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WOVEN TEXTILES

'THE ENVELOPING OF SOUND'

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CHAPTER CONTENT

INTRODUCTION

In my thesis, I have taken the approach of examing the organisation of sound. Observing music that spans from the limitations of traditional notation, and musical space to a musical form which triggers off sensorial perceptions i.e. synesthia, which is the intermingly of senses.

Developments in sound technology such as playbacks systems have clarified the process of layering and enveloping sounds, through spatial dimensions.

Throughout my thesis I have focused on the works of John Cage, Brian Eno and Roger Doyle through which this evolution of music will be illustrated.

CHAPTER ONE

SPATIAL DIMENSIONS OF SOUND

Introduction

Music is a temporal art, an organization in time. In Schopenhaueurs definition, music is "perceived solely in and through time to the complete exclusion of space". (Ref 1.1) Indeed, it would seem to be impossible to talk about music at all without invoking spatial notions of one kind or another. Thus in discussing even the most elementary aspects of pitch organization. Only pitch is uniquely musical - one finds it necessary to rely upon such spatially oriented oppositions as "up and down", "high and low", "small and large" and so on.

Musical sounds have a quality of volume or density occupying available space, but musical elements of sounds (such as the tone chords) retain their individuality of sound. This is what musicans call the texture of sounds, and its density is determined by the number of component parts.

These variations in texture produce a spatial effect or feeling, and through music we can become conscious of certain locations, this is called tonal space. Musical space is conceived as a space of relationships of musical time and space.

The octave is the basic system of dividing the tonal pitch into different paces, which have a relationship together in tonality, and generally have a central pitch around which the music focuses.

The definition of timbre, 'tone colour' is "the quality of sound that disguishes one instrument from another" (Ref 1.2). Composers have always used the distintive timbres of various instruments to colour their music. However, in the past few decades musicans have begun to compose with timbre, making the colour of sound itself a primary focus of interest.

The definition of harmony is "the vertical dimension of music"; The interaction of stimultaneous pitches to produce chords. The study of harmony also includes chord progressions, or movements from one harmonic entity to another. Harmony in the musical sense implies no aesthetic judgement it can be consonant or dissonant" (Ref 1.3) The defination of vertical listening "most traditional and popular music unfolds horizontally with time, and the listener hears the music as if listening to a verbal statement, thesis or argument" In recent years, many composers have become interested in creating a type of music to be heard vertically or spatically. "Such music tends to rely on subtle graduations of timbre" (Ref 1.4).

NOTATION AND MUSICAL SPACE

Notation is made as a set of instructions for a construction to be realised by someone i.e. the performer. The forms it represents and their relative placings are determined by the composers desire to communicate his requirements to the performer as effectively as possible.

John Cage used a different system of notations and filling of space, from the traditional approach of composing. His work attempts to "shift western music from tonality and functional harmony to an emphasis on indeteminary and duration" (Ref 1.5). This system will be discussed more fully in chapter two.

The traditional method of musical space was examined by the Austrian theorist Heinrich Schenker and described as an "attempt to isolate and define the essential relationships of tonal music, and to place them in a hierarchial structure, that is systematic and atemporal in nature". Schenker viewed all tonal motion as representing, "a linear unfolding of a single vertical chord, and the pitch on which it is built is the tonal centre." (Ref 1.6)

This movement through tonal space is through the organization into the "tonic traid" of layers, of the background, the middleground and the foreground. At one extreme the 'background', is the timeless underlying traid, at the other the 'foreground' there is ultimately the composition itself. In between are one or more 'middleground' levels that mediate between these extremes and indicate how the simpler structures of the background are transformed to produce the actual details of the compositional surface.

This linear movement of musical space is challenged by such musicians as, Brian Eno, with his vertical movement of sound, and also by John Cage's idea of silence as containing sounds.

Although Schenker's theory enables one to understand the notion of musical space in a fresh and more powerful way, It does not represent a whole new way of thinking about music. The musical spatial characteristics of his theory do not comprise a uniquely modern interpretation of musical structure, but rather a new method for addressing an age old concern among those interested in the nature of musical organization. Yet, the notion of musical space seems especially appropriate to much recent music, although there is an essential difference in the way the quality of space is communicated in most modern works. In modern music the spatial characteristics appear much more on the surface and are in fact more closely related to textural matters.

This shift in modern music from the background to the foreground was the result of necessity. With the loss, shortly after the turn of the century of a structural framework provided by a widely accepted set of compositioned conventions, composers had to accommodate themselves to a new and different kind of framework one that changed from composition to composition. Each work had to define its own system and consequently the system had to be relocated closer to the compositional surface.

This surface emphasis of modern music has been strongly critised as producing somewhat shallow music. All the action seemed to take place on the surface. Many composers felt the need to construct a new compositional framework in some ways analogous to the tonal system. Arnold Schoenberg devised a new twelve tone system which attempts to be multi-dimensional and so fill the musical space much better.

Schoenberg's description of this twelve-tone system, as "a new procedure in musical construction which seemed fit to replace those structural differentiations provided formly by tonal harmonies" (Ref 1.7)

The twelve tone system assumes a particular ordering of the twelve chromatic pitches, which is determined uniquely for each composition. "All that happens at any point of this musical space has more than a local effect. It functions not only in its own plane, but also in all other directions and planes and is without influence even at remote points". (Ref 1.8)

However, although Schoenberg's twelve tone system was innovative it has failed to become a system accepted by ~~even~~ a majority of composers. It has not become a musical language spoken and understood by a large and varied community. His system restricts the sense in which it can be said to offer a spatial dimension analogus to that of tonality.

This emphasis of modern music on the surface and foreground of tonality is also characterised by an interest in the physical space where the music is performed. Western music has made little use of spatial directions as a compositional resource.

However, there has been a few who experimented with this idea such as the "polychoric music of late-Renaissance Venice, where separate choirs were placed on opposite sides of Saint Marks and heard alternately, creating a spatial analogy to the responsive structure of music" (Ref 1.9). But only in the nineteenth century does the placement of performing forces begin to become

of widespread significance. This approach can be seen in the work of the composers, Beethoven, Wagner and Mahler.

This increased interest in performance space helped with the weakening of one kind of musical space to the strengthening of another.

The actual physical shape of a score and the relationship of the shape to the music it embodies are matters of considerable interest to the question of musical space. "Traditional Western notation is two dimensional. It contains a time dimension, read from left to right, which presents the unfolding sequence of the composition, and a 'space' dimension, read vertically (i.e simultaneously), which reveals the temporal textural components" (Ref 1.10). Thus many of the surface aspects of musical space are immediately perceived from the visual format of a score.

Schenker developed a sytem for representing multi-dimensionality and the 'synchronic structural', aspects of composition. According to Morgan, Schenker's system expands the vertical, or synchronic dimension through a series of layers, notated one above the other, to represent different levels of structural importance.

These layers exist simultaneously and their interconnections are logical. This has changed musical notation and space from undimensionality to multi-dimensionality.

This can be seen further in John Cage's efforts to "transcend the spatial framework entirely, allowing music to unfold in time, totally without restrictions the results seem pecularlily "unmusical", musical time then becomes indistinguishable from ordinary time" (Ref 1.11)

SYNTHESIA

This idea of spatial structures has a long history in the theory of synthesia. Synesthesia is the phenomenon where the stimulation of one sense produces a mental impression associated with a different sense. (Ref 1.12)

In pschological terms this process has been defined as "a phenomena characterising the experiences of certain individuals in which certain sensations belonging to one sense or mode attach to certain sensations of another group and appear regularly whenever a stimulus of the later type occurs" (Ref 1.13)

Psychologists have studied the highly complex patterns of images which occur in synesthetic perception. Some of the many clinical terms applied to the mixing of sensorial perception are chromesthesia, photothesia, synopsia and colour hearing.

Colour associations based on pitch are quite common. This does not require a sense of absolute pitch. Experiments concerning the nature of absolute pitch have determined that attention to the individual sound of notes and not relationships between notes.

Many individuals consider low sounds or pitches analogous to darker colours, and higher pitchs to brighter ones. It is difficult to determine if there is some physological process resulting in perceived similarity of dark colours and low registers or if composers and audiences are simply accustomed to certain conventions.

However, in 1929 Sabaneev examined 250 students and found that 218 associated tonal registers to colours. In every case low registers was seen as dark colours and higher notes were seen as lighter ones (Ref 1.14).

Another issue is the behaviour of colours in combination. If one combines two notes they are clearly distinguished by ear as two elements. Two notes remain what they were before. They retain their two positions on the musical scale (Ref 1.15).

Synesthesia based on timbre is probably the most common among musicans i.e. the connection of certain colours with different instruments. In Zur Farbenlehre (towards a knowledge of colour (1810), it is interesting to note that Goethe first embraced but later rejected the idea of an analogy between musical tone and coloured light. In his book he cited the case of a Swiss magistrate who perceived colour in sounds. To him each instrument evoked specific colours and high notes were particularly vivid (Ref 1.16).

In 1855 the composer Joachim Raff stated that colours impressions came from different instuments. e.g The flute gave him the sensation of intense azure blue, the carnet - green, the trumpet scarlet and the french horn purple.

The prevalence of a synesthetic link between timbre and colour among composers and performers has lead some music theorists to devise ways of employing colour in musical notation. For example, as early as 1876 H. Bosanquet a distinguished scientist and researcher on the scientific side of music, suggested that different colours should be used in printing the staves devoted to various families of instruments. He found a lot of musicans agreed on specific colours. Bosanquet suggested black strings for voices, red for brass and drums, blue for wood wind instruments (Ref 1.17).

In my own research for my work I used the sound edit program on the Apple Mackintosh computer in college, to measure the frequencies of certain sounds. In using a library sound from the computer which in this case is a phone ringing. When this is displayed in colour the timbre of the sound is varied in colour.

In silence John Cage refers to sound as a "transmission in all directions from the fields center" (Ref 1.18). There seems to be a common movement beaming through all these representations of music, and it seems to be the concept of radiance. Representation of sound as radiant, is I believe a symbol of a cultural movement throughout the twentieth century, with its technical changes.

Before the advent of sound recording, the piece disappeared when it was finished. So it was something that only existed in time. The effect of recording is that it takes music out of the time dimension and puts it into the space dimension. As soon as you do that, you're in a position of being able to listen again and again to the performance. You become familar with details you most certainly have missed the first time through. The effect of this on the composer is that he can think in terms of supplying material that would actually be too subtle for a first listening.

The early emphasis on reproduction of musical performance has yielded to a realisation that the medium has its own unique potentials. "This development of magnetic tape was decisive in that it made recorded sound vastly more manipulable, through experimental processes of splicing, looping, reversing and variable speed playing". Also the development of multi track recording and mixing makes possible whole new ranges of use and abuse of technology (Ref 1.19)

Methods of Recording

Notation has been described by Goodman as a tool, where the musical score guides the performance and identifies it as a unique event which can then be replayed in its unique identity. Notation is characterised firstly by sound-differentiation. It is a "symbol system" of characters differentiated from each other and arranged throughout the musical space. These characters of

notation must always be repeatable with their distinctive features throughout the space. Notation systems thus acquire the characters to be disjointed or separated from each other to give them their identity. Thus notation systems sound event and object are restricting frameworks which give a sound its particular identity. Within Western music this has been further restricted by the limited style of notation used. This has been challenged by Cage, Eno and Doyle/Roger. Doyle characterises "traditional written music" (as sung) in straight lines". In nature there is no straight lines, and opposing this is the path that Western music has taken of straight lines. Eno and Doyle particularily, have introducted the use of many environmental sounds from the world thus freeing music from its reliance on only a few instrumental sounds. They, like Cage have challenged the traditional treatment of musical space differentated by forms of notation. Goodman speaks of notation as symbol systems also, and I would see these musicans as using this second definition of 'symbol systems' more so moving from the restrictions of traditional notation. This is especially evident in Eno's use of synthesia and the evokation of other senses, such as vision through the use of colour from sound.

These changing attitudes towards music have derived from technological developments. Traditionally there has been a transmission loss from composer to score, to performers and then to audience. Technology has changed this and now there is a closer link between the composer and performer and so more freedom in notation is possible and it is the work of Cage, Eno and Doyle amongst others which have resulted from this.

The change in technology has also influenced dance choeography through the use of video recording as outlined by M. Parker and MacMillan. A similar movement from a restrictive form of notation can also be seen here. Dance has been freed from its traditional movements also using movements from life as the use of environmental sounds also does. Notation is still important for structuring the piece but it is a much freer and wider form and in terms of music "the composer for the first time has the whole world of sound at his disposal" (Roger Sessions, p.190). This has been assisted by the developing technology which has freed music from its performance space. The recording studio and its technology has thus allowed the movement from the surface, linear arrangements of sounds and radiances. Radiance is thus the process of getting circulation from sound thoughout space and within this can evoke the synthesia of colour movement in sound.

CHAPTER TWO

THE WORK OF JOHN CAGE

With technogies we find the need to improve. For the American music composer and visual artist John Cage life and art are not two separate worlds. In his view the true mission of art in our time is to clarify the enormous changes taking place in the 20th century.

"I saw my function ... as an inventor and research worker rather than as an artist. I had been very much influenced... by the need to apply modern technology to music" (Ref 2.1).

John Cage, born in Los Angeles in 1912, was the only child of inventor engineer and ship designer, John Milton Cage. In 1931 he studied composition with the pianist Richard Buhling who made him particularly aware of the importance of time in music, and from 1934 to 1936 he studied counterpoint and analysis with Arnold Schoenberg.

In his music he experimented with 'noise and silence'. He made silence between notes an essential element in his music. Cages famous production of the prepared piano in 1940s consisted of putting mechanical objects into the organic piano. His determination to open the pianos cabinet and to reveal and manipulate its steel strings with a variety of objects was an aggressive, mechanistic intervention.

His technical intrusion into the "naturally" organic was characteristic of American Culture. He inserted nuts, bolts, screws and other mechanical bits under the strings. He altered the timbre and emphasised their percussive capabilities.

This appeared unsuitable for the vocal and instrumental traditions of Western harmony. The piano was changed from a potentially tonal instrument evoking the harmonic range of a full orchestra.

Arnold Schonberg, in reference to this feat, referred to his former student Cage not as a composer but as "an inventor genius". (Ref 2.2) In the early part of Cages career he was particularly aware of the paralles between his chosen revolution in music, that beeing durational rather than harmonic. In 1949 he praised Satie and Webern arguing that their "different and correct structural means" (Ref 2.3) were based on time rather than classical harmony, Cages efforts to shift Wstern music from tonality and functional harmony to emphasis an indeterminary and duration suggest a sophisticated recognition of the differences fueling American culture.

Cage and contemporary painters such as Jackson Pollock saw "barbarism"in their own countries past. Their works echoed instead the great percussion traditions of African-American slave music (American jazz) and native American art.

Thus Cage's barbaric piano was inspired by an African Americans dance. Pollock and others tried to escape the rational and civilised. Contemporary journals such as Life and Art News published photographs of Pollocks rhythmic "dance" around the canvas.

His unconventional contact with the paintings surface, his entry into "the arena" of the canvas is witnessed further by the handprints appearing on the wall sized canvases he was producing around 1948. The hand prints linked to ritual art. Also Pollocks statement phraising native American sand paintings "more a part of the painting .. literally to be in the painting" (Ref 2.4).

Cage had his own perspective to the New York art scene of the late 1940's having already made friends and traded ideas with the West Coast Morris Graves and Mark Tobey. Their interest in Oriental philosophies and tribal cultures gave Cage a good foundation on the abstract expressionist interest in native American primitivism. He retained representation in his work, long after the New York school painters had become abstract. This set the West Coast avant-gardists apart from the N.Y. painters. The west coast painters retained interest in external things, whilst the N.Y. school artists abondoned this in favour of a deeply imagined inner state of being.

When the artist Max Ernst and his wife Peggy Guggenheim invited him to visit New York in 1942, he met such famous artists as Marcel Duchamp, Piet Mondrion and Andre Breton.

Through contact with these and other artists he realised that his music was more closely related to the developments taking place in the visual arts than in music.

In this respect it is noteworthy that Cage was offered the opportunity of performing both in the museum of Modern Art in New York and at Carnegie Hall. These concerts soon earned him the reputation as an avant-garde composer. As a result he was commissioned by Marcel Dunchamp in 1947 to compose the sound track for the Dunchamp segment in Hans Ruchters film Dreams 'that Money can Buy'.

On the way to creating music that was close to nature he began to use Chance Operation. He found inspiration in the age old Chinese I. Ching (Book of Changes). Cage saw a definite link between the charts and hexograms of the I Ching and the charts he used to compose his music. Since then J.C. has continually employed the element of change not only in his music, but in his art and literature as well. To collect material for this working process, he recorded a virtual library of sounds characteristic of the city, environmental sounds, surrounding us in our everyday living. He processed these using the I Ching to avoid any sort of control. This was an extremely unusual development in modern music in the 1950s. However, in the visual arts which are usally more advanced than music in the progression of new ideas, 'Chance' had been used frequently by the surrealists and the abstract expresssionist in New York.

An example of one of these works was in his piano piece. The piano is fully notated but its content is the result ~~operation~~ of chance. This use of indeterminary or "chance" gave the performer a active role in determing the course of the piece.

Thus, Earls Browns December 1952 is a visual design to be realised to any instrument as the performer sees fit. Alternatively the composer could give the performer control over the order of sections of their content. (1953) 25 pages - there were 25 pianos and each performer had 25 pages each and they could arrange them in any order before starting. Thus music was no longer to be necessary ~~of~~ a progression of fixed steps from start to finish. (Ref 2.5).

In Cages concert for piano and orchestra the question ~~been~~ posed how is the performer is supposed to deal with the given configurations? He used a code "It consists of 84 letters or combinations of letters one of which is placed before each configuration of notes. For instance, the letter A means 'following the perimeter, from any note on it, play in opposite directions in the proportion is given. Here and elsewhere, the absence of indications of any kind means freedom for the performer in that regard! (Ref 2.6) Or again, the letter G means 'of notes written, play number given in any manner (key, harp) beginning and ending as indicated by arrow. Dynamic indications accompany each circle on the circumference of which the notes are placed ". The result being Cages set of instructions has to do with telling the performer where he is free to act according to his own choice.

In Cages music a performer is not an 'interpreter', someone trying to convey what someone else wants to say, he is a co-composer. Along with this interaction between the composers decisions and the performers the music involves interaction with decisions provided by chance operations such as throwing dice.

From the start Cage was fascinated by the use of new or uncommon procedures. Cages versatile youth came to an end when he was twenty two and when he asked Schönberg to give him lessons. Schönberg did not mind his not being able to pay but he did insist that he promise to devote his life to music. So because of this Cages produced no further visual work until 1969. In the meantime, though, music of his had been exhibited as visual art. In May 1958, when a concert of Cages music was staged in New York Town Hall, conducted by his life long friend Merce Cumningham, of the concert for piano and orchestra.

The pages of the piano part were exhibited in the upstairs room at the Stable Gallery. Several of the pages were sold, Cage wrote them out again to keep the set complete.

These pages were the equivalent of a set of architectural plans by an architect who is also an established artist. They have been described as 'radiate', because the supreme quality of how they contain light. "All that Cage does seems filled with light. Light and also lightness - for one thing, because of the way of making everything he does look effortless. (Ref 2.7)

Cages concert for piano and orchestra does not have a master score, but is written in his own form of notation. This is based on the idea of space as being relative to time as determined by the performer. The freedom of movement and the amount of time is left up to the performers and the space of the notes must be relative to this. His notation consists of three sizes of varying duration or amplitude. These notation pages were given to the performer to play by 'chance' or by his choice, playing whatever elements or notes he wants. It is parallel to the idea of collage and placing various elements together by chance to see how they operate. Thus what he is experimenting with is the idea of creating "space" in music by chance and thus freeing it to reveal itself in unexpected sound creations. He is moving away from the restrictions of time.

His music moved towards appearing "as a virtual demonstration of its disembodiedness" as can be seen in his stage production of "the bodies of the seven haepsichoed players were all but invisible, dwarfed by the fifthy-one tape players, seven films and eighty slide projections that performed automaticaly, mechanistically bodilessly" (Ref 2.8).

This is related to his work on silence and within silence and disembodiness he found new sounds and forms. Cage is removing the body from vision, and letting it free itself from its ego through silence. The basis of his work is this idea of freedom and change as revealing space unlimited by the constraints of time and tradition.

Cage moved away from traditional notation, instruments and harmonic sounds to explore the sounds revealed by silence, By the lack of time restriction, by "Chance", Cage has moved away often from traditional instruments, inserting mechanical objects into such instruments as the piano and also in using sounds from the environment all to evoke a sense of space and light unrestricted by the forms of time or the body. This use of new, unexpected sounds (such as the environment and silence in varying processes of time and form is also used by Brian Eno, although he uses it to evoke a different sensation-that of colour-rather than space.

Roger Doyle is also interested in creating a sense of 'space' through his music, although his is more interested in creating a specific impression of space as in his work, the tower of Babel, rather than Cage's emphasis on formlessness and the actual processes of space.

CHAPTER THREE

THE WORK OF BRIAN ENO

Brian Eno (B.1948) is a contemporary British musician and artist. In his work Eno has proved better able than most to focus on the future, seeking out meaning from the onslaught of stimuli. His public creative career began in 1972 with his synthesizer playing for the rock group Roxy Music. He is a prime example of a composer who draws freely on the resources of many types of music and ideas about music. These include popular genres, such as rhythm and blues and rock and roll, progressive rock, punk, and new wave, as well as African, Middle Eastern and Asian styles. He has also been influenced by minimalism, experimental new music, post-Cage, Avant Garde theory and electronic music. Eno have combined music with visual art in the form of video and sculptoral installations. He has also written music for films and commericals.

Although Eno has performed live, his primary arena of operation is the recording studio, which he has called his "real instrument". Besides numerous collaborations with Roxy music, David Bowie, John Cale and Daniel Lanois, among others he has also been involved in over 20 productions of albums for other musicians including Talking Heads and U2.

The scope of Eno's musical activity is impressive. Between 1972 and 1988 he released eleven solo albums ranging from progressive rock to what he has called "Ambient Music". "A gentle music of low dynamics, blurred edges, and washs of sound colour, produced primarily through electronic means. In his role of composer he has been keenly interested in working with the traditionally neglected realms of timbre (tone colour) and texture, and in the process of pursuing that interest he has been involved in the development of the "new Age" or "space music". (Ref 3.1).

Although Eno had no former musical ear-training, he is evidently listening all the time and not just ot the sounds of what we normally call "music". "Eno uses his ears to scan the environment" (Ref 3.2). He sees a sharp distinction drawn usually between "music" and "noise" and it is these boundaries that he blurs, intermingling both. He was also influenced by John Cages "silent" piece and the sounds of silence. Eno proposes a different way of experiencing music, listening to the evokation of colours, involving it in installations in certain places. i.e Auroa musicals in Galleria Del Cavallino - in Venice. This audiovisual installation consisted of a darkened gallery with video screens. Behind five oblong, irregularly patterned screens which continuously filled and drained with slowly gradating colours. This was accompanied by Bell like chimes in a prolonged rallentando, as if a deceptively simple classical composition was slowly coming to a finish without every quite doing so.

Much of Enos music is constructed on a vertical basis. To a great extent, it is music concerned with the sheer colour of sound rather than with the linear (horizontal) growth of melodies. Each moment in Enos music presents certain tone colours or timbres and the interest lies in the relationship between these colours rather than in the evolution of thematic material which is the norm for western music.

Like John Cage, Eno believes musicans should have freedom of expression of tonality in music and not to be bound by limited systems of notation. With this system you can get new, unexpected ideas and results and so most leave the freedom for these to emerge. An example of this is with his song 'Baby's on Fire'. As Tamm notated "The instruments were incredibly out of tune, so out of tune you wouldn't believe it. However, it sounds fanastic. There is one little bit in it where there's a riff between the guitar and one of the bassists, and they're so out of tune it sounds like cellos" (Ref 3.3). This is what Eno calls "Retroactive Creativity" where what often would be considered as mistakes, works out for the best. This lack of technical musicality has also resulted in his appreciation of the simple, and in his ability to realising musical potentiality in may materials. Eno tends to work with a limited range of sounds realising its structure and movements which many traditional musicans lack.

He wrote an essay critising traditional musical composition methods and examines alternatives. He argues further introducing Cybernetics or "the science of organisation" (Ref 3.4) into music and composition, what becomes important here is the dymanic process of the music and the environment of senses, it suggests, such as colour space image and smell.

If you think of Enos creations in art terms, he is a painter of sound. Magnetic tape is his canvas and he applies his sound substances to that canvas, mixes them, blends them, determines their shape. He has just enough instrumental techniques to give him his "pigments" to begin with. This claim he has to be not so much a sound composer as a sound painter is reinforced by the way he works with light in his video pieces is identical to the way he works with sound in his music. He uses magnetic taped sounds in an experimental way, splicing looping and reversing it at different speeds to produce different effects.

The interest today isn't in developing serial music or polyphony or anything like that. It is constanly dealing with new textures in sound. When a pop record is produced the conventional style is to have drums and the bass in the foreground. Then you have one guitar and maybe there's an echo of the first guitar. The sound is compiled as if its a screen, a cinema screen. Depth is suggested by putting on a bit of reverberation, its a cinematic king of depth. One of the interesting things about pop music is that you can identify a record from a few seconds of hearing it. A fact of almost any successful pop record is that its sound is more of a characteristic than its melody or its chord structure or anything else, the sound is that thing you recognise.

However, Eno began to hear sound as textures of the environment, he wanted to capture a sense of a distant horizon that couldn't be heard, the elements that were out of earshot.

So he began to leave out the tunes, the chord patterns, the beat and so on, in order to deal with the texture. The result has been that the spatial characteristics appear much more on the surface. This tends to create music that has been described as "Holographic". One of the characters of a hologram is that when you shatter it every little piece still carries the information (the image), through a smaller piece. This is how Eno's ambient pieces seem to be; any part of them yields an image of the whole.

According to John Cage ambience are the sounds of the surrounding environment suggesting space and depth. In Websters new 20th Century dictionary "Ambient" meant "surrounding, encompassing on all sides, investing, as the ambient air" Ambient - "That which encompasses on all sides (Ref. 3.5).

The Japanese electronics company Panasonic began, a few years ago, advertising their "miracle ambient sound", an effect which added aural illusion of spaciousnes and depth to music coming out of a small stereo loudspeakers.

Eno considered ambience as being able to tint the atmosphere of the location where it was played. It was music that surrounded the listener with a sense of spaciousness and depth, encompassing one on all sides instead of coming at the listerer. It blends with the environment and seem to invite one to listen musically to the environment itself.

Ambient music was decorative rather than expressionist, if not completely free of individual taste, memory and psychology, and in Cages ideal, it nevertheless lacked the Bathos of self importance and confessional displays of open psychic words. It seemed to rotate around central issues, never approaching them directly. Eno tries to make music ~~or even with his~~ and audio visual works that "seduce people to the point where they start searching" (Ref 3.6). What seems to interest him is sitting on that line between seductive surface and meaningful content.

When Eno was asked in an interview does he worry that his music was seductive and how people mistrust beauty today. He responded by describing the impact a high catheral must have had in the 14th century. If you try and imagine how it must have felt like. Most of us are quite happy to be seduced when hearing music and to drift with it instead of stepping back from it and saying "Hold on, this is carrying me, I'm not pushing it its pulling me". The catheral experience must have been heavenly - to see the light in that way, through the stained glass, so unlike any other experience of its time (Ref 3.7).

Eno's ambient pieces tend to be characterised by "quiteness, gentleness, an emphasis on the vertical colour of sound, establishment and maintance of a single pervasive atmosphere" (Ref 3.8).

For Eno, in using techniques of echoes and reverbs and the modulation, you are creating a space, such as the impression of water.

Eno is now working with another sense; that of smell, through perfumes, which in their multi-dimensionality evoking another sense of emotion. He is been sponsored by a large perfume company and about every month he goes to Paris and works there for a few days. They have about 10,000 perfume ingredients to work with. Perfumes are important in a way, much more than people generally regard them, because the first senses that creatures had must have been chemical senses chemical and tactile. These must have evolved long before sight and hearing, which are rather sophisticated brain processing senses. You can imagine amoebas having chemical responses and tactile responses to each other. I think those are very primitive and deeply buried they're never been respectabilised and raised to the level of art like sound and vision have. It's like we don't know how to deal with them. We have a whole language to deal with the construction of music, its almost impossible to describe that with perfume its a much, much vauger sense.

Perfumes don't fall onto anyone axis. For instance, a musical note has pitch, you can say its high or its low, there are no equivalent axis in perfume, everyway of describing it is multidimentional.

With Eno's ambient music people thought he had gone soft, although he was really moving into a landscape sensibility of music. The idea that one is listening to a body of sound, presented as happening in a particular type of space, a location of some sort.

An aspect of this landscape painting is to do with the removal of personality from the picture. You know how different a landscape painting is when there is a figure in it. Even if the figure is small it automatically becomes the focus, all questions of scale and depth are related to it. When Eno stopped writing songs he took the figure out of it.

20th Century painters were saying they wanted their work to be like music to have freedom to be abstract as music, now what's interesting is that music can actually be like painting, figurative or landscape like. Eno's music begins with an "impression of a place, of a physical feeling of some where a climate or a clarity of air, or a cloudiness... what I am interested in is making pictures of some kind and using music as a way of doing this" (Ref 3.9)

With his 'video-painting' you find yourself watching a slowly changing painting rather than using it as the mode to tell a story, as in films. As he began to use this form, he realised that the primary material from videos was not its ability to tell a story, or display images and ideas, but it was light. Eno doesn't want to use videos in the traditional form of watching them, but to present the video screen as an object in the overall piece.

These are what Eno terms video sculptures which are based in an entire environment of sound and video, evoking colour and light.

He intends people to use his video sculpture in the same way that he uses echoes and re-echo in his music to evoke colour textures and moods. He uses the video screen in a very particular way, where they are no longer images but it is a light source rather. This is related to the idea of colour being evoked through music "because the use of pure light as opposed to images tie you to specific conventions ...! Like the notion that sound is rooted in a particular moment and in a specific environment. (Ref 3.10)

CHAPTER FOUR

THE WORKS OF ROGER DOYLE

In the following chapter, I am going to discuss the work of the Irish composer Roger Doyle who specialises in electro-acoustic music. Having attended the Royal Irish Academy of music, he was awarded a Dutch Government Scholarship in 1974 to study electronic music. At the University of Utrechts Institute of Sonology which enabled him to produce his first LP 'Oizzo'. Further Scholarships took him to Salzberg and Helsinki, where Solar Eges, Thalia and Fin and Estra his first large-scale works, were composed.

Roger Doyle has worked a lot with theatre, film and dance. In the 1980s the Music Theatre Group, Operating Theatre, which he formed with actress Olwen Fouree, performed and toured Ireland and abroad. He also collarabrated with the experimental group ICONTACT. They mounted productions in the 1990 Dublin Theatre festival and in and entire wing of the Irish Museum of Modern Art in 1992, where his on going work, the Babel project, intergrated live and electronic music, with dance and architecture.

Roger Doyle's present work 'The Babel Project' is a giant musical structure being composed room by room, exploring the language of many musics and cultures both real and imagined. Each room is composed in a different musical style.

The concept behind The Babel project is to compose a collection of C.D.s large enough so that listeners would then program which 'rooms' they wished to visit at each hearing. The journey through the tower becoming a kind of aural virtual reality.

In this project so far, Roger Doyle has composed three temple music pieces and two concert ones (The imaginary tower concert hall). A room of rhetoric, a monsard (attic-childhood memory room) and a concert dressing-room, a stairwell and a Babel musical alphabet, also KBBL the tower of Babel radio station.

There are interesting possibilities for the usage of music within the tower. At the Banff Centre for the arts in Canada in 1992 Roger Doyle collaborated on a 'Tower of Babel' virtual reality environment in which consisted of three rooms. The music for two of these was trigged from the CD-room.

(The concert hall and the attic) while a third was an interactive Babel 'Alphabet' of tiny particles of sound whose duration and numbers were triggered by the position of the spectators head in the virtual space.

KBBL the imaginary radio station broadcasts from the twenty-fifth floor of this futuristic mile high tower, and the morning and night shows (all with Roger Doyles music with invented band names) have been completed). He uses real D.J.s and imaginary ads, traffic reports, weather and phone-ins. Each radio program lasts about twenty-five minutes and an early evening, leisure pursuits programme is in preparation, this would complete the first KBBL CD.

Roger Doyles exploration of using radio transmissions on 'a textural layer', allows him to overlay sounds with electrical acoustic sounds. This is a type of enveloping of layers of sound, using environmental noise especially.

During my interview with Roger Doyle I questioned him on how he constructs his imaginary environments. He described how "imaginary musical spaces have become a very important aspect of his music".

Every piece is a room and how he really wants to give the impresssion as you hear the pieces that you are actually in a room, even though a not very defined room, it leaves a lot to the imagination.

"They range from the room of rhetoric which has a science fiction feel. Where there are dripping taps, squeezing floor boards and foot steps and yet there is no one there. On one level its like a science fiction story and yet its not too defined".

A lot of composers write program music, especially for opera and ballets. This is music that tells a story, the Babel Project seems to approach this style of program music, almost as if your searching for a plot.

On the other hand there is program music, which exists without reference to anything else. Its completely abstract. The Babel project is somewhere in between. It's showing you shadows of rooms, almost as if your in the room. However, because its music and not unusual your imagination has to fill in the rest.

The rhetoric room perhaps is most abstract of semi progamatic compositions. It sets up a place with some familar sounds in it and leaves you there to your own imagination to decide whats happening. Its quite a chilling environment.

Roger Doyle described how he "imagines this tower of Babel has its own concert hall and its own cinemas and theatres". So he composed some concert music, making it sound as if its a live concert. However, the whole thing has been created in a studio. Everything is faked, the audience and even the orchestra tuning up. As a extension of this Doyle composed a piece called the dressing room of the theatre. Its very well defined and leaves little up to the imagination. You can hear a concert going on in the far distance and close up to you, there is the saxaphone player warming up, rehearsing his solo. You can hear doors opening and closing-its all very visual.

Roger Doyle is not interested in traditional methods of composing anymore "I'm getting instruments to do things that cannot be written down". The Babel project is a mixture of electronic music and instrumental acoustic music. Every moment you hear a regular instrumentalist playing a regular instrument you'll hardly recognise it. He works with the soloist and if the instrumentalist has a curious mind, they'll go on a journey together. Everything is taped as they work together and then its usually edited down to half of its length.

Doyle carefully edits around the breathing so it sounds as if it is one take. However, actually there have been several days recording. "The whole thing about the Babel project is that I want to get away from Western notation and tradition". A lot of his work sounds like they come from a desert tribe. He is really interested in the legacy of tradition. Especially very old traditional music and what can be done with it in new ways.

"What I get my instrumentalists to do has been inspired by the highly ornamented. You couldn't get the in betweens and highly ornamented. Its the same with ethnic singing. Its only tradtional written music that sings in straight lines. There are no straight lines in nature and written music tends to force music into straight lines. Music is like nature in that way.

Doyle has been inspired by John Cages 'chance' approach to music. However, Doyle perfers to control it more. He allows music to happen simply because he has a curious mind.

As regarding ambient music and the works of Brian Eno. "I have attempted to create ambient music for the tower where one could sit down and chill out. Although, I think its had its time, we're coming up to a new century. However, it is a very interesting concept. This background music is not to be listened to with folded arms. Its only since Beethovens time that people actually began to sit down and really concentrate, in music concert hall situations.

"I see all music as becoming a background experience quite separate from actually listening to music". I am disturbed that there is music everywhere. Its designed to be heard and not listened to, radio stations have re-inforced this.

Doyle has worked a lot with film makers and dancers, such as Bob Quinns film "Bishop Story" which was originally called Budawanny. In which he composed a seventy minute soundtrack. This style of music using environmental sounds, freedom from notation and playback moves techniqus of sound recording from the linear space to mere background surroundings. This obviously links up with synthesia, as music is now free from the environmental sounds of the world. In using this method the senses cannot be eliminated and synethesia emerges. World noise sounds cannot be limited merely to hearing and we can see this in the work of Roger Doyle. He sees himself as a blind composer and yet his music is very suggestive of colour, although this is not a conscious decision on his part.

CONCLUSION

Through the work of the three main composers under discussion the evolution of music is clear. Music has moved from the tradition of linear surfaces, rail roaded by notation to experiments in spatial and textural dimension. With the advent of sound reproduction acting as a key development, It has widened the scope of sensory perception of sound and space.

This began with John Cages inventive experiments with noise and silence. Brian Eno developed the aspect of the colour of sound in modern music taking a 'painterly' approach to composing, creating sonic landscapes.

Roger Doyle despite his insistence on his blindness opens up the surroundings of music throughout space, allowing sensory perceptions to emerge. Doyle gives an audio-visual element despite his unconsciouseness awareness of this factor in his work.

Through modern sound technology music is reflective of the environment today moving from audio to multi-sensory levels of perception. In this it reflects the complexity of todays world.

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