Designing NESTAR - a Network of Exploratory Spaces for Temporal Arts Research

Summary: We are building a network of researchers and laboratories to facilitate the study and creation of temporal arts: music, dance, theatre, film, video, performance arts, etc. All of these incorporate time, and most incorporate sound, both of which are intangible; as a result, they have appeared inscrutable to many researchers. In addition, audience reactions seem so diverse that many have despaired of reaching any useful conclusions about their perception and reception. However, over the past seven years, we have designed a unique research platform and environment under the project titles of (Phase I) *Multimedia Thesaurus* and (Phase lI) the *Interactive Multimedia Playroom* to address these problems, and we are delighted to report enthusiastic response from artists and researchers in various disciplines. We are now designing Phase III called *NESTAR - Network of Exploratory Spaces for Temporal Arts Research* - optimized for exploration of music, and temporal arts in general. It consists of a set of networked physical environments, virtual versions, specific and modifiable media content, and a design which encourages musicians, artists, other scholars, non-specialists, and even children to explore, converse, and conduct psychological experiments relating to music and the interaction of sound, image, and movement. It is designed to appeal to all who have an interest in temporal arts: artists and scholars; performers, composers, and theorists; general audience and critics; psychologists and game designers - thus maximizing the potential for cross-disciplinary discourse.

The NESTAR project has engaged the imagination of people in many different fields and countries, and we are now working to develop the loose-knit group of core collaborators into a broader networked community with access to long-term installations in academic and public spaces. We are currently developing (i) a 'sensored' version of the 3D sorting grid which will permit users at one installation to view the placement of media by users in another part of the world; and (ii) different levels of a virtual version - from a simple portal to link two or more 'sensored' grids to more complex virtual or hybrid reality versions. As the physicality of the environment is one of its important characteristics, the virtual versions will serve as supplements rather than substitutes; however, they will greatly enhance some aspects of the project such as allowing the testing of large cross-cultural groups of "subjects", designing and marketing new structures, and enabling richer discussions between team members in different regions.

The real strengths of *NESTAR* lie in the quality of participants it attracts, and the richness of the media content. We are already in touch with over forty scholars and artists internationally who have expressed considerable interest in our project, and expect this number to grow exponentially as physical installations proliferate. We wish to begin building a much clearer framework of collaboration so that interested researchers can more easily identify the project's suitability for their own work, and indicate their own level of commitment to the project's development, whether as a "user", a contributer of media content or bibliographic recommendations, or as a core collaborator / coordinator for a local NESTAR 'node'. In addition, we want to improve means of communication between all interested researchers to optimize sharing of research material and findings. The International Opportunities Fund would allow us to work with a group of core collaborators who can help us (i) identify challenges and propose solutions for maximizing the project's relevance, quality, efficiency, and visibility; (ii) identify potential funding sources, partners, and clients in their own regions and internationally, and develop applications and partnerships; (iii) articulate the ways in which they see NESTAR aiding their own research, teaching, and/or creative practice; and (iv) identify and enlist students and colleagues who are prepared to participate in subsequent applications. We are confident that such reinforcement will

enable us to leverage significant funding, make the project stronger and more effective, and thereby entice more scholars and artists to join us and help make our research environment a favourite place to explore, reflect, and understand issues relating to music, media, movement, time, and cognition.

overview:

This project is intended to foster the development of an international component of an ongoing research programme which can be most aptly described as a distributed multimedia research environment, whose central feature is a dynamic classification platform. While the environment is being optimized for auditive and multimedia analysis and discourse, other cognate applications are also emerging, such as the development of museum exhibits dealing with sound and sound-image interactions. The long-term objective is to form a nucleus of researchers internationally who will work together to develop: (a) a deeper understanding of our perception of sound, image, movement, and their inter-relationships; (b) an accompanying vocabulary to articulate that understanding; and (c) a recommended set of frameworks, strategies, and tools for further research.

description - conceptual:

Multimedia analysis is a field that is shockingly underdeveloped, given the ubiquity of multimedia content on television, internet, cinemas, and performance venues. The challenges include: (i) the invisibility and apparent intangibility of music, which often precludes the non-musician's ability to "point to" any given detail; (ii) the invisibility and apparent intangibility of time, coupled with a traditional skepticism of our ability to “understand” time, which contributes to a hesitancy to confront the role and perception of time in temporal arts; (iii) lack of a common non-technical vocabulary for describing music, dance, multimedia, etc; (iv) a (resulting) lack of systematic studies into interactions of sound, image, and movement; (v) a tendency to want to protect the subconscious and often visceral effects of art from the rational analytical mind of verbal discourse; and (vi) the difficulty of creating tools to measure things in motion. This dismal state of affairs is familiar to most who have been involved in collaborative processes such as performance art, film, dance, etc. Conversely, any advances towards more effective communication between specialists from different artistic areas can greatly faciliate collaboration, and enhance both the teaching and analysis of music and multimedia.

background:

Modern culture is full of examples of the many ways in which sound and image can be paired. Some artists and artistic teams (and advertisers) seem to have an innate knack for finding wonderful combinations. Yet, our understanding of how such pairings are perceived rarely emerges from the unconscious or the intuitive. We don't really know to what extent our impressions of a “good match” are personal, culturally specific, or universal – nor to what extent our perception will change with a small change in one of the components. Michel Chion (1991) remains one of the few scholars to attempt some means of classifying these interactions. The most common defense is that it is too complex to investigate, as our reaction to any given match of sound and image depends on personal aesthetics, experience, training, etc. However, by setting up the NESTAR environment with very short clips to be combined in multiple ways, and asking people to articulate their reactions, we can see that, in fact, there is often considerable consensus among groups. By developing some additional software and hardware to complement our existing structures, we propose to allow for more precise study: for example, by applying colour filters to any given image, we can see whether a “better” or “worse”

match is found between a specific image and sound. Likewise, adjusting the tempo or volume of a sound may improve or decrease its suitability with a specific image. Most importantly, the establishment of 'nodes' worldwide will greatly facilitate asking many people from many cultures to give their opinions on specific combinations. The playful nature of the environment also assures participation by a wider group of 'subjects' than usually volunteer for a psychological experiment often conducted in a sterile laboratory with long questionnaires and boring, artificial, and/or poorly-recorded media content.

connection with previous research:

The first phases of this programme have been presented as the *Multimedia Thesaurus* and the *Interactive Multimedia Playroom* in the form of various physical installations as well as in talks and conference presentations. The current form (NESTAR - *Network of Exploratory Spaces for Temporal Arts Research*) consists of a set of networked physical environments, virtual versions, specific and modifiable media content, and a design which encourages musicians, artists, other scholars, non-specialists, and even children to explore, converse, and conduct psychological experiments relating to music and the interaction of sound, image, and movement. The very positive response from a diverse array of researchers worldwide has led us to imagine the usefulness - and appeal - of having several installations connected together (via sensors and an internet portal) to allow for the development of a common database of media clips, coordination of experiments, and easier sharing of research findings.

description - physical:

The environment's central feature is an installation of flexible proportions where players trigger short sound or image clips by scanning hand-held objects with a wireless scanner. They then match sound with image, and / or place them into particular "sorting" structures. Some of these structures are large 3-D grids whose axes can be labelled with any terms that amuse the participants, whether descriptors of mood, musical parameters, the nature of the sound-image interaction, or other associations (in a kind of perceptual mapping). Alternatively, a researcher (or group of researchers) can select or create a specific set of media clips and labels, and perform quite rigorous psychological tests. The ability to "handle" sounds and pair them with a variety of images has proved to be a fascinating activity; it brings to the surface many associations that usually remain in the subconscious.

These installations can serve as novel substitutes to the psychology lab, while simultaneously allowing for free exploration in ways that can appeal to artists and musicians - performers, creators, and theorists - and other interested players. It seems to provide an invaluable first step in teasing out the complexity of issues relating to our perception of sound and multimedia, and thus will facilitate the development of a more sophisticated set of tools and strategies for analysis and criticism that can in turn help creators be more articulate and refined in their integration of sound, image and movement. A parallel focus on language has been built in to enable the diverse population of the intended users to communicate, and to reflect on the most appropriate terminology for communicating with others.

peripheral applications:

Although the main objective of the project was originally a tool for music and multimedia creation and analysis, the NESTAR platform has shown potential for numerous other applications as well, ranging from a pedagogical tool to a team-building and networking tool, not limited to music or fine arts. The platform is very effective in sensitizing people - from children to senior scholars - to the variety of reactions to, and associations with, fragments of music and sound, and to the myriad effects

of sound-image interactions. It also promises high relevance for research in various other fields, including gaming and market research, and works as an excellent facilitator for artists wishing to collaborate but lacking a common vocabulary and repertoire.

As a central feature of the NESTAR environment involves the "sorting" of sounds according to their perceived associations with mood, image, and terminology, it is exhibiting a significant potential for cognitive studies relating to classification & retrieval as well as auditory, temporal, and multimodal perception. The 'sorting' structures used are varied; we are beginning to experiment with some organic shapes as alternatives to the cartesian grids. We suspect that an examination of people's preferences for particular structures for the classification of specific media sets may provide good insight into cognitive issues, and may be transferable to more virtual forms of structure such as media organization on the computer. The project also contributes to the design of strategies for the classification and retrieval of media - not just as digital files but also as conceptual groupings. In the world of information overload, where image- and sound-search machines are still in their infancy, it seems that this is a rich area for exploration.

As *NESTAR* can operate with any set of short media clips, it is well-suited to showcase a particular aesthetic, culture, technology, environment, or subject matter, or alternatively to present a broad array. In addition, we have been alerted to the platform's potential for purposes such as a multimedia museum exhibit, a pedagogical tool, and a model for games (both real and virtual, for pedagogical purposes and sheer entertainment).

We are gathering a core international group of researchers from several fields who are helping develop the framework for various uses, including that of a traveling interactive museum exhibit networked to several museums simultaneously, and the development of a Montreal-based Centre for the Exploration of Temporal Arts which would complement (and perhaps direct) the larger NESTAR Network. I am also, at the recommendation of a senior psychologist, preparing a book to give an overview of the project and our findings to date (working title *The Playroom Phenomenon*). We expect to enlist the support of other researchers in fields such as artificial intelligence and cognitive sciences (beyond the music psychology expertise we already have), who will be able to help us formulate strong applications for funding and partnerships.

long-term vision:

We are reasonably confident that, given funding, installations could be operating in many research laboratories worldwide within a few years, as well as circulating in the form of one or more travelling museum exhibits. We are therefore proposing to develop NESTAR - *the Network for Exploratory Spaces for Temporal Arts Research* - to oversee the development of these networked spaces, ensure their coordination, maintain dynamic links with cognate researchers, and help extend both the banks of media and the pool of collaborators. In addition, the network could eventually act in a kind of consultation role, making resources - human, physical, multimedia, and documentary - available to those designing anything which involves sound and/or temporal arts, from the design of public spaces and art policies to the development of more responsive search engines and data mining for music and multimedia. The installations themselves are already excellent tools for sensitizing people to the effects of sound; this is of paramount importance in today's world as our sonic environment becomes increasingly noisy while attention to the visual continues to dominate.