

Interactive, Responsive Sound Environments A Broader Artistic Context

Dr Garth Paine

Music, technology and Innovation

De Montfort University

Leicester, UK

+44 (0)116 - 2078320

garth@activatedspace.com.au

ABSTRACT

Interactive systems offer a unique method of engagement, based on a response – response exchange. They offer the promise of a truly immerses experience.

This paper will look at the development of artistic practice in the twentieth century, and it's associated focus on individual expression. It will do so as a way of looking at the development of the interactive ideal.

In drawing a conceptual framework for interaction, it will also draw on the study of Cybernetics, particularly, the causal loop, drawing parallels between the interdependent nature of the causal loop, and the relationships developed in an interactive system.

Finally, I put forward a personal observation on how explicit the role of the technology should be in the users experience of engagement with the interactive system.

This collection of musings represents an exploration of the many facets of interaction, especially within an interactive, immersive environment, with the view to establishing

an interdisciplinary context for personal engagement and experience, and

some conceptual starting points for thinking about interactive sound works beyond the confines of “music” per se.

Keywords

Interactive, responsive environment, interaction, immersion, engagement.

1. Artistic Context

As an artist my interest lies in reflecting upon the human condition. There are many aspects of our lives, and many facets of the myriad relationships between individuals, different cultures, governments and philosophical persuasions that we struggle to find the time to consider in our day-to-day lives. Addressing these issues on some level is however vitally important to the continuing co-existence of the many disparate parties that form the global community, and is integral to the further development of understanding and insight into the relevance of differences within the global community.

Art in its many forms, musical, visual, performance and literary is an appropriate platform for the consideration and expression of these issues. Visual artists, writers, dancers and musicians have explored these issues for centuries with profound results. One only has to look at the prestige attached to the great cultural institutions of the world to see that the product of this artistic endeavor has communal value. It might be argued that the value attached to these institutions is purely financial; that the value placed upon the works they contain is a product of contrary economic principles. Of course the economics of historical value play a part in their financial value, however, it would be far too cynical to contribute their communal worth solely to the financial market place. If that were the case, the works would be housed in private environments for private enjoyment, not in public institutions, accessible by all.

If it is agreed that these works have a communal worth, then it is also true that artistic endeavour is of value to society. The public institutions attest the worth of the traditional art forms, writing, music, dance and visual arts (painting, sculpture and photography).

The twentieth century witnessed a movement towards the expression of individual experiences. Fueled by a movement away from patronage towards individual commissions, and artists working from their own inspiration, and offering their works in the commercial market place, the evolution of artistic practice saw the constraints of commissioning bodies lifted, and replaced by the concerns of the individual artist.

In Theories and Documents of Contemporary Art – A Source Book of Artist's Writings, Peter Selz discusses the place of the artist after World War II.

Characterised by an intensely personal and subjective response by artists to their own feelings, the medium, and the working process, it was an art in which painters and sculptors were engaged in the search for their own identity. In the universe described by existentialists as absurd, the artist carried the romantic quest for the self, and for sincerity and emotional authenticity, into a world of total uncertainty. ([5]:10)

He goes on to comment that the “mechanized mass culture with a plethora of facile and easily accessible public media added to the artist's sense of alienation and the need for individual expression.” (ibid:11)

These pressures of the changing world led to an art that was driven by self expression, an art that focused on “the personal psychology of the artist rather than on the phenomenological world”. (ibid:11)

This development grew out of the main thrust of the avant-garde movements of Europe between the world wars.

The surrealists' desire for unpremeditated spontaneity held the promise of true creative freedom ... They worked in a realm of ambiguity and communicated through their gestures an aesthetic of incompleteness. At times this exploration turned towards new and unexpected figuration, as in the work of Alberto Giacometti, Jean Dubuffet, and the northern CoBrA¹ Artists, while at others it manifested itself in gestural abstraction. The existential act of making the work was an essential aspect. Even more than previous manifestations of modern art, the dialogue between the maker and the consumer of the work became a necessary element for its completion. (ibid:12)

The interactive, responsive sound environment seems a logical and appropriate extension of the desires of the Surrealist

artists. It claims the processors of mass media on the one hand, and the sacred space of the art gallery on the other. It combines these apparently opposing forces in an art-work that requires the viewer to be the conduit for the creation of a momentary experience. The viewer takes the role, not only of spectator, but simultaneously of creator; where their behaviour creates the environment, and the environment conditions their behaviour. In so doing they find themselves in a position of contemplation, a position where it is necessary to develop a cognitive map of the relationships between behaviour and environment, between action and reaction, between individual and communal.

Such a position is perhaps unique to the interactive, responsive sound environment. It reinvents the basis for humanist considerations; considerations that extend from the physical (behavioral, gestural) to the more profound; the spiritual, the sense of connection to environment, to community, to religion, culture, society and all the other structures that form a broader sense of belonging.

A sense of being immersed in the experience became of paramount importance for contemporary artists. Mark Rothko (1903-1970) for instance spoke of his large canvases:

I paint very large pictures. I realised that historically the function of painting large pictures is painting something very grandiose and pompous. The reason I paint them, however - I think it applies to other artists I know - is precisely because I want to be very intimate and human. To paint a small picture is to place yourself outside your experience, to look upon an experience as a stereopticon view with a reducing glass. However you paint the large pictures, you are in it. It isn't something you command. (Rothko:1951:104)

Peter Selz comments:

... after a period indebted to surrealism and searching for a meaningful mythology, he [Rothko] found his own style of vibrating colour planes. ... he explained that his painting needed to be that large in order to place the viewer intimately into the picture space itself. At the end of his life, Rothko completed 14 large paintings from an ecumenical sanctuary in Houston. Eliminating all references to subject matter, but retaining the triptych shapes for his almost monochromatic dark paintings, he succeeded in evoking undefined yet universal meaning and emotion. (ibid:14)

¹ CoBrA was a short lived revolutionary northern European artists group of the 1940's. The name is derived from the three capital cities of the countries of it's members; Copenhagen, Brussels and Amsterdam.

The sense Rothko had of being immersed in his paintings heralds one of the qualities of an interactive, responsive sound environment. Sound is perhaps the best medium with which to achieve a sense of immersion. It presents as a homogenised sound field, but may contain points of spatialised information, points of interest that seem separate, dynamically mobile and yet part of the whole. In order to achieve these objectives, the sound generation algorithms must be designed in such a way that the position of the spectator is considered in the sound spatialisation, and that the aesthetic of the sounds reflect an organic and approachable quality.

An artist working in New York at the same time as Rothko, Robert Motherwell, discusses the role of the artist in defining an aesthetic that explores and concentrates emotional experience:

The aesthetic is the sine qua non for art: if a work is not aesthetic, it is not art by definition. But in this stage of the creative process, the strictly aesthetic - which is the sensuous aspect of the world - ceases to be the chief end in view. The function of the aesthetic instead becomes that of a medium, a means of getting at the infinite background of feeling in order to condense it into an object of perception. We feel through the senses, and everyone knows that the content of art is feeling; it is the creation of an object for sensing that is the artist's task; and it is the qualities of this object that constitute its felt content. Feelings are just how things feel to us; in the old-fashioned sense of these words, feelings are neither 'objective' nor 'subjective', but both since all 'objects' or 'things' are the result of an interaction between the body - mind and the external world. 'Body - mind' and 'external world' are themselves sharp concepts only for the purpose of critical discourse, and from the standpoint of a stone are perhaps valid but certainly unimportant distinctions. It is natural to rearrange or invent in order to bring about states of feeling that we like, just as a new tenant refurbishes a house.

The passions are a kind of thirst, inexorable and intense, for certain feelings are felt states. To find or invent 'objects' (which are, more strictly speaking, relational structures) whose felt quality satisfies the passions - that for me is the activity of the artist, an activity which does not cease even in sleep. No wonder the artist is constantly

placing and displacing, relating and rupturing relations; his task is to find a complex of qualities whose feeling is just right - veering toward the unknown and chaos yet ordered and related in order to be apprehended. ([3]:38-39)

While Motherwell is not intending to comment on New Media Art, or more explicitly interactive, responsive sound environments, I think his commentary is particularly pertinent.

He speaks for instance “of an infinite background of feeling” being “condensed into an object of perception”. It is exactly my intention that my interactive, responsive sound environments, create “an object of perception” by focusing the visitor's attention on the inter-relationship between their behaviour, movement patterns and the quality of environment. The installation work itself “is the creation of an object of sensing”. Its entire purpose is to reflect the sensitivity of relationship so that the small intimate gestures of each individual are acknowledged; in such a way that every participant is intensely aware of “an interaction between the body - mind and the external world”. However, as in the case of Rothko's large paintings, it is an “external world” in which they become completely immersed.

Motherwell's comment that “it is natural to rearrange or invent in order to bring about states of feeling that we like...” (ibid), describes well the desired nature of engagement with interactive, responsive sound environments. The inhabitant is engaged in a constant, fluid and dynamic series of streams of engagement, of response, and evolution of environmental qualities. This collection of simultaneous experiences, of “relational structures” establishes an architecture of experience “whose felt quality satisfies the passions” of those involved in the momentary interaction.

This complex and multi-faceted stream of experience must be designed, or at least established as a potential outcome, by the artist. The artist must set out to establish “a complex of qualities whose feeling is just right - veering toward the unknown and chaos yet ordered and related in order to be apprehended.” ([5]: 27)

Each of my interactive, responsive sound environment projects set out to further this aim and illustrate a line of development that represents:

- greater levels of interaction,
- more simultaneous streams of response,
- dynamic orchestration, and
- multi-faceted, conditional response behaviors that reflect more and more intimately the weight of gesture and the quality of behaviour of each individual engaged with the interactive, responsive environment.

This evolution can be seen in my work by examining my interactive, responsive sound environment installations

MQM (Moments of a Quiet Mind)

GITM (Ghost in the Machine)

MAP1

MAP2

REEDS

Gestation, which was recently exhibited in the 10th New York Digital Salon (April/May 2003)

All these works are details with audio and video clips on at <http://www.activatedspace.com.au>

2. Cybernetics – The Causal Loop

Another form of inspiration has been the study of Cybernetics, especially with respect to the closed causal loop.

The relationship between the physical space of an exhibition, the technology used to execute the work, and the human movement and behaviour patterns that form the basis of the engagement is critical in the development of responsive environments.

One of the principal concepts of cybernetics is the causal loop. A closed causal loop is one in which each of the elements contained in the loop act upon the others in a constant and varying fashion to maintain equilibrium. The only influences on a closed causal loop are the elements it contains.

An interactive installation exhibits the qualities of a closed causal loop. Human movement and behaviour patterns act upon the technology. The sensing system collects information about the nature of the human movement, the weight of the gesture, the speed and direction of movement. The data is fed to audio and video algorithms that respond in whatever fashion the artist has designed. The response of the system is presented in the physical space. It takes the form of changing sound patterns and variations in video or animation projections. In this way the technology acts upon the space, altering the architectural and energetic nature of the exhibition area. These changes in the physical space caused an alteration of behaviour by those that inhabit the exhibition. This alteration of behaviour, be it one of excitation or placation, will be driven by an intention to bringing the system to equilibrium, or drive it into an unsteady or chaotic state.

The human response to the alterations in the environment forces the closed causal loop into a further iteration. The input to the technology will be varied, the output of the technology will vary and the physical space will in turn be changed, generating a new and distinct response from those within it. This relationship is illustrated in Figure 1.

Interdependent relationships are formed between:

- • the technology that mediates the installation response
- • the human condition, the behaviour, emotions and relationships that are exhibited in the exhibition space
- • the definition and experience of the physical space.

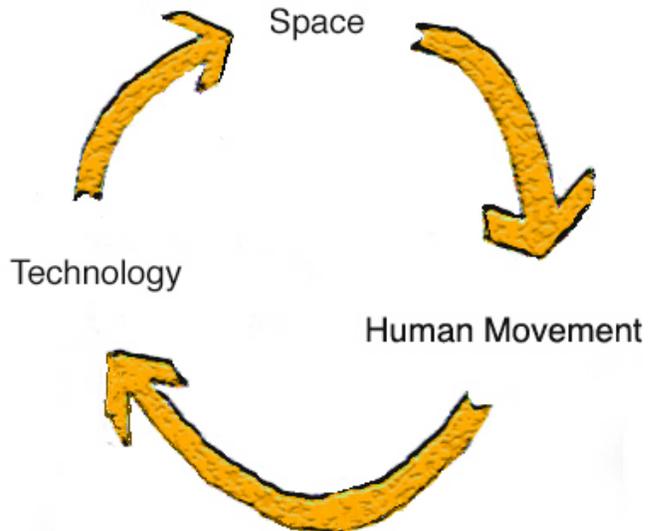


Figure 1 a Closed Causal Loop

I have taken particular inspiration from a key proponent of Cybernetics, Norbert Wiener. He conducted extended research into the application of cybernetic principles to the organisation of social systems.

In 1948 Wiener wrote:

It is certainly true that the social system is an organisation like the individual, that is bound together by a system of communication, and that it has a dynamic in which circular processors of a feedback nature play an important role. ([6]:24)

These words indicate that a well-designed responsive environment may represent patterns of social interaction, and in so doing provide a basis for the consideration of aspects of the human condition.

In 1996 Fritjof Capra wrote

... the discovery of feedback as the pattern of life, applicable to organisms and social systems... (helped)... social scientists observe many examples of

circular causality implicit in social phenomena, ... the dynamics of these phenomena were made explicit in a coherent underlying pattern. ([1]:62)

So too are the patterns of relationship in an interactive, responsive sound environment made explicit and coherent through many iterations of the closed causal loop discussed above. Each one rendering the nature of the relationship with greater detail.

In 1998, the virtual reality and interactive installation artists Christa Sommerer and Laurent Mignonneau expressed similar thoughts when discussing the development of the interactive digital arts:

. . . the art work . . . is no longer a static object or a pre-defined multiple choice interaction but has become a process-like living system. ([4]:158)

One of the pioneers of interactive arts, the American video, and interactive, responsive environment artist Myron Krueger expresses a similar sentiment when discussing his early interactive video works:

In the environment, the participant is confronted with a completely new kind of experience. He is stripped of his informed expectations and forced to deal with the moment in its own terms. He is actively involved, discovering that his limbs have been given new meaning and that he can express himself in new ways. He does not simply admire the work of the artist; he shares in its creation. ([2]:84)

Here, Krueger, as an artist, draws the same parallels expressed by Wiener and Capra, outlined above. He indicates that the experience of engaging in a responsive environment involves an active engagement with each moment, and that each moment of engagement contributes to the creation of the art work. The participant does not have an option of taking the stance of a detached spectator; they are inherently part of the process, part of the artwork.

3. Hiding The Technology

The technology involved in all my installation works has been designed to be as transparent as possible. The principle objective has been to immerse the user in the experience of engaging in a way that ensures the technological tools are not an explicit part of that experience.

I arrived at this view in 1995, prior to commencing my PhD, while presenting a workshop on interactive systems at the Green Mill Dance Festival in Melbourne, Australia. During the presentation, I demonstrated a simple interactive system with the help of dancer Sally Smith.

The demonstration occurred twice:

1. Six touch sensitive floor pads were fixed on the floor and covered by dance flooring so that the pads were invisible to the audience. Sally Smith performed a dance sequence that generated a musical score based on the triggers generated by the dance choreography.
2. The dance flooring was removed so that the floor triggers were visible to the audience and the dance sequence was repeated.

After each iteration of the dance sequence the audience were quizzed as to what the focus of their experience was. During the first demonstration, the audience remarked that their primary experience was of the dancers movement, and the symbiotic relationship between the choreography and the sound score. During the second iteration of the demonstration, the audience almost entirely focused on the technology. Their focus was to work out which floor pads triggered which sounds and, if the sound-trigger relationship changed, (as it did) why it changed and what conditions generated their expected outcomes.

It was clear that the second test precipitated a focus on the technology at the expense of the dance. This was undesirable in a work that was designed to engage the audience in an artistic experience.

As the approach discussed in this paper has the two principle goals:

1. artistic expression, and
2. technological development that serves the artistic expression by engaging the audience in an interactive experience that increasingly reflects their individual nuances and provides an immersive sense of engagement,

the technology has always been hidden. The artistic imperative has been the sense of immersive experience and individualised response above all else.

4. Conclusion

The concept of immersion is integral to the interactive experience. This paper has delved into areas of exploration that parallel, and inform interactive research, by outlining issues to do with the development of artistic practice that focuses on

individual experience, but at the same time addressing the cybernetic principles of inter-dependence.

Much interactive systems research is consumed with the development of technical solutions to particular situations. It is beneficial to take a step back and look at relevant concerns in other fields of endeavor. In so doing I have gained a number of insights that have helped me bend the technology to my cause, and not, as is so often the case, the other way round.

4.1 References

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