of gene dominance by proposing that in order to understand the organism it is necessary to investigate beyond its boundaries. This paper will draw on these conceptions of biological boundaries to discuss both my body of work *Visible Human Bodies* (2005) (created as artist in residence in the Cell and Gene Therapy Laboratory at the Murdoch Childrens Research Institute) and Helen Chadwick's photographic works *Viral Landscapes* (1988-89) (from my original research held at the Helen Chadwick archive at the Henry Moore Institute, Leeds, UK). Through this discussion of these works I intend to explore the notion of biological boundaries as active and permeable as well as evoke notions of the boundary between the interior of the body and the exterior environment as ambiguous and constantly shifting.

1. Evelyn Fox Keller, "Beyond the Gene but Beneath the Skin", *Genes in Development: Re-reading the Molecular Paradigm*, (Durham [N.C.]: Duke University Press, 2006), 307.

INTRODUCTION

This paper will discuss my body of work *Visible Human Bodies* (2005) and Helen Chadwick's photographic works *Viral Landscapes* (1988-89) in relation to conceptions of biological boundaries. I will discuss these works by drawing on theories of development as proposed by the developmental biologist Susan Oyama. *Visible Human Bodies* was created using living bacteria as a drawing medium. Helen Chadwick's large-scale digital images *Viral Landscapes* feature photographs from several image sources including landscape photographs of the Welsh coast-line, microscopic imagery of her bodily tissues,[i] and photographs of canvases that documented her physical engagement with the environment by pouring oil paint into the sea and recording patterns made by waves which were digitally composited into single images.[ii] In order to contextualise Oyama's ideas in relation to notions of development and bodily boundaries this paper will commence with a brief discussion of issues from molecular genetics related to gene focused views of development, before moving on to discuss the ways in which these artworks explore biological boundaries.

During the 20th century the field of genetics, which developed out of the disciplines of embryology (concerned with how the organism develops into a complex many-celled being)[iii] and physiology, has dominated biological research. In its conceptual theories of development the field of molecular genetics seemed to disregard the rest of the cellular material, such as the cytoplasm and the nucleus, and instead focussed on understanding the genetic code in order to solve the problem of development.

Fundamental to notions of gene dominance was Francis Crick's 1958 theory of the central dogma. The central dogma insisted that the development of the organism was determined by the DNA and that once the genetic information or program was sent to the proteins it could not be passed back to the genes.[iv] Susan Oyama wrote: "the central dogma is the one-way flow of information as the ruling metaphor for development…The dogma states that information goes from genes to proteins, never back to genes…"[v] The concept of genetic programming has influenced theories of development by attributing ultimate power to the DNA and that all the information required for development was encoded in the DNA. This idea formed the basis of the most ambitious project of the 20th century in molecular genetics, the Human Genome Project. Molecular biologists and geneticists had hoped that the knowledge that would come from this project would provide the answers to questions regarding the specific function of genes and the causes of genetic conditions that had caused illness and suffering over generations.

Toward the end of the 20th century, the debate that was focused on challenging the gene focused view that had dominated biology gained momentum. These debates were a consequence of the practical and theoretical problems that had been encountered by adhering to the gene centred approach. Other factors included the confusion that had arisen in relation to the use of the term "gene", the meaning and connotations of which had become unclear in contemporary uses, as well as misunderstandings in relation to what constituted a "genetic program".[vi]

Developmental Systems Theory (DST) offers alternative ways for understanding development without relying on models of gene dominance. Oyama has contributed to these debates by seeking more complex and subtle approaches and explanations for development without focusing exclusively on either nature or nurture. Her ideas have provided a challenge to binary models which attribute development to either the genes or environmental influences, traditionally been perceived as different and mutually exclusive forces.[vii] Her ideas have been discussed in relation to DST because she has argued that culture, the environment as well as genetic make-up are constantly working together to create us.[viii]

Gene dominance models conceive that DNA possesses special qualities and that it is some sort of powerhouse in which all the crucial information in order to control development is encoded. According to this way of thinking DNA is thought to remain largely unchanged from one generation to the next and it is passed down to other components of the cell such as proteins or membranous structures which obey the instructions that are received from the DNA.[ix] In the past, within the field of biology the other factors that are attributed to environmental influences have not been seen as important. These influencing factors have tended to be grouped together as "environment[al]" and considered "as a standard background that is not itself in need of explanation".[x] Whereas, according to Oyama, the developmental system "is a mobile set of interacting influences and entities. It includes all influences on development, at all levels of analysis".[xi] DST considers that development involves the "construction and reconstruction" of a variety of elements and factors which are "contingently" reformed "for each life cycle".[xii] According to this approach "the life cycle of an organism is developmentally constructed, not programmed or preformed. It comes into being through interactions between the organism and its surroundings as well as interactions within the organism".[xiii]

In order to understand the development and regulation of the organism at the level of the genes, the body has been broken down into smaller and smaller molecular particles. Simpler

life forms have been studied in order to understand the molecules that controlled the codes that animate and organize matter into living organisms.[xiv] For example E. coli has been used as a model organism in laboratories in order to understand how genes work, because all the cells are identical making it much easier to learn about the processes of cell division and development,[xv] instead of studying more complex organisms with different kinds of cells. Jacques Monod remarked: "What's true for E. coli is true for the elephant".[xvi] E. coli has been used in research laboratories as factories to produce and modify DNA. This can be used for numerous applications such as sequencing (in the case of the Human Genome Project), to determine gene function and in gene therapy applications.[xvii]

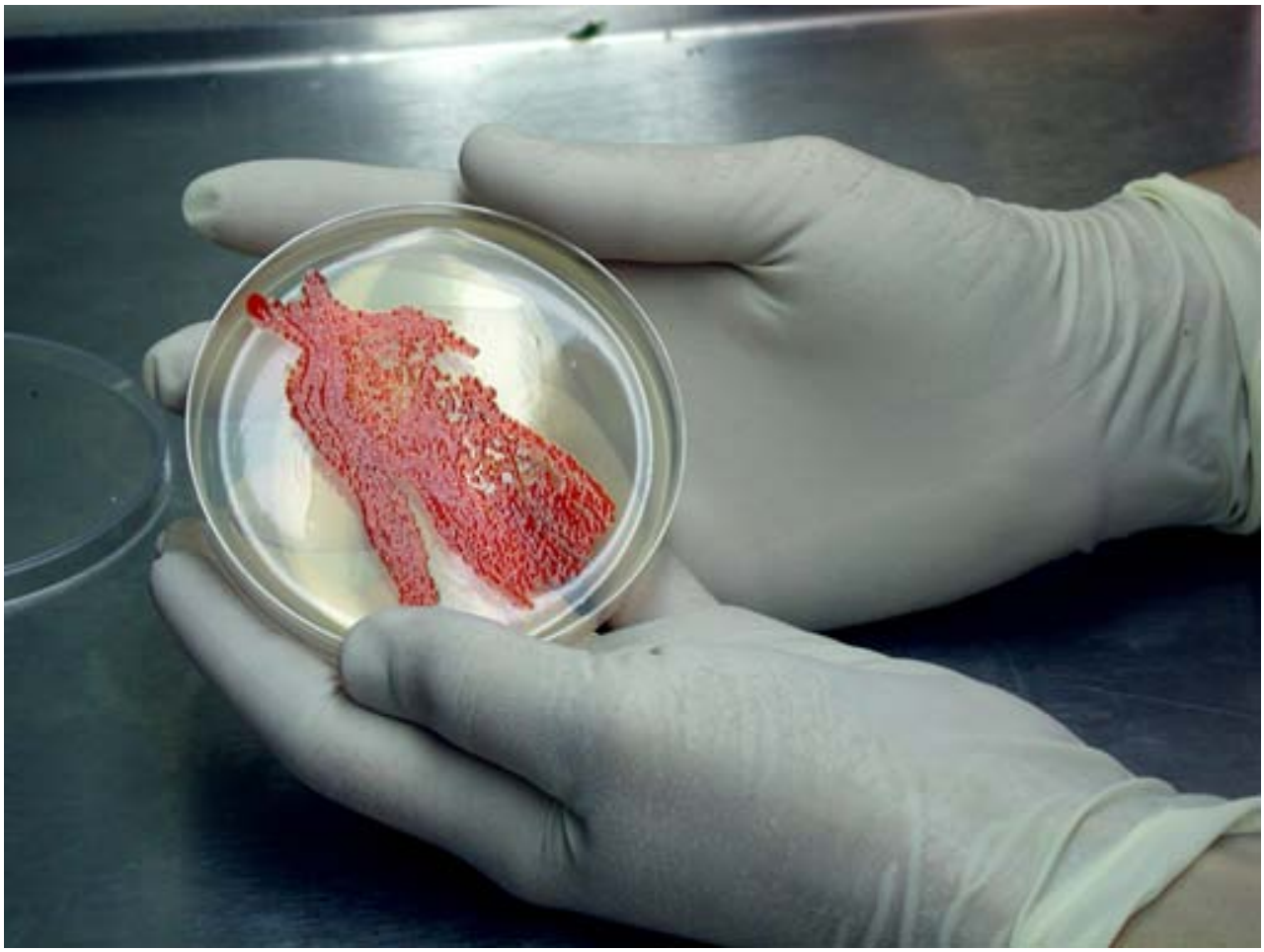
Visible Human Bodies

Peta Clancy, *Visible Human Bodies*, 2005.

During an artist residency with the Cell & Gene Therapy research group at the Murdoch Childrens Research Institute at the Royal Children's Hospital in Melbourne I engaged with the day-to-day processes of working within a laboratory where techniques for altering the genetic make-up of human DNA for treating inherited conditions were being developed. I undertook the residency in order to learn about the techniques that were being used to develop gene therapy methods. In response to this experience I created the series titled *Visible Human Bodies* by using living E. coli (and other pathogenic bacteria, that is, organisms that cause disease) as a drawing medium in order to acknowledge the importance of these bacteria to the genetic research that I had observed in the laboratory. I created these

images firstly by using a large needle to ‘pick’ the living bacteria that was growing within petri dishes, and apply this (using a series of fine dot marks) to the surface of fresh nutrient agar. During this process the images of the human figures were not visible to me. I then sealed the dish and stored it in a 37° incubator for several days during which time the image materialized.

When I exhibited the work from this series *Visible Human Bodies* the bacteria drawings were mediated through the photographic process and did not represent the actual experience of working with and growing these figures. As mentioned the figures were not visible when I initially applied the bacteria to the agar in the petri dishes, yet became so over a period of time. I empathised with and related to these human figures, as they emerged, quite simply due to their human form. Observing these forms appearing from amorphous particles of bacteria throughout the incubation process was a fascinating and enigmatic process. These images of the human body differed from much of the imagery that I had observed within the context of the laboratory which was reduced to smaller and smaller fragments. Instead of zooming in closer and closer and concentrating my attention on each cell, gene, or protein I sought to depict the body as a system, in all its complexity, and to think of it as a multifaceted entity and not in terms of a molecular phenomena. As well as responding to the scientific environment, these works also engaged with the photographic process. This process of the bacteria figures becoming visible was not unlike the photographic process whereby the photographic paper is exposed to light and the latent image is treated with chemicals in order for the image to become visible.



Peta Clancy holding bacteria drawing in the Cell & Gene Therapy Research Laboratory, 2004.

The research being conducted in the Cell & Gene Therapy laboratory was focused on investigating ways for treating genetic disorders such as gene therapies which would involve the insertion of "'healthy' copies of genes into a patient's cells".[xviii] At the time I undertook the residency the working methodologies were being questioned because the findings by the researchers in the laboratory "radically undermined the assumption that proteins were simply and directly encoded in the DNA (indeed, it undermined the very notion of the gene as a functional unit that resided on the chromosome)".[xix] Therefore, within practical research contexts it has become necessary to look to other methods that contribute to development and to examine the organism and its environment more broadly rather than focusing on the genetic material.[xx]

Biological Boundaries

Attitudes toward development that focus predominantly on the genes, as Oyama has argued, have created boundaries "between the genes and everything else in the universe".[xxi] Oyama has proposed that in order to understand the organism in a more comprehensive way it is necessary to investigate "beyond the boundaries of the organism".[xxii] By looking to a

multitude of influencing factors which are both internal and external to the organism and that are essential to "the developmental system" that is necessary to create "a life cycle".[xxiii] Therefore, it makes much more sense to think of development in terms of "constructivist interaction" between interior and exterior.[xxiv]

Oyama refers to the variety of factors that contribute to the development of the organism which are passed on from one generation to the next as "developmental means":

> These means include genes, the cellular machinery necessary for their functioning, and the larger developmental context which may include a maternal reproductive system, parental care, or other interaction with conspecifics, as well as relations with other aspects of the animate and inanimate worlds.[xxv]

The development and survival of the human body depends on the existence of boundaries on all different levels, from the surface of the skin to the cell wall as well as the nucleus. A permeable outer sheath called the plasma membrane that regulates the substances that enter and exit the cell and that protect it, is made up of the cytoplasm as well as the nucleus, which in turn contains the DNA. A porous membrane that regulates substances that flow into and out of it also protects the nucleus, which has been perceived as the control centre of the cell. These boundaries between the cell and external environment and the nucleus and the cytoplasm are fundamental to the survival of the organism.[xxvi] Yet they are not static sheaths that divide the inner body, cell or nucleus from the exterior because they are fundamental to the development of the organism and they control much of the movement between inside and outside.

In order for the human body to be conceived as an organic entity some sort of boundary must be drawn around it in which to differentiate it from other entities. In biology the notion of boundaries is a complex issue, as Fox Keller has argued, because biology has "recognised many bodies, corresponding to many skins".[xxvii] None of the membranes in our bodies provide an impermeable division between interior and exterior because they are all porous. The cell membrane of a fertilized egg, for example, "regulates so much of the traffic between inside and out" that it is "an active agent in shaping the body it contains, indeed, in determining the very meaning of interiority".[xxviii] Each membrane is porous and dynamic and for this reason it is impossible to think of each self-contained entity as existing independently from its external environment. Fox Keller has argued that the notion of boundaries has not always been productive, though they are fundamental to the survival of the organism, she prefers to consider these biological integuments basically as "hold[ing] things together" and retaining "the many large molecular and subcellular structures" within close contact for development to occur.[xxix] Nonetheless, it is necessary for these membranes to remain strong and resilient for the survival of the organism. Bodily boundaries have traditionally been perceived as static borders between inside and outside yet it may be more productive to think of these boundaries as active and never sealed because they all permit different degrees of communication. For example, "cells need to communicate with each other through intercellular signalling".[xxx] The boundary between the interior of the human body and the exterior environment is ambiguous and constantly shifting.

Notions of inside and outside are deeply embedded into cultural perceptions of the body. Whether it is the skin which is seen as a boundary between inside and outside or the boundary that is drawn around the cell. The emphasis in the developmental systems approach is on mutually constituting entities and their surrounds.

Reflecting this complexity Oyama writes:

> "It is not a simple thing to draw an outline around an individual organism…If we follow our skin to its transition to the mucous membrane of the mouth and throat and beyond, in a kind of topological analogy to the coastline, we can ask whether our gut symbionts are inside or outside us. A particle of food could be considered inside once it has been absorbed into the blood stream or into a cell, but one of our cells similarly resolves, if we look closely enough, to a maze of structures, channels, and pores, constantly changing their configurations and traversed by frantic traffic."[xxxi]

Helen Chadwick: *Viral Landscapes*

Helen Chadwick making paintings used in *Viral Landscapes*. Leeds Museums & Art Gallery (Henry Moore Institute Archive) Acc. No. 2003.19, Papers of Helen Chadwick.

Chadwick's series *Viral Landscapes* similarly evokes this sense of the interconnection between the body and the environment as well as the porosity of the boundaries of the cell and the body. In these works the body appears to have broken the boundary of the skin and is now immersed in and deeply connected to the external world "everything touches it – diet, climate, and soil, - is made manifest in it".[xxxii]

To create these large-scale digital images Chadwick was informed by her interest in organic structures and systems. *Viral Landscapes* were intended to evoke Chadwick's physical experience within the natural environment. Initially she was commissioned to create works in the landscape, however, she felt particularly alienated within this environment. So, in order to immerse herself more fully in it she lay down on the earth with her head to the coastline. This particular pose was informed by Andrea Mantegna's painting titled *Lamentation Over the Dead Christ* (1480). Therefore Chadwick oriented herself in the same position as the figure of Christ in the painting in order to evoke and enhance other bodily senses and feelings beyond the sense of sight.[xxxiii]

Chadwick intended to evoke her sensory, not just visual, experience within the landscape through the use of colour to represent different bodily parts and sensations. *Viral Landscape No. 4* included the colour pink, microscopy images of cells from the cervix and was intended to symbolize the sense of touch.[xxxiv] Another image, *Viral Landscape No. 1*, included a microscopy image from her mouth and was intended to relate to the sense of taste.

In order to evoke the connection between the internal body and the external environment Chadwick combined microscopy imagery from her bodily tissues with patterns in the swirls of paint created by the natural forces of the waves. She digitally fused her cells with the patterns that mapped her physical interaction with the environment, splattered and smeared across the landscape, and created images that were seductive, beautiful, unsettling and

strange. By bringing these image sources together she looked for connections in the physical formations between the microscopy imagery and the wave paintings. *Viral Landscape No. 2* was related to the inner ear and hearing because the swirling patterns that she found in the paintings reminded her of the shape of the inner ear called the osseous labyrinth.[xxxv] *Viral landscape No. 3* related to the microscopy imagery of the cells from her blood smear, the forms of the boulders in the landscape.[xxxvi]

In the series, *Viral Landscapes,* Chadwick challenged notions of the boundaries of the body as impermeable membranes. She represented her cells flowing freely through the landscape to evoke a connection between all forms of matter. Without the boundaries of her skin, her body broke the bonds of form and gender to become cells and tissue scattered over the landscape. Hilary Robinson observed: "the merging of scale and the use of coastline…raised questions about the location of the interiors and exteriors of the body and the locations of self and gender".[xxxvii] Evoking these ideas, Chadwick commented that these images were not intended as "ruined catastrophic surfaces but territories of a prolific encounter, the exchange of living and informational systems at the shoreline of culture".[xxxviii]

In *Viral Landscapes,* the body has gone beyond the boundaries of the skin, as Chadwick commented, "it's out there floating in the elements, as cells drifting".[xxxix] Usually in her work she would "establish the interior" yet, in *Viral Landscapes*, this perspective was altered and the works depicted "fragments of the inner self, of cells, but they are out in the open, completely vulnerable and free".[xl]

Helen Chadwick's *Viral Landscapes* evoke a sense of the biological boundaries of the body, whether the cellular membrane or the skin, not as rigid and fixed but instead as active and permeable membranes which interact both internally and externally. Through this discussion of *Visible Human Bodies* and *Viral Landscapes* in relation to molecular biology and developmental theory I have intended to explore notions of the boundary between the interior of the body and the exterior environment as ambiguous, constantly shifting and interconnected.

REFERENCES

i Helen Chadwick, Acc. No. 2003, Notebook 2003.19/E/6., Papers of Chadwick, Henry Moore Institute Archive, Leeds Museums and Galleries.
ii *The Art of Helen Chadwick* [Videorecording], Production D. Donahoe, (London: Illuminations, 2004).
iii Evelyn Fox Keller, *Refiguring Life: Metaphors of Twentieth-Century Biology*, (New York: Columbia University Press, 1995), 14.
iv Fox Keller, *Refiguring Life*, 93.
v Susan Oyama, *Evolution's Eye: A Systems View of the Biology-Culture Divide*, (Durham, [N.C.]: Duke University Press, 2000), 50.
vi Evelyn Fox Keller, "Beyond the Gene but Beneath the Skin", in *Cycles of Contingency: Developmental Systems and Evolution*, (Cambridge, Massachusetts; London, England: The MIT Press, 2001), 299.
vii Oyama, Griffiths and Gray, eds., *Cycles of Contingency*, 2.
viii Susan Oyama, Paul E Griffiths and Russell D. Gray., eds., *Cycles of Contingency*, 2.
ix Oyama, Griffiths and Gray, eds., *Cycles of Contingency*, 3.
x Oyama, Griffiths and Gray, eds., *Cycles of Contingency*, 1.
xi Oyama, *Evolution's Eye*, 72.
xii Oyama, Griffiths and Gray, eds., *Cycles of Contingency*, 1.
xiii Oyama, Griffiths and Gray, eds., *Cycles of Contingency*, 4.
xiv Fox Keller, *Refiguring Life*, 87.
xv Fox Keller, *Refiguring Life*, 93.
xvi Fox Keller, *Refiguring Life*, 24.
xvii Email conversations with the late Dr Panos Ioannou leader of the Cell & Gene Therapy Research Group, Murdoch Childrens Research Institute, Royal Children's Hospital Melbourne, January/February 2005.

xviii Jim Vadolas and Heidi Peters, Cell & Gene Therapy, http://www.mcri.edu.au/pages/research/research-group.asp?G=10, [Accessed: 25/01/09].
xix Vadolas and Peters, Cell & Gene Therapy.
xx Evelyn Fox Keller, "Beyond the Gene but Beneath the Skin", 299.
xxi Oyama, *Evolution's Eye*, 194.
xxii Oyama, *Evolution's Eye*, 64.
xxiii Oyama, *Evolution's Eye*, 197.
xxiv Oyama, *Evolution's Eye*, 11.
xxv Oyama, *Evolution's Eye*, 29.
xxvi Eldra Pearl Solomon, Richard R Schmidt and Peter James Adragna, *Human Anatomy and Physiology*, 2nd ed. (Orlando: Sauders College Publishing, 1990), 95.
xxvii Fox Keller, "Beyond the Gene but Beneath the Skin", 300.
xxviii Fox Keller, "Beyond the Gene but Beneath the Skin", 301.
xxix Fox Keller, "Beyond the Gene but Beneath the Skin", 301.
xxx Fox Keller, "Beyond the Gene but Beneath the Skin", 307.
xxxi Susan Oyama, "Boundaries and Constructive Interaction", Genes in Development, 279.
xxxii Roberta McGrath, "Helen Chadwick Viral Landscapes", *Portfolio Contemporary Photography in Britain* 39 (2004): 57.
xxxiii Ann Bukantas, "Viral Landscapes", http://www.liverpoolmuseums.org.uk/podcasts/transcripts/viral_landscapes.asp, [Accessed: 26/09/08].
xxxiv Chadwick, Notebook 2003.19/E/9.
xxxv Bukantas, "Viral Landscapes".
xxxvi Bukantas, "Viral Landscapes".
xxxvii Hilary Robinson, "Border Crossings: Womanliness, Body, Representation", in *New Feminist Art Criticism: Critical Strategies*, (Manchester; New York: Manchester University Press, 1995), 142.
xxxviii Helen Chadwick, *Enfleshings*, (London: Secker and Warburg, 1989), 97.
xxxix Philip James and Sarah Batiste, *Interviews with the Artists: Elements of Discourse*, (London: CV Publications, 1996), 19.
xl James and Batiste, *Interviews with the Artists*, 19.

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ABSTRACT

I shall argue in my paper that the autonomy of the contemporary art school or college has become progressively compromised within its larger context – being a critical part of today's corporatised transnational university. This has happened for many reasons, but primarily because of the 'globalisation' of tertiary education, teaching and research. In a word, arguably, artists who teach the new media arts face cultural, historical and pedagogic situations that are foisted upon them because their institutions have been absorbed into the contemporary bureaucratised Euro-American university system. As a result, the radical pluralism of contemporary art is being seriously threatened or homogenised by the aesthetic, cultural, managerial and pedagogic values of our universities.

Furthermore, practicing artists who specifically teach contemporary art, media and technology are daily challenged by the shifting social role of the university in society and its internal systems of managerial rationalism, its literal, anti-metaphorical art education speak (especially as it pertains to artistic creativity) and its blinding cardinal institutional and pedagogic belief in the exploitative logic of global capitalism and media celebrity culture.

This is further complicated by the fact that contemporary artists who do not submit to this complex economic and cultural zeitgeist of tertiary education for global niche markets become, because of their personal and professional convictions and values, hermeneutically critical and suspicious of 'the administered world' (Theodor Adorno)

Contemporary art, ideally speaking, as an act is controversial by nature; it is, according to one of its (post)modernist lodestars, Georges Bataille, in opposition to the status quo. So, fundamentally, we need to ask ourselves: What kind of education will suit this specific type of art? Can art schools merging with universities retain or create a pedagogic rationale that nourishes their teachers and their students who seek to question our one shared turning world?

" From the diary of a six year old boy at the at the American School on Tangier Morocco : " I get up at 8.309. I eat my breakfast. Then I go to the job."

When asked what he meant by the job he said, " school of course." "

William Burroughs, The Job, 2008.

"…sometimes you have to say 'shit' to science."

Luis Bunuel, My Last Breath, 1984.

The question facing anyone, who is critical of the fallacious equation between one's artistic and academic identity and university advocacy research as a moral lifestyle, is why are universities so resisting creative arts research? Why this cultic fetishisation of patently unsuitably narrow criteria of evaluation as to what represents academic research?

Therefore, I shall argue, that the autonomy of the contemporary art school has become progressively compromised within its larger context of being a critical part of today's corporatized transnational university with its 'made-to-measure' postmodern professoriate producing a distorted performative culture of pedagogy that is tragically grid-locked in an archaic 'two-cultures' paradigm of 'free-market' ideology, 'the pursuit of excellence', the myth of universalism and other spurious motherhood "standards " that speak of the hegemony of the humanities and the natural sciences in determining the socio-cultural worth of the media art educator in our common life.

This has happened for many elaborate factors that are intricately salient to the 'globalization' of tertiary education, teaching and research. In a word, arguably, artists who teach face many profound cultural, historical and pedagogic problems that are, significantly partly, forced upon them because of being absorbed into the contemporary bureaucratized Euro-American university system.

And as a result, the given radical pluralism of contemporary art is being radically threatened or homogenized by spurious aesthetic, cultural , managerial and pedagogic values incarnated in the larger institutional panoptic ethos of our universities.

Furthermore, practicing artists who specifically teach contemporary art, media and technology are daily challenged by the shifting social role of the university in society and its internal systems of managerial rationalism, literal, anti-metaphorical art education speak (especially as it pertains to artistic creativity !) and a blinding cardinal institutional and pedagogic belief in the exploitative logic of global capitalism and media celebrity culture.

This is further complicated by the overriding fact that contemporary artists, who do not submit to this complex economic and cultural zeitgeist of tertiary education for global niche markets, are by their personal and professional convictions and values hermeneutically critical and suspicious of 'the administered world' (Theodor Adorno). (2)

Contemporary art, ideally speaking, as an act is controversial by nature ; it is according to one of its (post)modernist lodestars, Georges Bataille, in opposition to the status quo. (3) So, fundamentally, we need to ask ourselves : What kind of education will suit this specific type of art ? Can art schools merging with universities subscribe to a pedagogic rationale that nourishes their teachers and their students who seek to question our one shared turning world ?

The artist as an aesthetic vagabond, intellectually homeless, "travelling without a passport " (Steve Fagin), striving to seek new creative, social and pedagogic possibilities, not in order to serve our art schools and universities losing their social-cultural autonomy but learning to live with otherness, learning to engage in a perennial Socratic dialogue with our contemporaries, the past and the future. (4) Valuing the arts, science and technology as a form of reflexive cultural, intimate and personal conversation (Hannah Arendt, Martin Buber, Erving Goffman, Edmund Husserl, David Hume, Michel Montaigne, Vilem Flusser) (5) Creating and teaching as dialogic emancipation. To echo, Jacques Derrida in his moving final interview, learning to finally live. (6)

Our three main worlds of perception, affection, and concepts, respectively the worlds of journalism, art and the academy are increasingly notable , as McKenzie Wark recently astutely noted , for their systematic institutionalized inability to afford their own conditions of negation. (7)

Then what art schools profess to do as tertiary sites of preparing students to become emerging artists in the new knowledge economy by seeking new paths of creativity, critique, innovation and resistance

are in critical need of far-reaching institutional self-questioning that goes beyond the customary rhetorical pieties we read in their promotional brochures.

It behoves us all as artists, educators and citizens to bust wide open these three worlds and their exhausted post-postmodern rhetorics of cant, hypocrisy and uselessness. Art has become decorative, ahistorical "wallpaper'' entertainment, journalism 'life-style' spruiking for the status quo and the academy, as Kenneth Rexroth once described universities , are "fog factories". (8) All three worlds need not be as such, but tragically for many complex reasons, we prefer to be sleepwalkers.

Once upon a time, academics as public intellectuals had substantial authority and gravitas in the world. But in the last forty to fifty years, what we have observed is their dramatic decline in their status as commentators on critical issues that are dear to our everydayness. For someone like Stefan Collini, speaking of twentieth century English intellectuals, they represented nothing less than "absent minds" in their culture.(10) This sad state of affairs has now become the main template of our Angelo-American world of education. The academic intellectual – and let us be frank here, not all academics (far from it) are, ipso facto, intellectuals as defined by past and contemporary scholarship. (11)

Universities were once autonomous sites of access, dissent, critique and democratic collegiality. Social issues were often at the forefront of their orbit of concerns and careers took second place. Nowadays, we are witnessing the global privatization and redistribution of knowledge, information, culture and education. Vocation is on everyone's minds : academics and students including , admittedly though arguably on a lesser scale, artists. The " country of the mind" (John Middleton Murry) was once synonymous with the University and its flexible capacity to generate larger cultural, ethical and social questions in society.

And beware any artist- academic who endeavours - in terms of peer acceptance, career and university research – not to categorically play "the game of the norm" (Alain Bergala) . (12) For art to them is larger than themselves, to invoke Gass, once more, the artist is principally concerned with possessing " an uncorrupted consciousness." (13) Making the artist, ideally speaking, Adorno aside, an enemy of the state. Thus, it is in this essential context that contemporary art and studio art teaching and research represent a kind of philosophical walking. For the art academic is, by definition, an incorrigible loiterer in the university and everyday life.

It bears saying, again and again, that artists who teach produce in and out of the academy vital (unrecognized) research that feeds into the cultural DNA of our social and personal lives. This is axiomatic in the artist's world and his/her existential values ; for to engage in the creative act is to (re)search for new " grammars of creation" (George Steiner). (14) Art, theory and pedagogy are intimately interwoven with each other – aesthetically, ethically and ontologically. Surely, anyone who is familiar with the foundational ideas, effects and critical post-Duchampian genealogies of contemporary art, will recognize how they are fundamentally grounded in culture, language, thought and society.

Why is it that art schools in their larger university contexts, by delineating the dynamic intricacies that exist between theory, discipline, method, research and the proliferating new wiki model of open source knowledge, directly challenge the current thinking concerning the university and its role in our hyper- managerial society ?

These are important issues that require to be acknowledged by our universities as they are highly relevant for today's mass art, 'the culture industry' (Adorno), education, government, and a 'post-disciplinary' world of increasing cultural amnesia.

Indeed, it is not only that most non-art academics have (consistently) a poor understanding of what *contemporary* art is, and this inevitably generates much critical, administrative and pedagogic confusion as to how best relate to an art school, its teachers, students and under- and post-graduate courses and programs. But, generally speaking, art schools are more often than not unfortunately

noted for their internal critical schisms relating to the ongoing legacy of (post) modernism, the mimetic arts, abstract and conceptual art, photo-media, installation art, performance, video and the media arts, etc.

Witness how art history with its obsessive concern with the 'specificity' and materiality of media, as W.J.T.Mitchell correctly observes, is still resistant to a more informed understanding of 'the moving, virtual, and dematerialized images in the art world' and best recently epitomized by the hostile reaction to the emphasis on new media at the 2002 *Documenta* exhibition at Kassel, Germany. (17) This is not new to anyone who has been teaching 'time-based' media , video art and new media since the 1980s.

Historically speaking, in terms of university governance, teaching and future policy and research directions, our universities (that are so heavily dependent on British tertiary education values) can only make sense of contemporary art strictly as a kind of research that creates new knowledge. Art as science, art as humanities, never within its own terms, but in the ever-present standardized language of scientism, and bureaucratic and economic rationalism.

James Elkins makes a very good point in this context, where he argues that many art educators distort their own arguments and ideas by fitting them to concepts that are often neutral and inevitable. (18) These concepts are generally defined by non-artists who preside in determining what represents research in the academy. At the heart of this immense problem lies, as Elkins argues, the urgent quest to conceptualise the intellectual value and status of studio art education as being analogous to the weight of theory as it applies in neighbouring disciplines like literary studies, European philosophy, anthropology and sociology, etc. (19).

Yet, as we can all testify who teach in art schools, we are forced – on a daily basis – to operate in "the administrative box"(Elkins) that is increasingly driving today's universities as institutions of higher learning and research. (20) Sadly, we are located in a ' box-ticking' culture of pedagogy and research where academics are snug in their tenure-track careers indifferent to their social and institutional role as teachers, researchers and as intellectuals. As Stephen Melville puts it rather aptly, " Indifferent to knowledge and to our own careers, the fact of our professionalism is the ongoing institution of this indifference." (21)

In our universities with their totemic, hierarchical values of bureaucratic corporatization , self-serving cultural and occupational flattery and technocratic measurement of what represents academic teaching and research , little wonder then art academics with their post-object aesthetics, professed post – postmodernist avant-gardism and their studio departments as 'laboratory' sites of aesthetic, cultural and technological experimentation are cautiously looked upon as unwelcome professional mavericks or outlaws.

Given the present global scenario of mass education, migrant turbulence, diasporas, demographic shifts, hybridization and the movements of capital and media, universities are radically becoming spaces of non-institutional critique and, instead of intellectual and moral accountability being at the centre of their pursuit of truth in society, they have become non-questioning economic and socio-cultural actors in the administration and commodification of academic knowledge.

Artistic knowledge, by its very nature, is social knowledge and theory for Adorno, amongst others, represents a form of practice. (23) This signifies a very conflicted relationship between the university and media art production.

Bill Reading's key observation of the rapid fragmentation of the modern university into 'ruins' predicated on its growing crippling philosophical inability to differentiate between accounting and accountability is so starkly prescient to say the least. (24) Academics are 'content ' providers, students are consumers or clients and accountants and managers hold the decisive reins which significantly contribute to the educational and research outcomes of the university. Therefore, Reading's description of the university as a ruined institution that has clearly lost its historical raision d'etre has

become one of the axiomatic starting points in any self-reflexive , institutional evaluation of its identity, concerns, community and research outcomes.

Creative arts research is yet one more conflicting contemporary discourse, amongst many other divergent ones, that epitomise the modern university and its changing historical narrative and social role. Over the last two hundred years, three broad ideas have defined it (non-sequentially) : the Kantian concept of reason embodying unity and wholeness ; the Humboldt idea of culture ; and now, the techno-bureaucratic concept of excellence.

Derrida sees the university with its Greek-European legacy as a dissent, resistant, critical and deconstructive oppositional force to nation-state power, economic, ideological, religious and media powers that are inimical to the continuous affirmation and development of democracy. It is a post-hierarchical space without status and rank, essentially, in order to usher in " the Humanities of tomorrow". (25) A place in search for truth without any conditions attached. In other words, academic freedom to know, criticize, question and doubt without any fear of punitive peer reprimand motivated by triumphant corporate instrumentalism. But as Melville reminds us, speaking about (art) criticism in the 'classic-modern' university, it has never been historically friendly to it as a rule. (26)

He cogently argues that the modern university should not be so cynically committed in its administrative language to new paradigm shifts because of their novelty or status but be more directly involved with an open demand for "its own acknowledgement or reinvention." (27)

Consequently, art academics are constantly engaged in a permanent questioning of the social definition, role and relevance of contemporary art production. Focusing on the shifting interactions between artistic practice and theory, as Florian Waldvogel notes, art educators are often problematising the more traditional notion of artist, teacher and public. (28). This, in pedagogic terms, means that they address the established educational, social, and political hegemonies that have and are presently determining the ideas and practices of art and studio art research.

Art and design schools and departments, as a result of implementing a radically new interdisciplinary strategy, may need to examine more closely art education's emphasis on output, objects and projects and focus instead, as Ron Burnett advocates, in its shared studio contexts, classes, and exhibitions on unmasking the complexities of process as a distinct pedagogic objective. (29) This means exploring our intricate multi-dimensional media environment in terms of the new digital technologies and their intricate links between mediation, connection, immersion, and community. Also, there is an increasing awareness that artists as producers and researchers are concerned with the interplay between their times and the individual, and effectively strive to locate the creative arts closer to the social and natural sciences but not at the peril of negating their own distinctive autonomy and character. Artists, after all, for someone like Ezra Pound represent the antennae of the human race ; and, for Marshall McLuhan, similarly they are concerned with intuiting change in perception thereby materializing it for others to see, experience and ultimately change.(30)

Critically then, artists (irrespective of their media of creativity) and with the advent of sophisticated networks of communication and speed, not only broaden and interweave the concerns and disciplinary boundaries of all fields of artistic experimentation, but they crucially show us the possibility of another world in this present one. As Paul Eluard once put it : " There is another world, but it is in this one. "

Also how do we adequately comprehend and theorize the dynamic new cultural technologies of post-Cartesian concerns and textuality and our telematic culture when both of them are developing more rapidly then we can speak about them in an informed, reflexive way that is cognizant of their multifarious and mutating socio-cultural formations and effects?

Too often we tend to ignore our own cultural mind-sets when using computers and their prevailing techno-futurist myths. Computers are still being used, despite the proliferation of new education networks and new forms of communication, in a sterile, conformist way ; they are commonly thought

as tools for reconfiguring the binary banalities of modernism and formalism, used in a context – free void of ahistorical learning. This is not a new problem. In the early 1990s, Roy Ascott, complained of the unimaginative way in which computers in art education were put to the service of the market :" This has spawned a mechanistic, technocratic attitude and an abuse of what should be seen as an extremely subtle, complex and sensitive agent of perception, cognition and action." (31)

This is not to deny the recent emergence of less rigid structures, spaces and discourses in new media teaching that suggest connectivity, interactivity and dialogue, but computers still need to be used more as a source of self-reflective creativity that is markedly aware of the fragmentary character of knowledge and the lived experience of everyday life.

Computers are best thought not as tools as such but rather as immersive environments, as Ascott has been advocating over the years, central to a radically new kind of art education that speaks of telematic connectivity and , moreover, of syncretism that represents multilayered material and metaphysical worldviews. (32) Ascott's pioneering role as an art educator questioning the reductionism , totalizing dogma and omnipresent rationality in traditional art education has only been acknowledged in the last decade or so. (33) Instead of art schools or departments , we have collegiums which advance a kind of thinking that is quite a distance from the "sclerosis of conventional art education." (34)

So often art educators use digital technology and computers added to studio art production and theory as an expression of vocational training, instead trying to understand contemporary reality as being syncretic which leads students to question their own identity, their relationship to others, and ask questions dealing with media ecology and the phenomenology of culture, time and space. Combining ubiquitous computing with post-biological technology.

Following seminal artists like Vito Acconci and the late Nam June Paik, Mark Amerika has recently proposed that art education should encourage students to reinvent themselves, to see how far they can participate in a continuous personal self-discovery trajectory located in a highly technologised social process of artistic invention, social networking and seeking to grasp " the unexpected, the luminous, stupefying connections connections " (Henri Michaux) of their everyday lives. (35) For Amerika, it's a question of trying to find your own path of aesthetic and existential drifting as a nomadic explorer involved in a multi-linear narrative of creative excursions and experiences. (36) Specifically, for Amerika, students should be shown how best to enter into their own space of mind where they become the artist-as-medium where they hack, improvise, cut and paste, remix, etc., in the global network information society.

The art of the 1960s has been, in effect, beneficial to the art students of today in providing them with essential process-based and performative strategies coming from that specific decade helping them to establish important concepts and strategies in digital art practice now. Despite the encouraging signs of student creativity nowadays, the ubiquitous " dead hand of institutional bureaucracy" (Ascott) with its short-sighted obsessive stress on accountability and profitability is still at the core of our universities. (37)

Given the cultural amnesia conveyed by our computer –inflected media in our age of consumption, information-networks and global capital, art educators are faced with challenging aesthetic, cultural and pedagogic issues that have not as yet been given their critical due by their non-art academic peers. These are important issues because of their complex prescient nature as they are anticipating new concerns and directions in tertiary education, culture and our networked information economy.

However, we need also to be self-critically aware that the new media arts do not necessarily indicate, ipso facto, new aesthetic paradigms : for the new media arts are transitional media and this crucial observation should be an integral part of any sustained pedagogic attempt to demythologize their centrality to our social and psychic lives. This denotes an elementary understanding of most forms of digital image creation : the continuing importance of a historicist awareness of the existing parallel echoes between new media's past and present history.

Therefore, if we are to see the new audiovisual media as an expression of alterity, identity, subjectivity and temporality we are compelled to be frequently questioning our own metaphors that are colouring our thinking, teaching and creative arts research. How do we teach the screen arts and by what methods and philosophies of art, culture and society when educators are faced with the rapidly changing software programs, technological tools and products that characterize a highly volatile and unpredictable techno-art zeitgeist.

New media theory needs to be reinvented and applied lightly and tangentially to our concerns as artists, educators and thinkers. We need to be critical and inventive of our habit to important and apply complete theoretical paradigms taken from other fields to explain the formal, visual and technological specificities, histories and multiple effects of the new media arts without being *experientially* familiar with them as cultural artefacts.

Hence, the necessity of becoming more 'empirical' and less theoretically certain of ourselves and letting go of our dogmatic certainties of the Cartesian method of philosophizing and becoming more intuitive , self-critical and non-authoritarian alive to Wittengstein's challenge "Don't think, look." (38) To which we may also add " and listen." The new media educator, in Nietzsche's term, as ' experimentor.' (39)

If we are to practice an anti-idealist kind of contemporary (art) pedagogy , involving new technological media, we need to analyze the more arguable explainable modes of Western thought that are often inappropriately used to decode new media's shifting complexities, forms and agendas. This suggests to be conscious of tertiary pedagogy as political culture and its institutional fictions of authority and legitimation. Meaning that we rethink the teaching of multimedia creativity as being , in Nietzsche's sense, ' untimely' which signifies not trying to be neither modern at any price nor timeless as yet, but to go against history as such for it is not essentially experimental , to extricate something from modernity itself because , in Deleuze's words, history is ' just the set of more or less negative preconditions that make it possible to experiment something beyond history. …..that one leaves behind in order to " become" , that is , to create something new." (40)

As art academics we have to value the present and future aesthetic, cultural and technological agendas that are questioning the metaphysics of realism and the orthodoxies of modernism, and in doing so do we need to be mindful of Avital Ronell cautionary observation that when discussing the new technologies we are located in a "twilight zone between knowing and not knowing" ? (41) Ronell's words capture precisely several of my own key artistic and pedagogic precepts : the new media technologies question you in so many different profound ways, not least asking you : what do we actually know ? What is theory ? What is (media) pedagogy ? And what is "new" about new media ?

On this last point, Hubert Damisch's following statement underlines how we are perpetually always located on the ambiguous cusp of things :

"We live in a moment of suspension. Is it the end of something or the beginning of something else.?" (42)

One never knows.

For any worthwhile materialist critico-theoretical definition of contemporary media technology in the context of today's transforming university in an epoch notable for its increasing virtual life of simulation, high speed information and global networks necessitates a mercurial interdisciplinary approach to the exact and human sciences resembling Michel Serres's multi-faceted comparativism that is based on the zigzag pattern of a fly. (43) This means having the inventive ability to traverse across many spaces of interference located between many different things making different connections. Serres's distinctive indifference to temporal distance suggests that he can make unpredictable connections all within the same time frame and between numerous authors, texts, genres and myths.

For Serres the past is never out of date nor is an art form like video art : like Hermes (the operator who brings diverse things together) Serres's provocative concept of theory as a rapid reflexive time machine scanning texts and signs across different artistic, cultural and temporal contexts denotes a fluid capacity to treat complex subjects conceptualized to be the result of noise, chaos and chance with lightness, speed and simplicity.

Artists who teach and their students are not only engaged in the (new) art-historical, mixed-media generic and pedagogic intricacies of their evolving art forms – little understood by their non-art academic peers - in the context of their social and psychic lives, but they are also concerned with intellectual emancipation and experimentation. This goes against the engulfing global free-market ideology that is seeping particularly into our universities, art schools, museums, and other related cultural institutions. Art academics that often see themselves as 'fore-riders' of aesthetic and cultural critique prize reflexive knowledge and open-ended, research-oriented pedagogy that is critically located within the students' own existential horizons. This 'one-to-one' scenario of mutually enhancing teacher and student relationship in the studios of the art school basically questions the utilitarian and vocational instrumentalism of the modern university and its imbrication in the New World order of our new century.

Artist-teachers and artist-students, therefore, are situated in an experimental learning and research ethos because the contemporary visual arts as a discipline is exceptionally creative in terms of their concepts, forms, processes and strategies. Both parties are intuitively engaged in navigating the constantly uncharted waters of creativity that is represented in all creative disciplines which deal with, according to Gillies Deleuze's apt expression, 'the formation of space-times.' (44) Thus, we can only speak of our own specific creative activity and its impact on the public sphere to each other, Deleuze's wisely notes, but not of the more very solitary act of creation itself. (45) Thus, dealing with students on a one-to-one basis in the (art) academy indicates developing a critical consciousness, stimulating one's curiosity about the world at large and our presence in it, and mobilising a critique of resistance in education against the commodification of art, culture and life. Art education as a dynamic expression of eagerness, total intellectual energy and inquisitiveness, against the daily routine of teaching and seeing it rather, as Edward Said once said, as ' an experience of investigation and discovery.' (46)

Today's art students with their Web 2.0 literacy of self-empowerment and shared network knowledge are, in fact, teaching the teachers new vistas of knowledge and creative pedagogy. The question is whether our art schools are flexible enough given their power structures and values to accommodate ideas and knowledge that problematise the institutional boundaries of the humanities and the sciences

It is not just students, as we know, but people in general are becoming familiar with new computerised models of cultural and social evolution that are shaping the expectations and outcomes of higher education today. Universities in their characteristic glacial stance to adopting the newer open-ended distributed forms of knowledge, that art colleges are now representing with their emphasis on post-conceptual art, bio-art, interactive digital and virtual media, installation art, performance, sound art are in a perpetual state of 'moral panic' as to how to deal with these new art forms of extraction and immersion. This is further complicated by the possibility that a fair few of non-art academics in senior university management although familiar with the more established arts in very general categorical terms some of them – judging by their pedagogic rhetoric – may even be (contemporary) artphobes!

Art schools, as a rule, due to their complex pre-and (post) modern critical, cultural and pedagogical concerns and histories are sites, like their larger university contexts, conflicted with various competing discourses of fine art, craft and the newer non-representational art forms since the Second World War. Consequently, the legacy of Conceptual Art and the proliferation of new media, has meant a critical questioning of the structure of art schools along with the conventional media of painting, sculpture, ceramics, fibre, jewellery. So it has meant, over the years, a radical rethinking of art education (both ideologically and practically) away from the central European master-apprentice model, as Julie Ault and Martin Beck remind us, to a more contemporary post-object model of study valorising collaboration, social process, topicality, and discursivity. (47)

Whatever else is happening in our art schools, Brian Eno's recent observation that a 'real revolution' is taking place in our world because it is forming into many various global consensual blocs far remove from the short-term expediencies of our national states and the possibilities of a viable democracy maybe manifesting now. Eno's description of how people are starting to 'listen to music and look at art that is emergent, not predetermined and they accept the wiki model of open source evolution of knowledge' is a daily cultural reality in art colleges and schools.(49) This has huge implications for the vexing nexus between studio art production and university management and life. Are art schools the more concentrated open expression of this new emerging shared knowledge of connectivity, immersion and transformation in our various university faculties and departments?

The intersections of art, culture, technology and dissent thought are vividly embodied in studio art production and its teaching signifying its overall discursive irritant presence in the larger context of the classical-modern university and its global market ideology of scientism and vocational education. Art education, ideally speaking, should be critically defined and practised beyond the (art) market. It is constantly rethought, restructured, and reinvented. Art schools are concerned with the singular artist dissecting contemporary reality. Art as a cultural conversation that is acutely aware of the predominant mythologies of our everyday life. Only time will tell if art schools have a better future inside or outside universities.

REFERENCES

(1). William .H.Gass, Fiction and the Figures of Life, Boston, Nonpareil, 1979, see "The Artist and Society," pp. 276-288.

(2) On the question of art, criticism, conformity and Theodor Adorno's aesthetics of cultural critique see particularly Donald Kuspit's essay " Deadministering Art ", amongst of his other essays and interviews in Kuspit's excellent anthology " Redeeming Art" edited by Mark Van Proyen, New York, Allworth Press, 2000, pp.15-27. Kuspit's brief provocative 1984 essay " Forum : Art Students', pp.7-10 is notable for his criticism of how a fair few – but not all – art students subscribe to "the tired Nietzschean myth of elitist nonconformity." p.7. Things have changed a bit since then, art students seem now more concern with their artistic and vocational outcomes after they graduate.

(3). See Florian Waldvogel, " Each One Teach One," in Mai Abu Eldahab, Anton Vidolke and Florian Waldvogel (eds), Notes For An Art School, Amsterdam/Nicosia, International Foundation Manifesta/Manifesta 6, 2006, p.25.

(4). On the idea of an artist and/or writer being an aesthetic vagabond see Jean-Louis Schefer, The Engimatic Body, Cambridge, Cambridge University Press, 1995, p.xviii.

(5). On Jacques Derrida's ideas of 'the university of tomorrow' see his passing remarks in Jacques Derrida, Learning to Live Finally, An interview with Jean Birnbaum, Crows Nest, Allen and Unwin, 2007 (originally

published in 2005), trans : Pascale -Anne Brault and Michael Naas, pp.47-50. This book is full of poignant wisdom for the specialist and for the general reader alike on identity, knowledge, friendship, life, philosophy and society.

See Jacques Derrida, " The University Without Condition, " in Peggy Kamuf (ed and trns), Without Alibi, Standford , Standford University Press, 2002, pp.202-237. Derrida's path-breaking essay is an essential starting point for anyone interested in what is an university and why it matters for the ethical and pedagogic well-being of democracy.

(6) McKenzie Wark, 50 Years of Recuperation of the Situationist International , New York, The Bueil /FOruM Project and Princeton Architectural Press, 2008. The opening two pages of Wark's book is a withering and accurately prophetic account of the disintegration of our worlds of art, journalism and the academy. For instance, " In a blunted age, the scribe with one good butter knife dipped in spit has the cutting edge . And yet such writers hardly seem to appeared among us." p.4. Amen.

(7) Ibid., p.5.

(8). Kenneth Rexroth, Bird in the Bush, New York, New Directions, 1959, p.99.

(9). In these conservative, anti-intellectual and puritanical times the (art) academic is no longer interested in being a public intellectual. For a fine incisive overview why it is that no longer we have intellectuals who have a breath of vision, and are concerned with learning and speaking out on far-ranging public issues (viz. Hannah Arendt, Noam Chomsky, Mary McCarthy, Bertrand Russell, Jean-Paul Sartre, Susan Sontag, Gore Vidal, Raymond Williams) see Frank Furedi, Where Have All the Intellectuals Gone ?, London/New York, Continuum, second edition, 2006.

(10). Stefan Collini, Absent Minds, Oxford, Oxford University Press, 2006.

(11). See ibid., and Gore Vidal, " The Hacks of Academe " and "American Plastic" in Jay Parini (ed), Gore Vidal Selected Essays, London, Abacus, 2007, pp.107-118 and pp.119-149 respectively. Also refer to Edward Said, Representations of the Intellectual, New York, Vintage, 1996 (The Reith Lectures, 1993) and Humanism and Democratic Criticism, New York, Columbia University Press, 2004. The literature on what constitutes today's university as an ailing public institution of open critical debate and on academics as tenured gate-keepers to global capitalism, media and imperialism has been reasonably expanding since the 1960s.

For an invigorating critique of how consumer capitalism has turned the academy, amongst others things, into an integral part of a "no-thinking' global 'middle mind' culture see Curtis White, The Middle Mind, London, Penguin Books, 2005.

(12). One may note for (art) academics who do speak beyond their professional expertise addressing larger issues central to our lives they are, in Alain Bergala's fine expression, not 'playing the game of the norm." See Alain Bergala's essay on the filmmakers Victor Erice and Abbas Kiarostami in Alain Bergala and Jordi Ballo (eds), Erice -Kiarostami Correspondences, Catalogue. Barcelona, Centre for Cultura Contemporania De Barcelona, Alain Bergala/Jordi Ballo, 2006, p.12.

(13). Gass, op. cit., p.288.

(14). George Steiner, Grammars of Creation, London, Faber and Faber, 2002.

(15). George Steiner, Lessons of the Masters, Cambridge and Harvard,

Harvard University Press, 2003.

(16). Ibid., p.2.

(17). W.J.T.Mitchell, What do Pictures Want ?, Chicago and London, The University of Chicago Press, 2005, p.205.

(18). James Elkins, ' Afterword,' in Kate Macleod and Lin Holdridge (eds), Thinking Through Art, London and New York, Routledge, 2006, p.242. Elkin's text is a succinct thoughtful summary of the major debates that inform the book concerning the incommensurability of studio art production and university life. We need to

find appropriate ways of how to theorise about the studio and the university without resorting to inappropriate administrative jargon.

(19). Ibid., p.243.

(20). Op cit., p 242.

(21). Stephen Melville, "Allo?Allo?," in W.J.T.Mitchell and Arnold I.Davidson (eds), The Late Derrida, Chicago, The University of Chicago Press, 2007, p.122.

(22). Ann Summers, On Luck, Melbourne, University of Melbourne Press, 2008, p.67.

(23). Adorno is cited in Florian Waldvogel, op.cit., p.21.

(24). Bill Readings, The University in Ruins, Cambridge, Massachusetts, Harvard University Press, 1996. Reading's posthumously published book stills remains one of the most compelling studies as to why the University is not a model community for society at large. For Reading's prescient view of university accountability as accounting see passim.

(25). See Florian Waldvogel, op.cit., p.25 and Jacques Derrida, Learning to Live Finally, op.cit., p.47.

(26). Stephen Melville, "Is This Anything ? Or, Criticism in the University, " in James Elkins and Michael Newman (eds), The State Of Art Criticism, New York /London, Routledge, 2008, p.117.

(27). Melville, "Allio ? Allio ?," op.cit., p.121.

(28). Waldvogel, op.cit., p.27.

(29). Ron Burnett, " Learning, Education, And The Arts In A Digital World," in Mel Alexenberg (ed), Educating Artists for the Future : Learning at the Intersections of Art, Science, Technology and Culture, Bristol, Intellectual Books, 2008, p.125.

(30). See Victoria Vesna, " Toward a Third Culture : Being in Between," Leonardo, vol.34, no.2 cited in Burnett, ibid., p.117.

(31). See Roy Ascott, " The art of intelligent systems," in Christine Schopf et.al. (eds), Der Prix Arts Electronica, Linz,Veritas-Verlag, 1991, p.28.

(32). At the Medi@Terra Festival , Athens, in 2000, I was on a panel with Roy Ascott where he spoke of the medieval church origins of Western university and its implications for the teaching of the new media arts.

(33). For an anthology of Roy Ascott's essays see Edward Shanken (ed), Telematic Embrace : Visionary Theories of Art, Technology and Consciousness, Berkeley, University of California Press, 2003.

(34). Roy Ascott, Pixels and Particles : The Path to Syncretism, in Alexenberg, op.cit., p.50.

(35). Mark Amerika, "Making Space For The Artist, " in Axelenberg, ibid., pp. 75-82. Henri Michaux, the Beglium born artist-writer , (1899- 1984), is quoted on p.82

(36) Ibid., p.77.

(37). Ascott, op.cit., p.51.

(38). Quoted in John Rajchman, " The Lightness of Theory," Artforum,

vol. 32, no 1, p.211.

(39). Ibid.

(40). Gilles Deleuze, Negotiations, New York, Columbia University Press, 1995, pp.170-171, trns : Martin Joughin

(41). Avital Ronell, "Support Our Tropes 11 - (Or Why in Cyberia There Are a Lot of Cowboys) ," in Peter Weibel (ed) On Justifying The Hypothetical Nature of Art and The Non-Identity Within the Object World, Koln, Galerie Tanja Grunnert, 1992 p.95.

(42). Yve –Alain Bois, Denis Holier, and Rosalind Krauss, A Conversation with Hubert Damisch, October 85, Summer 1998, p.16.

(43). Michel Serrres (with Bruno Latour), Conversations on Science, Culture, and Time, Ann Arbor, University of Michigan Press, 1995 pp.65-70.

(44). Gilles Deleuze, "What is the Creative Act," in Gilles Deleuze, Two Regimes of Madness, New York, Columbia University, 2002, p.320. (Edited by David lapoujade. Trans : Ames Hodges and Mike Taorimina.)

(45). Ibid.

(46). Cited in Gauri Viswanathan (ed. And introd.) , Power, Politics, and Culture, Interviews with Edward Said, London, Bloomsbury, 2005, p.280.

(47). Julie Aut and Martin Beck, "Drawing Out & Leading Forth, " in mai Abu Ejdahab, Anton Vidokle and Florian Waldvogel (eds), Notes For An Art School, Amsterdam/Nicosia, The International Foundation Manfesta and the Manifesta 6, 2006, pp.37-45.

(48). Brian Eno, " And Now the Good News, " in John Brockman (ed), What Are You Optimistic About ?, London, Pocket Books, 2007, p.114.

Vince Dziekan: FACT Associates and Monash University

Preview: Programme Architecture

ABSTRACT

The synthesis of exhibition-based spatial practice and digital mediation is becoming increasingly influential to our understanding of art today. By effectively structuring the form through which viewer experience, interpretation and interaction with art is entered into, the exhibition acts as the interface that actively mediates between physical properties and social space, producing protocols for viewing and routines of audience engagement. What my preceding interdisciplinary research has referred to as *curatorial design* proposes a programme for how aesthetic experience might take shape at the intersection of new technologies and exhibition space.

This short paper will position upcoming research on curatorial design and emerging forms of programme architectures. Titled *Edge Blending*, this project will investigate how concerns relating to the blending of spatial practice and digital mediation characteristic of new media exhibition extend to the construction of encompassing curatorial programmes. In order to do so, the research (which has been supported by a British Council Design Researcher Award) will focus its study on approaches to structured artistic programming recently implemented at FACT, the Foundation for Art & Creative Technology based in Liverpool. By defining the term *programme architecture*, this paper aims to draw attention to the interdependence between the character of given creative approach (or programme) and the processes (development, design, evaluation) and systems (institutional, organizational, technological) employed in the realisation of exhibition projects.

The transformative impact of digital processes on practices associated with artistic production, curation and audience is distinctive of the continued evolution of the media/electronic arts.

KEYWORDS

Curatorial Design, Digital Aesthetics, Media Arts, Museum Studies

INTRODUCTION: Edge Blending the Exhibition Complex

The exhibition plays an instrumental role in determining the contours of creative practices associated with artistic production and curation. The art object, the gallery's cubic environment and the museum's institutional apparatus are powerful manifestations that shape our perceptions and understanding, as well as the expectations that we place on art. The influence of such conventional structures on the forms – and resulting conformity – of artistic and curatorial practice cannot be underestimated. Revealed in the light of new technologies, the closed structure traditionally associated with the gallery-based exhibition practice is reconceived as a more open matrix of differently constituted but interrelated spaces. The impact of digital processes has begun to transform art's *exhibition complex* (composed out of the interrelationship between artefact, gallery space and museum), and in so doing contends that the art of exhibition is becoming increasingly influenced by virtuality.

In saying this, it is crucial that any such definition of the virtual not be delimited to the technological capacity of digital media and associated technologies to produce new, artistic forms of illusionism. Rather, virtuality need be understood as determined by its situation in the real world and the capacity of social space to produce protocols for viewing and routines of audience engagement.

These ideas have been expressed most comprehensively in my recently completed thesis.[xli] *Without Walls: Virtuality and the Art of Exhibition* investigates how the intersection of new technologies with exhibition space offers new possibilities for aesthetic experience. The larger project is focused by expositions on spatial practice and digital mediation that establish the context for the emergence of the multimedial museum. This critical enquiry informs the creative production that was realised through a series of artworks, curated and 'demonstration' exhibitions that promote the conceptual and strategic application of curatorial design. (Figure 1) Together, the encompassing series of theoretical and practice-based investigations that constitute the thesis offer a response to the evolving role of new media in art, culture and society at the turn of the twenty-first century.

Figure 1. Vince Dziekan. *The Ammonite Order, Or, Objectiles for an (Un) Natural History.* ISEA2009 – The Exhibition, Ormeau Baths Gallery, Belfast, Northern Ireland. 2009.

Today, art's spatial realisation is no longer accommodated exclusively through physical architectural settings. Increasingly influential is the way that the synthesis of exhibition-based spatial practice and digital mediation structure new creative practices and situate viewer experience, interpretation and interaction with art. The position this research takes submits that the character of aesthetic experience under these contemporary conditions is occurring

within a new context – the *multimedial museum*. Through recognising how the relationship between artwork and museum has become increasingly integrated, the exhibition announces itself as the interface that actively mediates between their respective physical and virtual realities.

Crucially, any subsequent elaboration of digital aesthetics within the broader ecology of contemporary aesthetic production hinges on the pivotal issue of the intersection of new technologies with an expanded understanding of the constitution of exhibition space. Formally, how might the conventional format associated with exhibition become more fluidly constituted? From what kind of objects, events and experiences might exhibitions be constructed? In what novel ways might the practice of curation develop in response to collecting, combining and amplifying relationships between such elements and across an expanded 'bandwidth' of communication possibilities that exceed the delineation of gallery space and seep increasingly into the public realm? What in my thesis I referred to as *curatorial design* offers a programme for how art forms and aesthetic experience might operate across social, technological and physical architectures. These ideas collect around the proposition I am forwarding in this short preliminary paper: *programme architecture* as a system for a certain kind of intelligence about how the exhibition acts as the platform through which this fluid and distributed set of aesthetic and technological, social and cultural relations are brought together into meaningful constellations of ideas and experiences.

From Liquid Architectures to Programme Architecture

Formative ideas for this new tract of research were inspired in part by my involvement in an online forum hosted by one of the leading exhibiting and collecting museums of international modern art: the Tate in London. 'Liquid Architectures' instigated a discussion of the 'future of the artefact, and the institutions which steward their exhibition, collection and preservation' (Kelli Dipple. *Liquid Architectures* Online Forum, comment posted February 9, 2006).[xlii] While it is not possible to effectively summarise the full discussion here given the brevity of this text, participation in the critical dialogue with the assembled group of international and interdisciplinary theorists and practitioners presented a number of investigative tangents for pursuing how curatorial design can engage with key issues driving the ways in which institutional architectures might be devised to accommodate new forms of artistic expression.

In her introduction to the forum, Kelli Dipple, Tate Media's convenor of online events, noted:

Sophisticated New Media work can take years of research and development to produce, and are often presented in a variety of versions and formats. The line between artist, technologist, audience and participant are becoming less clear. How we credit, copyright, represent, document and archive work is changing. In the face of contemporary media practices and their dynamic impact on form, practice and participation, how and where do we focus attention and development? What methods and models will become prevalent in museum and gallery culture across the next 50 years? What cultural memory will sustain and who is the audience - currently and in generations to come? What social, technological and physical

architectures will become relevant to evolving artistic practice? (Kelli Dipple. *Liquid Architectures* Online Forum, comment posted February 9, 2006)

The application of the term *liquid architectures* provided an impetus that would shape the content and focus of the forum. Drawing upon Manuel Castells' characterisation of cyberspace as 'the space of flows',[xliii] one panellist interpreted liquid architecture as an allusion to:

the fluid or dynamic system within which we have both a structure or infrastructure and a mutable or flowing content operating within the structure. The structure itself may also be flexible or changeable, to some degree, as programmable structures often are. (Ken Friedman. *Liquid Architectures* Online Forum, comment posted March 21, 2006)

This notion raises a host of questions relevant to what methods and models might come to the fore in museum and gallery culture in the near future.

While Castells (2000: 501) identifies the global network of 'new media' as being at the root of cultural expression and public opinion in the information age, his argument recognises that it is not technological factors alone that influence the shape of network society. Accordingly:

Processes of social transformation summarised under the ideal type of network society go beyond the sphere of social and technical relationships of production: they deeply affect culture and power as well. Cultural expressions are abstracted from history and geography, and become predominantly mediated by electronic communication networks that interact with the audience and by the audience in a diversity of codes and values, ultimately subsumed in a digitised, audio-visual hypertext. (Castells 2000: 507)

Cultural, economic and political functions and processes combine within a network of communication, making up the aforementioned 'space of flows'. These network-based structures are characterised as 'highly dynamic, open system, susceptible to innovating without threatening its balance' and therefore perceived as most appropriate for:

Work, workers and firms based on flexibility and adaptability; for a culture of endless deconstruction and reconstruction; for a polity geared toward the instant processing of new values and public moods; and for a social organization aiming at the supersession of space and the annihilation of time – (while also being) – a source of dramatic reorganization of power relationships. (Castells 2000: 501-2)

Activating such reorganizations are 'switches': the role played by the interconnected functioning of these 'privileged instruments of power' act as 'the fundamental sources in

shaping, guiding and misguiding societies'. (Castells 2000: 502) By functioning as such a ‘hub’ within an internationalised art system and globally interconnected socio-cultural network, how might a cultural institution operate as such a ‘switch’?

Returning to *liquid architecture*: From my perspective, the etymological interpretation of the phrase that I would offer would be:

Liquid: reveals itself to vision as a surface, but is felt in a more enveloping way. It is only a limited part that ‘breaks’ the surface as the crest of a wave, with much of its real power perpetuated, ‘rolling’ away underneath - as anyone would attest who has ever been caught out by the power of the surf’s ‘undertow’.

Architecture: analogously, reveals itself by forms physically constructed, found in the built environment; however altering the term slightly to ‘archi-texture’ (as used by Henri Lefebvre in his influential text *The Production of Space*) draws attention to another dimension: of space defined as a set of much more fluid relations:

It is helpful to think of architectures as “archi-texture”, to treat each monument or building, viewed in its surroundings and context, in the populated area and associated networks in which it is set down, as part of a particular production of space. (Lefebvre 1991, 118)

Personally, the forum raised a number of issues that address the interpenetrations of digital media and the broader art complex and their overlaps across real and virtual dimensions of actualisation. Perhaps a reconceptualisation of the ‘virtual museum’ can be exercised as a conceptual strategy that accentuates and exaggerates the interrelationship of art’s abstract and material natures? Rather than constraining the notion of the virtual museum to a particularly narrow view of artistic activity conducted exclusively within the networked environment of the Internet, a more expansive notion of the multimedial museum opens the exploration of the art of exhibition to a wider range of encounters.

Erkki Huhtamo (2002) introduces how the notion of the virtual museum gained credence in cybercultural discourse as a result of the emergence of the World Wide Web (coinciding with its transformation into a multimedia environment with the introduction of the Mosaic browser in 1993). While influenced by the introduction of new software and media, the development of the concept was grounded in then current cultural discourses drawing upon a critique of the museum institution. Huhtamo’s main claim, however, proposes that the origins of the virtual museum can be historically traced back to the emergence of exhibition design as a new medium within the avant-garde art movements of the early 20th century (recognising exemplars like László Moholy-Nagy, El Lissitzky, Herbert Bayer and Frederick Kiesler as pioneers). Citing how examples of their work ‘often raise issues like storage and erasure, memory and forgetting, revealing and hiding, the physical and the virtual’ (Huhtamo 2002, 4), he closes with a cautionary note:

However, solving problems of routing and data-transfer is not everything. Our modes and routines of communicating and interfacing with multimedia databases are cultural, historical

and ideological issues as well. Considering precedents from the non-digital eras - covering most of the history of mankind so far - should not be neglected. (Huhtamo 2002, 14)

Ultimately, the implications of this overarching investigation leads inexorably to a reassessment of the artistic enterprise, challenging conceptions of art-as-object, gallery-as-space and museum-as-institution by reformulating them as contributing parts of an integrative art complex activated through – what I've begun to define as – an encompassing programme architecture.

So, what do I mean by *programme architecture*? A relevant interpretation of the term relates itself to an architectural 'brief'. Narrowly, this associates a building's design specifications directly to a statement of client-driven, functional requirements. More broadly however, the programme can be understood as a range of factors involving site, context, system and codes, as well as economic 'realities' and budgetary constraints. In addition, 'programme architecture' can be found in use increasingly in relation to business and project development where it is applied to what might be described as 'innovation' processes.

These applications of the term offer useful perspectives: seen in design as a means of distinguishing a focus on strategic functionality and high-level design criteria from otherwise strictly operational performance and constraints placed on creative possibility. Additionally, when employed in an educational context, the architecture of a curricular programme relates to the alignment of course structure with its adopted set of approaches to evaluation.

Taken together, these interpretations all recognise the interdependence between the character of a given programme and the approach and processes employed towards the realising a given project.

Programme Architecture and FACT

Developing upon the formative experiences and foundation research established through my PhD thesis, this proposition has been articulated into a research project titled, *Edge Blending: Curatorial Design and emerging forms of programme architecture*.[xliv] The term *edge blending* relates to a technical solution for solving the interference or banding that occurs when multiple projected images overlap. This software solution enables the presentation of large-scaled displays which can encompass a full 360° field of vision. The term is used here metaphorically to allude to the blending or mixing of realities that occurs when virtual art intersects with physical environments. This research will be undertaken in collaboration with the Foundation for Art & Creative Technology (FACT) in Liverpool. As the leading Mixed-Artform Venue (MAV) in Britain, FACT is internationally recognised as a producer of exemplary exhibitions that focus on new and emerging forms of creative practice. In order to build upon this foundation, over the past year FACT has begun to evolve its approach to research and development, artistic programming and role in the public realm.[xlv] Crucially in striving to meet these aspirations, the institution needs to be understood as a platform that is not inert, passive or benign in this construction (of meaning and 'public relations') but rather is instrumental and has significant agency.

In order to explore the implications of digital technologies on museums more generally and their exhibition-based practices through action-based research of curatorial design at the cutting edge of current practice, upcoming research and development will focus on integrative programme architectures – as has continued to be applied to FACT's 2009 programming, most directly associated with *Abandon Normal Devices*: a new annual festival dedicated to showcasing new cinema and media art, taking place in Liverpool, Manchester and the wider Northwest region.

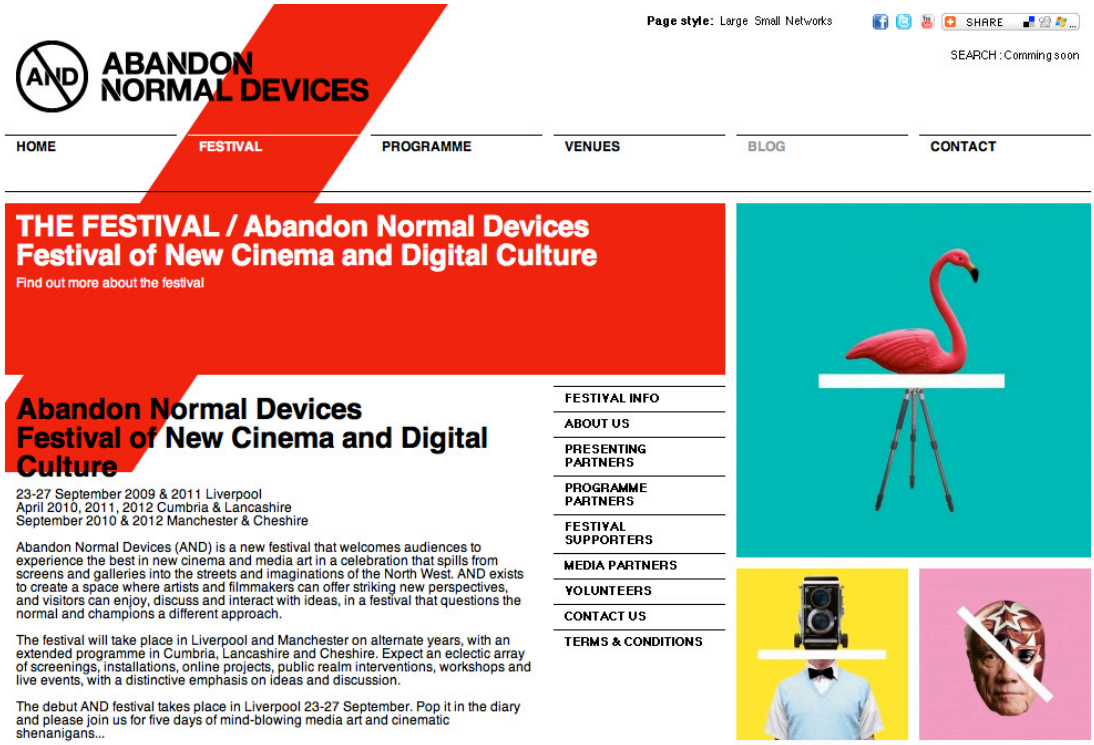

Figure 2. AND Festival website [http://andfestival.org.uk/siteNorm/festival/festivalDetail.php] Accessed 03/09/2009.

The festival's creative direction seeks to push the boundaries of moving image and screen culture through adopting a cross-platform delivery. The character of its programme architecture is reflected by a diverse content mix which includes gallery-based exhibitions, screenings, expanded performances, media installations and events taking place in the wider public realm. Featured artists such as Apichatpong Weerasethakul, Krzysztof Wodiczko, Blast Theory, Yes Men, Carolee Schneemann, KMA and DJ Spooky represent this diversity while thematic cohesion is maintained by their respective imaginings of physical, social and artistic notions of normality. Audience engagement with new cinema and digital culture will also be further facilitated by an accompanying conference and inclusive salon discussions.

By seeking to investigate new creative approaches to how the physical and virtual aspects of contemporary exhibition-based practice can be mediated, the outcome of this case study of *AND* will be aiming to contribute to furthering critical discourse around evolving futures for

mixed-artform venues alongside undertaking practice-based research of production models for the innovative extension of exhibition into the public realm.

Rapid technological development and the uptake of digital media by artists in a wide variety of forms have had a significant impact on museums and transformed conventional approaches to curation and exhibition design. It is becoming clear that we are reaching an important next stage in this development: the close of a 'pioneering' period in which a range of institutions acclimatised to the unique demands involved in exhibiting digital artworks within a pre-existing museological paradigm and the beginning of a new phase where new media exhibitions are conceived and designed to function within a more fully integrated programme architecture.

Credits

The basis of this paper was initially sketched out as part of a symposium exploring thematic correlations for art researchers with the Z-Node Research Group hosted by the Faculty of Art & Design, Monash University in Melbourne. Particular thanks to Prof. Anne Marsh (Faculty of Art & Design, Monash University) and Prof. Jill Scott (Zurich University of the Arts) for the invitation to participate in this seminar. Further, the author wishes to acknowledge Mike Stubbs (CEO/Director, FACT), Laura Sillars (Lead Curator, FACT), Andy Miah (Professor in Ethics and Emerging Technologies, University of the West of Scotland) for the inspiration and challenge, along with direct assistance in the preparation of this paper and accompanying presentation.

References

Castells, Manuel. 2000. The Rise of the Network Society, The Information Age: Economy, Society and Culture Vol. I. Cambridge, MA; Oxford, UK: Blackwell.

Huhtamo, Erkki. 2002. On the Origins of the Virtual Museum. Paper presented at the Nobel Symposium on Virtual Museums and Public Understanding of Science and Culture, 26-29 May, in Stockholm, Sweden.

Lefebvre, Henri. 1991. The Production of Space. Cambridge, MA; Oxford, UK: Blackwell.

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Media Art: Mediality and Art Generally

ABSTRACT

How does the notion of mediality, as an expanded conception of media, affect media art. If the concept of media art practice was once chiefly concerned with modern technological forms of audio-visual representation (photography, film, video, etc.) and then, under the guise of 'new media', developed a primary concern with the implications of the digital (electronics, computation and networked interaction), then where are we now? What are the artistic traditions, forms of practice and bodies of theoretical understanding that lend disciplinary coherence to media art? My particular interest is in how media arts is positioned within the Australian higher-education context. More specifically, how does it relate to the apparently more general field of visual art? Is it better regarded as a distinct entity or as crucial new perspective within a mainstream visual art education? I am leaning towards the latter view, partly because the 'medial' conception of media art practice lacks general currency within Australia. There is the awkward assumption that media art will focus narrowly on conventional media and the teaching of industry-relevant media production skills. The field of visual art is at least slightly insulated from these expectations and may provide a better umbrella for experimental media arts practice. These issues are considered in relation to the development of the Media Arts program within the Faculty of Creative Arts at the University of Wollongong.

KEYWORDS: media art, mediality

INTRODUCTION

This paper examines how the field of media art is positioned within tertiary creative arts education. More specifically, it considers issues faced in the development of the Media Arts program within the School of Art and Design at the University of Wollongong. A particular concern is how media art negotiates a place within contemporary art education while also, inevitably, reshaping the space and opening up a dialogue with technical, scientific and professional disciplines. A related issue is how media art is affected by recent historical and philosophical investigation into notions of mediality, which represents media as a general cultural condition, extending well beyond the conventional forms of media associated with industrial and post-industrial modernity – photography, film, radio, television and the internet. The paper argues that the emerging broad, conceptually nuanced and interdisciplinary conception of media projects a rich space of creative exploration, but also risks losing disciplinary focus. This problem is particularly evident at university open nights and the like, where media art appears to prospective students and their parents as an opaque discipline with no clear cultural context, technical basis or career outcomes. Rather, however, than insist upon a complex disciplinary autonomy, this paper argues that it is preferable for media art to subsume itself within the diversity of contemporary art. The conceptually guided and materially focused space of art provides an appropriate site for experimental media art practice and a buffer against expectations of immediate industry relevance.

Outside/Inside/In-Between

Media Arts is a relatively small program at the University of Wollongong. It is placed alongside a long-standing Visual Arts program, which has major studios in painting, sculpture and textiles and minor studies in drawing, printmaking and photography, and a popular Graphic Design program, which specializes in print and web-based graphic design. Media Arts also forms half of a new degree program in Digital Media, which combines TAFE study in video, animation and special effects with university theoretical and practical media art subjects. This new program has considerable funding support. It will be housed in a new multi-million dollar building at the "Innovation Campus" with a full film and television studio, multiple computer labs, black-box installation spaces and a gallery. The Media Arts program occupies a curious position within this overall institutional arrangement. At one level, in its processes and outcomes, it is distinguished from the clearly artistic space of Visual Arts, but at another level, in its plainly experimental, art-focused character, it is separated from the professional dimensions of Graphic Design and Digital Media. Its position indicates tensions and dilemmas, raising questions concerning the self-identity of media art and its relationship to wider contexts of contemporary art and industry.

My interest here is particularly in the relation to a more general space of contemporary art. Despite the global sway of video installation and digital production processes, media art still likes to imagine its marginal status within the contemporary art world. The sense of alienation is typically traced back to tensions between the cybernetic art of the late 1960s and the then emerging paradigm of critical conceptual art (Gere 2002,102-109). In 1997, new media theorist, Lev Manovich, described the gap between "Turing-land" and "Duchamp-land", arguing that the two worlds represented radically antithetical cultural tendencies; evident in the split between specialized electronic art venues such as ZKM, ISEA and Ars Electronica and mainstream art galleries and exhibition contexts (Manovich 1999). Closer to home, in his brief account of the history of Australian video art, curator and academic, Daniel Palmer, emphasizes the continuing divide between media art and contemporary art. Particularly vivid is his description of the status of the Australian Centre for the Moving Image (ACMI). Palmer argues:

> ACMI […] cast in concrete a split between media art and contemporary art; it was located right next door to the newly relocated and renovated National Gallery of Victoria, which found itself relieved of the pressure to properly represent and collect artists working with video. (Palmer 2007, 6)

Contemporary art's suspicion of media art is very evident in French curator, Nicholas Bourriaud's, rejection of "facile gadgets" (Bourriaud 2002, 59) and the uncritical, illustrative character of experimental computer graphics (Bourriaud 2002, 68). He contrasts the false and overly literal interactivity of media art to the poetically conceived and properly human dialogic space of relational aesthetics. More recently, debate on the *nettime* mailing list has addressed the continuing awkward aesthetic status of media art. In a deliberately provocative

post, German media theorist, Florian Cramer, describes the unfortunate state of contemporary new media interactive installation:

A visitor who would visit an arbitrary new media festival with an interest in contemporary art would see, first and most of all, preposterous machine parks. Or, in friendlier terms, it's the kind of art that rather belonged, as an educational or aesthetic gimmick, into a museum of technology than into a contemporary art discourse. (Cramer 2009a)

Despite these comments, Cramer argues against efforts to re-build links to mainstream contemporary art. In his view, if media art is generally bad, the state of contemporary art is "even worse", having retreated to the reactionary certainties of the white cube and "the good looking exhibition object" (Cramer 2009). Within this context, he maintains a (slightly bruised) faith in the alienated space of media art:

I find it hard to get past a certain attachment to the "media art" ghetto because it tends to combine the very worst (even painfully, unspeakably stupid and monstrously worst) with - IMO – the very best to be found in contemporary art. (Cramer 2009a)

Without denying the real force of these contextual tensions, the weakness of this binary-oppositional conception is that it radically oversimplifies the relationship between media art and contemporary art and, at its worst, trades on very standard tropes of avant-garde difference. It envisages contemporary art as a monolithic entity with a clearly defined centre periphery and excluded exterior. More usefully, however, contemporary art can be regarded as a shifting, multiple, de-centred terrain. Rather than existing at the margins or beyond the limits of contemporary art, media art appears as a node (or multiple nodes) within a more general and highly differentiated universe. As one of the respondents to Cramer's post, artist Renee Turner argues:

[T]here are many different artworlds (and for that matter artists/inhabitants/vagrants). Sometimes they intersect, rub next to each other, come into agitation or simply run on parallel tracks. (Turner 2009)

The other major problem with the binary conception is that it fails to acknowledge media art's real potential to affect the overall network of relations and to reshape the terrain of contemporary art. It is not as though media art is not equally concerned with issues of aesthetics, equally implicated within the conceptual space of art (however envisaged and mapped). Returning to the example of ACMI, while it certainly indicates a gulf between late 90s techno-scientific media art (with its emphasis on virtuality, immersion and the elements of commercial popular culture) and recognized, conventional contemporary art, from a macro perspective it can be regarded as a strategic expansion of the urban cultural sector. The two spaces are positioned differently but they share many affinities and communicate more than

they disagree. Indeed, communication, overlap and exchange between media art and contemporary art is so evident these days that the distinction between ACMI and the Victorian Gallery of Art now seems archaic and unnecessary. For example, some of the best work at the 2008 Sydney Biennale, such as Mike Parr's use of the former naval academy on Cockatoo Island as a mixed installation, performance and projection space or William Kentridge's installations, *What Will Come (Has Already Come*) (2007) and *I am not me, the horse is not mine* (2008) seamlessly incorporate media within contemporary art. Kentridge's work particularly represents an explicit reflection on the relation between drawing, mechanical illusion and industrial modernity.

It is within this context that I now believe that Media Arts belongs as a studio within Visual Arts rather than as a distinct, separate program. Media Arts can still form part of Digital Media and still explore links to other Creative Arts programs, such as Sound Production and Creative Writing, as well as to programs in other faculties (such as Computer Science), but should establish its home within the more general context of a contemporary visual art education. This signals less a retreat from grand curricula autonomy than an effort to position media art as a significant strand within contemporary art practice and to clearly indicate its embeddedness in the visual art tradition.

Media Reconceived

Five of our final year Media Arts students recently rented a local Wollongong gallery for two weeks and put on their own show, "The Static Age". It contained all kinds of stuff. Brodie McCaulay created fanciful home-grooming and beauty machines from bits and pieces of junk. She also produced a short film that involved sewing on 35mm film. Daniel Jones created an audio montage of media theory that played in a loop between two old reel to reel machines, while a zoetrope animation of a dancing skeleton with shopping trolleys ran on top of one of the spinning reels. Jade Markham created a huge inflatable snow dome full of flowers and dead computers. She also produced a set of moulded jellys with embedded LEDs. She had written in her proposal that she wanted to produce media art with cupcakes, and the combination of the electrical/electronic and the bright and wobbly domestic was weirdly effective.

Figure 1: LED Jelly, Jade Markham. Copyright: the author.

What does all of this say about the student level perception of media art? For me it indicates a fundamental shift in interest and orientation. Whereas a few years back, I would have seen nothing but screen-based animation and interactive works, now the best work is plainly directed towards materiality and installation. It is less intent to demonstrate technical expertise or to employ the latest software. It is also much more aware of its relation to traditions of experimental art practice. It is self-consciously art rather than cutting edge new media. Moreover the notion of media itself has broadened, slipping free of the standard attachment to film, video, games and the internet and suggesting a deeper engagement with the history and philosophical implications of the term.

Within this context it is worth mentioning that in 1984 - the final year of my undergraduate degree in Communication and Media Studies at the then Canberra College of Advanced Education – I had a choice between studying film or video production. Anybody with any kind of pretence to artistic ambition chose film. I chose video. Film was preferred because it linked to traditions of art cinema and because of its technical superiority – its higher resolution and richer tonal range. I liked video precisely because of its low resolution, ghosting and shimmering electronic colour. Video represented a space of curious, visible immateriality. It provided a means of confronting what appeared to me as the central fascination of media: the manner in which mediation manifests presence as absence and absence as presence. Although at one level personal, this preference was clearly shaped by major currents of contemporary critical theory that stressed the primary displacement of language, text and representation. The point here is that my preference for video was not simply a preference for a specific technical medium. I chose video because it engaged with key issue of media generally – issues that gained further prominence and focus with the shift to digital media. The student exhibition described above indicates that now things have changed again. The media no longer represent a space of presence/absence. Or, more precisely, this quality is no longer what makes media fascinating. Now it is their imbrication in the material world – whether as the detritus of countless waves of technological innovation or in all kinds of experimental efforts to link media to immediate, space, time, corporeality

and action. Rather than engaging with the pathos of being/non-being, media now somehow enables a return to the thinking of presence. Despite this flip in orientation, it is evident that the concept of media extends well beyond the technological specificity of celluloid, electronic or digital images. It engages fundamental aesthetic and philosophical concerns concerning the nature and consequences of mediation.

Although this broader conception of mediation (termed “mediality”) has been available for many decades in strands of critical media theory, it seems to have taken coherent shape during the past decade. It has emerged partly as a consequence of the many efforts to explore the history and archaeology of technical media (in the work of authors such as Batchen, Kittler, Grau and Zielinski) and partly as a result of philosophical enquiry into the notion of mediation (drawing upon the work of Nietzsche, Heidgger, Derrida, Stiegler and many others). In a blog post to a 2009 University of Siegen public debate, Florian Cramer describes the influential German context:

In the last decade, German humanities have developed a broad, general

and transhistorical notion of media as "mediality" ("Medialität") in

which any material or imaginary carrier of information qualifies as a

medium, from CPUs to angels. (Cramer 2009b)

In his *Deep Time of the Media* (2006), German media theorist, Siegfried Zielinski, provides a particularly engaging account of this new conception of media. Adopting an archaeological approach and insisting that the history of media is not a tale of linear progress, Zielinski examines the rich historical strata of media experimentation. He considers, for instance, the Pre-Socratic philosopher, Empedocles’, conception of mediated perception, the alchemical/scientific practices of the 17th Century polymath, Giovanni Battista della Porta, and the (electrically) dancing frogs of the 18th Century doctor of medicine, Luigi Galvini. It is difficult, perhaps impossible, to tie all the historical themes and detail into a coherent notion of media, but the key elements include: communication at a distance; the fashioning of illusions; transformation of materials; the development of hermetic codes; animating the inanimate; and the shaping of generative and symbolic combinatory systems. Above all, Zielinski argues that media experimentation involves an empirical approach and an indeterminate mix of rational enquiry and imaginative vision. His notion of media practice deconstructs the boundaries between science and art and demonstrates a strongly philosophical dimension. Questions of truth and appearance, presence and absence, technological and human, perception and language, finite and infinite, materiality and abstraction, essence and transmutation are integral to the historical field of media experimentation and enquiry.

While this broad conception of media (and media practice) has considerable potential for media art (and media art education), it should not reduce our central concern with the materiality and cultural configuration of contemporary media. There is a risk that the notion of mediality can provide a justification for historicism and antiquarian nostalgia. Zielinski avoids this risk by constantly reinterpreting present media in terms of the heterological character of past media. Traditions of natural philosophy and magic – experiments with mirrors, magnets, sulphur, lightning and gold – serve as vital means of illuminating and interrogating present concerns. It is precisely in terms of the need to develop novel solutions to current creative dilemmas that an exploration of past media - and an opening up of the notion of media generally - becomes meaningful. At a pragmatic pedagogical level, my experience is that the medial perspective makes clearest sense to students if it is incorporated within both practical and theory streams. This is a very important issue within the context of our offerings because the Media Arts program lacks a separate theory program. After a generic eighteen months, students pursue either a sequence of Visual Arts or Graphic Design theory subjects. My view here is that there is no need for a separate Media Arts theory stream, rather the thinking of mediality is better located within a more general conception of visual art theory. This is really not a huge challenge. The practical and philosophical issues that the media perspective raise are already integral to the concerns of contemporary art. It is just a matter of lending them focus and coherence. This is not to deny that mediality has wider implications (within scientific and humanities disciplines); it is simply to say that it is also vitally relevant to the theoretical field of art.

CONCLUSION

On the basis of the above discussion, it may be possible to suggest (yet another) brief summary description of media art:

The field of media art represents a creative and reflective engagement with the contemporary scene and long heritage of technologically enabled experience, representation and communication. Very importantly, media art positions itself within the space of contemporary art. It may test the limits of art and open up a dialogue to technical and scientific disciplines, but it is fundamentally conceived in relation to traditions of avant-garde, conceptual and participatory art. The notion of media is understood broadly, taking shape variously as a technical, cultural, aesthetic and philosophical phenomenon.

Although at one level this may seem to sketch the possibility of a mega discipline, media art may actually have greater success by abandoning the hubris of autonomy. In my view, media art is better regarded less as a new discipline than as a trajectory, a pathway, an opening within the complex and multi-layered tissue of contemporary art.

REFERENCES

Bourriaud, Nicholas. 2002. *Relational Aesthetics* (translated by Pleasance, S. & Woods,

F.), Dijon Quetigny, France: Les Presses du Reel.

Cramer, Florian. 2009a. blog post to University of Siegen public debate, "Medienwissenschaft – Ein deutscher Sonderweg?", http://medienumbrueche.uni siegen.de/groups/medienwissenschaften/blog/ (accessed 26 April 2009).

Cramer, Florian. 2009b. 14 May post to discussion thread, "Re: Political Work in the Aftermath of the New Media Arts Crisis". Nettime mailing list. www.nettime.org (accessed 16 May 2009).

Gere, Charles. 2002. *Digital Culture*. London, Reaktion Books.

Manovich, Lev. 1996. "The Death of Computer Art". http://www.thenetnet.com/schmeb/schmeb12.html (accessed 12 June 2009).

Palmer, Daniel. 2007. "Media Art and its Critics in the Australian Context", *Re:Place Second International Conference on the Histories of Media Art, Science & Technology*, Berlin: 15-18 November.

Turner, Renee. 2009. 15 May post to discussion thread, "Re: Political Work in the Aftermath of the New Media Arts Crisis", Nettime mailing list. www.nettime.org (accessed 16 May 2009).

Zielinski, Siegfried. 2006. *Deep Time of the Media: Towards and Archaeology of Hearing And Seeing by Technical Means* (translated by Custance, G.). Cambridge, Massachusetts: The MIT Press.

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Cool Video Dude

ABSTRACT

I plan to discuss the history of one of the most unique and dedicated media art courses in the country 'media arts'. Originally established in
1978 in the outer Melbourne suburb of Bundoora as Preston institute and later Philip and now currently at RMIT in the school of art.
I will discuss current challenges of media arts within a traditional fine art school and issues surrounding multidisciplinary practice and approaches. I will also talk about the history of media arts and its development as one of the first screen based art courses prior to the explosion of 'multimedia' and digital technologies and also how our sensibility as a course area operates in relation to these technologies.
In particular by establishing a more critical framework in regards to new technologies. We are less interested in the latest developments of new technologies for their own sake and more in the cultural histories of various technological media and the ability to combine them with newer ones.
I will discuss the all too common utopian mindset of the wondrous possibilities afforded by digital media which endlessly regurgitates the marketing rhetoric of Apple Mac. Where by creatively is locked into the world of software and the computer lab opposed to an awareness of older, vintage technologies whereby students can achieve outcomes that one can't in current software.

INTRODUCTION

Since 1978 Media arts has offered a multidisciplinary undergrad and post grad fine art course with a focus on experimental screen culture, originally part of Philip Institute of technology and previously Preston Institute. In 1995 media arts amalgamated with RMIT, we left the paddocks, cows, gum trees and isolation of outer suburban Bundoora in Melbourne and became part of the department of Visual Communication and later the school of art at RMIT in Melbourne. In retrospect, it was Philip Institute's decade or so of isolation in Bundoora that allowed a unique pedagogy to develop in media arts. It was an outsider, maverick approach to the emerging culture of media arts which drew on pop culture, film theory, modernism and post modernism and a dedicated focus on the culture of sound art and soundtrack design.

Media arts were developed by Rod Bishop and Bill Gregory around 1978 based on a multidisciplinary model that was happening in art schools in the UK at the time. In the late seventies media arts consisted of courses in experimental video art and film, fine art photography, performance and sound art. A student could also combine areas like painting, and sculpture into the mix, allowing students to move freely between disciplines was a fairly radical thing at the time, this was the 70's after all and a time of ungraded passes, frees education and do your own thing. Looking back this cross disciplinary model, of allowing students to fundamentally design their own pathways through their degree has been integral to the philosophy of media arts, opposed to dictating a rigid structure of core units and compulsory courses.

Originally the staff of media arts included Rod Bishop, Philip Brophy, Les Walking and later Philip Samartzis, myself, Martine Corompt and Dominic Redfern, the later all originally media arts students who went on to develop the program at RMIT. In the mid nineties the

course was expanded to include experimental animation and new genres, it also saw the demise of film as a subject, and later in 2005 when media arts fused with the school of art, fine art photography and sound art went their separate ways as course areas in the school.

Currently we exist within a fine art degree program, however this has bought its own challenges and problems. While we clearly have much in common with a fine art sensibility, We have often met resistance from the more traditional course areas in the school who come from a more conventional model of art education and our multi disciplinary approach doesn't suit their atelier model of art education.

However I maintain contemporary art is by definition multi disciplinary in nature, painters make video art, sculptors do stop motion animation and video artists draw. Artist categories are increasingly being blurred and redefined, its therefore critical that any kind of education in art reflect this.

One of the other issues we have faced occurs even before our prospective students enrol in our course, it occurs in year 12 when students make the decision to either undertake studio arts or screen culture courses or perhaps in some cases it's called visual communication of some other generic term. Essentially this means at very early stage prospective undergrad students have separated a fine art practice from one that utilises technology. In a very real way this defines the way in which students think about technology in relation to fine art practice.

This clearly has implications on our intake of students, for media arts is positioned within a traditional fine art school and we have always maintained that technology is only as interesting as the artist driving it. Or another way of putting it – it's easy to teach an artist to use to technology, but it's harder to teach a nerd to be arty.

Media arts at RMIT sees students develop a range of skills over their time in the course and many of our graduates go on to practice as artists, they possibly do web design or DVD interface design as a way of paying the rent, which these days certainly beats flipping burgers. Our course is really less about industry outcomes, and more about providing students with an entrepreneurial approach to media art culture which can be applied to a whole range of outcomes. In particular our students function as independent practitioners, curators, festival organizers and form art collectives.

The notion of a media arts course located within a fine art program gives student's access to knowledge and information from the rich history of 20th century and 21st century practices in expanded cinema, materialist cinema, kinetic art, video art, experimental animation and performance art that they may not have if undertaking a more standard 'multimedia course'.

The history of media arts is the history of technology, in our own

course we have seen *super 8, 16 mm, vhs, Umatic, Fairlight CVI's, Hi-8, Media 100's, Avids and Amiga*s come and go. The history of technology is the history of obsolescence, with this in mind any investment in the latest digital media is of course an investment in tomorrow's land fill, which from a cynical point of view can't help but flavour my own practice and pedagogical model. Whereby the focus is not simply on the wondrous utopian possibilities of new digital media but rather on an informed cultural history of all forms of media, weather it vintage, dead, obsolete, outmoded, superseded, contemporary, analogue or digital.

New media artists in particular love to rehash and duplicate the same digital utopian marketing hype as someone like Apple Macintosh I have always found this odd and problematic when working within a institution where artists use technology. The highest resolution, the best fidelity, the fastest processor, the latest software version, the coolest iphone app, the biggest bandwidth, the hottest website, the weirdest web site, the largest hard drive capacity – digital media is indeed the culture of more is better. However from an educational and fine art pedagogical perspective this sensibility poses a number of challenges. We are already seeing students who fetishise vhs quality video with bad tracking, 8 bit video game samples and an enthusiastic appreciation of the low tech. At the end of the day it is about the culture of ideas and how to best realize those ideas, whether it's in the latest high definition video with dolby 5.1 surround sound or a reconfigured obsolete Nintendo power glove from 1989 is frankly largely irrelevant.

In media arts we are particularly interested in the recombination and the fusing of old and new together into intriguing and unusual combinations. In particular our course developed by Martine Corompt *Experimental animation* takes as a starting point the rich history of animation techniques of the 20th century. Rather than purely be locked into the flawless, software worlds of *Flash* and *After effects*.

Experimental animation in addition to exploring the possibilities of digital software, looks in the rear vision mirror at the many untapped, neglected and decidedly hands on analogue animation techniques and processes. From Silhouette animation, Rotoscoping, multiplane, Rostrum cameras and sand animation combining those with digital media for unusual and unexpected outcomes.

One of my own courses in media arts New Genres has a syllabus which reflects a more eclectic idiosyncratic and what I see as an expanded approach to new media. With lectures and workshops on topics such as 'Haunted media,' 'Obsolete and dead media' The aesthetics of malfunction, The web and Dirt Style web art, PowerPoint art, 'the hype of new media' and 'Destruction in art' A course such as this casts a critical eye over the emerging technological landscape and sees artists as playing a critical and active role in shaping and indeed critiquing this emerging technological culture.

We also have on offer a range of experimental video art subjects. The advent in the 1960's of consumer level video technology brought about an explosion of activity that has propelled us to the point in which we currently find video as the default medium for many artists. Nonetheless this event did not occur in a vacuum, it was part of a continuum of experimental practice that included proto-cinematic devices and the pre and post war waves of experimental film activity in Europe and America. Accordingly the courses that form the foundation of video art culture within Media Arts are premised upon the breadth of experimental moving image practice across the last century. Media Arts embraces this range of activities and presents students with a non-hierarchical model of screen culture. Students draw upon the full range of moving image culture from you tube to cinema, television to live audio vision, gallery based installation to public intervention. The challenge remains how to satisfy or adequately represent and systematise these possibilities for students given the limits upon art schools in the current funding climate in education. Because we work in an arena dominated by hype around emergent technologies we emphasise content over effect and stress technique and method over technology.

In addition to the cultural and historical context we offer students, the video art courses draw upon phenomenology, structuralism and post-structuralism as models for understanding the range of experiences afforded by the moving image. In turn we present students with a range of analytical tools and ‘linguistic’ models that can be applied across genres, contemporary presentation platforms and historical technological forms.

There is a school of thought, that media art and new media courses have possibly become redundant. The line of thinking goes that for all intents and purposes you can source material from the web and upload videos to *You tube* complete with comments like 'cool video dude', digital cameras are affordable and accessible, everyone has a mobile phone, and a Facebook account. One can, re-enact their own favourite movies and upload them to You tube, you can watch DVD’s and listen intently to the directors commentary and view backup material like storyboards and shot lists, welcome to the digital revolution, where everyone is an artist, everyone an expert, everyone a player in the new media landscape.

However what is sorely missing from this picture of a digital utopia is a context and a culture, a historical reading of technology and a literacy of all forms of screen based media. Our own course area provides an experimental lab to try out ideas, to expose students to screen based media which they can’t find on *you tube*, to critique ideas and discuss them in relation to the cultural narratives surrounding media arts and to provide a language and a sensibility beyond the ubiquitous 'cool video dude' of *You tube*. In many ways while a course like media arts is indeed in a sense redundant to your average 18 year old. it is also simultaneously critical and even more important in the current climate of digital media culture and the ‘cool video dude’ mindset which plagues the new electronic landscape.

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Open Learning Networks in Media Arts Education

ABSTRACT

The explosive growth of knowledge in the 21st century has placed a unique set of pressures on many institutions, and in particular, on those that **generate**, **analyze**, **sort** and **disseminate** information. While the public looks to universities as places where world's-best practice in knowledge management is employed, these same universities are in danger of being overwhelmed — not only by the increase in knowledge, but by the just-as-rapid multiplication in techniques for **capturing**, **exploring**, and **distributing** this knowledge. I want to suggest that closed "Virtual Learning Environments" are not the best solution for digital-media arts education. Instead, I argue that external "user-centric web services" should be allowed to flow into the university web systems. In this way students and teachers increase their participation in the broader production (and critique) of knowledge in the media arts and other disciplines.

1. The explosive growth of knowledge in the 21st century has placed a unique set of pressures on many institutions, and in particular, on those institutions that have a specific charge to **generate**, **analyze**, **sort** and **disseminate** this ever-increasing wealth of information. While the public looks to universities as places where world's-best practice in knowledge management is employed, these same universities are in danger of being overwhelmed — not only by the increase in knowledge, but by the just-as-rapid multiplication in techniques for **capturing**, **exploring**, and **distributing** this knowledge. Universities need a plan to engage with the open networks of knowledge that constitute contemporary society: this is a core justification for their existence. The problem is, the plan's not really working.

2. In the ideal IT world envisaged by administrative, academic, and IT staff at many Australian universities, the university's web presence and web services should be part of a centrally managed repository. These services should be strictly gated and limited in access. They should be **controlled**, **secure** and **hierarchically** organised. This particular conceptualization is the by-product of another time when computing and network resources were both limited and expensive. Now that both are cheap and broadly available, universities have lost their "natural monopoly" on the provision of web services for their academic communities.

3. This is a familiar story in the so-called digital age. We see all around us how the internet, peer-to-peer and other open access platforms are developing profound challenges to the organization of media, information and knowledge. In simple terms, the user-centric web services commonly associated with terms such as Web 2.0, the semantic web, open source, and the Read-Write Web are at the forefront of this change. Even if we filter out much of the hype surrounding these terms, the web is becoming more user-focused, collaborative, more "participatory", and more dynamic. This participatory logic of networked media is also having a profound effect on the way we might think about the position of universities in terms of their general contribution to what is commonly referred to as "the wealth of networks".

4. Many new social network services have very quickly positioned themselves in the marketplace as brands. At the same time, we could also argue that these new entities could be easily aligned with pedagogical principles of “learner centred”, “blended” or “constructivist” learning approaches, which emphasise the ways students operate in a community of peers. When students are encouraged to explore at their own pace, reflecting on their own discoveries as part of that process, there is enormous potential for them to learn in new ways. Utilising the multiple feedback channels available via social networking software and other similar tools, universities can engage with students by entering into a dialogue with them about what they want to learn (and what they need to learn) in this fast paced media-world.

5. While this might be the case, universities have been slow to embrace the full social and collaborative strengths of the web, and to align themselves to the emerging practices of open standards that will shape the 21st century. For the most part, universities still prefer to work within their “walled gardens” purpose-built by the institution. These are typically “push” systems with strict protocols that disallow external access or control. Although disruptive, universities need to adopt the best practices of the social web in order to improve their internal processes, and to transform themselves into more outwards-facing teaching and research institutions.

6. As Chris Anderson puts it in *The Long Tail*, these developments contain the potential to free us from “the tyranny of lowest-common-denominator fare” and establish in its place “a world of infinite variety.” As the internet becomes more ubiquitous, it is reshaping the economics of media culture. It is reshaping the culture and economics of education in the same way. The flood of blogs, podcasts, video clips, and MP3s, most available for free, testifies to these changing economies. While universities struggle to keep their Vista and Blackboard packages operational, the students and staff are climbing over the walls and becoming increasingly involved in the participatory media culture of the social web.

7. And so, higher education faces a challenge. It may not fully acknowledge it yet, but it does. And the challenge is this: when students have been accustomed to these very facilitative, usable, customisable, personalised, open and adaptive tools — both for learning and for socialising — why **would** they accept closed, standardised, unintuitive, clumsy and out of date tools in the formal education they are paying for? This goes to the core of the cultural differences between the Web 2.0 environment and the traditional domain of higher education. Who needs a VLE or WebCT (or whatever proprietary software package the university demands that they use) when the open web and social software already provide that for you — only better and for free? The question universities have to ask themselves is whether they are prepared to acknowledge this shift, and to embrace new **strategies of adaptation** instead of the usual **resistance** to rapid social and technological change.

8. Parallels between the music, film and entertainment industries in the digital disaggregation of delivery platforms should serve as an equally loud wake-up call for those of us working in higher ed. Will universities go the way of vinyl and CD? I don’t believe so. But the message remains clear: we ignore the everyday social media practices of the open web at our peril.

9. I want to suggest that centralised VLEs are not the answer to the ‘web 2.0 problem’ for education. This is because its software protocols embody principles of hierarchy, control, and centralisation instead of bottom-up, networked interconnectivity. Making the **traditional** classroom **virtual** won’t help educators understand the new challenges and opportunities they are now facing. By allowing user-centric web services to flow back into the university web

systems, we will be able to build upon the increasing participation of the university community in the broader production (and critique) of knowledge.

10. So, what are the characteristics of web-native learners, and what tools do they want or need? What new learning opportunities – and risks – are opened up by social networking and media sharing tools? And how might we reframe our ideas of learning, teaching and research in light of all this? In short, what would be the role of the university if many of its current services were **disaggregated** to specialist providers on the web? What would happen if we shared these resources across the institutional boundaries of branded universities, and instead worked together in a spirit of collaborative research and teaching?

11. These are difficult, complex questions to consider. Part of the answer is staring us in the face. If the university community is going outside for solutions, then we need to connect those practices and systems back to the institutions we are all a part of. If we don't, universities are in danger of cutting themselves off from each other and from the world-at-large. We are cutting ourselves off from potential students, potential research collaborators, and potential business partners. And we are missing out on the opportunity to work otgether outside of the walled gardens of educational institutions.

12. Although much of what I mention here can seem radical to some academics and administrators, the collaborative read-write web is already in broad daily use through the higher education community. Students scour Wikipedia when doing background research for an assignment. Wikipedia in fact, is still the outstanding example of a collaborative success story. Researchers maintain blogs and wikis, giving colleagues instant access to experimental results. Many people at universities spend much of their time online, trading links to media and information on every subject imaginable — via email, SMS, Facebook, Twitter, instant messaging and so on. We all know this. The open web is **already** a reality. And that is why it's up to us, to make sure that we do everything we can to allow our constituents to redefine the university in the light of these new open network structures and that we join together to build the open learning models that will benefit us all.

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Musical Technology / Technological Music:

Teaching Electronic Music in the Academy

ABSTRACT

In 2007 WAAPA began a new music course that tied a thorough traditional music training with computer programming and new media arts. The Music Technology Major in the three year Bachelor of Music aims to produce students who can not only program interactive or compositional projects but also have a full capability in a more traditional musical background of aural training, harmony, theory, history and performance. After initial learning in composition, acousmatics, spatial music, recording, mixing and mastering music, students are introduced to programming through composition projects using MaxMSP and Jitter, moving on to Csound and the programming of Arduino's, as well as real time internet performances. The project based teaching and assessment structure encourages collaboration and performance in the public arena, creating a foundation for a performance/research ethic beginning at undergraduate level. This course is developing exciting outcomes that may finally solve the sound art versus music debate while developing learning strategies that combine musical and scientific approaches for a range of artworks with sound as a foundation. The paper discusses the design of the course and how it differs from others, and provides detail on the way programming is taught within a music framework and some of the outcomes to date.

KEYWORDS

Australian electronic music technology composition

"I don't think composition should be taught…. my attitude is: keep everything as human as possible, create a sense of proportion, good atmosphere to work, quietude, fantastic people there to help when they need them, and let them quietly get discouraged and get out of this tentative commitment they made; rather than creating some kind of Utopia."

(Morton Feldman, Music Times, August 1972).

Background

In 2007 the West Australian Academy of Performing Arts (WAAPA) at Edith Cowan University (ECU) introduced a new suite of Bachelor of Music (BMus) courses. The Music Department had previously been part of the WA Conservatorium course structure within a Bachelor of Performing Arts (BPA) when it merged with ECU. What was a complex map of units with a performance focus and very different structure to other courses at the university was now required to conform thus providing a rather unique opportunity for a complete overhaul of the existing BMus and its majors.

Early 2005 in preparation for this merger Cat Hope and Malcolm Riddoch began researching the structure for a Composition and Music Technology major within the proposed new Bachelor of Music degree. A number of composition students had already graduated through the BPA, enrolling in one on one 'instrumental lesson units', and this stream was formalized as a Composition major. A Bachelor of Music Technology had already been developed in 2001 with Robert Sazdov appointed as co-coordinator. However, despite an exciting start the degree collapsed in 2005, Robert Sazdov left WAAPA and the remaining students were then transferred to the ECU School of Communications and Multimedia and its Bachelor of Communications degree as a Music Technology major. This stream still exists as a Creative Music Technologies major within the Bachelor of Creative Industries at the now School of Communications and Arts (SCA). There is no music taught in this major.

The practical keys for the success of the proposed new Composition and Music Technology majors, within a university wide restructuring, were financial viability and clear differentiation from the creative technology major at the SCA. Consultations began with various other Australian universities and their academics[xlvi], in particular Julian Knowles who was then at the University of Wollongong. After also consulting practicing composers it was decided that the new majors should prepare music students for the rapidly evolving opportunities available in 21st century technologically driven music creation. Factors such as the explosive impact of the internet on traditional music industry business models, independent artists, music distribution and the public's listening habits - the growth in the film industry - the lack of music producers in the music industry - and the ever increasing hybridity of the contemporary arts - were all pointing to a need for trained musicians with broad based skills and musical tastes capable of working collaboratively across multiple genres and creative industry sectors. They needed to know about technology, without needing to know how to use every program that was current at the time the course was written.

In researching the various Music Technology courses on offer in Australia and internationally it became evident that many institutions tended to emphasize the technological aspects - sound engineering, mixing/mastering, computer skills and so on - with outcomes directed more towards production expertise than musicianship. These are not of course mutually exclusive outcomes as musical skills are also an important part of any Music Technology course and certainly for any successful career in sound engineering and production. Nonetheless, there did seem to be more of an emphasis on developing skills in musical

technology rather than technological music for many of the courses we looked at in the research phase. One notable exception that provided some inspiration for developing the new major was the New York University Music Technology program at the Steinhardt School[xlvii]. In this sense therefore, we saw a niche and a need for a course structure that emphasized the teaching of technologically oriented music skills, from composition to performance and production, within the context of an understanding of the historical development of, and contemporary skills in the use of musical technology. From the outset, the fundamental goal guiding the Music Technology course and degree structure at WAAPA was the emphasis on producing electronic musicians rather than technicians.

With this musical distinction in mind, a course structure was developed leveraging the excellent resources available within the WAAPA Music Department at ECU. The Classical stream within which both Composition and Music Technology reside thus provides prospective Music Technology students with a strong grounding in traditional music theory, notation, harmony, orchestration, aural training and history. Utilizing the production expertise available within the Contemporary Music stream likewise provides a solid basis in mixing, recording and mastering techniques. Integrating the Composition and Music Technology streams provides a practical and historical perspective on composition techniques with an emphasis on electronic composition, leaving Music Technology to focus on the history of electronic music and technology, acoustic and acousmatic approaches to the theory of organized sound, multi-channel spatial music, programming, synthesis, internet technologies and electronic performance.

Furthermore, an emphasis was placed on critical thinking, writing and research skills from first year onwards looking towards not just the development of an active postgraduate research program but also to provide the industry skills required for project management, grant applications and critical reviews/publications, both via online and print media. Lastly, provisions were made to develop cross-disciplinary collaborations with other student musicians (performers, technicians etc.) and students in the various arts (film, dance, theatre, visual, gaming, TV and radio) available within the Faculty of Education and Arts at ECU.

This basic structure came together in first semester 2007 as the Bachelor of Music majoring in Music Technology at WAAPA and is now (2009) into its third year.

Bachelor of Music Course Structure

The course structure as it now stands has four streams all of which are integrated to varying degrees with the Classical, Jazz and Contemporary music majors.

Music Techniques - covers aural, theory, harmony and arranging. Students may choose classical or jazz specialties. Here, students learn techniques to discuss and identify intervals, melodies and chords. It enables composers and electronic musicians to communicate with

performers, hearing the music they write on the page, and facilitates the discussion and understanding of a wide range of music, even if it is not their preferred style.

Music History And Culture - in first year Music Technology Overview covers the history of electronic music and technology from Humboldt and Busoni through the tape music revolution and on to the present laptop computing era. A film music history overview is offered in third year. From second year the students can also choose to do classical overview, baroque, classical, jazz overview, jazz and contemporary overview . All music students do 20th century overview in first year which covers music from Debussy onwards.

Ensembles And Extension Studies - here students choose any other music unit within the BMus as an extension to their principal study. Ensembles include ECUatorial[xlviii], for all three years, starting with works by composers such as Alvin Lucier, John Cage, Tom Johnston, Laurie Anderson and Pauline Oliveros with an emphasis on improvisation and learning how to listen. Second year ensemble includes performing original student works composed in MaxMSP while the third year Aletheia ensemble collaborates with other institutions, such as Griffith University in Queensland, in the performance of electronic improvisations via audio streaming over the internet[xlix].

Principal Study - this is where students specialize, with first year Music Technology and Composition students sharing the same stream. From second year onwards they diverge to specialize in either Composition or Music Technology. Those interested in the composition and performance of electronic music major in Music Technology, those interested in writing for acoustic instruments take Composition. All continue to take part in the composers' workshop and Music Technology students have a production (mixing/recording/mastering) module each semester until the end of second year.

The mix of units across the different majors and the ability to pick and choose extensions from other areas such as modules from Classical principal studies and so on makes for a very broad based degree structure. However, this freedom of choice is somewhat complicated by the unit structure and complex timetabling and this is especially the case when offering music units to other students outside of WAAPA Music. This issue is currently being addressed in order to encourage cross-disciplinary collaboration.

The Music Technology principal studies include both composition and electronic streams throughout the degree. In the composition stream students take Introduction to Composition, Applied Music, Sound Art, and MaxMSP composition. The electronics stream covers Acousmatics, Spatial Music, MaxMSP, Jitter, Csound and Internet music. Assessments are in part theory based (essay and online writing as well as exams) although the emphasis is on practical outcomes such as sound installation, electronic performance, soundtrack production, CD album releases and compositions.

Principal Study - Electronic Composition

While Composition majors focus on notated acoustic music after first year (taught in one-on-one lessons), Music Technology students focus on electronic music, sometimes notated, as their practice/expression in classes. Apart from this distinction the two streams are the same,

engaging with ensembles, performers, music history, aural training, arranging and so on with Music Technology retaining an emphasis on electronic composition throughout.

The first semester first year Introduction to Composition discusses current day composers both international and Australian as well as important events in composition and performance over the last fifty years. Topics include genre, style, analysis, a study of music broken down into its components, as well as the relation between improvisation, composition and sound art. A collaborative project with a non-music student is also required and this is repeated every semester through to third year[l].

The second semester Applied Composition introduces approaches to music for film, theatre, dance, TV, sound art installation, music video and gaming as well as contracts and copyright issues including the Creative Commons and APRA. Again, an emphasis is placed on collaborative processes across multiple disciplines and demonstrated practically with another collaborative project.

In second and third year there are group composition classes for Music Technology majors covering composition skills as they relate to MaxMSP and sound installation. These classes complement the MaxMSP programming units that start in second year and focus on the electronic composition from a music perspective and how to score electronic music. The fourth semester composition unit on sound art looks at interactive theory, sound sculpture and the internet. A sound art exhibition project is also undertaken using MaxMSP. In third year the composition class analyses the students' own works looking towards the final semester graduation project.

A weekly Composers Workshop gathers all the composition and music technology students from first to third year together - often with honours students, postgraduates, the composer in residence and visiting artists - to debate, comment and share ideas about composition. Every student is required to organize one 15 minute performance per semester including, if necessary, finding performers and setting up rehearsals.

Throughout their composition studies the students are also required to write reviews for the online Earwax Magazine[li] and maintain their own composers page on the WAAPA Musicians Blog[lii]. Provisions have also been made for a Composer in Residence, a position awarded yearly to established, upcoming or recently graduated composers, offering staff benefits such as access to computer labs, audio equipment and rehearsal rooms, teaching experience and a performance of their works in the WAAPA concert program. Students are encouraged to interact with the Composer in Residence and are required to attend their concerts and presentations, offering an engagement with the new music community outside WAAPA.

Principal Study – Electronic Music

The core studies for Music Technology reside in this stream and begin in first semester with Acousmatics. While classical notions concerning tonal music, traditional notation and aural training are reinforced in the Music Techniques stream this unit attempts to deconstruct the student's classical conditioning and come to an understanding of the electronic concept of music as 'organized sound'[liii] via both theory and praxis. The physical concept of sound in terms of the science of acoustics, psycho-acoustics and neural processes associated with auditory perception is first outlined in the context of the question: What is sound? Following this bracketing of the scientific concept the students are introduced to Pierre Schaeffer's phenomenological concept of sound as a sonorous object of perception[liv], or to 'the sounds themselves'[lv].

Concurrent aural training is undertaken via weekly field reports[lvi] describing environmental sounds without recourse to their source. By mid semester, due to the retuning effects of repetitive listening, students' auditory perception usually becomes sensitized to the musicality of environmental noise and they begin composing an acousmatic electroacoustic work using field recordings in a multi-track digital audio editor. All students must have some previous experience with a multi-track environment to gain admission to the course. The students are then organized in a team project using their compositions for an end of semester public sound installation, the 'Acousmatic Listening Lounge' at ECU's off campus white box gallery, the SpECtrUm Project Space[lvii]. This sort of practical, project based learning is an important aspect of every semester from first year onwards. Outcomes include increasingly sophisticated sound art installations as well as electronic performance with students involved in the event planning, marketing and management.

The second semester Spatial Music unit investigates the spatiality of organized sound utilizing 5.1 surround sound production facilities to produce five channel spatial compositions with each student constructing a 5.1 DVD of the semester's works. Spatial music by composers such as Iannis Xenakis and Karlheinz Stockhausen is analyzed and students are required to produce a graphic score as well as organize and install an end of semester multi-channel public performance of their spatial compositions.

The technical production requirements of these core units are bolstered by dedicated production units with one semester each of recording, mixing, mastering and CD/DVD production through to the end of second year.

Starting in second year, programming is introduced via MaxMSP as both a composition and live electronic performance tool. Emphasis is placed on its use in ensemble works linking electronics with acoustic musicians as well as in the construction of interactive sound art installations. This programming stream is extended into third year with the introduction of CSound as well as Arduino microcontroller hardware for use in interactive MaxMSP sound art projects.

MaxMSP can be especially useful for introducing programming to musicians in ways that can be understood musically, particularly for those that might not have a strong background in computers and/or mathematics/programming. While traditional concepts of musical structure

(i.e. melody, rhythm, polyphony) can be quite difficult to translate there are other musical structures, particularly when using prerecorded samples and effects, where it is easier and more intuitive to create musical structure. One of the strongest aspects of MaxMSP as regards teaching the software effectively is its realtime prototyping environment. Students can build structures on the fly and see how they operate during the construction process. The architecture encourages students to explore their own creative potential as there is no barrier between the creative thought process and the ability to build/construct.

The third year Music Internet unit comprises an introduction to the WAAPA Music Label[lviii], the department's online audio publishing website. Fifth semester third year Students form the onsite staff and are introduced to the responsibilities and tasks of managing editorial copy, online store maintenance, order fulfillments, stock take, marketing and audio mastering for MP3 downloads, CD Audio and album cover artwork, PDF scores and so on. They learn the basics of music distribution as it is currently evolving on the internet and publish a downloadable MP3 of their concurrent Aletheia Streaming Ensemble performance. In the final semester the students publish selected works as approved by the editorial board consisting of WAAPA Music course coordinators.

Third year is also devoted to the ongoing development, realization and production of a major sound art installation or electronic performance to be showcased in the end of year WAAPA Music Technology Graduation Show. Throughout their undergraduate career and especially by third year all students are encouraged to expand their professional music practice beyond the academy, and the department has developed a relationship with Tura New Music[lix], the peak body for new music in Western Australia, to facilitate this. Tura provides performance opportunities at the monthly Club Zho performance nights as well as the annual Totally Huge New Music Festival and the aligned conference. The support includes infrastructure, liaison with local councils, national contacts, marketing and promotion. Several undergraduates have already successfully participated in commercial projects outside the academy, from MaxMSP interactive installations[lx] to film, radio and television. These external collaborations and industry partnerships are an important part of the curriculum in the widest sense and are intended to help ensure that graduation is merely a stepping stone for our professionally skilled electronic musicians.

Music Research Program

Postgraduate research pathways were also formalized in the Music Department restructuring. While there previously tended to be a distinction within the department between non-research oriented performance and music research as musicology, the new Excellence in Research for Australia (ERA) initiative has opened up the potential for an active postgraduate and academic music research program. ECU implemented the Creative and Performing Arts Activity Index (CPAI) for recognition of performance activity as research some time ago. Following this new research focus WAAPA Music is currently developing a research ethic at the department from the ground up - from a renewed focus on undergraduate research and writing skills to consolidating its postgraduate program through such initiatives as the postgraduate colloquium for all BMus Honors and Masters of Music (in Composition, Music Technology and Screen Composition). The newly accredited WAAPA Music Research

Centre brings together active music researchers in the department with online publishing[lxi] of ongoing research. It is affiliated with the faculty research group CREATEC[lxii] and together these form an integral part of the creative research initiative at ECU.

Although still in its formative stages this WAAPA Music research initiative and focus is the capstone of the Bachelor of Music at WAAPA and an important part of the ethos and structure of the Composition and Music Technology streams. To date there has already been one Music Technology Honours graduate, and one Master in Screen Composition will submit this year (2009) while the initial cohort of undergraduates is into the final third year of the BMus and working towards the inaugural WAAPA Music Technology Graduation Show.

In terms of the ongoing development of the course and research structure we are still learning as we go, constructing the intra and inter departmental and university relations that the WAAPA Music Technology degree is built upon. While communication across the music majors remains a problem due to the specialization of each discipline (classical, jazz and contemporary music), we find that music technology requires an inclusive and eclectic approach that weaves through the various degree course structures. This eclecticism is reflected in the relation between Composition and Music Technology, or more specifically the relation between traditional approaches to tonal music and notation, and the technological approach to music as organized sound. At WAAPA Music Technology these are complementary disciplines, and necessarily so given that the purpose of the degree is to produce an electronic musician as a technological classicist with well rounded, eclectic musical and production skills capable of working with technology across multiple genres - from sound installation to graphical scores, more conventional notation, the internet, film and interactive media.

The history of electronic music in the academy is as old as the modern use of electricity, over a century now, and from the beginning it has been driven by this same dynamic interplay between classical composition and constantly evolving electronic technology - between classical composers and technologists. There is an innate freedom to this technological dynamic, and this is as true of our early 21st century electronic music as it was for the pioneering Italian composer and educator Feruccio Busoni (mentor to the electronic pioneers Edgard Varèse and Australia's own Percy Grainger). Creative and academic freedom underlies our technological approach to music, just as Busoni himself said, looking forward to our technological future: "music was born free; and to win freedom is its destiny."[lxiii]

REFERENCES

[i] The institutions and courses covered during the 2005 research phase included Adelaide University Bachelor of Music Studies in Music Technology, Griffith University Bachelor of Music Technology, Sydney University Bachelor of Music, University of Western Sydney Bachelor of Music, University of Edinburgh Degree of Bachelor of Music (Music Technology), McGill University's Schulich School of Music Bachelor of Music in Music Technology, Northwestern University Music Technology and New York University Steinhardt School Music Technology Program.

[ii] Music Technology, NYU Steinhardt, http://steinhardt.nyu.edu/music/technology/ (accessed June 18, 2009).

[iii] The ECUatorial ensemble is named after Varèse' famous work, completed in 1934, that contained parts for fingerboard theremin and cello.

[iv] For ongoing documentation of performances and streaming audio see the Aletheia Ensemble collaborative browser at http://aletheia.waapamusic.org (accessed June 18, 2009).

[v] In tandem with these film student collaborations, each year the students take part in the Revel8 competition, where they compose and synch music to super 8 film. The films are show at a major cinema and there are a variety of awards on offer. Revel8 | MySpace, http://www.myspace.com/revel8super8filmfest (accessed June 18, 2009).

[vi] Earwax magazine: Earplug, http://earwax.waapamusic.com (accessed June 18, 2009).

[vii] WAAPA Musicians Blog: Composers and their music at WAAPA, http://waapacomposers.com/composers/ (accessed June 18, 2009).

[viii] The term 'organized sound' following Edgard Varèse encompasses a technological approach to music and remains a focal point throughout the degree. For Varèse on organized sound see William W. Austin, *Music in the Twentieth Century* (New York: Allen and Bacon, 1969).

[ix] Pierre Schaeffer, (2005) "Acousmatics," in *Audio Culture – Readings in Modern Music*, ed. C. Cox and D. Warner (New York: Continuum, 2005), 76-81.

[x] Dr Malcolm Riddoch has a background in science and phenomenology which makes him a well suited lecturer for this module.

[xi] WAAPA Musicians Blog: Field Reports, http://waapacomposers.com/cat/music-technology/ (accessed June 18, 2009).

[xii] A number of Sound Spectrum projects can be found at Spectrum Archives, http://www.scca.ecu.edu.au/projects/spectrum/comingup.html (accessed June 25, 2009).

[xiii] WAAPA Music Label, http://label.waapamusic.com/ (accessed June 18, 2009).

[xiv] Tura New Music, http://www.tura.com.au/ (accessed June 18, 2009).

[xv] WAAPA student Brett Murray provided MaxMSP/Jitter programing for Silent Barrage in collaboration with Philip Gamblen, Guy Ben-Ary, Peter Gee, Dr. Nathan Scott and the Dr. Steve Potter Lab. The work toured New York in 2008 and won an honorary mention in the 2009 Ars Electronica.
http://www.aec.at/prix_history_en.php?year=2009 (accessed June 18, 2009).
http://www.symbiotica.uwa.edu.au/silentbarrage (accessed June 18, 2009).

[xvi] Music Research Group, http://research.waapamusic.org (accessed June 18, 2009).

[xvii] Centre for Research in Entertainment, Arts, Technology, Education & Communications, http://createc.ea.ecu.edu.au (accessed June 18, 2009).

[xviii] Feruccio Busoni, "Sketch of a New Esthetic of Music", in *Three Classics in the Aesthetic of Music* (New York: Dover, 1962).

Stephen Jones

A Systems Structure for Understanding New Media Practice.

ABSTRACT

The production of new media artworks involves a complex network of artists, technical and other collaborators (eg, sound and/or choreographic), technologies, funding institutions, curators and exhibiting structures all functioning concurrently in a context of cultural, political and technological strata. The people involved become a network consisting (in one language) of nodes and inter-connections. The operating process is a communicative activity best described through Wiener's cybernetics and the indication of the circular causal loop structure of a system. The connections of the network consist in these feedback-loop structures. They are dynamic yet can develop an intrinsic stability through their capacity to handle variety and perturbation. When they function adequately they can become autopoietic and thus self-generating and self-sustaining. The system of interconnections is rhizomic in general and it is driven or motivated by desire in one or many of its multitude of types.

This analysis is very important for providing an adequate basis to the historiography of the media arts. In this paper I provide a basis for pedagogical curricula and presentation that uses the framework to bring to the students' attention the wide range of interconnectedness of the study and practice of the new media arts.

INTRODUCTION

In dealing with ‘new’, or technologically operative media – however old that ‘new’ medium is – we are dealing with a kind of art that is fundamentally different from the more traditional forms of visual art such as painting or sculpture. This is not because we are dealing with the temporal sequence, since paintings etc., have their temporal extension as well, which comes from the time it takes to perceive and then form interpretations of, or meanings from, what has been so perceived, but because it takes a collaborative infrastructure to produce it. It is the nature of this collaborative process in new media art that I want to draw out. This might then provide a background against which modes of teaching can be expanded into the area where art-making is understood as a kind of management activity, not unlike the role of the producer in cinema.

The production or making of new media artworks involves a complex network of artists, technologies, technical and other collaborators, funding institutions, curators and exhibiting structures all functioning concurrently in a context of cultural, political and technological strata.

- The people involved become a system of entities in multiple relationships or, in another language, a network consisting of nodes and inter-connections.
- The operating process is a communicative activity well described within Norbert Wiener's cybernetics through the elucidation of the relationships or inter-connections generating the circular causal or feedback-loop structure of this system or network.
- These relationships will be a continually shifting, dissolving and re-forming system of communications between individuals, ideas, actions and productions.

- The systems are dynamic yet they develop an intrinsic stability gained through their capacity to handle variety and perturbation.
- When they function adequately they can become autopoietic and, thus, self-generating and self-sustaining.
- In general such a system is rhizomic and it is driven or motivated by desire in one or many of its multitude of types.

Thus all the entities, be they actors or contexts, that are operative within the process of making and constituting a collaborative infrastructure or cultural system may be represented as nodes in a network of relationships that commonly show bi-directional *inter*-activity.[lxiv] This *inter*-activity means that we can talk of an individual influencing another individual, an individual producing an object (e.g., an artwork or book) that influences other individuals either negatively or positively, by reinforcing or dissuading certain ideas and activities. These all take place in institutional and cultural contexts which are as much actors in the overall system as any of the individuals. Books, exhibitions and other outputs and productions, political events, budgets and censorship, cultural mores and cultural events, art movements and critical discussions all form the cultural/political context in which the acts of artists are influenced. Institutions and their frameworks - be they teaching, research or funding institutions - all have influence and, finally, so do the technologists who produce and modify the systems of tools that permit the process of art-making to occur.

All these elements are part of a system, and there may well be several operative systems interacting with each other in any one location or subculture. It is the classes of relations that operate dynamically through these systems that I want to elucidate and I will use the conceptual structure of systems theory to do so.

This analysis is very important for providing an adequate basis to the historiography of the media arts. However, in this paper I want to extend the use of systems theory towards providing a basis for a pedagogical approach that brings to students' attention the wide range of relationships operating in, and the interconnectedness of, both the study and practice of the new media arts. What becomes important, therefore, in understanding how particular cultural practices function is that we need to see how the system, or network, of individuals, institutions and technologies that constitute that culture communicate, *ie.* how they *relate* to each other, and what it is that is communicated through those networks of relations.[lxv]

Systems operate over time and possess a dynamics and a means of describing that dynamics in a way that shows how the system is maintained in spite of perturbation and assault, evolution and development, criticism, politics and denial of opportunity or support. The systems theory approach may be applied to groupings of people with common intentions functioning over various periods of time within diverse socio-political situations. Such an application can then account for the ways social groupings are spawned, function and break up, often spawning new versions in opposition, or in a spirit of "we can do it better" or "this approach is more aligned to the (political) state of things".

Around 1967, the idea emerged that loosely-coupled, accidental groupings made up of artists, their artworks and the audience could be understood as a system (or complex whole) of some sort. Both Jack Burnham, in the US, and Roy Ascott, in the UK, wrote about the use of cybernetics and systems principles in understanding certain kinds of art of the time, particularly those that were largely the extensions of kinetic art into performance and conceptual work as well as various levels of 'sculptural' installation works. Their theories grew out of work based in Norbert Wiener's cybernetics, which was further developed by cyberneticists such as Gordon Pask in his conversation theory.

Burnham's approach developed from Ludwig von Bertalanffy's systems theory, which emerged from his studies of the problem of self-regulation in theoretical biology.[lxvi] Burnham then applied this approach to art-works based on the rule structures and broadly interactive relations that make for a whole system that is stable and on-going. These may consist in a complex arrangement of processes both organic and technical and may enter into complex relations with the audience, thus requiring extended temporal engagement.

Meanwhile Ascott realised that out of recent developments in kinetic art there was becoming an interest in the notion that artworks might 'behave' and invite participation, in the sense that they could be responsive to the presence of the spectator, and that they might be interactive if, when appropriately constructed, they actually engaged the spectator in some level of interaction beyond the simple notion of a stimulus-response event, thus engaging in 'conversation' with the audience. As Ascott notes: "The participational, inclusive form of art has as its basic principle "feedback", and it is this loop which makes of the triad artist / artwork / observer an integral whole."[lxvii]

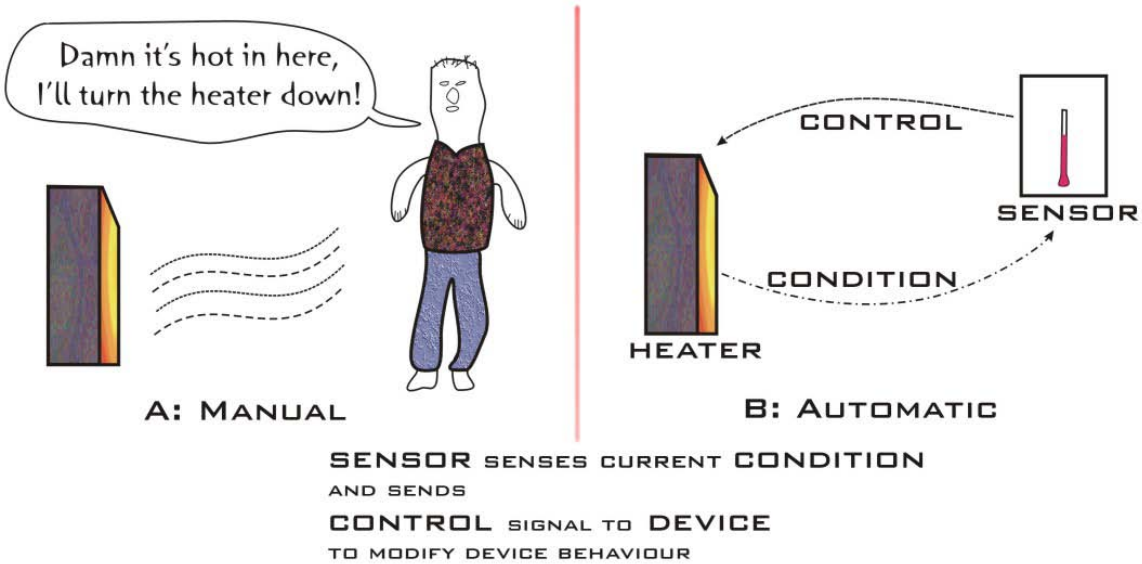
Thus both Burnham and Ascott recognised the usefulness of systems theory in understanding contemporary art through their perception of the dynamics that lie behind many types of art and the role of cybernetics in the perception of, and interaction with, responsive artworks, and it remains useful in this way. However they did not come to grips with the particularly collaborative nature of the processes of 'making', where a tightly coupled group of people work together to produce an artwork. Making, too, partakes of cybernetic processes and it is here, I suggest, that the teaching of new media art, especially that branch of it that involves the utilisation of new technologies, should take into account the role of the cybernetics of social interaction when it involves the development of new devices[lxviii] and otherwise engages in that process usually thought of in the technological world as R&D.

So what I want to do in this paper is to show the characteristics of such a cultural system as it operates in Art & Technology. These characteristics are:

- the Relations formed from circular causal inter-connections, *i.e*, feedback structures, among the participants in the system.
- the Motivations that are the forces that drive the system's intentionality are well described under the notion of desire, and

- the Self-construction of the system in which it will tend towards autopoietic closure in its capacity to continue itself as a self-sustaining, self-regulating system

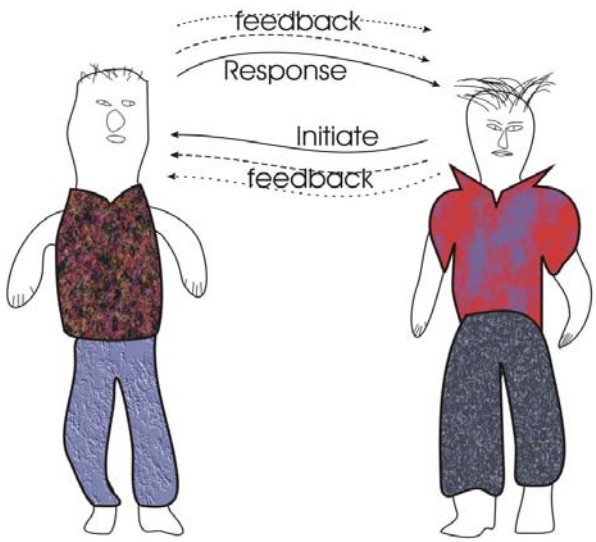
I will discuss each of these:



The relations

The relations that operate dynamically within art-making systems are the first things that need to be elucidated when teaching new media either as practice or as history, and it is these relations for which we utilise the conceptual structure of cybernetics.

Norbert Wiener originally developed cybernetics to aid in the pointing of anti-aircraft guns during the war but he quickly recognised that it was applicable in many areas of machine control, eg, the thermostat [Fig.1], and more interestingly, that it was analogous to the behaviour of animals and people in many ways. He saw that in many circumstances the control of some process necessitated a communicative interaction mediated through a complex and multi-layered structure of feedbacks between entities; human, institution and machine, that allowed the requirements of each to be taken into account in the regulation of the overall system in which they were embedded. Thus, cybernetic processes fit into the larger category of *communications* systems and it is by communication that a channel or inter-connection becomes a relation.



Communication is about the sending of *messages* between entities in which the message is a pattern of changes or differences (*i.e.*, information) transmitted between the entities at either end of the channel. If the entity receiving the transmission is able to decode the message then a communication has occurred and in a certain sense, a measure of *control* has been communicated between them.[lxix] This communication then becomes part of a *cybernetic* process when the receiver of the message responds, sending a message back to the original sender, closing a loop of information between the two entities.

The kinds of relations that operate, allowing a system to maintain its coherence when perturbed are of two general forms, linear-causal (or feedforward) relations and circular-causal (or feedback) relations.

- Feedforward relations in human groups consist in the issuing of a stimulus. These can be acts such as the giving of orders or instructions or the publishing of texts and artworks, in which the effect will be one of influence while little means of responding (as feedback) to the source of the order or published material is available.
- The majority of relations that are fundamental to human systems at all scales are the circular or feedback relations, which consist in the gauging and provision of a proportionate response to a stimulus (*i.e*, providing a considered response), which in human terms may be thought of as the process of conversation.

Feedback modulates the behaviour of the source in ways that are permitted by the construction of that source. When the proportionate information fed back is a function of some sort of *comparison* (*e.g.*, the success of a machine in reaching some goal) and inhibits the system through being subtracted from the input, then the machine or the system is said to reach a basic level of *control*. As Wiener put it:

> "… control of a machine [achieved] on the basis of its actual performance rather than its expected performance is known as feedback".[lxx]

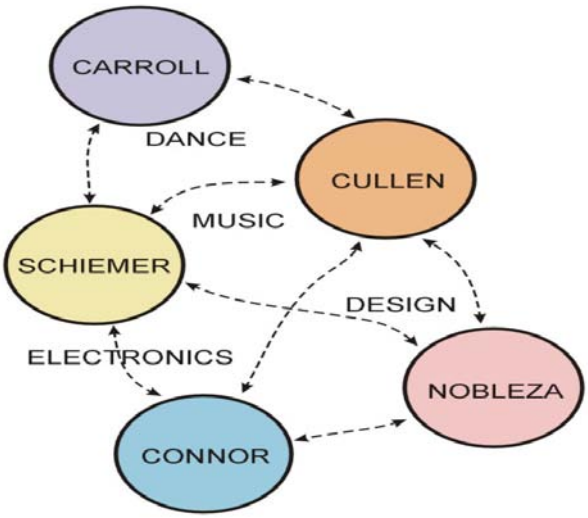
In biological systems, feedback relations allow some proportion of the output of the system to be returned to the system as input (information) that is useful in the maintenance of dynamic homeostasis for example in thermo-regulation, maintenance of pH, osmotic pressure, posture.[lxxi] In social systems, the paradigm process is the conversation, however the feedbacks operating are likely to be far more diverse and complex, and will include a range of negatively and positively valued responses that may well induce a range of behaviours in the system (*i.e.*, amongst the members of the group) running from calming to downright hysterical, though, hopefully, they would be mostly within a more constrained region, and thus, contributing to the capacity of the system to produce the outcome – *e.g.*, by offering suggestions on how to solve problems.

Thus the types and qualities of feedbacks within a system, along with those available to it from its environment, are a prime factor in keeping the intentionality or directedness of the group oriented towards some sort of goal (*e.g.*, such as making an artwork). Also contributing to directedness, and applying primarily to groups of people, is the purposiveness found when a particular goal is held in mind and the system (group, *etc*.) works towards achieving that goal.

2. Deleuze and Guattari's Machinic Phylum

While the use of feedback relations that serve to regulate the behaviour of a system assists us in understanding the structural dynamics of the system, particularly through feedback supported interaction and collaboration, it does not elucidate the process by which collaboration evolves as a problem-solving mechanism. This is a matter of intentionality and the motivational forces (internal to the entities that constitute the system) that drive such intentionality in bringing the system to functioning. In order to reach towards this necessary layer in the interactions that constitute collaboration it will be useful to introduce Deleuze and Guattari's notion of the desiring-machine as a member of their "machinic phylum", and through which they provide us with a view of these motive forces, for which they use the term 'desire', in the cybernetic system.

In their "Balance Sheet Program for Desiring-Machines"[lxxii] they consider our whole social process under the general rubric of "desiring machines", which are members of their "machinic phylum". They invoke a cyclical interaction mechanism that is cybernetic and of diverse function within society. Given that a machine is, in effect, a system of linkages among components, Deleuze and Guattari's machinic phylum becomes operative through relations between people and tools that "become or already are distinct components of a machine", which will be dynamical and in turn a component of the social machine. And these particularised instances of 'machines' are components of higher level machines (*i.e.*, systems of linkages) or machinic "phyla that determine at a given moment which tools, [and] which [people] will enter as machine components in the social system being considered."[lxxiii]



And in a certain way, reinforcing what I have said about the collaborative group functioning as a system, Deleuze and Guattari describe their conception of the machinic phylum not as the tools and machines that we use but as a dynamic network of technologies and people, a social machine that functions at that greater (societal) level. It is an organisation of functional nodes (people, devices and institutions) in a social, collective network wherein the flow of energy and information produces the organisation of the machine (or system) and drives its evolution.

This social machine functions through comm-unication and interaction,

- it is made up of recurrent circuits,
- it acts "through real distinctions in an ensemble" (*i.e.*, through the production of information in the system),
- it utilises "the probability of a less-probable" (*i.e.*, it produces order or new states of lower entropy, which is a definition of organisation).

Thus, in many ways, it represents the linkages between people that make up a society, or the system of people and tools – linked through relations – involved in a collaboration.

The motivational forces that flow through its linkages, thus producing its dynamics, are the forces that Deleuze and Guattari gather under the rubric of "desire".

> "… desiring-machines are indeed the same as technical and social machines, but they are their unconscious, as it were: they manifest and mobilize [desires, intentions] that "correspond" to the conscious or preconscious [interests] of the economy, the politics and the technics of a specific social field."[lxxiv]

The desiring machine is the ensemble of individuals and "fixed" entities (tools and machines) which are themselves the components of a constantly inter-looping process of relations among components driven by our interests and desires and the tools' offerings. The players, the operatives in the machine, are embedded in the machinic phylum as agents of desire. At the same time

> "Desiring-machines are not in our heads, in our imagination, they are *inside the social and technical machines themselves*. Our relationship with machines is not a relationship of invention or of imitation…. It is a relationship of peopling: we populate the social technical machines with desiring-machines, and we have no alternative. We are obliged to say at the same time: social machines are only conglomerates of desiring-machines under molar conditions that are historically determined; … [Desiring-machines] are eminently useful, since they constitute the two directions of the relationship between the machine and man, the *communication* of the two."[lxxv]

Artists could almost be thought of as paradigmatic desiring-machines but for the fact that the desiring-machine exists at the more interactive social, rather than individual, level. As Deleuze and Guattari note: "What defines desiring machines is precisely their capacity for an unlimited number of connections, in every sense and in all directions."[lxxvi] That is, artists (as desiring machines) are or become rhizomatic, proliferating in the world as sequential, coupled interactions having impacts, in varied ways, on themselves and on each other as systems in process with other surrounding systems.

Deleuze and Guattari consider the evolution of the phylum as process, as a continuum – things take time to occur, to connect, and being multiple, things have varying time-states in relation to other components of the phylum, creating an overall context of many things in coupled relations with many other things. The types and qualities of relations in the 'machine' are crucial; they are all and everything. Desire, generosity, multiple idiosyncratic behaviours drive the process, draw things in – building the desiring machine. Components mutate producing a radical break as inventions. New approaches and discoveries energise the phylum. These breaks are step-functions in its processes (in its local and evolutionary time scales) and it shows a punctuated evolution – flow-break-flow. It self-organises as "a collective *full body*, the engineering agency on which the machine installs its connections and effects its ruptures."[lxxvii] Thus the collaborative process can be seen as this "machine" in itself, a system that functions through multi-layered feedback processes operating between the individuals who are the "nodes" in the "network" that is the organisation of the machine. It is the driving force of desire that motivates collaboration and the research and innovation that produces technological developments and launches them into user-space.

3. Maturana and Varela's Autopoiesis

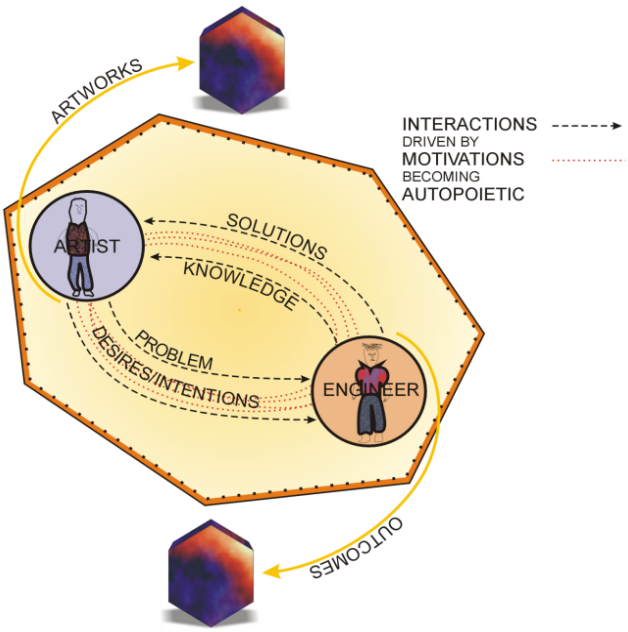
As components within the machine (the system) we are engaged in the process of its construction, something which then feeds back onto our own construction of our selves. Given this, Deleuze and Guattari's framework is a psychoanalysis of the *intentionality* of the components in that whole (*i.e.*, of our intentions), yet they do not adequately articulate the system as a bounded whole process. As a procedure for analysis the concept of the system (machine or network) that can be broken down into subsystems and their relationships for further analysis can be very useful. Yet to draw the process apart into components is ultimately to mislead because it is the one process of these components, tightly-coupled, that is the world and our becoming in it. Thus the subsystems must be re-assembled to gain an adequate understanding of the behaviour of the system as a whole.

A system constituted of a collaboration in process entails layers of interaction and feedback and it is these functionings that are the object of interest here. These cybernetic processes in the interactions within this structurally-coupled system accord it its dynamics and bring forth its evolution. The concept of interaction that I am invoking here, in which the internal processes of the system (artist + technologist + the devices they produce and use) act to produce and reproduce its components, setting up a sustained existence for those components in the face of environmental perturbation, leads one to the concept of Autopoiesis.

The theory of Autopoiesis was originally developed by Chilean biologist Humberto Maturana, and then extended in company with Francisco Varela, in an attempt to understand biological systems from the inside, rather than from the observer's outside view of the system.[lxxviii] As a theory it describes the basis for self-organisation within biological systems and the cybernetic processes of the components of the system in play within it. Although there is considerable debate as to the applicability of autopoiesis to social systems,[lxxix] many of its characteristics assist greatly in understanding the development of the "components" that would be operating in the social environments that produce the types of artefacts that, *e.g.*, make up the art & technology tool set.

Following Maturana; for a system of entities possessing a range of available relations the structure of the environment within which it exists "provides the historical sequence of perturbations"[lxxx] that select the trajectory of states that it goes through. That is, the kinds of processes (recurrent, continual, disruptive, etc) that the environment experiences determine the kinds of changes that the system, within that environment, undergoes. The environment itself may also be perturbed by the changes in the system, which then feed back into the behaviour of the system itself. If the organisation of the components of the system allows it to change structurally "as a result of its interactions"[lxxxi] then it is considered "structurally plastic" and it is "structurally coupled" if it is capable of undergoing "a domain of perturbations that allow it to operate recurrently in its medium without disintegration"[lxxxii] *i.e.*, if the system tends towards ultrastability, in Ashby's sense of being able to accommodate the perturbations through the full range of its possible "behaviours".[lxxxiii]

Thus, (and here's the point) in collaborative art-making two or more autopoietic systems, say an artist and a technologist, each of whom acts as a medium for the other, become mutually structurally-coupled through the history of their reciprocal interactions. Events ("conducts", behaviours) in one system "triggering perturbations" in the other bring the systems into an interlocking of interactions which is indistinguishable from what we call a "consensual domain". As Maturana puts it: a "consensual domain is closed with respect to the interlocking conducts that constitute it, but is open with respect to the organisms or systems that realize it."[lxxxiv] Conversation can be described as an "interlocked, mutually selecting, mutually triggering domain of state trajectories"[lxxxv] as can collaboration, on a larger scale, and I argue that these are both autopoietic.

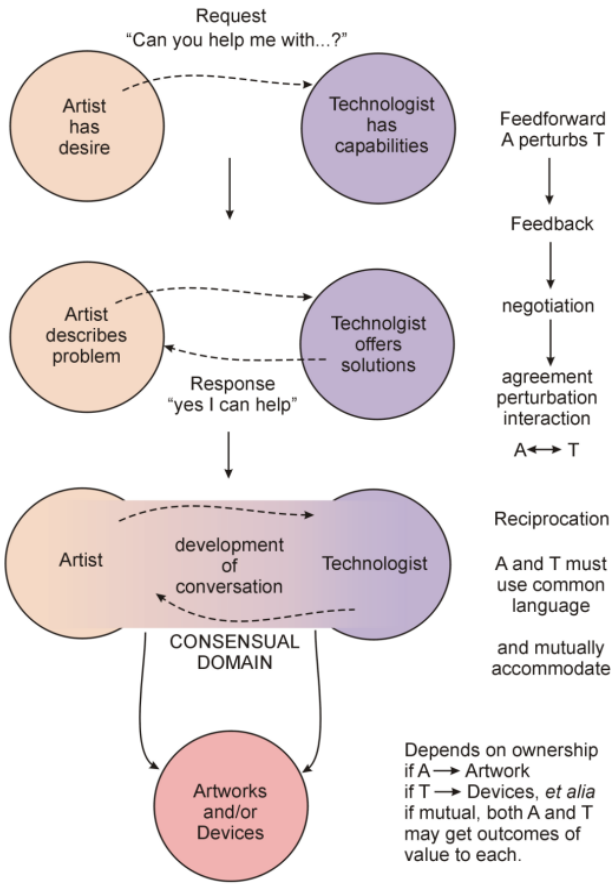


However the "bounded" nature of the consensual domain raises a question: How is it that given the autopoietic status of the entities engaged in a making (a collaboration) that any communication (any exchange of information) can occur? What the perceptual and the conscious aspects of the entity find themselves exposed to, at the heterarchy of functioning boundaries, are differences in their perceptions of the material they are handling despite its being a product of the same process (the "collective full body" or collaboration). These distinctions constitute Derrida's 'differance' and they are Bateson's 'difference that makes a difference' and each of these, in another languaging, is information. Such subjectivity and understanding as becomes available in the process arises through recognitions of these differences and is given meaning through memories, *i.e.*, learned events or experience.

To reiterate: I consider a collaboration to be constituted of several participants who are coupled through their mutual interactions in a consensual domain (a domain of languaging). That is, a collaboration emerges out of the context of interactions (conversations) and desires (intentions) among the components (members) of a system. Each participant in the system may then influence the others through their varying capacities (affordances) for recognition and response, feedforward and feedback and, as Whitaker notes, "this influence is recursively exercised upon the emergent [collaboration] through the participants' ongoing interactions."[lxxxvi] A collaboration maintains and continues its self-regulation through the productions that interactions among the participants of the system generate within it, as a result of the consensually determined potentials,

- *e.g.*, the range of the terminology (or jargon) that is mutually recognised and understood,
- the willingness to subsume personal intentionality to the intentionality of the collaboration,
- the range of available feed-stocks (*e.g.*, cash flow), and
- other qualitative considerations.

The determination of the *consensual domain*, that is the domain within which the feedback loops, or conversation, are operative, provides the boundary conditions (the conditions that determine whether an individual is a participant) through the range of terminological agreements that the members of the system have made. In this sense we can see that for individuals functioning in the vicinity of the system, one is either an insider or an outsider. The insider is the one who is going to have the influence except under extraordinary circumstances and then the system will include the outsider by, itself, adapting to the new terminological domain that they bring with them. Here, in non-art-making situations, is where the artist can have a very strong role, as a disrupter of standardised views and as a generator of new productions, which in turn may produce new demands on the tool use structure of the system.



4. Pedagogy

In a sense, I am proposing a new kind of art theory, not of aesthetic interpretation but of production – of making. It is effectively a theory of the interactions required to produce an artwork under the conditions in which the artists are dealing with new technologies (i.e., new media) and almost necessarily engaging in a collaboration. However, it seems to me that, in an odd sense, especially having said what I have above, that this notion should not be spelt out, *explicitly*, within the actual processes of teaching, lest students become bogged down in the analysis of the relations entailed in their own art-making. Nevertheless, I argue, it needs to be very much at the base of what the teacher knows, so that they can guide and suggest, and understand how to resolve the kinds of struggles that develop in coming up with ideas, metaphors and new 'devices'. I would suggest that as much exposure as possible to the full spectrum of, say, interactive works, should occur, however what one wants to do is to liberate the thinking so that new as yet un-thought-of modes of interaction might appear.

REFERENCES

i Given that this occurs over time we can also say that they are constructing the system as they go.

ii Jones, Stephen (2008) "The Confluence of Computing and Fine Arts at the University of Sydney 1968-1975" in Andreas Broeckmann and Gunalan Nadarajan (eds) *Place Studies in Art, Media, Science and Technology*: Historical Investigation on the Sites and the Migration of Knowledge. VDG-Weimar, Germany.

iii von Bertalanffy, Ludwig, (1952) *Problems of Life: An Evaluation of Modern Biological Thought*, London: Watts & Co.

von Bertalanffy, Ludwig, (1968) *General Systems Theory: Foundations, Development, Applications*. New York: George Braziller.

iv Ascott, Roy (1967) "Behaviourist Art and the Cybernetic Vision," *Cybernetica: Review of the International Association for Cybernetics*, vol.9, no.4, 1966, p.249; and vol.10, no.1, 1967.

v I think that it is not unreasonable to suggest that any new artwork constitutes such a thing.

vi Wiener, Norbert (1950) *The Human Use of Human Beings*, Boston: Houghton Mifflin; London: Eyre and Spottiswoode, p.8.

vii *ibid*, p.12.

viii von Bertalanffy, 1968, *op cit*, p.78.

ix Deleuze, Gilles and Guattari, Félix (1977) "Balance Sheet – Program for Desiring-Machines" in *Semiotext(e) ANTI-OEDIPUS*, vol.II, No.3, 1977.

x Deleuze and Guattari, 1977, *op cit*, pp.118-9, their emphasis.

xi Deleuze and Guattari, 1977, *op cit*, p.132.

xii Deleuze and Guattari, 1977, *op cit*, p.129, their emphasis.

xiii Deleuze and Guattari, 1977, *op cit*, p.121.

xiv Deleuze and Guattari, 1977, *op cit*, p.121, their emphasis.

xv Maturana, Humberto (1975) "The Organization of the Living: A Theory of the Living Organization", *International Journal of Man-Machine Studies*, vol.7, (1975), pp.313-332.

Maturana, H.R. & Varela, F.G. (1980). *Autopoiesis and Cognition*. Dordrecht: Reidel.

xvi See [Whitaker, 1995] for a review, but I shall cover two of the problems in this and the following footnotes. The main problem is that autopoiesis supposes the presence of a boundary or membrane that contains the components and which prevents the exchange of information across that boundary. Biologically, the operational structure of an autopoietic system can only be perturbed by the presence of some material, say some molecule, at its boundary. Anything that happens outside is irrelevant as far as the system is concerned. Maturana has been prepared to consider social systems as autopoietic and has explored the construction of consensual domains and language [Maturana, 1978, pp.47*ff*], whereas Varela argues that the lack of a physical boundary in social systems and consensual domains indicates autonomy but not autopoiesis [Varela, 1979; 1981].

My view of this issue is guided by von Foerster's definition of a boundary "as being the envelope of that region of space which shows the desired increase in order, [von Foerster, 1960, p37] and that this allows us to say that boundaries are not necessarily physically manifest. The same goes for an autopoieses' definition of its space. We are now familiar enough with the concepts of virtual spaces and cyberspace to accept that a social autopoiesis need not be limited to a physically bounded geographical "space" or location. Thus, I consider it not unreasonable to say that within the construction of consensual domains boundaries

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Media Arts: a Multidisciplinary Approach

Experimental screen practice and intermedia forms

ABSTRACT

This paper addresses the symposium' theme of 'media arts in the context of contemporary art education' by presenting an approach to teaching media arts curriculum informed by experimental screen arts. I approach this topic through a personal perspective, exploring the difficulties, opportunities, limitations and possibilities in the teaching area within the traditional art school model. The essay is divided into two parts. The first section raises some questions related to the area of media arts. Taking these points into account, I discuss my teaching approaches in the second section and offer my academic unit in experimental screen as an example for analysis.

KEYWORDS

Experimental screen, film, video, intermedia, practice

I graduated with a Bachelor of Fine Arts from the University of Western Australia before obtaining a scholarship to complete a Masters by research degree. Despite doubts on my parents' part, I managed to find paid employment first as a graphic designer, then multimedia developer, before working in television. As my practice began to suffer at the hands of the unrelenting working hours of 'industry', I was keen to find an academic position that may be more sympathetic to a parallel art practice. There were simply not many new openings in visual arts and having taught architecture and fine arts students in the then expanding area of multimedia, I found myself teaching at university full-time in multimedia design at the then Department of Design, Curtin University of Technology. More recently, my main teaching responsibility shifts to media arts at the School of Art and Design, University of Wollongong.

I suspect my trajectory in professional practice and academia is far from unusual. Many fine arts, visual arts, and arts graduates find themselves traversing a number of fields, and we are used to the idea that we have to continually acquire new knowledge in emerging fields. Recently, when writing a first year introductory lecture to media arts, I was stumped by the question: 'what is media arts?' Rather than searching for the term's etymological origins, I find it more revealing to look at it current and past use. The term, media art(s), is often conflated with a number of related but arguably distinct terms: new media (arts), multimedia (art and design), electronic art, and digital arts. Indeed, some use 'media arts' whilst others

insist on ‘media art’. The interchangeable use of these parallel terms implies a loose definition that is still open for interpretation and transformation. I find the relationship between new media and media art(s) is the most telling.

In general, the term, new media, in the arts context defines a set of art media (plural of art medium) in the form of mediating technologies often situated in stark contrast to traditional art media such as painting and sculpture. Michael Rush defines this set of technologies as ‘inventions outside of the world of art’ and that the result of this ‘technology-based art […] has directed art into areas once dominated by engineers and technicians.’ This seems like a perfectly clear definition, so why is there a need to shift to using the term, media art(s)? The answer lies in the word, ‘new’. It is perhaps the most frequently controversial part of the term. Lisa Gitelman and Geoffrey B. Pingree write in their introduction to *New Media, 1740 – 1915*, ‘All media were once “new media”,’ and they argue that it is more important to ‘consider such emergent media within their historical contexts – to seek the past on its own passed terms.’ I will return to address this point in more detail in the second section of the essay. But for now, let us assume that the term, media art(s), has been adopted for utilitarian and descriptive reasons; it is assumed to include ‘older media’ (or technological media as they inevitably age) with newer, emerging media. However, this change of term engenders its own sets of difficulties.

First, by omitting the word ‘new’ (as defined against old or traditional), the term has lost its specificity. If media is the plural of medium, then in encompassing all works made with technologies as their media, is media art(s) not is the same as contemporary art? Where does this definition leave traditional art forms that also use technological media, for example, printmaking that uses diverse, often highly complex, reproductive technologies? Does the term, media arts, truly provide a useful definition for study or practice? Is there a danger that it is so inclusive that it becomes meaningless? Does this inclusiveness also serve as a kind of colonisation of previously theorised fields such as conceptual art or experimental films? By doing so, does this not remove art works from their originating context and the spirits with which they were made?

Second, the historiography of media art(s) and new media is, to an extent, tautological. Media art(s) history largely relies upon history to define it as a discipline. This scope of this history, however, is set by the keyword, media. The result is a historicist’s linear narrative: stringing together events that would lead to the eventuation of the field. Lev Manovich, for example, presents the parallel development of cinema and computer technologies as the answer to ‘what is new media?’ In his overview on media art, ‘Media -> Art / Art -> Media: Forerunners of media art in the first half of he twentieth century’, Dieter Daniel, explicitly forges links between art, media technologies, and mass media. His history of media art runs parallel to the history of modern art. From tracing the development of the avant-garde and its relationship with contemporary media technologies Daniel concludes that, ‘All modern art is media art.’ In contrast, Michael Rush’s history of new media in art is more speculative. He admits that, ‘[w]hile the use of new media in art does have a history, it is not easily delineated.’ Unlike Daniel’s overview of media art, Rush presents a survey based on ‘a thematic approach’ that brings together art forms for examination. By freeing the art works from a cause-and-effect chronology, his account allows works to be positioned in a constellation that provides an intense focus such as how media technologies are used in art. By establishing a history of media art that is severed from traditional art forms (for instance, a history of media arts that names the advent of photography as its origin), we run the risk of

overlooking the continuity between older and emergent technological forms (of which the relationship between printmaking and photography is a prime example).

Third, the shift to media art(s) puts the emphasis on media and this results a frequent blurring between art media and mass media. The overlap between these two areas of practice is evident. For example, works of Nam June Pak and David Hall do not only critique the role of television in contemporary society, but the media object of the television set is central to these artworks. Other artists such as Stan Douglas deliberately appropriates the language of television in his works and Ant Farm's use of mass media of broadcast television as part of their works presents a critical engagement with media culture. However, from these examples, it is also evident that the most immediate distinction between art media and mass media is their relationships with commerce and industry. The move between the two is not always overt and within this slipperiness can be a subtle migration from the creative and critical use of media technologies to the corporate agenda of the 'creative industry'.

Lastly and perhaps most importantly, there is a principal distinction between the term media *arts* and media *art*. The singular form implies one artistic discipline that specifically deals with the use of media or media technologies, while the plural is assumed to encompass a number of such disciplines. This pluralisation, however, can subtly shift the focus from one of exploration to one of utility. As a singular discipline, media art may remain one of many within the tradition of fine or visual arts; media arts, on the other hand, allude to a whole set of new practises that warrant a field onto itself, one that is distinct from its origins. In the context of tertiary education, this may influence the curriculum, for example, a focus on media production techniques may be preferred over experimentation or theoretical exploration into the media tools. In the context of marketing courses, media arts, an apparently inclusive term, may serve as a better brand name. Pedagogical concerns and cultural politics asides, the important question is whether this subtle addition changes media art from a arena that questions and even subverts the use (s) of media in contemporary society to a tamed discipline concerned solely with career prospects and training for industry.

Pedagogically, media arts courses have largely taken the trajectory that reconciles screen-based practices with computational media, incorporating photography, film, video, computational and networked media. At the School of Art and Design, University of Wollongong, media arts is a major area of study within the Bachelor of Creative Arts degree program. Students undertaking major studies in visual arts or design may choose media arts as their minor streams. Students enrolled in other programs within the Faculty of Creative Arts and the university may also enrol into media arts units (subject to pre-requisite requirement).

Within this context, my approach takes into consideration a number of factors. Media art(s) is taught as an evolving area and draws upon diverse areas including experimental film, performance art, installation, sound art, and new media. Rather than seeking to define the field, I make use of this open-endedness to allow students to explore media technologies as intermedia art forms dictated by their interests and relevance to their own practice. The curricula of my subjects preclude technological determinism and the perceived needs of industry. In practice, these subjects are project-based and informed by history and theory. Students are encouraged to experiment creatively with media technologies as guided by their conceptual explorations.

One key concept I engage with is the (re)examination of technology in its contexts. Returning

to the earlier point raised by Gitelman and Pingree regarding 'new media', the authors' intention to focus on the emergent media of the 18th to early 20th centuries is:

> […] in part, to counter the narrow devotion to the present that is often evident today in "new media" studies, a growing field whose conceptual frameworks and methods of inquiry are heavily influenced by experiences of digital networks and the professional protocols of the social science of communications. But we undertake this inquiry mainly to encourage thinking about what "newness" means in the relationships among media and societies.

Similarly, I introduce both old and existing technologies to students in the contexts of their historical and contemporary relationships with other art forms, other disciplines and general culture. The aim is to allow students the space to explore the technologies' boundaries: their currencies or obsolesce, to seek possibilities from both the past and the future for their use, re-use, and deliberate misuse. The focus on older technologies is an important aspect. The rationale is not based the search for origins, rather it serves to provide a connective way to think about current media technologies and paradigm. In the exhibition catalogue, *Devices of Wonder*, Barbara Maria Stafford argues that the value of re-examining optical technologies of the past lies in their relation to the present. She writes:

> The question of how to coordinate vanished with emergent optical technologies returns us to the cooperative creation of meaning typical of early modern interdisciplinarity […] Plucking things out of their customary family contexts and inserting them into a space of invention does not represent a "clean break" with an organic method of filiation. On the contrary, it extends to each of us the creative opportunity for inventing further relations of our own.

The subject Media Arts 201 focuses on experimental methods using the screen as an intermedia form through exploration with 16mm film technologies, digital video, frame-by-frame analogue animation, digital non-linear editing, projection, installation and performance. It is a second year core subject for students majoring and minoring in the media arts stream. It is also offered as an elective to Faculty of Creative Arts students who have completed their first year of study. The class is composed of students from a broad range of study areas including, visual arts, media arts, graphic design, music and sound composition, performance, journalism, and creative writing. While curriculum is similar to a traditional experimental film and video unit in parts, the focus is on relating screen history to practice in the development of a contemporary interdisciplinary approach.

The history component runs parallel to three assessment tasks: a research essay, a 16mm film project, and a major project that responds to an existing artwork. The lecture series is not strictly chronological; rather thematic threads provide the structure for the content. Students are introduced to both historical and contemporary experimental time-based media and screen practice. Beginning with the modernist avant-garde, the lectures explores abstract films through looking at the works such as Hans Ritcher's and Viking Eggling's motion paintings, May Ray's experiments light in his early films, and the notion of visual music in the works of

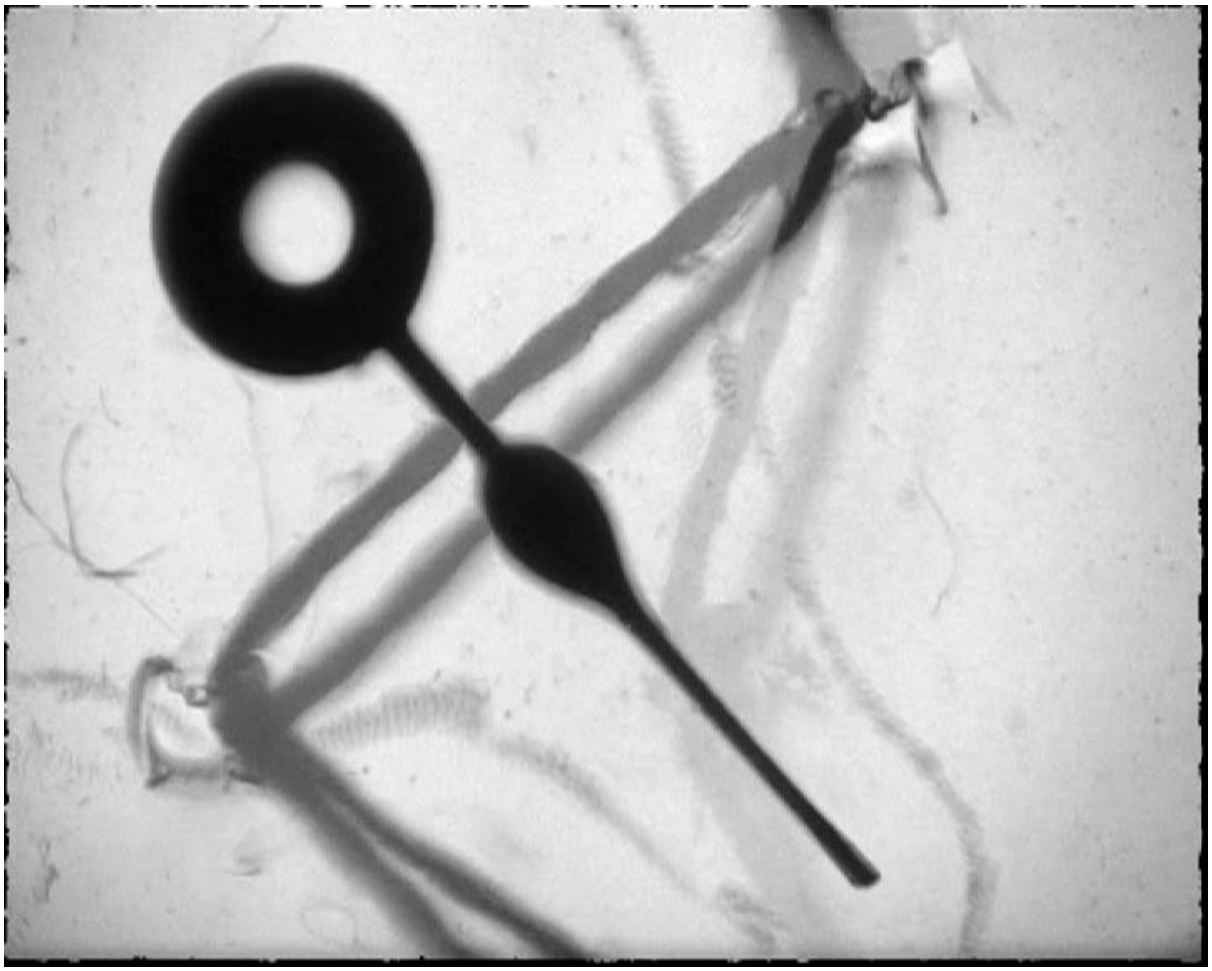
Oskar Fischinger, Len Lye, Harry Smith and so on. Film as a medium then is broken down for evaluation, focusing on the film frame in works such as Tony Conrad's *Flicker* (1965) and Peter Kubelka's *Arnulf Rainer* (1960). The tension between the abstract image and the photographic image is also explored through looking at the films of Bill Morrison. Temporal structure of film is approached through montage theory but taken further by analysing found footage films such as the works of Craig Baldwin and Martin Arnold. Surrealist cinema is discussed through historically significant works such as Luis Brunel and Salvador Dali's *Un Chien Andalou* (1929) in conjunction with more contemporary interpretation such as Jan Svankmajer's animated works and the Brothers Quay's films. The post-war American avant-garde is introduced through the figures of Stan Brakhage, Kenneth Anger, and Maya Deren. This is followed by a brief look at Fluxfilms and Andy Warhol's underground films as examples of film as conceptual exploratory medium. Structural films of North American filmmakers, Michael Snow and Hollis Frampton, are discussed with British structuralist materialist works. Expanded cinema, with Malcolm Le Grice's performance works and Anthony McCall's *Light Describing a Cone* (1973), in particular, sets the scene for discussing contemporary video works and video installations. The materialistic exploration of video practice in the early works of Bill Viola, Gary Hill, Bruce Nauman, and Brian Eno, are contrasted with later works that use video as a platform for conceptual development. Works of Gillian Wearing, Sam Taylor Wood, and Doug Aitken, for example, provide points to discuss video (and film) as an intermedia platform for exploring ideas as well as the relationship with other art media (in these cases, photography, painting and architecture). The conclusion of the lecture series looks at experimental screen works in the areas of dance, performance and music. The idea of interactivity is also explored in expansive works such as Peter Greenaway's *Tulse Luper Suitcase* project.

A strong thread that runs through the program is the questioning of medium specificity. This is carried out in practice as students encounter different technological forms and explore their specific characteristics. This is done through an exploration of 16mm film, physically as well as conceptually. This old technology, is new to many students, and connecting the physical characteristics of celluloid with their tiny static images to the ephemeral time-based experience is generally an exciting discovery. The students' experimentation is also informed by historical materials on abstract films, found-footage works, and structural and materialist projects. The subject, however, fundamentally challenges medium specificity by encouraging the students to push beyond the boundaries they identify. The hand-made films are transferred and edited digitally, allowing the students to 'sculpt' the film temporally. As the students begin their major projects, they are also guided to connect the media of film and video to other art forms.

To conclude, I present four students works to illustrate this learning process. Howard Taylor, a music student, responds to the 16mm hand-made film project by creating a piece of visual music. He first writes a mathematical score then performs this rhythm by scratching pre-determined symbols onto the black leader for the equivalent numbers of frames. The result is a piece of silent music. Brodie McAulay connects the processes of sewing with that of film projection (figure 1). Her handmade film in part explores the light and darkness of everyday minute objects as May Ray had done in *La Raison á la Retour* (1923). She extends this experiment in a spatial form. Using an obsolete microfilm/ filmstrip viewer to project sewn 35mm film onto a crocheted screen, Brodie further explores the shadow play of the projected image. Her work echoes Annabel Nicholson's film performance, *Reeltime* (1973), bringing together the rotary motion of the sewing machine and the film projector. Inspired by Anthony

McCall's *Light Describing a Cone* (1973), Jesse Whitemore investigates moving image projection onto a fluid medium. Selecting dry ice as the medium, he sets up a video installation where the animated creatures bubble out of the primordial soup and evolve into intelligent beings only to end up destroying themselves and returning once again to the serene sea creatures at the beginning (figure 2). Murray Clapham, a performance student, responded to the choreography works of Maya Deren by creating a twin screen dance film within the industrial settings of Wollongong at night (figure 3). The movement of the dancer is juxtaposed with the movement of the camera each poetically exploring their spatial surrounds. Working through from analogue to digital technologies, students learn about different conceptual and practical processes and experiment with media as an art form. As Michael Rush writes in *Video Art*:

> Artists used language, photography, film, video, slides, and performances to express their ideas. The forms may have shifted, but this attitude prevails today: materials are at the disposal of the artist. It is not the artist's job to conquer paint, or metal, or marble. The interdisciplinary nature of art work, particularly the incorporation of photography, performance and dance into the visual arts, heightened artists' awareness of time, so that time actually becomes a medium, especially in the form of video.



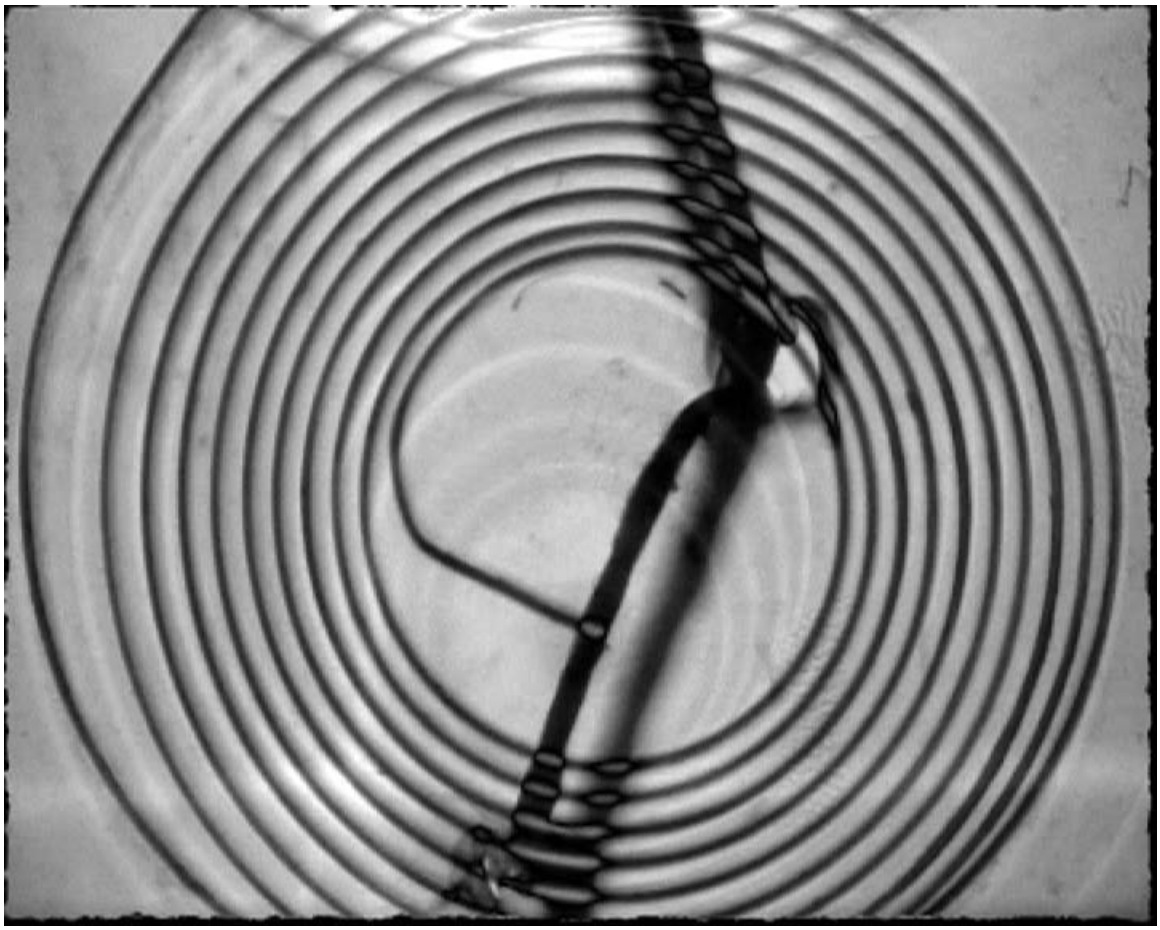


Figure 1: Brodie McAulay (2009)

Figure 2: Jesse Whitemore (2009)
Photos by Vanessa Collars

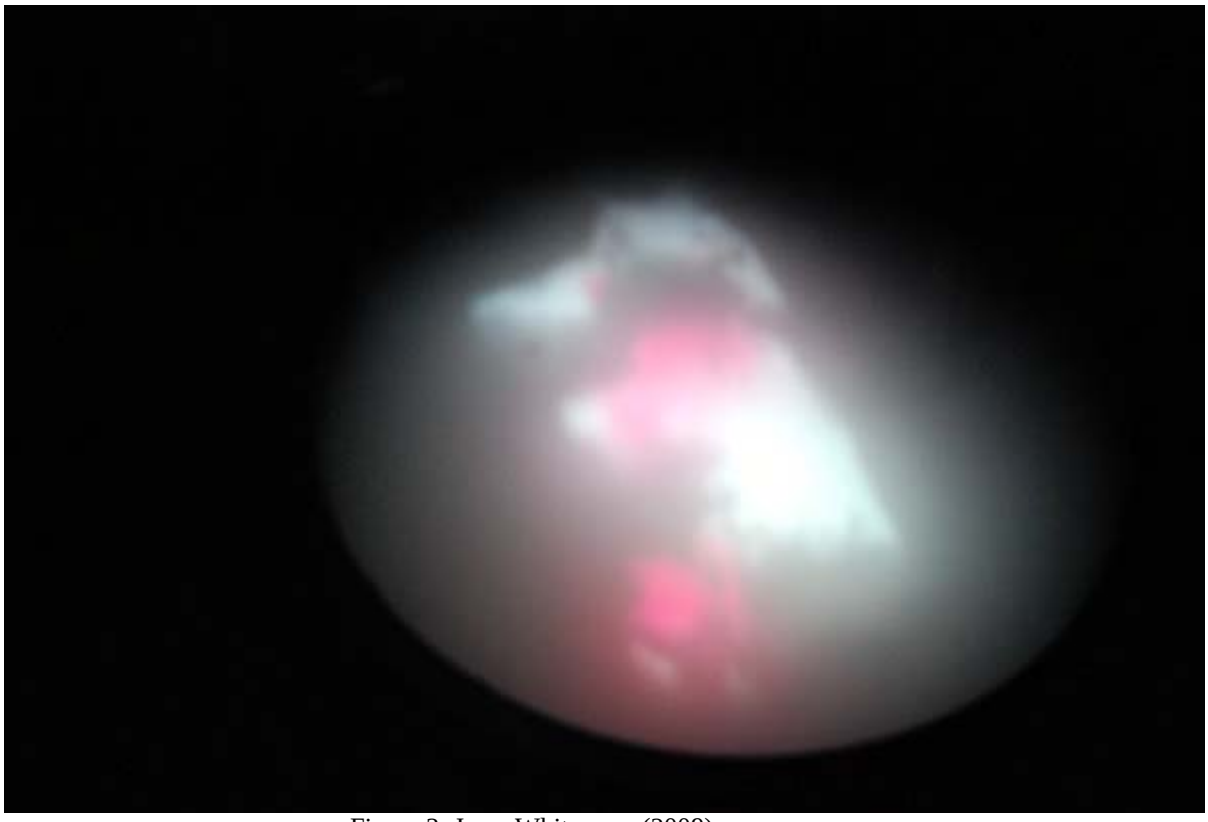


Figure 2: Jesse Whitemore (2009)
Photos by Vanessa Collars

Figure 3: Murray Clapham (2009)
Photo by Vanessa Collars

The University of Wollongong offers ‘media arts’ as an area of major studies within the Bachelor of Creative Arts. RMIT offers a Bachelor of Fine Arts (Media Arts). University of Melbourne offers a study program in Media Arts. This symposium, however, is titled Media Art Scoping Study. The website, Medien Nunst Netz HYPERLINK "http://www.medienkunstnetz.de" http://www.medienkunstnetz.de), uses the translation, media art. For the purpose of this paper, I do not make the distinction unless explicitly stated.

Michael Rush, *New Media in Art*, London: Thames and Hudson, 2003, p. 8.

Lisa Gitelman and Geoffrey B. Pingree, *New Media, 1740 – 1915*, (Cambridge . MA: MIT Press, 2003), 5.

Lev Manovich, *The Language of New Media*, (Cambridge, MA: MIT Press, 2001).

Daniel Dieter, ‘Media -> Art / Art -> Media: Forerunners of media art in the first half of he twentieth century, Medien Kunst Netz. HYPERLINK "http://www.medienkunstnetz.de" http://www.medienkunstnetz.de

It should be noted that the German term, medien kunst, differs in usage and definition of the direct English translation of media art.

Rush, 9.

Gitelman and Pingree, 5 – 6.

Barbara Maria Stafford and Frances Terpak, *Devices of Wonder*, (Los Angeles: Getty Research Institute, 2001), 5 – 6.

Michael Rush, *Video Art*, (London: Thames and Hudson, 2001), 61.

Gaye Swinn: RMIT University Jennifer Lade: RMIT University

Teaching the Mirror-makers: Designing Education for Games Designers.

Our concern, in designing the three programs that constitute RMIT's games offering was to accommodate the needs of an infant but rapidly expanding industry while looking towards a future in which China was likely to play a significant role and one that would have an adverse effect upon the Australian games industry as it was then constituted. At the time of the opening of the programs, for example, the Australian industry was much favoured as an American production site because of the high education standards, good general skills base and language compatibility. However, at that year's games expo conference the keynote speaker warned that for every Australian working on American games titles in Australia the American industry could afford ten highly educated Chinese to design, make and translate – once the Chinese industry had caught up. This was the business background against which the programs were being launched.

In addition, it was clear that while the market for games was growing very fast the demographic seemed to be unchanged or to undergo very marginal change, year on year. Research into the cause of the standstill was scant but it seemed self-evident that there was too little local industry-support for new ideas, possibly far too few genuinely new ideas circulating and, quite clearly, a complete lack of interest in what appeals to girls. In purely business terms, this last cause was astonishing given the size of the potential market.

There were three significant and fundamental drivers to the design of the programs. Firstly, optimising their appeal to women in part response to the manifestly narrow perspectives evident in the output at that time. Secondly, ensuring that we created those specialists that the industry identified a need for. Thirdly, generating graduates who would ensure, by virtue of their conceptual strengths, that the local industry did not succumb to the fate that seemed to be awaiting it, described earlier.

Three specialist areas that RMIT had expertise in, were identified, namely, art, design and programming. Collaboration between RMIT schools ensured that we could cover the three bases well. It should be noted that other specialist areas such as sound design and Physics were outside of our remit at that time but would potentially represent interesting specialities to Melbourne academia's offerings to the industry.

Staff of the School of Computer Science and IT were assigned the task of proposing and designing content for the Games Graphics Programming program while staff of the School of Creative Media dealt with the programs in Digital Art and Games Graphics Design. A common core between the three programs was agreed and was built around the idea of studio practice and the kind of real-world collaboration that would ensure that all parties could speak the language of each specialism.

Attracting women students in equal numbers to men was a significant challenge but one which we felt would mean – if we were successful – that the female voice would not be drowned-out in the generation of ideas. The creation of virtual worlds requires a degree of understanding of scientific, mathematical and mechanical principles, however, disciplines traditionally poorly taught to women. Consequently the course Maths and Physics for Artists was written to provide real world context for otherwise difficult abstractions.

The Digital Art program enabled a degree of expansion from the games focus to encompass emerging requirements such as Digital Curating and Digital Lighting Techniques. We felt strongly that we must avoid a circumstance in which the focus of the programs was too narrow, the production of industry cannon-fodder was not our aim but rather the production of cultured and creative talents that would ensure that mere technical skills were not all that the local industry could offer to the world.

On that basis we also designed-in Art History, Narrative and Communication and Cultural Studies, the generation and development of creative ideas being the highest and most significant goal of the enterprise and some insight into the cultural masterworks of human civilization being the means to convey the point. The very fact of the Digital Art program offered, however, an additional and we felt, significant, benefit that RMIT might build upon – namely the elevation of a struggling infant discipline (Digital Art) to a position of respect.

Two important issues are at play in the issue of Digital Art; on the one hand many people see the creation of digital art as a contradiction in terms because they believe that all or most of the essential "creativity" is supplied by the computer. Many traditional artists who are entirely familiar with public misunderstanding of the difficulty of what they do, nevertheless, fall into this category. At the other extreme are those who claim as art examples of technical play for its own sake – some artists also fall into this category.

It seemed clear to us that a better understanding of the nature of Digital Art was long overdue, a recognition of the extensive craftsmanship necessary to generate digital works and a respect for the emerging community of talented artists who had chosen to work largely in the digital realm. It was an alarming fact, however, that in the early recruitment period prospective students would attend interview willing to argue that they do not need to have any expertise in or knowledge of art, per se, because Digital Art is all about getting other people's works and mashing them up until they look something like art. The attitude has not gone away it has just gone underground.

The social and ethical dilemmas encircling the development and delivery of the games programs are a few of innumerable examples of the challenges that come with the digital and wired age. It is clear, for example, that games production continues to be dominated to some degree by a narrow mindset that tends to exclude otherness, emotional engagement or intellectual, artistic or existential depth. While there are increasing numbers of quite exemplary exceptions, generally games are characterised as juvenile, superficial and boyzone but we felt strongly that games were too important a new communication vehicle for us to ignore the challenge that educating for their future creation posed.

In an interview in Gamasutra in 2006, Chris Crawford, author of 'The Art of Computer Game Design' (1982) asked the following:

“Has anybody noticed that we don't appeal to the general public? Has anybody thought that perhaps it might not be a good thing? In fact, the industry has talked about reaching out to a broader audience for decades, but the industry is not willing to do anything about it. As long as you keep recycling the same product you're going to have the same markets.” [lxxxvii]

Crawford goes on to compare the games industry with Hollywood where there is considerable investment in new ideas, a feature distinctly lacking in the games industry broadly, where the recycling of ideas is the norm.

During the consultation phase of the program development a number of industry advisors were at considerable pains to make it clear that they were not looking to be told by new graduates, how to run their business. The underlying fear expressed by first generation of games entrepreneurs seemed, indeed, to be a fear of new ideas themselves at a time when the Australian industry seemed not to have the business clout to drive the creation of new ideas and had already accepted its status as cheap producer of American ideas, quietly.

Such issues are inevitably the stuff of discussion between industry professionals and an institute which prides itself on producing work-ready graduates but can result in setting up alumni for employment struggle in an industry that isn’t necessarily moving forward. Trying to ensure that our graduates’ qualifications did not trap them in a zone of diminishing employment was a top priority in the design of the curriculum, therefore, and was the thought behind keeping the word Games out of the title of at least one of the three programs – Digital Art. The naming of Digital Art has, of course, brought other problems largely revolving around intra-institute naming “rights”.

The process of design of the programs was informed by a philosophy that goes beyond employment readiness and business health, however, and is exemplified by Hannah Arendt’s argument that what we make, makes us.

“… things that owe their existence exclusively to men nevertheless constantly condition their human makers. – This is why men, no matter what they do are always conditioned beings. Whatever enters the human world of its own accord or is drawn into it by human effort becomes part of the human condition. – The objectivity of the world – its object or thing-character – and the human condition supplement each other; because human existence is conditioned existence…” [lxxxviii]

Arendt does not concern herself with concepts of “good art” or “bad art”, nor was she a social scientist concerned about the effects on the minds of children of too much fantasy or too much television. Her driving hypothesis was that we should simply be mindful of what we do. For Arendt the world of action is paramount and being present and mindful in it – essential. The world of labour and the world of making are both contingent worlds, she argues, and only in the realm of action do we find freedom. Man the Maker, “must build the world of human artifice” in which action can take place - and the world which that maker makes will affect the maker and affect us all and our ability to act, virtuality notwithstanding.

It is not accident, for example, that the American army uses war games to foster a sense of invincibility and battle-readiness in its troops or that some find motive in the virtual world of social sites for murder in the actual world of the jilted lover. The games and the virtual worlds we create are both mirrors of our actual world and windows into both the dystopian and utopian mindsets of Homo Faber. If we accept that the virtual world is a mirror of the

actual world then it follows that we must be actively and mindfully engaged in its making and must not leave it to the few, if our freedom of action in the mirror world is not to be proscribed by what has been made for us.

We do not operate in a world free of vested interests of course and the three programs have come under attack from a number of quarters – not least the state Education minister at the time of their launch. The initial development of new degrees in established universities involves a great deal of creative conceptual thinking, future projection and political clout to get them up and running. But once the new student body arrives a different set of challenges emerge and in the establishment of genuine cross-disciplinary collaboration a great deal of hard work and getting-to-know-you is involved.

Fears within the institution that new programs, especially if they are perceived to be "cool", may impact on student applications to established programs or compete for scarce resources or undermine the general status quo can lead to a degree of internal hostility. We found to be completely lacking, any institutional recognition that there will always be those who hope for or even actively pursue an early demise of the infant upstarts. From the point of view of the institution once the programs are launched and physical facilities provided, they are expected to be immediately successful and requiring of no further support. In particular, the idea that they should need further development and refining seems to be too great a leap to be politically expedient.

Inevitably perhaps, contributions towards the common endeavour of teaching games programs is unevenly provided by the allied forces. As a result of our experience in creating and running RMIT's Games programs we have come to think but cannot prove that there exists a belief that creativity is innate, is easily accessed therefore or that it is provided by the computer or that it has little value or, at best, provides mere decorative icing on the important substance of the cake itself. In many respects these attitudes simply reflect a general belief in the greater importance of the sciences in Western culture. It is an attitude that helps to explain why games making and games playing continue to be dominated by those who have a vested interest in their own background education in the sciences rather than the arts and, even more importantly – rather than the humanities.

In addition, different schools within Universities have different administrative protocols and intellectual approaches to teaching and research that can seem unbridgeable at times. Trust and good will take time to develop and during that time new programs are vulnerable to threat from within the institution.

More optimistically, during these first five years of the life of the suite of programs there has clearly been a deepening of commitment within the evolving student body to a career that is seen as being somewhat less edgy than it was. Anecdotally the cause is the increasingly mainstream position of the industry worldwide and general community acceptance of games as a legitimate form of entertainment and communication. Increasingly the intake now includes a significant number of art school graduates and the occasional specialist (recently a forensic archaeologist for example) who see the games industry as an ideal career in which to develop their speciality.

From discussions with the student cohort it is clear that the programs are popular in part because they provide a cross-disciplinary and collaborative environment. The collaboration is sociable and extremely valuable in the sharing of skills and improving the gender balance between the art and design requirements of games design and the programming and computer science elements. Collaborations sometimes extend well beyond the studio of course.

Recently industry representatives[lxxxix] involved in assessment panels have acknowledged the value to the industry of future employees who are developing those skills in effective communication, collegial co-operation and the cross-disciplinary collaboration that are required for the making of games and the success of the industry itself.

The last five years have seen rapid diversification in the industry which now encompasses mobile networks, changing forms of game play such as the Wii, casual online games, massive multiplayer games and the pervasiveness of social networks that have moved game play from the desktop out into the open. Such industry changes along with greater general computer literacy and familiarity with software have intensified the emphasis on the generation of new and original ideas. Technical skills are vital for the realisation of concepts, but concentration on technical expertise alone, diminishes employment opportunity both locally and internationally. Current practical protocols for developing and extending creative conceptual thinking in the Games area have focused on developing good studio practice, in both the actual and virtual environments.[xc]

In terms of concepts we have noted that the engagement with and interest in narrative amongst Games students is strong, though regretfully the fantasy genre continues to be too well supported. There are, of course, both positive and negative aspects to this fascination with fantasy.[xci] On the one hand engagement with 'magical powers' can be very entertaining, can relieve tensions and make the player feel happy and relaxed. But, on the other hand, the problem with fairies and their ilk is that they provide an instant "magical" solution that tends towards the shoot first - work it out later scenario, or the entirely unsatisfactory 'and then I woke up' solution. As one student recently put it, 'how ripped off would you feel if seven volumes of Harry Potter were to end with…and then I woke up.' It is clear to those who teach in the programs that students must be fully engaged in their virtual worlds and that those worlds must encompass a full range of cultural expression if there is to be a sustained creative output of equally engaging material.

Based upon these principles we have developed studio practice in the area of character development by building characters and environments with actual materials. This engagement with actual materials and tangible problem-solving has translated positively into work in virtual environments. Interestingly, this recent actual studio output has engaged School of Creative Media and School of Computer Science staff and students in much positive interaction. It seems that it is the very tangibility (ie. the actuality rather than the virtuality) of the outcomes that has so facilitated social interaction and the exchange and development of ideas. Quite what this unexpected result says about games makers and possibly also games players in terms of a perceived need to have a life in the actual is not yet clear. Watch this space

Matthew Perkins: Monash University, Faculty of Art & Design

Increasing Scholarship of Australian Video and Performance Art through Internet-Based Databases.

ABSTRACT

Video and performance art are highly visible in contemporary art and artists, curators, students and academics at all educational levels are responding to this trend through their own work. The difficulty in Australia is that there is very little access to historic and contemporary Australian video and performance art so students and academics find themselves looking overseas for inspiration.
The Australian Video Art Archive (AVAA) was founded in 2006. The aim of the archive is to provide an on-line educational hub which showcases new and historical Australian video and performance art works in the form of a database. These works can be viewed on-line or rented for educational, research and exhibition purposes. The lack of knowledge of Australian video and performance art is predominantly due to the scarcity and fragility of documentation but we have found that this documentation can be collected, archived and disseminated.
This paper will give a brief overview of the difficulties involved in constructing an archive on Australian video and performance art and what role such an archive can play in increasing scholarly reflections on this history. I will present the AVAA as a case study.
[http://www.videoartchive.org.au/]

KEYWORDS

Australian video art, Australian performance art, archive

INTRODUCTION

How does information become transformed into knowledge, and knowledge into wisdom?
(Yosef Hayim Yerushalmi 1994[xcii])

Video and performance art are highly visible in contemporary art and students, academics, artists and curators, at all educational and professional levels are responding to this trend through their own work. The difficulty in Australia is that there is very little access to historic and contemporary Australian video and performance art so these groups find themselves looking overseas for inspiration. In response the Australian Video Art Archive (AVAA) was founded in 2006. The objective of the AVAA is to preserve works in a digitial form and to provide an on-line research and educational hub in the form of a database which showcases new and historical Australian video and performance art works.

The urgency in archiving art works on video has reached fever pitch over the past few years with a number of exemplary international organizations dedicated to the challenge. A standard practice for archiving media art works in the digital age is beginning to surface through this proliferation of information and the related debate.

The lack of knowledge of Australian video and performance art is predominantly due to the scarcity and fragility of documentation. “Video and digital art is at serious risk of being lost to future generations due to the instability and variability of its formats. There are many impediments to the documentation, access, and preservation of media art, not least of which is its often ephemeral nature, and the traces it may or may not leave for posterity”.[xciii] At the AVAA we have found that this documentation can be collected, archived and disseminated. Developing such archives and on-line databases would seem paramount in increasing scholarly research on the Australian visual arts especially in areas where the work is in jepordy of being lost forever.

This paper will give a brief overview of the difficulties involved in constructing an archive on Australian video art and what role such an archive can play in increasing scholarly reflections on this history. I will present the AVAA as a case study.

The Beginning of Things

Jacques Derrida explored the origins of the word ‘archive’ in his paper *Archive Fever*. In the opening passage Derrida “presented his audience with the image of the *arkhe*, as a place where things begin, where power originates, its workings inextricably bound up with the authority of beginnings”.[xciv] He describes the archive “as part of the desire to find, or locate, or to possess that moment, as a way of possessing the beginning of things”.[xcv] So while the archive can be seen as an institution that investigates technical processes of preservation and systems of storage and retrieval a key motivation is to allow for the illumination of the ‘beginning of things’ and how this knowledge may affect our translation of events and objects that occurred after and indeed before those archived artifacts were created.

In the context of video art in Australia illuminating these beginnings is not without its problems. Daniel Palmer points out that “Australia does not seem to have an equivalent to international video art’s myth of origin – Nam June Paik’s early experimentation with a Sony Portapak in New York in 1965”.[xcvi] Documenting this history has been somewhat neglected. Having said this there have been a number of important articles that summarise the early stages of video art in Australia such as Bernice Murphy’s, ‘Towards a history of Australian Video’, in *The First Australian Video Festival Catalogue* in 1986, and Stephen Jones’, ‘Some notes on the early history of the independent video scene’ in the same publication.

More recently Daniel Palmer’s 2004 article, ‘Medium without a Memory: Australian video art’,[xcvii] Jacqueline Millner’s 2007 article ‘Home Video: Australian pioneers and their contemporary legacy’[xcviii], and John Conomos’s 2007 chapter ‘Framing Australian Video Art’ in *Mutant Media: Essays on Cinema, Video Art and New Media* all contribute to the dialog about the early stages of video art in Australia and the problems associated with the lack of record and procedures in place to organize this history. John Conomos states “anyone who has engaged in writing a history of Australian video art will recognize (a) the scant nature of existing relevant historical documents, manifestos, catalogues, etc. (b) the lack of proper archival treatment of such documents and (c) the sheer ephemeral nature of such documents.[xcix]

How the medium of video was taken up by artists in the 1960s and 1970s further complicates the process of finding the beginnings – where to begin? “Video art emerged when the boundaries separating traditional art practices like sculpture, painting and dance were

becoming blurred".[c] Johannes Birringer calls this an "ethos of borderness … its continual crossing of all kinds of cultural and political boundaries".[ci] He continues "the genealogy of the medium, including early experiments with the conceptual, formal image transmission and the closed-circuit feedback loop, can only be understood, however, if we recognise that the language, form, and function of video did not emerge independently from other object - or process - oriented art forms [such as] visual art, film, dance, theatre and performance art."[cii]

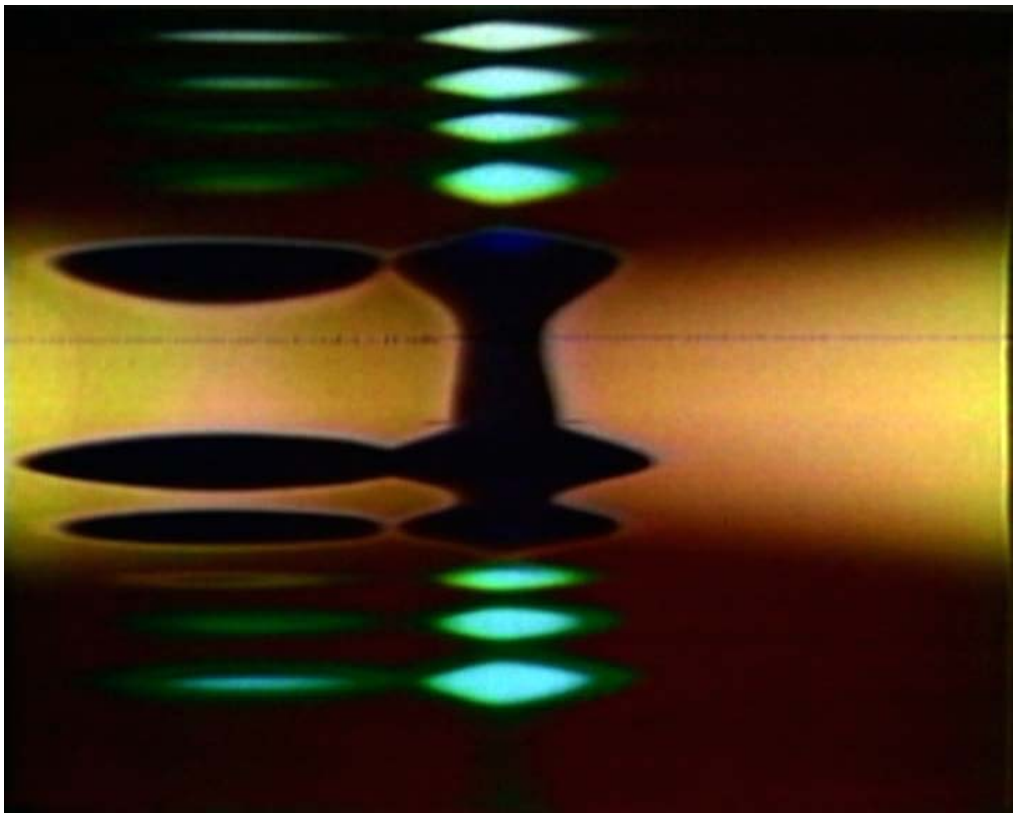


Figure 1: Warren Burt, *5 Moods*, 1979. Copyright: the artists and AVAA.

A brief overview of approaches to the medium of video in Australia in the late 1960s and 1970s reveals the diverse approaches to the medium. From artists interested in the synthetic potential of the video image such as Stan Ostoja-Kotkowski, Mick Glasheen and Warren Burt (see fig 1), to artists interested in documenting performances such as Mike Parr, Stelarc, Jill Scott and Gary Willis. From artist interested in television as a mass communications icon such as Tim Burns to artists interested in the idea of site such as Bonita Ely (see fig 2). And finally artists working as collectives or collaboratively to comment on social or political observations such as Bush Video, Judi Stack & Bob Weis and Peter Kennedy, John Hughes & Andrew Scollo.[ciii] Where to begin indeed? Is a photograph or film taken off a monitor to be considered? What part do the films of artists such as Arthur and Corinne Cantrill play in this history? These practices are important to the evolution of both the electronic and moving image in Australia as elsewhere but these questions do highlight the conundrum for archives and collections. Where to begin and end? What are the criteria for inclusion?

Figure 2: Bonita Ely, *Sunset Video*, 1975. Copyright: the artists and AVAA.

With the dramatic increase in post graduate studies in Australia over the past 10 years it would be interesting to gauge the quantity of commentary made on historic Australian video and performance art in theses over this time. It is my experience as an educator that while international artists receive a great deal of attention, on the whole Australian students are unaware of their own rich and diverse cultural heritage in relation to video and performance art and that there exists very few resources for them to counter this gap. International archives and on-line databases are already being used to this end however it is fundamental that academics, artists and curators have access to their own cultural heritage.

Over the last decade as we witness museums moving their collections on-line and academies scanning their slide collections the shift of studies in visual culture to the virtual terrain signals a change in how we experience and study art. “Just as the utilisation of movable type and the printing press opened the possibilities of scholarship to a vast audience, so the utilisation of the new technologies has the potential for opening the treasures held in the research libraries, [museums and archives] to us and to our students”.[civ] But this is a slow process that requires the producers of such databases to navigate technical, economic and legal issues such as copyright.

There are a number of international archives that focus on the history of video art but there is little Australian content. Notable is the Video Data Bank and Electronic Arts Intermix, both hosted in the USA. These databases include new and historical works and have a strategy of exhibiting, collecting and preserving. In Germany Media Art Net is one the most comprehensive with essays that cover a variety of perspectives of the history of media art alongside stills and video of much of the artwork. There are also a number of websites dedicated to establishing methodologies for archiving video and media art - among them Netherlands Media Art Institute and Variable Media Network which is hosted by the Guggenheim Museum in New York.

Case Study: Australian Video Art Archive (AVAA)

Aim 1: The AVAA will continue building an on-line video archive and a research collection of new and historical Australian video and performance art works.

The Australian Video Art Archive is still in its infinacy. The on-line database currently features around 70 artworks by 32 artists including Warren Burt, Bonita Ely, Kevin Mortensen, Jill Orr, Jill Scott, Peter Callas, Troy Innocent, Sue Dodd, Guy Benfield, Ross Harley, John Gillies, and Gary Willis. We have also discovered many more works in gallery archives and are now negotiating the addition of these works to the Archive's collection.

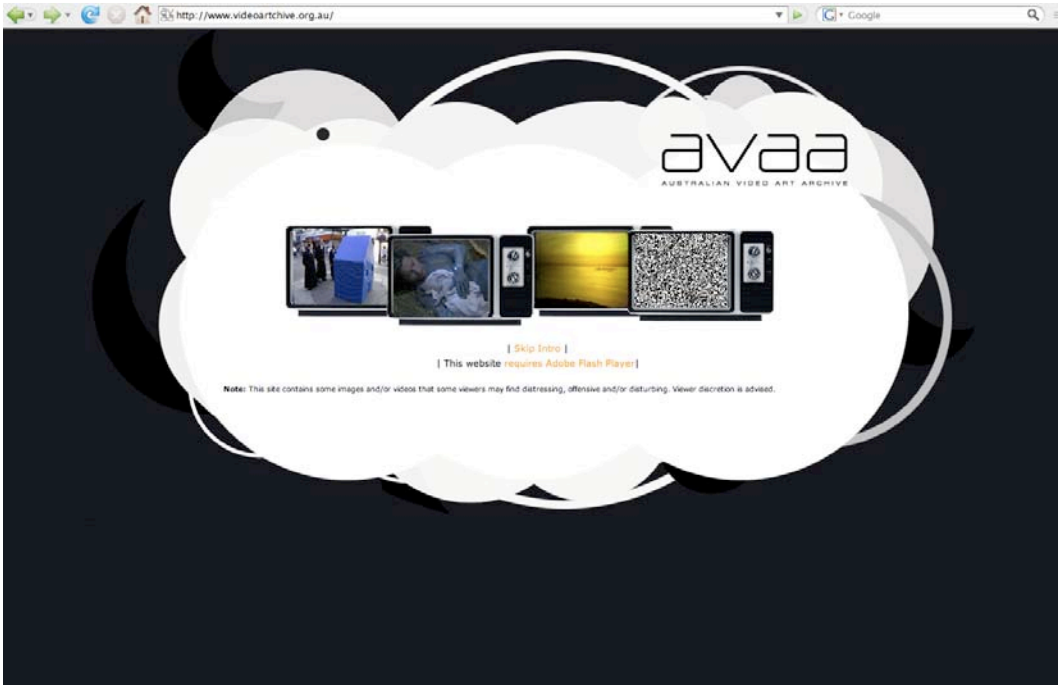


Figure 3: Sreenshot from AVAA website. Copyright: the artists and AVAA.

Judit Bodor in her article 'Archives in motion' (2005) asks "how can we document increasingly complex and often ephemeral art practices 'objectively' enough to provide a reliable sense of these practices and works in the future?"[cv] The Netherlands Media Art Institute reinforces this perspective in stating that "a responsible approach to documentation, presentation and preservation also requires gaining an insight into the artist's intention and the significance of the technology used for a particular work".[cvi] There is a need to provide the work itself so that it can communicate its content but it is also important to provide the appropriate context. To this end the AVAA include an artist's statement, a synopsis relating to individual works, a curriculum vitae and a bibliography – provided by the artist. We are also considering the inclusion of other metadata such as photographs, drawings and notes. We have also undertaken a pilot program in which we have produced video documentaries, interviewing a number of artists (Troy Innocent, David Rosetzky, Lyndal Jones and Peter Callas to date) and theorists and will release these through the Archive's website. These resources will assist in contextualizing the work in the cultural, social and political moment of the works initial realisation.

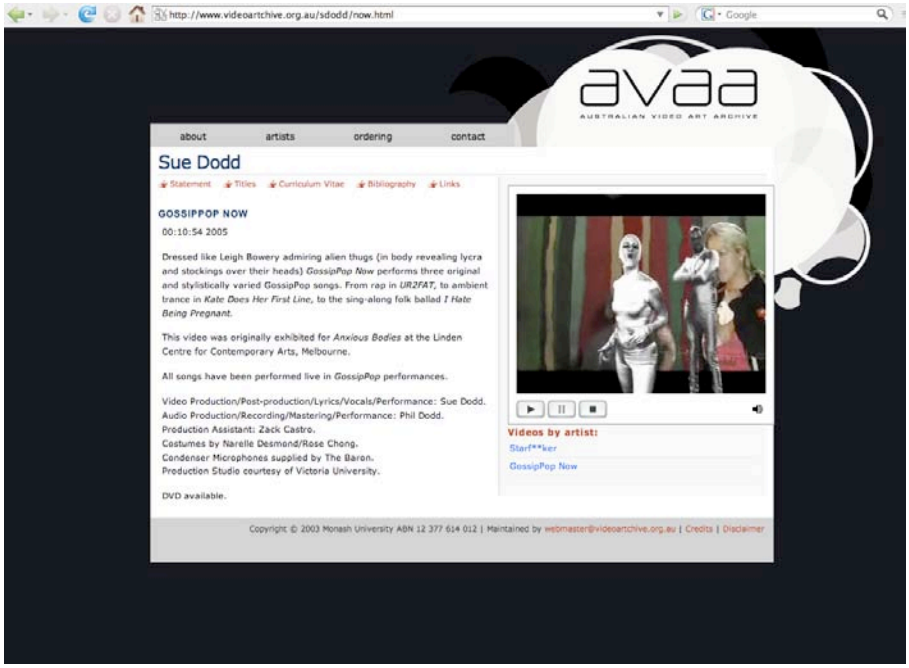


Figure 4: Sreenshot from AVAA website. Copyright: the artists and AVAA.

Aim 2: The Archive allows researchers to borrow the material for educational, research and exhibition purposes.

From the Archive's inception we followed the model provided by the Video Data Bank and Electronic Arts Intermix. In many cases accessing the video excerpts via the web will provide enough content for commentary but if this is not the case then the video works may be borrowed on DVD for either research purposes or for exhibition and screening purposes for a rental fee. This income is split equally between the artists and the archive. This allows the artist to be paid for access to their work and allows the archive to become a sustainable activity.

The AVAA has been very conscious of issues relating to copyright as both a legal and ethical obligation. The Netherlands Media Art Institute, Montevideo/Time Based Arts and the Electronic Arts Intermix both recognize the need for dealing with issues of copyright as part of an archive's methodology through the application of licensing agreements[cvii]. As part of the AVAA's methodology we established licensing agreements with the artists and rental agreements with the borrowers. By putting in place these agreements we have been able to negotiate the difficult landscape between commercial interests and a type of 'fair use' utilization of the work.

Aim 3: The Archive aims to transfer old video or film artworks to a digital format to preserve the work.

The importance of the technical processes of archiving media art works cannot be underestimated. The AVAA has chosen to digitise all works rather than protect the original media. Archivists at The Netherlands Media Art Institute, Montevideo/Time Based Arts recognize that "digitisation can change the characteristics of the work and/or affect the artist's intention, but without it the work will soon deteriorate to such an extent that presentation in its original state [is becoming] impossible".[cviii] In addition, the playback equipment for the numerous formats is rapidly becoming obsolete or has already vanished. The digital

environment may suffer a similar fate. At this stage there is some debate within the archive community regarding the best format for digital preservation. Not unlike the situation with video tape formats, of which their have been over 50 types since the mid 1960s, there is a multitude of digital file formats, compression types and codecs that may prove to be obsolute themselves in the near future.

The Archive's methodology is to acquire the work in the highest quality available. The work is then captured in an uncompressed digital format, which is then stored on a hard-drive and on Monash University's Large Research Data Store (LaRDS). LaRDS is a central petascale research data store that provides hundreds of terabytes of capacity for storage. Content on LaRDS is backed-up nightly and provides a secure environment for digital data. In addition, the video work is transferred to a data DVD and to DVCAM tape.[cix] Finally, the Archive has also begun to have film transferred to a digital format through a high definition scanning process because of the demise of a variety of chemical processes and film stock.

Conclusion

In conclusion, "cultural memory will always be connected to techniques of preservation because only preserved memories can be accessed as information"[cx] and archives and on-line databases have a crucial roll to play in providing access to this information. Archives will not only provide access to well-known works but also move beyond these canons to expose the great depth of creative activity utilising the medium of video and the moving image. The Australian Video Art Archive's aim is to become a point of access for this information while simultaneously preserving this expanding body of digital data that represents the diversity of our cultural heritage. The Archive can function to secure the future of the past[cxi] and counter a lapse in memory of important works. This is pressing work because failure to act will result in long-term cultural consequences.

REFERENCES

[i] Yerushalmi, Yosef Hayim, 'Series Z: An Archival Fantasy', http://www.psychomedia.it/jep/number3-4/yerushalmi.htm, accessed 10/06/2009.
[ii] Gibbs, Michael. 'Archiving Media Art.' *Art Monthly*, no.285 (April 2005): 37.
[iii] Steedman, Carolyn. 'Something She Called a Fever: Michelet, Derrida, and Dust', http://www.historycooperative.org/journals/ahr/106.4/ah0401001159.html, accessed 08/06/09.
[iv] Steedman, Carolyn. 'Something She Called a Fever: Michelet, Derrida, and Dust', http://www.historycooperative.org/journals/ahr/106.4/ah0401001159.html, accessed 08/06/09.
[v] Palmer, Daniel. 'Medium without a memory: Australian video art.' *Broadsheet (Contemporary Art Centre of South Australia)*, vol.33, no.3 (Sept-Nov 2004): 20-21.
[vi] Palmer, Daniel. 'Medium without a memory: Australian video art.' *Broadsheet (Contemporary Art Centre of South Australia)*, vol.33, no.3 (Sept-Nov 2004): 20-21.
[vii] Millner, Jacqueline. 'Home Video: Australian pioneers and their contemporary legacy.' *Art and Australia*, vol.45, no.2, (Summer 2007): 252-257.
[viii] Conomos, John. 'Framing Australian Video Art,' in *Mutant Media: Essays on Cinema, Video Art and New Media*, John Conomos (Sydney: Artspace in association with Power Publications, 2007), 97-117.
[ix] Rush, Michael. *Video Art*. (London: Thames & Hudson, 2003), 9.
[x] Birringer, Johannes, 'Video Art/Performance: A Border Theory', in *Performing Arts Journal*, Vol.13, No.3 (September 1991): 55.
[xi] Birringer, Johannes, 'Video Art/Performance: A Border Theory', in *Performing Arts Journal*, Vol. 13, No.3,

(September 1991): 61.
[xii] For examples of artists utilizing the synthetic potential of the video image see the 'electronic drawings' of Stan Ostoja-Kotkowski in the late 1960s, David Perry, *Mad Mesh* (1968), Mick Glasheen, *Teleological telecast from Spaceship Earth: On board with Buckminster Fuller* (1970) and Warren Burt, *Five Moods* (1979). For examples of artist creating performative works see Gary Hutchinson & Harry Hooton *Video Cinema Poetry* (1971), Mike Parr and Peter Kennedy, *Idea Demonstrations* (1972), Mitch Johnson, *Video Feedback Participation Piece* (1974), Stelarc, *Insert / Imprint / Extend / - Event for Amplified / Modified / Monitored / Man* (1975), Jill Scott, *Inside Out* (1978), Gary Willis, '*…and the Leopard Looked like ME!' – Play for You* (1979-1981). For examples of artists interested in television and its ubiquitous presence as a mass communications icon see Peter Kennedy's use of a television in his installation *But the Fierce Black Man* (1971) and Tim Burns, *For the Sake of Art* (1974). For examples of artists interested in site see Bonita Ely *Sunset Video* (1975). For examples of artists interest in social and political observation see Bush Video and their documentations of the Aquarius Arts Festival in Nimbin (1973), Judi Stack & Bob Weis, *You, Them & Us* (1977) and Peter Kennedy, John Hughes and Andrew Scollo, *November Eleven* (1978/79)].

[xiii] Cohen, Kathleen, et al., 'Digital Culture and the Practices of Art and Art History.' *The Art Bulletin*, vol.79, no.2 (June 1997): 187.
[xiv] Bodor, Judit, 'Archives in motion - approaches, perspectives, interlinking.' (October 2004/April 2005), http://www.artpool.hu/Recenzio/Interarchive.html, accessed 31/05/09.
[xv] The Netherlands Media Art Institute, Montevideo/Time Based Arts. http://www.montevideo.nl/en/conservering/resource/preservation.html, accessed 10/06/09.
[xvi] The Netherlands Media Art Institute, Montevideo/Time Based Arts lists 'clearing the rights' as part of the preservation process [http://www.montevideo.nl/en/conservering/resource/preservation.html] while Electronic Arts Intermix has a section dedicated to agreements and contracts [http://resourceguide.eai.org/collection/singlechannel/agreementscontracts.html].
[xvii] The Netherlands Media Art Institute, Montevideo/Time Based Arts. http://www.nimk.nl/en/conservering/resource/p_videoart.html, accessed 10/06/09.
[xviii] The Video Preservation Website in the US which is affiliated with National Center for Preservation Technology and Training and the Bay Area Video Coalition lists a number of migration possibilities including DVCAM as a viable format.
[xix] 'Flynn-Burhoe, Maureen. 'Mapping Memory: from Papyrus to Digitization: The Great Flood and the Arkh.' http://oceanflynn.wordpress.com/2008/05/15/archives-fever/, (May 2008), accessed 02/06/09.
[xx] Boyle, Deirdre. *Video Preservation: Securing the Future of the Past*. (NY: Media Alliance). 1993.

Joel Zika: Monash University

‘The Dark Ride’: The history of the thematic ride as a unique model for new media and cinematic installation.

ABSTRACT

This research examines the translation of the visual language of cinema into a spatial experience. An investigation into early moving images reveals the role that amusement parks played in exploring narratives using architectural spaces. The exegesis will address the history of entertainments, in particular the ‘dark ride’, which have an emphasis on narrative over and above effect.

Extensive field research was undertaken including historical sites across the east coast of the US, in search of new approaches to new media. Over twenty key popular entertainments were experienced first-hand, from Coney Island’s legendary ‘Spookarama’, to the earliest dark ride in operation, ‘The Old Mill’ at Kennywood in Pittsburgh.

Though the period between 1901 and 1940 is where we find the most poignant examples of the Dark Ride’s unique role in defining the way that spaces can be the format for narrative experience. There are many different types of Dark Ride still in operation across the United States and indeed the world. Many of these rides were heavily renovated or redesigned in the 1960s at a time when the iconography of cinema had reached a new mass popularity. Common features that came to define a Dark Ride attraction were drawn from the combination of these following elements:

an enclosed structure that creates a darkened or dimly lit enclosure;

the use of lighting in the form of triggered spotlighting or backlight effects;

a powered ride system based on a passenger vehicle attached to a track that follows a meandering, seemingly random path;

a reliance on scenography to create the ride experience, which includes forms of spatial trickery and animatronic activation of simple figures, scenery and props; and

sound effects, which could range from simple triggered sounds, such as horns and buzzes, through to voice-over narration and even complex, full musical scores.

Field research involved an analysis of key sites (from this early modern period) still in operation in North America An extensive literature search revealed no popular books on Dark Rides, with fan publications such as magazines and websites discussing their mechanics and history but rarely the experience itself. Aware of the low budget nature of these parks the anticipated goal was not to discover technical marvels but collisions of experience and

environment, phenomena that could lead to a formula for developing studio works in varied contexts.

Figure 1. Haunted House, Ocean City, MD, 2007. Copyright: Joel Zika

Many of its defining elements seeming born from other defunct spaces, and the content of rides changing from inception to suit new themes or styles. The original Dark Ride was the product of abandoned infrastructure and unpopular culture, which defined it as a medium.

Other academics, writers and artists have examined the popular-culture landscape of the USA through exploratory field research. Of particular influence to this study was Umberto Eco's 'Travels in Hyperreality'[cxii]. In this text Eco reports largely on extensive travels through North America in search of 'The Absolute Fake', his interest in American culture and entertainment and its use of replicas, appropriation and iconics. In relationship to Eco's writings this study would look at the sites not only for individual interest but also to understand their role in broader cultural geography.

From looking at historical documentation it seemed that a key element of the Dark Ride'ss development was its relationship to the surrounding environment. Often, parks were pictured nestled in foreboding woods or on dilapidated piers, and it was hard to gain a full visual understanding of this relationship without visiting the sites themselves. One of the preconceptions present in early printed works was the abandoned nature of these types of parks, stranded on the outskirts or run-down and barely used. This impression of dilapidated and forgotten worlds is pivotal to the mythology of the classic amusement park in film and television but surrounding environments would need to be seen in person in order to gain insight into how they affected the evolution of the ride.

Today a key resource for the enthusiasts of dark rides, the 'Laff in the Dark' website, lists 55 rides in the USA still operating, though that number is diminishing. In Pennsylvania alone there are 174 defunct amusement parks,[cxiii] with countless original Dark Rides either demolished or abandoned. In the summer of 2007 when this field research took place, two amusement park sites in Pennsylvania and many more across the country closed indefinitely. Three of the sites visited during field resesarch will be focussed on, each with a different format, history and relationship to their local urban and geographical environment.

Kennywood, home to the oldest Dark ride still in operation, is an amusement park on the outskirts of Pittsburgh, sitting on the edge of the Monongahela River. In 1898 Kennywood Park was bought by the local rail company. Originally used as a picnic ground for workers, the park became a destination for those using the Pittsburgh trolley system. One of the first rides to be set up at Kennywood was also arguably the first Dark Ride ever built. Constructed in 1901, 'The Old Mill' was the first of a genre of Dark Rides set in a fictional abandoned mill.

Pre-industrialised mills used water and gravity to move logs through a series of milling stations, pushing the logs through by hand. When 'The Old Mill' was first built, it used this simple non-mechanical approach to ferry passengers through the course. Within a large ring structure, the narrative progression takes place through images and models decorating the walls of the water trough, which then opens up into large dioramas. These gravity-propelled rides pre-date mechanised trolley cars and are the next step in the historical progression from 'Tunnel of Love' rides[cxiv]. Whilst a tunnel or boat-style ride used similar tricks and shocks to the Old Mill, there is a shift in the latter to a greater sense of immersion within a narrative. In this case the narrative is built into the architectural structure. Over the years the content would change[cxv] but the format of the mill was kept.

Figure 2. Old Mill Ride, Kennywood, PA, 2007. Copyright: Joel Zika

The participant in the ride enters at the point where logs were loaded onto punts and ferried into the darkened space. In the open spaces, where the logs would have been loaded from the water and cut, animatronic scenes of monsters and ghouls play out. Looking at these types of rides today sees far less of a focus on intimate thematics; in the 1930s a new breed of rides referred to as 'Mill Chute' rides were developed. Behaving more like a roller coaster, Mill Chutes lifted and dropped the rider, rather than following a sequence of images or dioramas.

Approaching Pittsburgh from its outskirts allowed me to see the landscape around the park and imagine how it would have looked in the site's heyday. Pittsburgh sits at the juncture of a number of rivers, and routes in and out of the city interweave with the paths of these waterways.

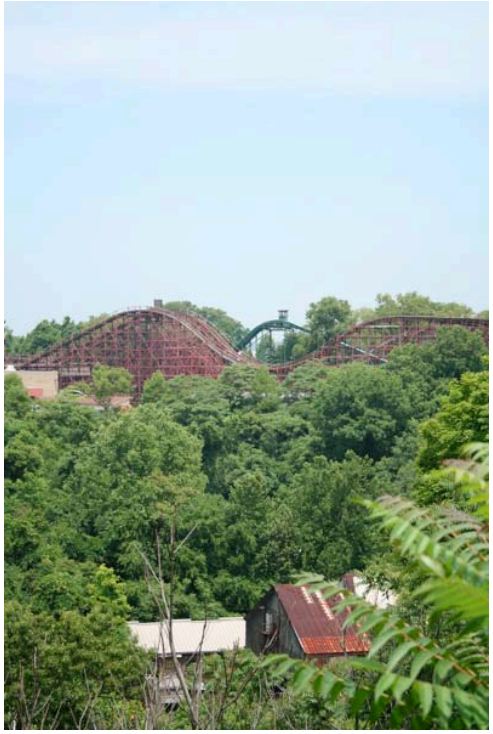


Figure 3. Kennywood and surrounding abandoned buildings. Copyright: Joel Zika

Large bridges traverse not only the intertwining rivers but also a dynamic landscape of steep hills and ravines. Journeying to the western side of Pittsburgh sees many solitary cottages and old businesses overshadowed by enormous fairytale-like trees, some towering 10 metres overhead. With a large Germanic community settling the city, houses have a colonial European feel, many barn-style with exposed wood. With the winding road and horizon all but eclipsed by giant fauna, each part of the travel seems disjointed from the next; despite being only kilometres from the city, each set of houses feels like it could be the last.

In 1968 George Romero set his debut film 'Night of the Living Dead' on the edge of dense Pennsylvanian woodlands only a short drive from the Kennywood site. What would become one of the most important and influential horror films ever made owed its success to use of the natural landscape and the isolation it amplifies[cxvi]. In the valleys immediately surrounding Kennywood, large factories lie abandoned, a spooky site so close to what is a lively fun park. Adjacent to the car park, the once beaming lights of the two fast food outlets are obscured by a mesh of wooden boards.

Thinking back to the origins of the ride itself, one can imagine a time when the movement of goods and people along waterways in and out of the city was the norm. This mode of interaction would determine the way that people saw and defined the limits of their urban surrounds. In The Old Mill ride we see another example of the ride experience mirroring and condensing day-to-day interaction with the city.

Whereas later Dark Rides would interlink with a more cinematic sense of ambiguous space, The Old Mill took a pre-existing site and attached a narrative to it. Waves of industrial change in Pittsburgh would give rise to the mythologising of many architectural elements of the city and its surrounds. In the early 1900s it was the mills and barns of the previous century that could act as the canvas for a plethora of eerie texts and immersive experiences.

An ever changing industrial landscape in America saw many iconic everyday buildings metamorphose into the sites of myth. The 'Abandoned Mill', 'The Old Mine' and even 'The Hayloft'[cxvii] were all used as formats for the development of Dark Rides throughout the 20s and 30s. In Kennywood's The Mill Ride we see how the evolution of these forms of entertainment are intrinsically linked to shifts in urban and rural landscapes. Such rides give the viewer the chance to travel through an abandoned site, or a replica thereof, and use the anxiety related to these places to build a narrative. Being indicative of the fears of the society during a certain time, similar connections can be made between all types of immersive entertainments and the pervading concerns of the public at their inception.

In Ocean City, Maryland, a Dark Ride with no track exists: Pirates' Cove is a 'Walkthrough Ride'. It has no trolley and is experienced on foot, creating some immediate changes in the temporal experience. The ride's owners, Trimper's Rides, are the oldest proprietor at the site; their grounds encompass a few rides on the promenade facing the ocean, but mostly traditional rides behind the beach. Pirates' Cove features an extensive façade, which looks to have been updated heavily in the 1970s. A detailed full-body model of a pirate protrudes many metres from the front and is accompanied by an enormous treasure chest and skeleton. It is a truly impressive site, one which seems lost on the hordes of summer tourists avoiding the ride in favour of the brighter, less thematic entertainments.

Figure 4: Pirates Cove, Ocean City MD, 2007. Copyright: Joel Zika

Despite not having a mechanised track to guide the participant through the journey, there are many ways that the ride controls the experience through animation of the space itself. In this type of ride we see how the Dark Ride experience compiles a set of largely experiential vignettes in order to form a narrative experience. The thematics of the ride are set out early: the claustrophobia of the hull of a pirate ship, the freaky artifacts of plunder and the giddying disorientation of a stormy voyage. Physiological distortion is the main tool used by the pirate ride. Even before entering darkness the floorboards of the queue move backwards and forwards out of sync, moving your left foot forward and your right back. This happens

sporadically as the rider attempts to get to the entrance; clambering for balance creates a sense of distrust and expectance in the ride's structure as a whole.

Particular focus on illusionistic spatial techniques sees this Dark Ride drawing on popular perspective tricks from much earlier in the 20th and late 19th century. In one particular section the riders are led into a room of exaggerated perspective created by the size and position of vertical planks on the wall. This is an example of the 19th century 'Ames Room' technique, where cube patterns on the floor were used to trick the eye into a false sense of perspective. The most effective of the spatial illusions happens towards the end of the ride; riders are led through an archway and into a tubular passageway. The room itself is actually a rotating tube and the viewers stand on a platform which stretches through to the other side of the tube. The tubular walls seem to have holes punched in them which reveal a bright blue light; the effect suggests a starry night sky rotating above, presumably the view from the deck. As riders walk down the pathway – or perhaps plank – a circular screen at the end of the tunnel spins in time with the walls. Painted on the screen are luminescent dots the same colour as the lit stars. The technique brings about a feeling of sublime vertigo as the room seems to topple over like a ship at sea. The spinning room is featured in a number of Dark Rides, usually using a real room with decorated walls moving around the viewer. This ride shows the influence of popular cyclorama and panorama pavilions of the 1900s, which delivered a standalone immersion similar to this through two-dimensional imagery.

Figure 5. Pirates' Cove (spinning tunnel), Ocean City MD, 2007. Copyright: Joel Zika

The importance of the Dark Ride lies in its ability to take all the elements of the narrative text and reorder them as a spatial experience. In the case of Pirates' Cove the journey sews together disparate elements of the pirate story and houses them all in the same darkened space. As cheaply as the idea may have been realised, its nightmare-like collage of imagery is incomparable to any cinematic adventure. The recreation of nautical stories as rides has its origins in the 'Noah's Ark' ride, similar to the pirate ride but thematically less abstract. The ride's structures were built in the shape of an ark, with all action taking place within the physical constraints of the giant boat. This type of ride was patented in 1920 by Leroy Raymond[cxviii], whose specific vision saw an enormous ark atop a large hill so that it had room to rock back and forth. Today only two Noah's Ark rides still operate, one in the UK at Blackpool and the other in the US at Kennywood.

Today's Coney Island is far removed from the resort megaplex of the 1900s,: a collection of amusement zones huddled together amongst souvenir stores and empty blocks, developers lying in wait to redevelop the area as apartments and a resort, and a caravan advertising 'The New Coney Island' sits in one of the abandoned blocks. There are three Dark Rides remaining on this site now: Spookarama, The Ghost Hole and Dante's Inferno. Of those three, Spookarama is the oldest and offers the most interesting experience. Built in 1955, it is not the oldest ride of its kind but it is a conglomerate of early ride attributes, representative of the end of an era. It is a Pretzel ride very similar to 'SpookHouse' in Keansburg, New Jersey (1932) and 'Laffland' at Sylvan Beach, New York (1934) which are also still running. Spookarama offers the longest ride experience and for that reason is the focus of this section.

To access the ride you must walk down a narrow laneway created by the cluster of rides and sideshows that make up 'Deno's Wonder Wheel Amusement Park'. The Coney Island site is made up of a number of separate amusement zones. Deno's sits behind the boardwalk. Amongst the crammed amusements, Spookarama's façade is largely hidden by the awnings of dodgem cars and slot arcades that sit around it. Trolley cars line up at the front of the ride and face towards the customers. They are tall art deco creations, and despite their bad condition and gaffer-taped mending, they are objects of great beauty. The trolley itself is key to this particular ride and reveals much about the connection between the Dark Ride and the cinematic experience. These particular trolleys are high, tall like the booths of a diner, and blinker any side vision. As the ride begins, the trolley moves up a queue towards the extremities of the site before turning around and progressing toward the entrance to the ride proper. In this outside section of ride, the cart turns the riders to view the back of the control area, making visible the most banal of control switches and power plugs before sharply pulling attention towards the swinging entrance doors. This act of exposing the inner workings of the ride may seem incidental but it occurs in most rides.

Figure 6. Spookarama, Coney Island, NY, 2007. Copyright: Joel Zika

A glimpse at the controls reiterates the entrusting of oneself to this mechanised journey, and the participant's being unable to in any way control the outcome. This manipulation of your point of view continues throughout the ride, the track moving in one direction while the rider faces another. The pivoting trolley allows the point of view to be spun around completely before coming to abrupt stops. The content of the ride is far less a sequence of dioramas than actions of individual props, quick acts of terror that can be illuminated and seen for only a fraction of a second: an electrocution, a dismembered man, a leering mummy or a piano

playing psycho. The elements weave together thematically, approaching from out of the darkness much like apparitions. Architectural space has very little to do with the impact of the journey. A narrative or thematic order is more prevalent than a spatial logic due to the twisting and turning of the track and the trolley itself.

In a contemporary context the easiest comparison that can be made to the structure of the Pretzel ride is that of cinema's tracking shot. When patented in 1928 the Pretzel ride was defined by two important documents: a model of the trolley and a map of the track[cxix]. The map of the ride comes with annotation as to where the different visual elements would be triggered, a graphical script for the experience. Long tracking shots were not common in major films until the 1940s; in the Pretzel ride, point of view was experimented with extensively. With the shape of the trolley framing every tableau cinematically and a triggered soundtrack supplied within the space; the trolley's role as 'virtual camera' is clear.

Re-entering the ride with a flash camera allows one to quickly uncover some of the practical reasons for the ride's structure and pace. Firstly there are no dividing walls at all; in fact, all the props are visible from the one position. The space uses light to control their visibility. The track meanders and curls around the edges of the room, using only the side walls for more elaborate scenes of horror. All other elements are hanging, suspended or sit like a totem around the track; the centre of the room is empty. For the most part the ride uses very little space. The cart detracts your attention from any upcoming fright until the very last second by spinning the participant to face into the darkened inner space.

These three rides alone unveil many unique ways of creating a narrative environment. Some of the techniques techniques are echoed in larger, more contemporary entertainments, the architecture of shopping malls and museums. In these Dark Rides we see not only the genesis of many of these approaches but unique connections to the environment in which they are set and the content they deliver. In many cases the environment and content are linked. Pirates' Cove gives us an understanding of how a site can embody a narrative-rich environment without leading you through that tale in a linear way.

Spookarama's pivoting point of view and reliance on the trolley track for creating continuity connected the investigation most obviously with the cinematic experience. The ride was also crucial in understanding a different type of immersion, dramatic control of the viewer rather than bombarding or engulfing them with image. In the production of three-dimensional modelled animation, understanding how to effectively control point of view is essential.

Most rides build their physical structure to replicate, enhance and promote the experience. Many rides that people grew up with tended to have more exciting façades that the experiences themselves. However there are a small number – like The Old Mill – that have managed to incorporate the entire structure into the narrative experience. The Old Mill led to a broadening of ideas about the site-specific nature of the Dark Ride. Kennywood, a unique park, and the landscape of Pittsburgh will undoubtedly fuel the production of artworks for a long time to come.

REFERENCES

[i] Eco, U. (1986). Travels in hyper reality : essays. San Diego, Harcourt Brace Jovanovich. Page 30.

[ii] http://Laffinthedark.com has an updated list of currently active parks across the united states, they were consulted for this projects field research component. Information about defunct amusement parks can be found at http://www.defunctparks.com/ the documentation of sites varies.

[iii]A precursor to the Pretzel rides, the 'Tunnel of Love' was technically a Dark Ride. For the purpose of this research it is seen as being a key influence but not as thematic as its younger relative.

[iv] The Old Mill ride today, whilst still featuring all of its original structure, is branded 'Garfield's Nightmare'. It follows the popular comic book character on a surreal dream journey.

[v] A local of the area, Romero used only a small number of sites in his low budget film, with most of the action taking place in an isolated colonial house. The film sets itself in a USA under siege by a disease which brings the dead back to life as zombies. A group of characters take refuge in an old house as the threat from a growing

number of diseased outside grows stronger. Throughout much of the film the protagonists work on fortifying the house they are trapped in, stripping every element of the house's interior, using it to cover windows and doors. Shots of crazed arms frantically grasping through pieces of wood would become emblematic of the contemporary zombie film. This ritual the characters go through creates one of the many poetic allegories of 1960s American society. This fortification reflected a isolationist mentality gathering momentum in the USA in the 1960s. But in the suburbs of contemporary Pittsburgh these images seem to echo in real life. Only minutes from large new shopping malls entire strips of businesses (most likely open in the 60s) are largely closed down and boarded up. People pile in hordes onto the bus to be taken to the shopping megaplex only metres down the road. Old shops and bars lay abandoned by the side of the road as if the scenes of Romero's fictional film 40 years earlier had really played out.

[vi] The Haunted Hayloft is a walkthrough haunted house ride in Rockwood Pennsylvania. 'A frightening step back in time' is its promotional catch phrase

[vii] According to Laffinthedark the first Noah's Ark ride was designed and built by Leroy Raymond and installed at Venice Pier, California in 1919.

[viii] The patent documents which described the ride heavily detail the electric pick-up system employed on each cart but also the map of the track itself, showing the importance of the layout of the experience.

Biographical Information

ROGER ALSOP

Roger Alsop is a composer, media artist, sound designer and researcher. He teaches sound design in the Faculty of the VCA and Music, University of Melbourne, where he supervises postgraduate students n sound design, new media and collaborative works, and in record production at Box Hill Institute. His current research investigates processes of crossing media in creative art making. He has recently composed and designed for the 2008 MIAF, La Mama, the Alphington Wetlands Festival, and his visual and interactive media works have been presented by The White Street Project in Frankston, Victoria

PETA CLANCY

Peta Clancy is a lecturer in Photomedia in the Department of Multimedia and Digital Arts in the Faculty of Art & Design at Monash University where she is currently in the process of completing her PhD for which she received the Monash Graduate Scholarship. She has been the recipient of a number of public grants and awards including the Australia Council for the Arts London Residency in 2004 and a New Work Grant in 2007. Her photographic works investigate the materiality of the body exploring it as a force that is subject to change, ageing, decay and transformation.

MARSHA BERRY

Dr Marsha Berry is an artist and a researcher. She teaches narrative, digital and interactive media for undergraduate degrees in the School of Creative Media at RMIT University, Australia. Marsha supervises Masters and PhD postgraduate students across a range of research topics concerned with new media, narrative and mobility. Her current research investigates mobile media, urban fields, geoplaced knowledge and memory. Her art practice has included performing arts, video art and photo media. Recently she has explored notions of memory, place and displacement through video art, photography and evolved images.

COLIN BLACK

Internationally acclaimed composer/sound artist **Colin Black** won the prestigious Prix Italia Award (2003) for composing and producing his major work The Ears Outside My Listening Room.

Black's credits includes creating radio art and sound based works/installations for the following organsiations: Deutschlandradio Kultur's Klangkunst program, Czech Radio's Radiocustica program, En Red O 2000 (music festival Barcelona Spain), Rencontres Musiques Nouvelles (Lunel France), 60x60 Pacific Basin Regional Concert (Los Angeles), Australian Broadcasting Corporation, Brisbane's Institute of Modern Art, Hipersonica 2004 (Sao Paulo), The Literature Sound Barrier 2002 (Wien, Austria). Australasian Computer Music Conference 2008, the Parramatta Heritage Centre, NORPA and Lismore City Council.

Black's written publications include; "Oh Dear ABC" (Limelight, Jan 2004), "Radio Art: The age of the 'Bunker' Artist, Digging in Deeper, Spreading Thinner ... " (Vital Signs, 2005), "The Extended Enviro-Guitar (XEG): A Mobile Acoustic Profiling Resonating Filter", (4th International Mobile Music Workshop, 2007), "Is Anyone Listening", (RealTime, April-May 2008), "Alien In The Landscape: Distillation and Filtration of Soundscapes" (Sounding Out 4, 2008), "Radio Art: Broadcast or Outcast" (Music Forum. Journal of the Music Council of Australia, Feb - April 2009).

Black has been invited to talk about radio art and his work on London's Resonance 104.4FM, at the Sibelius Academy in Helsinki, Technische Universität Berlin and the Victoria University of Wellington.

Black is currently a post-graduate research candidate at the University of Sydney and a tutor of music, media, audio and sound design at TAFE

BROGAN BUNT

Brogan Bunt is Head of the School of Art and Design, Faculty of Creative Arts, University of Wollongong. He teaches within the Media Arts program and has a particular interest in computational media. He has produced documentary and experimental art projects, as well as a book on the field of software art (Risking Code: The Dilemmas and Possibilities of Software Art, VDM Verlag Dr. Muller, 2008)

JOHN CONOMOS

John Conomos is a media artist, critic, curator and writer, and Senior Lecturer in film and new media studies at Sydney College of the Arts, University of Sydney.

He was founding editor of the time-based media arts journal Scan+ and editor, with Brad Buckley, of Republic of Ideas (Artspace/Pluto Press 2001). A prolific contributor to local and overseas film, cultural and media journals for more then two decades, Conomos recently published "Mutant Media " (Artspace/Power Publications, 2008) and is co-editing with Brad Buckley "Re-thinking the Contemporary Arts School (NSCAD University Press) to be released in September 2009.

Conomos's videotapes and installations have been widely exhibited throughout Australia, Europe, the United States of America, Japan, Canada and Latin America. His work received a honourable merit award at Berlin's Transmediale Videofest '98, and in 2000 he became a recipient of an Australia Council for the Arts New Media Fellowship. He has produced several radiophonic essay programs for the Australian Broadcasting Commission's Radio National - "The Bells of Toledo" - to be broadcast later this year**.**

VINCE DZIEKAN

Vince Dziekan is Deputy Head Multimedia & Digital Arts in the Faculty of Art & Design, Monash University, Melbourne. His current research focuses on curatorial design forms part of an ongoing interdisciplinary project negotiating the impact of digital technologies on curatorial practices and the implications of virtuality on the art of exhibition. He recently completed my PhD thesis on this topic: 'Without Walls: Virtuality and the Art of Exhibition' investigates how the intersection of new technologies with exhibition space offers new possibilities for aesthetic experience. Ideas outlined in the critical writings establishing the concept of the multimedial museum are translated through practice-based research focused on the curatorial design of a series of original exhibitions. Vince has published in relation to these research topics in various peer-reviewed journals and presented at numerous refereed conferences, both nationally and internationally

IAN HAIG

Ian Haig works at the intersection of visual arts and media arts. His work explores the strangeness of everyday reality negotiated through subject matter that is at times perverse and provocative. His practice focuses on the themes of the human body, devolution, mutation, transformation and psychopathology. He teaches in media arts in the school of art, RMIT in Melbounre.

His work has been exhibited in galleries and video/media festivals around the world. Including exhibitions at the Australian Centre for Contemporary Art, Melbourne, The Experimental Art Foundation, Adelaide, The Australian centre for the moving image, Melbourne, The Museum of Modern Art, New York, Artec Biennale - Nagoya, Japan, Centre Georges Pompidou, Paris, Art Museum of China, Beijing.

ROSS HARLEY

Ross Rudesch Harley is an award-winning artist and writer. His video and sound work has been presented at the Pompidou Centre in Paris, New York MoMA, Ars Electronica in Austria, and at the Sydney Opera House.

He is also well-known for directing the audio/vision for the Cardoso Flea Circus videos and live performances with Colombian-born artist Maria Fernanda Cardoso. Recent work includes Aviopolis (with Gillian Fuller), a multimedia project and book about airports, Black Dog Publications, London; Busface, a photo-media installation with the Ejecutivo Colectivo exhibited at ArtBasel, Miami; and the DVD installation Cloudscope in collaboration with Durbach | Block architects at Elizabeth Bay House, Sydney.

He is a former editor of the journal Art + Text, and has written regular columns on design and popular culture for Rolling Stone and for The Australian national newspaper. He has edited a number of anthologies, including New Media Technologies (1993), Artists in Cyberculture (1993) and Before and After Cinema (1999). Another, entitled Parallel Histories in the Intermedia Age appeared in the Summer of 2000.

In 1992 he was the director of the influential International Symposium on Electronic Art (ISEA). He is Professor and Head of the School of Media Arts, College of Fine Arts at the University of New South Wales, Sydney, Australia.

CAT HOPE

Cat Hope is coordinator of composition, music technology and postgraduate studies in music at the Western Australian Academy of Performing Arts at Edith Cowan University. She has also taught sound art at the Curtin School of Art and is PhD candidate in art (sound) at RMIT University in Melbourne.

Cat is a sound and performance artist, composer and noise musician. She tours on a regular basis and has releases and exhibitions world-wide, both as a solo artist and in group Abe Sada. She is the founder of the metaphonica sound collective and Decibel new music ensemble.

STEPHEN JONES

Dr. Stephen Jones is an Australian video artist of long standing. He was originally a member of Bush Video (1974-5) and then worked at the Paddington Video Access Centre for several years (1976-78). In 1976 he worked with Nam June Paik during his exhibition at the AGNSW in Sydney before providing technical support for many major exhibitions including the Sydney Biennales and Perspectas from 1976 to 1985. He curated VideoTapes from Australia (with Bernice Murphy) which toured the United States and Canada as well as being shown at the AGNSW (1979-80). He established the independent video production facility Heuristic Video in 1982, working with numerous video artists and independent videomakers. From 1983 to 1992 he was the videomaker for the electronic music band Severed Heads. Between 1989 and 1996 he worked as an engineer for several major video post-production and computer graphic production facilities. In 1996 he re-started his career as an artist and in 1998 received a New Media Arts Fellowship.

He has had a major interest in the philosophical aspects of the nature of consciousness for almost longer than his involvement in video and produced *The Brain Project* web site <http://www.culture.com.au/brain_proj/> between 1996 and 1998. In 1998 he produced a first pass of a history of the electronically generated image in Australia for dLux Media Arts with a symposium called *Synthetics*, which was presented at the PowerHouse museum in July that year. He also built and showed *The Reading Machine*, a Brain Project installation at ArtSpace, Sydney, July, 1998.

He provides technical support for artists, developing sensor-controlled systems for interactive video/DVD installations and physical immersion installations, as well as developing theoretical perspectives on artificial intelligence and augmented environments. Since 2002 he has been researching the archaeology and history of the electronic visual arts in Australia. This work was his PhD project and the first stage of the history, to 1975, has been completed.

He continues to be involved in technical support in the arts, and is currently employed part time as an assistant curator at the Powerhouse Museum working on their Information and Communications Technologies collection. His curatorial interests include the understanding and development of networks of knowledge within organisations. He is also continuing to develop the history of art and technology and video art in Australia and is presently involved in a project to reconstruct several early Australian video art collections. This involves both gathering oral histories, documentation and ephemera of the works and the artists; and the digital preservation of much of the work that was made in the first two decades of video in Australia. His considerable experience in electronics in the arts means that he is now Australia's first conservator of electronic art.

JO LAW

Jo Law is an artist whose works span a number of fields including experimental film and video, installation, interactive and online platforms, screen cultural program, and critical writing.

Jo's films and videos have been shown widely across Australia and international events such as the 22nd Hong Kong International Film Festival and the 45th Melbourne International Film Festival as well as in screening programs in the Philippines, Norway, and Taiwan. She has received awards including the Silver Spire Award in New Vision at the San Francisco International Film Festival: Golden Gate Award.

Jo's installation works have been shown nationally in Australia and in Hong Kong and Taipei. Her interactive online work, Project X, was included in Interactiva at the Museum of Contemporary Arts in Mexico.

Her interactive installation, re:-, was exhibited as part of the Perth International Arts Festival in 2005.

Jo has a Master of Fine Arts from the University of Western Australia and is currently a PhD candidate at Murdoch University. Jo teaches visual arts, design and media arts at the School of Art and Design, the University of Wollongong.

JENNIFER LADE

Jennifer Lade is a sculptor and painter and senior lecturer in Digital Art and Games at RMIT University. Jen has been Director of the three undergraduate programs that focus on digital art and games design and programming for the four years since their launch in 2005 until standing down recently to concentrate on her Masters research. The programs are cross-disciplinary and are taught by the School of Creative Media and Computer Science and IT, jointly.

Jen's Masters project, "Lightstruck", investigates the relationship between the digital and the corporeal. Throughout the 80's and 90's she exhibited paintings and sculptures locally and internationally.

MATTHEW PERKINS

Matthew Perkins is the Studio Coordinator Photomedia in the Department of Multimedia and Digital Arts of the Faculty of Art & Design, Monash University, Australia. His work has been exhibited in *Figuratively Speaking: The Figure in Contemporary Video Art*, Brisbane (2007), *Stranger Geography*, Italy (2007) and *Skin Alive*, Canberra, Melbourne (2007). Perkins has also curated a number of exhibitions that focus on digital media and the body including *Anxious Bodies*, Melbourne, Hobart (2006-7), *Unsharp/Unconscious*, Brisbane, Launceston (2006) and *Vernacular Terrain*, China, Japan, Australia (2007-8). He recently co-authored with Elena Galimberti 'Historical continuums: video art at the George Paton Gallery' in Helen Vivien (ed), *When You Think About Art: The Ewing & George Paton Galleries 1971-2006*, Macmillan, 2008 and 'Globalising Effects: Video Art and Documentary Codes' and 'Digital Archives and the Conservation of Time-Based Arts', papers for the 2008 Art Association of Australia and New Zealand Annual Conference. With Anne Marsh he founded the Australian Video Art Archive in 2006.

MALCOLM RIDDOCH

Dr Malcolm Riddoch has a background in science and communications and a doctorate in philosophy. He currently lectures in Music Technology at WAAPA, Edith Cowan University specializing in acousmatics, spatial music and electronic improvisation as well as developing the WAAPA Music Label. He previously lectured in Electronic Arts at the School of Contemporary Arts ECU and has researched the WA music industry at Curtin University Humanities Research School. He has been actively involved in electronic music and arts since 1990 and also works in the multimedia industry. He is a founding partner in independent online music label Hidden Shoal Recordings

GAYE SWINN

Gaye Swinn is a photographer, painter and industrial designer. She has taught industrial design history at Monash University where she is currently completing her PhD. For the past fifteen years she has taught in the School of Creative Media at RMIT where she also completed her MA with research into games design.
Gaye led the design team for RMIT's Master of Creative Media suite of coursework programs and has just stood down from her role as Director of the programs to concentrate on her research and practice. Gaye currently teaches in the program and is a senior lecturer and research supervisor for her school.
Her background in games research made her a natural choice to lead the design team for RMIT's electronic games design offerings and she was Program Director during its recruitment period. Subsequently she has taught 3D design and animation and digital lighting techniques in the program.

Gaye's works are held in public and private collections in Britain and France.

JOEL ZIKA

Joel Zika is a Melbourne based media artist, Joel Zika's research centers on the translation of

the cinematic language into spatial experience. Key to this exploration is the experience and iconography of Ghost Trains and Haunted Houses, otherwise known as 'Dark Rides' . Using multiple projection installation, animation and large format digital imaging he creates works that have been exhibited in galleries, screenings and design shows nationally and internationally. Joel is currently lecturing in Digital Arts at Monash University.

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