

## ***Sensuous Geographies***

**A collaboration between  
Sarah Rubidge and Alistair MacDonald**

**a multi-user interactive/responsive installation R&D 18 months: 2001 – 2003  
[presented in Glasgow (New Territories Festival), Los Angeles, Chichester, Bedford,  
Winchester, and Leicester**

*Sensuous Geographies* is an immersive, multi-user interactive installation, created by composer Alistair MacDonald (Royal Scottish Academy of Music and Drama) and myself. It is primarily an interactive sound installation made up of polyphonic sound worlds in which individual participants a) independently initiate, modulate and control the spatial trajectories of strands of sound, and b) through composite spatial behaviours of two, three or four of the participants (e.g. the degree of proximity between participants a & b, or a & c, or d, b & a). As they enter a central interactive space (4mx4m) participants (who are tracked by a video camera mounted in the ceiling) don highly coloured silk robes, which allow them to be individuated by the colour-recognition tracking system. At the same time between 4- 9 independently responsive video images that echo the colour and motion of the participants emerge and disappear on banners hung through the larger installation space, extending the spatial range of the installation environment, and adding a second choreographic form to the installation.

*Sensuous Geographies* emerged from a collaborative research project, undertaken by Alistair MacDonald and myself in 2001-2003. The collaboration was one of equals with no 'director' taking control of the development of the project. Rather it developed organically through discussion and debate as to how best to achieve the artistic intentions and technological parameters that drove it.

The collaboration was grounded in a long-term artistic relationship between Alistair MacDonald and myself, both of whom have had long experience of working collaboratively with choreographers and composers, although we have made only one professional work together. Over the years, through devising and running music-dance workshops, we have investigated a range of collaborative processes between composer and choreographer. This experience, when applied to this research project allowed us to work intuitively across our respective fields, to 'read' potential extensions of each others' working practices in this new context, to accommodate ideas which may at first have seemed counterintuitive to one or other artist, and to experiment with new ways of approaching our work. The collaborative process in this project, however, was also extended to include contributions from participants, whose comments and physical responses to *Sensuous Geographies* were fed directly back into the research process.

### **Research Methodology**

The methodology used during this project was reiterative, comprising a cyclical flow between

- a) discussions concerning the effects desired from the installation, both from the perspective of the musical interface and the behaviour of the participants who generated the musical event,
- b) building the software interface,
- c) testing the efficacy of the tracking system (video camera and colour recognition software),
- d) testing the legibility of the interface, the effect of the interface and sound environment on participants, and their effect on the installation,
- e) evaluating the responses of both the interface and the participants and reconsidering the structure and content of the work in the light of this.

This cycle was undertaken three times prior to the first public showing, leading to development and refinement of the interface and musical content. Approximately 40 people were invited to take part and contribute to this process during the three interim research testing experiences. These

comprised dancers, composers, musicians, actors, performance artists, architects, theorists and others with a range of experience of interactive work. The introduction of the contextual layer of sound, and the use of blindfolds are two examples of aspects which came about directly as a result of feedback from participants in these development stages. The piece was mounted first in February 2003 (2) and the responses to the three days of this public event used to further modify the interface and environment for future events.

### **Artistic/research Imperatives**

The project focused on the development of a multi-user interactive environment using computer software (Max/MSP) which was *both legible to the user and complex enough to be artistically interesting in its own right*. Additionally it was intended that the installation would *use sensate, rather than conscious, awareness to guide movement behaviour, facilitate collaborative interactivity between participants and bring about emergent sound worlds and an emergent choreographic form*. The installation is designed both to allow participants to engage interactively with the installation, and to encourage participants to watch the activity of others doing so, thus *interrogating distinctions between the roles of audience and participant*.

Within the context of these overarching artistic intentions, each of the artists had particular goals in mind which were influenced by their particular artistic backgrounds. These two goals were integrated into a single composite work during the course of the collaboration.

I operated under two central research imperatives:

- to create a multi-user interactive installation which would generate emergent choreographic forms during its use;
- to develop an installation in which the behaviours of participants would be guided not through conscious intentions or thought but through 'subconscious' physiological messages initiated by subtle sensory perceptions of the environment.

I used notions developed by scientists such as J.J. Gibson (1966), who emphasised the notion that perception is a network of interrelated perceptual systems (including 'haptic' perceptual systems such as the kinaesthetic) that interact with, and modulate, each other.

Alistair MacDonald's guiding intentions were primarily concerned with creating a complex musical environment, each manifestation of which would be brought to life and given a distinctive character by the activities of the participants. His intention was to create a musical 'environment' rather than a musical instrument, as is common in interactive sonic installations.

Although the two sets of goals remained distinctive throughout the development of the environment, they interpenetrated throughout the working process, modulating each other as they developed. The result is a work that has a richness of texture that would not have been generated had each artist developed a work of this kind independently.

*Sensuous Geographies* addressed problems I had encountered in previous attempts to develop multiuser interactive installations. Earlier works, (e.g. *Passing Phases* (1996-1999)<sup>1</sup> and *Halo...in Performance* (1998))<sup>2</sup>, used visual imagery rather than sound as the primary interface<sup>3</sup>. I had also been exploring the introduction of the sensuous in to the digital domain in these works and others (*Time & Tide* 2001) and the use of this to affect behaviour. I had observed that when these pieces were engaged with by the general public the visual images, which were representational in character, seemed to encourage the viewer to use their conscious intentions guide their behaviour, rather than allow the sensations the images generated in their bodies to initiate their responses. Further, in both of these installations the tracking systems used (linked pressure pads [*Passing Phases*] and camera tracking [*Halo*]) did not individuate the participants. The latter were identified by both tracking systems as one of many un-individuated 'objects' which changed location in the space. These systems could 'lose' the 'identity' of individual participants (e.g. through occlusion), and made arbitrary decisions as to the 'identity' of a tracked object under these circumstances. Another problem that had arisen involved the effect of increasing numbers

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<sup>1</sup> With Garry Hill & Tim Diggins

<sup>2</sup> with Simon Biggs

<sup>3</sup> An extension of a collaboration with Simon Biggs

of participants on the legibility to the participant of their behaviour in the installation. In *Passing Phases* and *Halo* the numbers of participants in the interactive space were not limited. I observed that, if there were more than four people in the space, participants could not discern which of the installation's responses they were initiating as individuals. Although the behaviour of the participants and the behaviour of the individual images on the screen (each of which was independently interactive) were legible, and controllable, when there were more than 10 or so people in the installation, the images on the screen appeared to the participants to be engaging in random behaviours which had little to do with their individual behaviours. It was felt that there might be a way of generating live choreographic patterns in concert with the virtual choreographic patterns.

The research project which resulted in *Sensuous Geographies* was intended to address both of the issues mentioned above. In order to overcome the tendency of visual images to activate the conscious intentions of the participants, and to redirect participants attention to bodily responses, it was decided by MacDonald and myself to use spatialized sound as the main impetus for the navigation system in this research project (on the grounds that sound has the capacity to affect the body at a deep physiological level, as well as to exercise the conscious mind). Although the installation was developed primarily through artistic intuitions on the part of both researchers, reading theorists such as Paul Rodaway (1994); J.J. Gibson (1966); Damasio (2001) supported the artistic intuitions, provided a theoretical underpinning for the work, and deepened the artistic responses.

### **Research Process.**

The level of funding for the project was such that the only practical tracking system accessible by MacDonald and myself that would uniquely identify individuals involved video camera and colour recognition software. The restrictions imposed by this system significantly influenced the visual appearance of the installation environment as participants have to be identified by clearly differentiated colours, and testing determined that these would need to be bright red, yellow, green and blue.

(Our resolution to this aesthetic restriction ultimately gave the final installation its very particular character. The video camera used for tracking was placed overhead (to minimise occlusion of one participant by another) This led to the decision that participants would be dressed in costumes covering the whole body and head when entering the active space. Costume designer, Margaret Moffatt was commissioned to create two sets of costumes to accommodate (and denote) both novices and expert users. The costumes are opulent, richly coloured, and very non-technological in appearance. These costumes ultimately provided the installation with its visual character and ambience. They also had another function for participants, becoming masks that gave them a sense of anonymity and the freedom to behave in a way they probably would not have behaved had they been in everyday clothes. Additionally, the donning of the costumes also served as a threshold between the everyday world and the world of the installation, inasmuch as the process of putting on a costume, and facial mask, gives the event in which they are involved a sense of ritual, both for participants and observers.)

In order to address the issues concerning the need to individuate each participant, so as to increase the legibility of the interface, and thus the ability of the participant to understand what effect they were having on the sonic environment, a multi-user tracking system which could track each participant independently, without losing 'sight' of them, was developed using colour recognition that was interpreted by the software. Individuation of participants is a necessary condition for co-operative interactivity. In addition to enabling participants to identify their own effect on the installation it also allows for more sophisticated initiators of modulations to be used than one-one responsiveness (e.g. proximity between two or more people (a/b) affecting the sound environment in one way, proximity between a different grouping of people (a/b/c) affecting the sound environment in another way) .

Alistair MacDonald designed and built the interactive system that drove the work (using Max/MSP), and, over time, created the matrix of musical environments which participants access and transform as they engage with the installation. However, the particularity of the interactive interface, and the nature of the participants' interactive engagement with it were developed in

order to accommodate the choreographic research imperatives that I brought to the installation. These included the desire to have the participants be guided by the sense the sound environment generated in their bodies (for example the sound is such that they could “lean” into it and let that physical response move them in a particular direction, and at a particular speed), and the desire to see a genuinely emergent choreographic form develop as individual participants move around with their sounds, and enjoy the sound environment they generate. In order to encourage participants to engage in their sensory responses to the environment participants are blindfolded as they entered the active space. The lack of sight requires that they attend to those details of the environment of which they may not be aware when able to see the space around them (sight tending towards conscious interpretations of spatial understanding), in particular the precise placement of the sounds in the space in relation to their own body, the feeling the sound generated in their bodies, the actions that feeling precipitated, and the proximity of sounds other than their own to their own location. These affect the way participants move.

In choosing sonic materials for *Sensuous Geographies* MacDonald drew upon categories of sounds, which generate immediate physiological resonances, as well as sociological and aesthetic responses relating to the apparent identity of the sound. He also explored the idea, refined during the process of developing the work, that in “owning” a particular sound, participants appeared to empathise with it and share some of its energy. The initiation of sounds was not autonomous, rather each sound was selected by Alistair MacDonald during the installation events. The particular choice of sounds from moment to moment was a musical/compositional decision made by the composer (who also allocated the processing system/s for each sound as each new participant entered the space) allowing him to offer an ever evolving musical landscape during the installation events, and to fulfil both musical and choreographic needs.

In addition to the individual participants’ strands of sound there were also contextual layers of sounds which fill the whole room and create a (changing) sense of the environment within which the independent sounds operate, and at times observable differences in quality of movement behaviour. For example, in an untreated recording of a quiet outdoor landscape encourages participants tended to move very freely and naturally, a low, dense, static drone usually slowed participants’ movement, many of whom moved closer to the floor, higher cracking sounds induced an increased tendency towards energetic movement. These sonic qualities coloured participants’ physical reactions to the environment as a whole, and at the same time changed the perception of the individual strands of sound for both listeners and active participants. As a result participants who become comfortable in the installation appeared (and claimed) to have bypassed a conscious reaction to the sound environments, and thus a desire to control the environment. This opened the way for a (subconscious) collective approach to the generation of the sonic environment. It is here in the qualitative nature of the sound that the feedback from system to participant and participant to system was generated, not specifically the computer driven system, although the latter set the technical conditions for the feedback between environment and participants to occur. The design of the interface used choreographic understandings concerning the use of space were a means of rationalising some of the parameters developed for modulating the sound, for example proxemics (Hall 1963) as a means of creating dynamic, fluid group formations through responses to sound.

In order to ensure that the work retained its interest for more ‘experienced’ participants, the interactive system had a number of levels of complexity from ‘novice’ to ‘expert’. At its simplest, a ‘novice’ visitor’s sound will follow him/her around the space. As complexity increases parameters such as pitch and volume, or more radical dynamic transformations of the sound will result from speed of movement, position or proximity to other visitors, and these relationships between visitor behaviour and transformation will change each time one enters the space. The balance between legibility/predictability and complexity is designed to keep visitors engaged even after many visits. The most complex ‘expert’ levels were sometimes impossible to read consciously, but when a user reached this level an intuitive understanding of the installation environment, not a conscious navigation within it, seemed to engage them. Thus an ‘expert’ had not learned a technical facility, but a mode of ‘listening with the body’.

Over time the participants' manipulation of the environment became more expert both with respect to the individual as individual and as a member of a group, and the texture of the environment produced concomitantly more complex. This was in part due to the richness of the sound environments the participants found themselves initiating. Nevertheless, *Sensuous Geographies* proved to be accessible to, and usable by, participants from a wide range of backgrounds, and generated a wide variety of coherent interactive group responses from different groups of people.

## Installation

The installation became an immersive environment with a ritual ambience (noted by both participants and viewers) in which it was possible for participants could give themselves over to the effect of the sound they were generating on their bodies, and their consciousness (see [www.sensuousgeographies.co.uk](http://www.sensuousgeographies.co.uk) 'Public Response'). Although not all responded in this way participants from a wide range of backgrounds (from musicians, composers, dancers and choreographers to American football and basketball players, senior citizens and small children) all found their own way to respond to and engage with the installation. Although not all found it easy on the first encounter, most persevered through the initial period of confusion as they became more familiar with this constantly changing environment to find their own intuitive response to the sound environments they were experiencing.

The work has been used as an exemplar of interactive work by Steve Dixon in *Digital Performance: A History of New Media in Theatre, Dance, Performance Art and Installation* (MIT PRESS 2006), and used as a case study by PARIP; is the subject of two book chapters by Sarah Rubidge, printed respectively in *Performance and Technology* by Susan Broadhurst (Palgrave 2007) and *Choreography in Contexts*, edited by Joanne Butterworth and Leisbeth Weildschut (Michael Ryan, NY, 2007). Papers on the piece have also been presented at PARIP in the UK, at a Human-Computer interface conference in Vienna (which led to a jointly authored article in the peer-reviewed journal *Digital Creativity*, at the Corporeality Seminar at the University of Ghent, and at conferences and seminars in Australia.

A Symposium, entitled *Choreographic Installations, An Emerging from of Choreographic Practice*, was held at the University College Chichester, June 2004. Presenters included critical theorist Dr Valerie Briginshaw, interactive artist Dr Gretchen Schiller, and social psychologist Dr Chris Reed of Portsmouth University.

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