THE UNIVERSITY OF MELBOURNE

the australian sound design project

Designing Public Acoustic Space :

Australian Sound Designs, a database and website for a more considered acoustic environment.

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Abstract

To compile the first major study on Australian sound design of public acoustic space through a nationwide-wide website and database. Sound design is a new interdisciplinary field in which Australia has made pioneering contributions, yet little has been documented. A representative sample of sound designs, both indoor and outdoor will help to establish this national practice. Historical and stylistic trends can then be observed. The language and practice of sound design will be articulated and the importance of sound profiled for interdisciplinary designers, museologists, acoustic engineers, architects and musicians.

The objectives of the research project

General Aim:

Sound Design is a comparatively new field internationally, crossing the boundaries of the disciplines of architecture, acoustic engineering, environmental design, electronic composition, music and museum studies. This study, which will have an Australia -wide focus, will bring the study of the acoustic environment into the foreground for intense review. The interplay of acoustic space, sound design and the acoustic environment will be studied against a representative sample of sound designs from all parts of Australia.

This project aims to be the first comprehensive study of Australian sound design for public acoustic spaces. It focuses on the nature of acoustic space as context and then looks at the designs that have been superimposed. A comparative site-specific analysis will be made of a representative selection of sites, both indoor and outdoor, urban, rural, built and unbuilt. A range of criteria will be applied to each site so that a comparative database of acoustic features, and sound design processes can be cross-referenced in a fluid way. Where sound designs have been implemented, an original diagrammatic representation of each acoustic space will map the essential features. This information will be acoustically analysed on site and documented through digital sound recordings and digital video. All the data will provide a basis for further analysis and comparison so that historical and stylistic features can be discerned. Qualitative recommendations can then be made. The practice of sound design as a discipline will be collated for the first time. An informed study such as this will help this practice develop and establish paths of discourse so that the culture and practice of sound design can grow in the interests of care taking the acoustic environment in a sensitive way.

Specific Aims:

The project will:

- Establish the field of sound design in Australia.
- Provide evidence of Australia's important contribution in the field of sound design internationally, especially Australia's pioneering role with regard to audience-interactive technologies and flexible playback systems.
- Profile sound as a primary focus for designing space in a world that is visually oriented.
- Show the diversity of the Australian practice by analysing a range of sound designs in many different locations across Australia.
- Provide data for comparative acoustic site analysis.
- Stimulate discourse on the nature of sound design by visiting important acoustic sites and interviewing the country's outstanding sound designers.
- Start a network of sound designers who now work in isolation from each other.

- Provide a large range of original acoustic mappings, conveying the nature of the practice of sound design to a much wider public.
- Develop a more sophisticated methodology for encoding and designing sound that can be readily understood by the layman and the creative practitioner.
- Provide an historical perspective on the nature of this new practice and its rapid emergence superimposed upon an ancient sung culture.
- Provide a wealth of information for interdisciplinary designers, on the web with a possibility of a future book.
- Alert the community to the importance of heritage acoustic sites and the possibility that existing sound can be endangered.
- Re-evaluate place including original ownership issues as a basic fundamental necessity of sound designers.
- Open debate on the private and public interface and how it affects sound design practice.
- Collate the literature by having an extensive bibliography of related research, both Australian and International that will inform the practice and discourse.
- Provide audiovisual examples of works by major sound designers so that the practice can be judged through intimate knowledge of the primary source materials and their methodologies.

The significance, impact and outcomes of the project

This will be the first time a complete nation-wide study of sound design of acoustic spaces has been undertaken. Australia's acoustic environment has evolved as a by-product of other concerns: e.g. commerce, travel, and communication. Sound, because it is invisible is often left until everything else in a space, the building, the exhibitions, the furniture, the access for people, is decided. It is often then too late to deal with sound sensitively. Sound has its theoretical and physiological requirements as well as being a powerful tool to enhance psychological states of perception. The implementation of sound in the environment should not be a by-product of decisions made for other reasons or vested interests. Every space, whether built or unbuilt is a unique acoustic site that needs careful attention according to its own criteria and the behaviour of and possibilities for sound within it. The acoustic environment could be modified constructively if it were handled in a more conscious way. **Acoustic spaces need understanding and sound designs need to be appropriate to them**. In the design of public space this is rarely taken into account. This study, in the form of a nation-wide web site, will provide information, design examples, and methodologies which will help the professional and layman alike to understand more fully the needs of acoustic spaces and the discipline of designing with sound.

Formerly the domain of acoustic engineers, this new practice now encompasses artists, creative designers, multimedia companies and architectural forums, all with their elements to contribute. Sound designers and sound artists have developed new approaches which have created new systems for the design of the environment in indoor and outdoor venues alike. There are few sources relating to sound design, and those that exist focus on specific disciplines. While the body of literature on sound design is growing, it is hard to find, due to its interdisciplinary nature. The Canadian composer, Murray Shafer's book, *the Tuning of the World,* 1977, remains the most important source, defining the concept of soundscape and advocating designed acoustic space, but there has been little subsequent research as to how this should occur. What is needed is an analytical study based on the sound itself, its components and its needs.   The bibliography and web sites in this study will be invaluable in bringing much of this disparate work together for informed study and debate. The language and practice of sound design will be more fully understood.

In Australia, the field of sound design is emerging from the practitioners themselves rather than from a theoretical basis. There are some twenty professional sound designers from many backgrounds, architecture, musical composition, sound sculpture, acoustic engineering and museum studies. Many other people have shaped the acoustic environment unwittingly. As a result of this study all those making decisions on sound design and altering acoustic space will have materials on hand to help them: how to analyse an acoustic site, site-specific design criteria, and good design models for the implementation of sound when it is introduced or shaped. As a complete study, the acoustic identity of Australia will begin to reveal itself.   Comparative and historical threads will be made to articulate this identity and to encourage a skilful care taking of endangered sounds and acoustic spaces. In western culture, space has been inscribed visually. Australia has a sung history of its own. An aural perspective reveals subtle and evanescent properties. Sound is a powerful psychological tool. It can alter the perception of space entirely. The ear as well as the eye needs to be more fully engaged in designing the environment. Time must be spent in listening, in order fully to understand cultural identity.

As well as the heritage concerns, there is the creative side to this project. This web site will showcase inspiring creative alternatives for new and innovative sound designs found in Australia. Good models will inspire better ones. New ways of looking and understanding sound in space and time will be presented through new graphic approaches. There is no work including such approaches or information to date. Design studies rarely include sound as a major focus. Music studies all too rarely include the soundscape.

This study will help many types of people reconsider the acoustic domain and the importance of working with it in a conscious and careful way. **This study should raise the consciousness of the quality of sound, its design and implementation in the environment.**

Research Methodology

The Field Research and Data Collection will be carried out and completed during the years 2001-2003 during which time it will be part of an accumulatively built website. The choice of the web as the chief tool for publication is seen as more desirable than a book or CD Rom because of its ability to embrace constant update and revision. Specific elements have already been undertaken by myself in connection with my research assistant, Mr Garth Paine.

1. Prepare bibliography and web search

2. Write the introductory chapter

3. Define design criteria

4. Prepare questionnaires

5. Design database

Following the initial project design stage up to the initial call for works, there will be field trips to all states and territories to visit key acoustic sites, sound designs and personnel. Contributing artists, sound designers and related personnel will be interviewed. Substantial acoustic analyses and mixed media documentation will be executed on site in the acoustic spaces. A preliminary list based on the research available at the time of applying for funding is listed below but the current database of likely contributors is now 157 practitioners.

Artists and designers include **Richard Allison** (Port Arthur), **Tony Bishop** (Whispering Wall, Tasmania.), **Paul Carter** (Hyde Park Barracks, Museum of Sydney), **David Chesworth and Sonia Leber** (Sydney Olympics), **Peter Emmet** (Museum of Sydney & Hyde Park Barracks), **Nigel Frayne** (Museum of Sydney, Magian), **Les Gilbert** (Sound Design Studio, Southgate, Magian, the Purple Group, Osaka Aquarium, Sydney Aquarium), **Joan Grounds/Sherre de Ly**s (Botanical Gardens, Art Gallery of New South Wales), Neil McLachlan (Federation Bells 2000, RMIT), **Garth Paine** (Eureka Stockade, Immigration Museum, Melbourne Museum), **Toy Satellite** (cyberspace design), **Leon Van Schaik** (RMIT Landscape architecture), **Simon Veitch** (3DIS three dimensional interactive space video system) and **Gary Warner** (Museum of Sydney video wall, South Australian Museum).

Analysis of the role of sound in acoustic sites

The different roles that sound has in public space would be identified and studied in depth in relation to its environments, which are contrasting in general and specific locations, from tourist centres (Cairns and Darwin) to interactive sound designs in museums (Broken Hill, Sydney, Perth) to outdoor promenade sound designs, (Melbourne, Hobart) to indigenous sacred sites, (Uluru, Broome, Lake Mungo).

Elements for detailed study and comparison would include

- The role of architecture as acoustic container, shaper and modifier
- Dealing with ambient sound, introduced, designed, and unwanted (e.g. lights, hum, air conditioners, lifts.)
- The acoustic passage of audience through the building/site; the public as listeners and participants; user pathways and interactivity
- Sound oriented designs
- Exhibitions and designs that use sound as supporting material
- The active use of the audience as spatial interpreter e.g. Garth Paine's immersive environment installations and the Jewish Museum and the Museum of Victoria
- Passive triggering, i.e. the use of the audience to trigger the sound without their knowledge, e.g. Sydney Aquarium
- The space as conservator of acoustic heritage. The need for silence.
- The relationships between confluent soundings in space. Programming and sound spill.
- The museum as a global acoustic network. Virtual museums and satellite networks' potential for sound sharing, receiving and sending

Background research in the field

The Italian futurist, Luigi Russolo, declared in his seminal work *The Art of Noise,* that there were no sounds before the advent of the machine. This was one of the first distinctions between wanted and unwanted sounds and pointed to a growing awareness of sound in post-industrial society. The American composer John Cage brought people's attention to ambient sound and the art of listening in his provocative silent piece, 4'33 of 1950, while in France at the same time Pierre Schaeffer was composing music from sound directly to tape in the first Musique Concrete, assemblages of sound recordings. In Australia, Percy Grainger's work with the free music begun in 1938. His music machines, along with the first music computer (CSIRAC) and the Fairlight, were important contributions that received little attention. The design of sound in

its own right had its first place in the electronic music studios of Europe, America and Australia. In the seventies, the work of several Canadians, many associated with the ARC research centre in Vancouver was outstanding. Grayson's two books on Sound Sculpture embraced sound design across disciplines. The Canadian composer and acoustic ecologist Murray Schafer defined the soundscape in the most thorough book on the subject, *The Tuning of the World,* in which he predicted there would be " a revolution consisting of a unification of those disciplines concerned with the science of sound and those concerned with the art of sound. The result will be the development of the interdisciplines, acoustic ecology and acoustic design.... acoustic ecology must precede acoustic design." (p.205). Barry Truax's *Dictionary of acoustic* ecology*,* 1978 attempted to articulate the new terminology for public acceptance.

Recent International Progress in the Field

In 1993 the world forum for acoustic ecology of which I am a founding member, was set up in Banff to provide the first worldwide umbrella for sound studies, becoming a network for sound practitioners, from a variety of disciplines and contexts. Over the past few decades there have been too few texts despite the huge increase in artwork and applied projects with a strong sound focus. Two books by the English composer and sound artist, Trevor Wishart, *On Sonic Art* and *Audible Design* are excellent introductions and *Sound By Artists* is an anthology that collates a variety of approaches from mainly North American contributors. Douglas Kahn's two recent books are valuable encyclopaedic collations of post-modern thought relating to the history of sound in media and the arts. His second book, *Noise, Water, Meat*, explores historical ideas about sound in the arts.

Australian Sound Studies

There are no scholarly books on Australian sound practice, or its relationship to other disciplines apart from my monograph and audio CD, *Sound and Sculpture*, *Intersections in Sound and Sculpture in Australian Arts works*, published with audio CD by Craftsman House. Brenton Broadstock's book entitled *Sound Ideas* is a profile of Australian composers born since 1950 and stays within the realm of acoustic music.

Over the last decade, it has become increasingly clear that the place of sound studies and related research has become marginalised in Australian universities, despite innovative beginnings at LaTrobe, Melbourne and Sydney universities under the influence of Barry Conyngham, Keith Humble, Tristram Carey and others. This activity has been curtailed in academic circles with the closure of the LaTrobe music department that championed the field and other courses in electroacoustic music that no longer exist. The seminal on-line sound journal, *Mikropolyphonie*, has had to relocate. Sound studies are embraced to some degree in departments of media, fine arts, architecture and engineering, but there remains no serious academic discipline dedicated to sound studies in its own right. Those courses that do touch on sound theory rely heavily on perspectives defined by their own disciplines. Borrowing from European linguistic and literary theoretical models, in a desperate attempt to contextualise Australian sound practices within the broader society, is also a common practice. This results in scantily formed ideas without sufficient knowledge of the practice of sound itself and all the problems associated with transplanting European models to Australian society that has a completely different acoustic environment and sonic history. A close look at the use of sound in a variety of disciplines will put the role of sound, its theory and implementation under scrutiny.

As a result, Australian research has been sporadic. Rainer Linz's 22 *Australian Composers* and his issues of the journal *New Music Articles,* profiled artists and composers using sound in all its forms during the seventies and eighties, and became the main intellectual focus of debate for several years. *New Music Articles* centred around artist-run venues and galleries rather than the institutions. Two volumes of the journal *Essays in sound*, from UTS, Sydney, disseminated their broad course orientation. Paul Carter in his article "Acoustic Futures: sound noise and urban design", (*Artlink*, vol. 11, no.4, 1991/2), has argued, "to give our cities back to the human voice" (p.13), and his three books have articulated important links between sound, voice, performance and language in the development of Australian culture. My own books and writings, 1985-2001, have focused in depth on the spatial design of sound in the Australian context and looked closely at its relationship with sculpture, (see below under personal contribution and publications). I have assembled a national archive of this work. The increase in the amount of work by artists and sound designers became clearly apparent when I started investigating the area of sound sculpture in 1970 when there were about three practitioners, including myself.   By the end of 1997, over 130 Australian artists had embraced the concept in their work. The on-line journals *Sound-Site* and *Mikropolyphonie* continue to present some discourse about sound to a wider public. Most other documentation has been associated with sound conferences offered from the fine arts, cinema or computer music contexts, but serious scholarly work of a conceptual nature remains to be done.

The Australian Sound Design Project has been designed by to be implemented as a database and web site. The conceptual model is the result of collaborative work between Dr Ros Bandt and Garth Paine. A questionnaire and call for works has been prepared and is available on this web site or by emailing:

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The Proposed Database Model

A data model as a guiding methodology

In establishing the Australian Sound Design Project it became clear that we would need to collect a great deal of material from practitioners, theorists, curators and others engaged with the use of sound in public space. It was also important to develop a clear focus for the data that we wished to gather. In so doing we needed to address the intentions of the project (as outlined in more detail above), which were to establish a resource for the sound design and sound art communities, curators and others interested in sound practice. Furthermore, by amassing a centralised information point, we also hope to provide a focus for sound design practice, which may help establish an identity for the art form in Australia.

In order to develop a participant questionnaire, it was first necessary to develop a model that's covered the information we would wish to gather within an integrated structure, illustrating the way in which these elements of data interrelated.   That structure had to facilitate a clear path through the material and as such had to illustrate the component parts of the design in such a way that meaningful analysis may indicate patterning, or tendencies in the works submitted. The model also needed to support both delivery information patterns associated with Web access, and the requirements of ongoing research associated with the Australian Sound Design Project.

The first step in defining this model was to examine the many aspects of sound design methodology, practice and execution in order to find common documentable characteristics. Furthermore it is hoped the project will uncover characteristics that illustrated patterns of practice. In order to achieve this goal, the 'work' has been set as the central point of reference.

The work, the artist, the concept

The 'work' of course has a number of distinct characteristics, and may therefore be seen as an entity in its own right. It does however not come into being of its own volition. It is the product of a concept. The concept itself being a product of the artist's explorations.

The concept may be part of an ongoing process of exploration and discovery, but will be essentially unique to the work being examined. It is on this basis that the model represents the relationship between the artist, the concept, and the work itself.

Also associated with the 'work' is a methodology. The methodology embodies the artistic practice associated with the work. Whilst an artist may be associated with a particular practice, or genre, it is likely that this would change in accordance with the requirements of each work. It was therefore decided that the methodology was not a characteristic of the artist, or the concept (which may give rise to a number of different works employing different methodologies), but was in fact a product of the work itself.

Site

As this project has a particular focus on sound designs within public space, the work must have been presented in public space in order to qualify for inclusion in the project.

Each 'work' may be presented many times, and the qualities of the presentation may well vary. For instance the site in which the 'work'is presented will most probably be different from exhibition to exhibition. Each location (indoor, outdoor etc) will have a range of inherent qualities.

Each presentation of the work, due to its relationship with the site will also have a number of imposed requirements. These may include:

- The duration of the installation: Is it a permanent installation? or an ephemeral exhibition?
- If any installation is permanent (permanency would be indicated by an exhibition period of several years) it will have to deal with many issues not inherent to short-term exhibitions. These will include longevity of equipment, but may also include variations in response to seasonal changes, or in response to short term temporal variations such as the hours of the day, and the number of people present, amongst others
- The hours of public access will be determined by site policy

These points are but a brief synopsis of the many particular qualities of each site.

The site may be a large exhibition space within a major city based gallery; It could equally be an urban or rural environment, which may be by the seaside, on a river, or in a community centre, a library or other small community facility. With the advent of broadband Internet access the site may also be a virtual environment.

Acoustic Space

Of particular interest to this project is the acoustic quality of the space. The acoustic qualities of the space will naturally have a substantial impact on the way in which the sound designer works to achieve the desired outcomes.

Each site will have a particular set of acoustic properties. The reverberation qualities of the site may vary from extremely reverberant, (that is an acoustic environment with many reflections and a long delay time) to an outdoor setting with negligible or non-existent reverberation.

The sound designer may have to develop a particular strategy to deal with the reverberation qualities of the site in order to make the material intelligible, or to support a strategy for spatialisation, indirect reflected sound, or other features of the particular sound work.

Other characteristics of the site may also include resonant frequencies, and it is certainly the case that most indoor settings require a degree of equalisation in order to achieve a relatively flat frequency response. Sound Designers may of course choose to focus on these resonant frequencies to support their artistic intention. These are the very things the Australian Sound Design Project wishes to discover.

The mapping of the site's acoustic qualities will illustrate the basis for the decisions the sound designer has made in the preparation of the audio content and the specification of the required equipment. Further more, amassing information about many acoustic sites will assist sound designers wishing to use these exhibition spaces. It may also illustrate a propensity for the use of particular spaces, or illustrate a statistical leaning towards the availability of certain kinds of sites for sound works.

Methodologies

It is difficult at this stage of the project to indicate what methodologies those who participate in this project will present. Sound practice is unique (with the possible exception of installation and sculpture work) in the diversity of approaches and practitioners within the genre. Sound designers create:

- Aural environments,
- Installation works,
- Permanent exhibitions in museums, visitor and tourist information centres,
- Works that reflect heritage values,
- Works that involve interaction and audience response, and
- Works that reside on the Internet in a virtual environments.

Practitioner's range from composers; artist's, sound engineers and sound designers and range in age from youth to the elderly. The breadth of both the practice, and the range of practitioners is something that this study will hopefully uncover.

Hosting Bodies

Many sound works would not occur without substantial support from other bodies. Within the proposed model, these bodies are referred to as hosting bodies. Each work may have many hosting bodies, and the functions of each hosting body will vary in accordance with its involvement in the work.

Amassing data about the hosting bodies involved in sound work will provide a very valuable resource for practitioners interested in pursuing support for the work. The database will represent each hosting body that has engaged in some way in any of the works showcased on the site. The hosting body will be appropriately detailed, and its function illustrated by the role in the development, presentation, archiving, or other substantive support role associated with the works. The site will therefore provide not just a list of hosting bodies, but practical illustrations of the way in which they have engaged with the development of sound works.

Summary

This model is illustrated here only as a form of data management that has assisted in clarifying the questions to be asked in the participant's questionnaire, and the possible relationships between the data elements expect in the submissions. In going through this process however, it has become clear that this model, when matured by the many variations that will no doubt be observed in submissions, will become a generic tool for sound designers to address the many facets associate with the inception, development, and presentation of sound works in the public domain.

One of the objectives of this project is to develop tools that will be freely available to sound designers. Feedback on this model is thereby encouraged. You are encouraged to submit additions, alterations and alternative perspectives on the process of sound design as it is represented in this model.

In order to fully illustrate the submitted sound design works, the Australian Sound Design Project will include two featured works from each artist. The descriptions of these works, as provided by the artists, will be supported by both video and audio documentation viewable over the web.

The Australian Sound Design Project aims to be impartial with regard to genre and style. It aims to cast the net widely, to form an inclusive picture of Australian sound practice. Please see the submission for further guidance about the submission requirements