Epi-thet: A Musical performance installation and a choreography of stillness

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ABSTRACT

This paper articulates an interest in a kind of interactive musical instrument and artwork that defines the mechanisms for instrumental interactivity from the iconic morphologies of "ready-mades", casting historical utilitarian objects as the basis for performed musical experiences by spectators. The interactive repertoires are therefore partially pre-determined through enculturated behaviors that are associated with particular objects, but more importantly, inextricably linked to the thematic and meaningful assemblage of the work itself. Our new work *epi-thet* gathers data from individual interactions with common microscopes placed on platforms within a large space. This data is correlated with public domain genetic datasets obtained from micro-array analysis. A sonification algorithm generates unique compositions associated with the spectator "as measured" through their individual specification in performing an iconic measurement action. The apparatus is a receptacle for unique compositions in sound, and invites a participatory choreography of stillness that is available for reception as a live musical performance.

Keywords

Sonification installation spectator-choreography micro-array ready-mades morphology stillness

1. INTRODUCTION

The incorporation of ready-made morphologies into new musical interfaces has been a widespread approach, with examples including keyboard, guitars and all the other traditional music-instrumental shapes that carry with them cultures of interaction, imperatives of bodily engagement, and a fruitful starting point for the addition of "augmented" capabilities that can link well-defined performance technique with the digital domain.

There is a particular meaning associated with these morphological traditions, this being the subject of the field of musical iconography. "Musical instruments" remain within a certain kind of realm, a specialist sub-class of iconic meaning within cultural production.

The very technologies that allow for the augmentation of traditional instrumental morphologies, also present the possibility that these morphological traditions can be done away with altogether, thus separating the production of sound from a human body (or other "naturally-occurring" acoustic agent), a reality that first emerged with the mechanical reproduction of sounds. The separation of the means of production of sound from a physical gesture, is a subject of broad enquiry and controversy, for example, as addressed by Pedro Ferreira, who quotes R. Murray Shafer's famous epithet of "schizophrenic" to describe the separation of musical sounds from a corporeal production [1].

An alternative approach views the separation as a kind of liberation, creating a new opportunity for abstracted morphologies associated with sonic production. A related liberation has re-defined the long tradition of inter-disciplinary engagement (as old as musical production itself) and given particular shape since the late twentieth century as digital data has been able to flow freely between artistic modes. More pertinently, Schafer's "schizophrenia" has enabled a greater participation in the unfolding of creative

Figure 1: epi-thet at Arts House Meat Market, Melbourne January 2010

sound works by so-called "spectators". The authentic execution of musical works is no longer solely the province of specialised physical skill sets.

Dance, being a medium of non-instrumental movement expression, is an obvious candidate for the application of flexible data mapping and dancers have been testing interactive systems since their modern emergence some forty years ago. Despite this uptake of an abstracted sonic means of production that saw dancers wearing early versions of today's ubiquitous sensors, Birringer's review of interaction and

interactive systems in dance, highlights the relatively late uptake by contemporary dance to the notion of "active viewer participation", a crucial principle of interaction, which had been identified way back in the 1970s, as characterised by the "artistic strategies used to engage audiences in a dialogue" [2].

Since Birringer's review was published in 2004, many dancers have taken up the relational sense of interaction with a vengeance. Australian/New Zealand choreographer Simon Ellis and Shannon Bott, in their work *Inert,* integrate an audience of two into a choreographic design that is a creates an architecture of prone spectators and variously revealed dancers in real and virtual space [3]. The work *Tank Man Tango,* [4] presented at various locations in Australia during 2009, represents the other end of the participatory scale, and recalls the dance craze phenomenon of the *Lambeth Walk* from Britain in the 1930s with its widespread participatory involvement, and its adoption as a technique for subverting fascist rallies of the time [5].

A common feature of interaction, both in highly specialised skill contexts, such as traditional musical performance, and also in particular interactions with objects is the held shape, or posture of the body that is a functional pre-condition for the articulation of finer and more nuanced body actions, or, in the case of certain instruments, a focussed gaze.

These held postures suggest an aesthetic of "stillness" across a vast array of human performance contexts. This principle has been widely discussed, particularly in relation to the nature of artistic experiences and their relationship to time and process. Stillness was was the provocation for the 2007 Computers in Art and Design Education (CADE) Conference. A paper by composer Cat Hope reviewed various applications of infrasonic or low-frequency inaudible sounds, pointing to the qualities of resonance and overtone complexities that "allow listeners an individualised role in their own experience of a work" [6]. This experience of resonance is the "felt" vibration of inaudible sound, a phenomenon well-known to the deaf community, and conveyed to the authors through our work developing musical structures and instruments with the deaf/blind performer Michelle Stevens [7]. Another reference to the choreography of stillness can be found in Susan Jone's recent article that examines the relationships of T.S Eliot to various choreographers of his time, and the particular resonance of a passage from his *Four Quartets:*

At the still point of the turning world. Neither flesh nor fleshless;

Neither from nor towards; at the still point, there the dance is

Within the paradox of movement and non-movement is an expression of a choreography of stillness [8] that is also apt as a metaphor for the minute processes at the core of living function.

We have gathered these strands of interest – the cultures of instrumental movement, the free flow of data in the digital realm, the receptacles that allow for participatory musical expression and the choreography of stillness – into a form for the presentation of investigations and compositions that we undertook during an ANAT Synapse Residency with the Garvan Institute for Medical Research in 2008. The piece is called *epi-thet*, the title evoking the poetics of the unique individual and the given moment. The resultant music arises from an interactive system that sits somewhere between somewhat static, installed sound works on the one hand, and a musical instrument configured to recursively iterate its original iconic function (a microscope).

2. BACKGROUND

epi-thet is a culmination of our compositional work with genetic material, re-incorporating a bodily enactment into a poetic reflection on the enterprise of genetic research. The mechanisms for ontogenetic and phlyogenetic variation and function, through generations and within individual life are the fascinating subject of genetic research, with immense and epic repercussions for human life yet taking place on an infinitessimal scale. A live multimedia sound installation, *epi-thet* constructs a unique sonification and visualisation of the public-domain genetic data from Stanford University. Each expression of data is a realised as a new and unique composition, read through the specific time, space co-ordinates, and physical character of audience members. *epi-thet* reflects on the minute and the epic, with human genetic data in the centre of an experience of the scale of being human.

In genetic research, a central technology for researching genetic functioning is micro-array analysis. This technique literally visualises the degree of involvement of particular gene fragments through comparisons of the intensities of luminescence on tiny arrays. The results of these experiments are the static datasets that are then available for sonification.
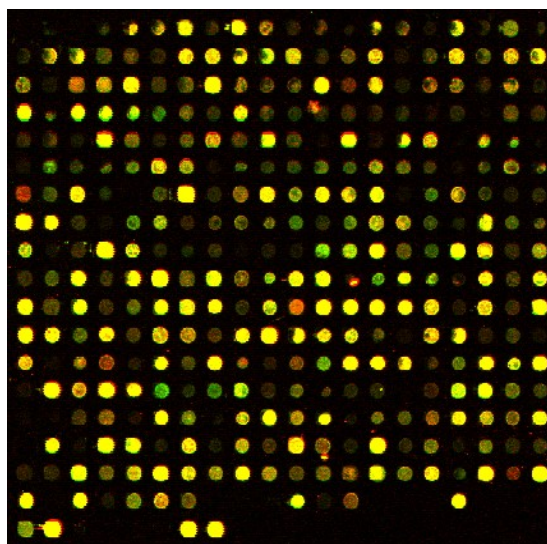

Figure 2: Actual micro-array image, with varying luminescence indicating degree of particular Genetic function (courtesy Stanford University)

Epi-thet builds on our previous developments of installation that are focussed on the contextual and relational qualities of sound in culture. Our previous works in this vein have included *John Cage's Musicircus* and *the megaphone project*.

Our interest is with the cultures of interactivity that feature specific gestural and postural repertoires, the contextualised shapes assumed by the body in relation to the operation of classic archetypal machinery, devices or objects. In the case of *epi-thet*, the device is the common microscope, the universal symbol of biological enquiry. The specific engagement with a microscope requires a still, slightly bent posture and a focussed gaze.

The shape of the musical expression is then achieved with the active completion of the work – a selection, modification, and shaping – by the varied physicality of the audience. Unique information from the postural variation between different

individuals selects appropriate micro-array datasets and shapes the musical realisation.

3. EXPERIENCE

The microscopes stand in large, resonant spaces on small platforms, lit from above. As the viewers lean down to look through the microscopes, the light changes and the sound emerges around and from under the viewer, allowing the infrasonic experience referred to above. The viewer is conductor of an enveloping sweep of sound: the individual at the centre of the sound world of self. Gazing at the visual image in the microscope shows continually changing patterns of luminescence comprised of thousands of single gene chip arrays in sequence, and linguistic epithets gathered from the canon of language. The light overhead fades as the sound rises. As the viewer moves away, the light rises in intensity again, and the sound fades. Others in the space watch and listen. A free-contrapuntal rise and fall is seen and heard.

The gestures and postures of the microscope viewers are observable and instrumental as poetic elements within the assemblage. Specific measures of posture, as held in the typical viewing stance for microscope viewing, determine the assembly of unique musical passages. audience members to articulate the artwork, like a conductor, or orchestral musician.

4. IMPLEMENTATION

Epi-thet consists of several microscopes, on stands of variable height, located on platforms the size of a conductor's podium that are also the sound diffusion devices. Simple lighting is mounted directly above the podium, activated by the presence or absence of a spectator on the platform. The rest of the large space is ambiently and dimly lit.

Within each microscope stand a netbook computer, an *arduino* processor board, associated distance and weight sensors, and a mini- data projector (3M Pro 110) are located.

Each computer is linked using OLSRd mesh networking to pass information sensed from spectators via the *arduino* boards to a custom dimmer control interface (using another netbook/*arduino* which also links to the remote public domain genetic data site. The computers are also running two instances of Pure Data.

The first instance drives the musical realisation, using static datasets that are accessed dynamically, with choice of dataset based on a simple physical characteristic of each spectator (distance from the microscope platform indicating angle of "stoop"). The sounds themselves are constructed from elemental sine tone generators and granular synthesis routines with synthesis parameters determined by variations in the genetic data.

The second instance of Pure Data utilises the Gem object library to drive the video that is projected onto a tiny screen and viewed through the microscope. The video is both a literal echo of the information that is gathered in the actual scientific process of micro-array analysis (see Figure 2, showing varying luminescence in two hues), and a unique compilation of linguistic epithets as evoked by the spectator. These compilations are again selected by the "stoop" angle.

The microscopic projection screen is achieved through a reversal of the usual objective to enlarge images. Here we are aiming to create a tiny, sharp image that is focussed onto the usual viewing surface of a common dissecting microscope.

We have developed a customised optical pathway, using a non-refracting mirror to direct the projector beam onto the screen.
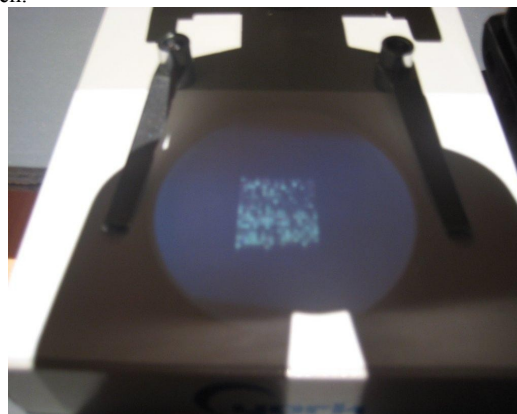

Figure 3: A small image projected onto the viewing screen of the microscope

5. CONCLUSION

We have developed a musical work that visually and sonically references the position of individuals within the enterprise of genetic research. While the benefit of sonification of genetic function as measured through the micro-array technique is beyond the scope of a practice-based development of an installation/performance, our work does represent a cultural benefit: that of a musical interface whose morphology is fundamentally linked to the cultural context of its origins. It creates a sense of homage to the efforts of researchers through the coincidence of still postures that are part of the everyday life of research, but also a symbol of reverence and humility in human relationships.

Created live by the interactions of the group who activate it, the experience is one of a free-polyphonic activity of sound and body.

6. REFERENCES

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