Minimalism and time: the perception of temporality in American minimalist music from1958 to 1974

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Minimalism and Time: The Perception of Temporality in American Minimalist Music from 1958 to 1974

The infinite is in the finite of every instant

- Traditional Zen saying

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Declaration: I confirm that this thesis is entirely the original work of the author and that none of the material offered has previously been submitted by the author for a degree in this or any other university.

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Abstract

This thesis examines the ways in which American minimalist music affects the listener's perception of temporality by applying the phenomenological approach, particularly that of Husserl, to the music of La Monte Young, Terry Riley, Steve Reich and Philip Glass. The output of each composer, especially between 1958 and 1974, is examined individually, and then a detailed discussion on the relationship between their music and the perception of temporality is given in the final chapter. It will be shown that the durational minimalism of Young can create an apparent state of timelessness, whilst the repetitive minimalism of Riley, Reich and Glass can cause effects as diverse as time retardation and non-directional time. Crucially, it will be shown that different types and styles of minimalist music can cause different effects on the listener's perception of temporality. The relationship between minimalism in the visual arts and the perception of spatiality will also be discussed – it will be found that the relationship is analogous and instructive.

Chapter 1

Introduction

The present now will later be past

The order is rapidly fadin'

And the first one now will later be last

For the times they are a-changin'

- Bob Dylan, 'The Times They Are A-Changin'

Bob Dylan's famous 1964 protest song 'The Times They Are A-Changin' may seem an odd starting point for a thesis on minimalism. However, the first line – 'The present now will later be past' – is a phrase which demonstrates a self-evident banality that would appear to require no comment or further thought. The Western view of time as a real if irritatingly intangible entity which flows at a steady rate and in a continuous direction has become so entrenched in our subconscious that it is difficult to escape from. It should not be forgotten, however, that the Western view of time is by no means the only view. With the West's ever

increasing acknowledgement of, and sympathy towards, non-Western thought systems, a dawning realisation is occurring amongst psychologists, philosophers, and indeed composers, that there are other equally viable (and equally subjective) standpoints available regarding time and the phenomenon of temporality. Many of the cultures which hold these standpoints would in fact call into question the validity of Dylan's phrase 'The present now will later be past'. The 1960s was the decade in which non-Western cultures, especially those of Asia, were first encountered by the West in a non-academic, 'house-hold name' fashion.[1] This was especially the case within popular music. In particular, the sound of the sitar became associated with psychedelic rock, and Ravi Shankar and Alla Rakha made an historic guest appearance at the Monterey International Pop Festival in 1967. The times were certainly a-changin'.

It is the purpose of this thesis to investigate the way in which minimalist music affects one's perception of the passage of time.[2] It will be found that the traditional concept of time which consists of a 'past-present-future' timeline and which continuously flows by at a steady rate, will

[1] Prior to the 1960s the West's only major point of contact with non-Western thought systems was through the academic world, such as T.D. Suzuki lecturing on Zen Buddhism in the USA in the 1940s and 50s.

[2] The phrase 'perception of the passage of time' will be used interchangeably with the phrase 'perception of temporality' throughout this thesis.

have to be disposed of. New conceptions of the passage (or non-passage) of time will be discussed. Although some concepts which are discussed in this thesis such as timelessness can be found in non-Western thought systems, these systems will not be investigated.[3] Instead, concepts and time-systems will be 'invented' in the hope that they best describe and explain the way in which one's perception of temporality is affected by the music in question.

Four American composers created a style in the period from 1958 to 1974 that would later, and mostly to their displeasure, be labelled 'minimalism'. One distinctive trait of the music of all four composers was its ability to affect the listener's perception of temporality. Although each composer had his own unique and distinctive approach to composition, they all created music out of a relatively small palette of elements, and hence the term 'minimalism'. This is not to say that their work was minimalist in terms of the actual duration of the music – many of their compositions last well over an hour and some could be regarded as endless. As will be seen, it was the combination of using only a small number of elements and/or processes over an exaggeratedly lengthy time

[3] For good discussions of non-Western concepts of time see: *Time and the Philosophies: at the Crossroads of Cultures* (London: William Cloves and Sons Ltd, 1977);and Hughes, Diane Owen & Trautman, Thomas R. (eds) *Time: Histories and Ethnologies* (Michigan: University of Michigan Press, 1998)

frame which created the distinctive temporal effects, the analysis of which will form the latter part of this thesis.

The four composers in question are La Monte Young (b.1935), Terry Riley (b.1935), Steve Reich (b.1936) and Philip Glass (b.1937). They each created their own distinct brand of minimalism but nevertheless deserve to be bracketed together due to their proximity in terms of chronology, experience and place within the history of minimalism. The term 'minimalism' has been used to describe subsequent composers as diverse as John Adams, Louis Andriessen, Michael Nyman, and John Tavener, but the four composers which are discussed in this thesis are almost universally regarded as the founders of minimalism. In fact, Young has been described as 'the granddaddy' of minimalism, at least in terms of music.[4] His first truly minimalist work was the *Trio for Strings* which he wrote whilst still a student in 1958. The *Trio* is an early demonstration of Young's preoccupation with tones of extremely long duration, which would eventually become drones in the early 1960s. In the year below Young at Berkeley was Riley. Riley's 1964 masterpiece *In C* was his first truly minimalist composition and probably remains the most oft-played minimalist work today. His minimalist technique is based upon the use of repetition rather than duration. However, both repetition

[4] As will be discussed later, 'minimalism' is an umbrella term which can be used to describe other media such as dance and the visual arts.

and duration create a sense of stasis – and it is the static nature of their music which allows them to be grouped together under the label of minimalism even though the sound worlds they inhabit are so dissimilar.

Steve Reich's first minimalist piece was *Its Gonna Rain* (1965), a tape recording of a preacher 'phased' against itself. His use of phasing in *Its Gonna Rain* (see Chapter 5) would determine much of the music he would write up until the early 1970s. His music displays an austerity and objectiveness that is not present in the repetitive works of Riley. This is due to Reich's unerring adherence to strict musical processes. Like Young and Riley, he showed an early interest in jazz and improvisation but he eschewed any sense of this in his minimalist style. Glass was the only one of the four minimalists to have been largely uninfluenced by jazz. His sources of inspiration were the modularly constructed rhythms of North Indian classical music which he discovered whilst working with Ravi Shankar and Alla Rakha. Like Riley and Reich, Glass' music uses repetition as a starting point, but is based upon what he calls the additive process, rather than Reich's phasing process.

A far more detailed and accurate account of each composer and his works will be given in Chapters 3, 4, 5 and 6 – dedicated to Young, Riley, Reich and Glass respectively. It has been common practice amongst

commentators to group Young and Riley together, and Reich and Glass together.[5] It is likely that this is for three reasons: a) Young and Riley's musical development, at least in terms of minimalism, precedes that of Reich's and Glass';[6] b) Young's and Riley's music relies heavily upon improvisation rather than the dictatorially prescriptive method favoured by Reich and Glass; and c) Young and Riley are associated with psychedelia and the hippie movement, whereas Reich and Glass are (mostly) not. A fourth, and perhaps more cynical, reason could be that Reich and Glass have gone on to be highly successful and commercial composers of music which is not particularly minimalist whereas Young and Riley have not. Whether or not the distinction between Young and Riley, and Reich and Glass, is entirely justified, it certainly acts as a useful benchmark from which to understand their musical development. However, in terms of the perception of temporality it is wiser to group Riley with Reich and Glass. Young's use of duration rather than repetition sets him apart from the other three.

The amount of discussion dedicated to each of the four composers is not equal. More time will be spent discussing Young and Reich than will be spent discussing Riley and Glass. Young deserves a fairly lengthy debate because his is the only style of minimalism based upon duration rather

[5] For example: Schwartz, *Minimalists* (London: Phaidon Press, 1996).
[6] Furthermore, Young and Riley were at college together for a while, as were Reich and Glass.

than repetition. Of the three composers of repetitive minimalism, Reich's music will receive the most attention, for the simple fact that he was the most prolific, and his techniques changed the most.

This thesis begins with an attempt to define minimalism, firstly with regard to the visual arts and secondly with regard to music. Then follows a discussion of minimalism in the visual arts followed by an investigation into how the minimalism in the visual arts can affects the viewer's perception of space. Space is a more readily tangible concept than time and hence acts as a useful starting point for a discussion of musical minimalism's affects on the perception of temporality. As has already been mentioned, a chapter will be dedicated to each of the composers. These chapters will give biographical information and the works of each composer will be discussed in the chronological order of their composition. The reader will hopefully, having made his or her way through each composer's chapter, have a good overview of American minimalist music.

The final chapter will discuss the way in which minimalist music affects one's perception of temporality. A comprehensive and structured analysis of these altered perceptions will be presented. Husserl's phenomenological philosophy will be discussed in relation to the

perception of space in minimalist art, and to the perception of timelessness in the music of Young. Phenomenology supplies a detailed description of how a subject *perceives* the passing of time[7] - rather than asking questions about the reality and ontological status of time. It is therefore a suitable philosophical tool to use in this thesis. Finally, I will use the phenomenological approach to describe the ways in which the music of Reich, Glass and Riley affects one's perception of temporality. Several concepts will be introduced such as prediction-based listening and time retardation. The thesis will hopefully shed new light on the relationship between minimalist music and the passage of time – a relationship which has often been acknowledged but has never received the attention it deserves.

[7] Interestingly, and perhaps tellingly, Husserl used the perception of a melody as a model for his description of temporal flow.

Chapter 2

Minimalism Defined, Minimalism in the Visual Arts, and the Perception of Spatiality

The big problem is to maintain the sense of the whole thing.

- Donald Judd[8]

No attempt to define minimalism has ever been entirely successful, as is usually the case when attempting to define a movement or an artistic style practiced by a number of individuals, across several media. The minimalist aesthetic, whatever that may be, can be found in the visual arts and music, and in theatre, dance, film and literature. However, an attempt at an imperfect definition is nevertheless desirable, if only to act as a filter for the content of this thesis.

[8] Donald Judd interviewed by Bruce Glaser in 'Questions to Stella and Judd', *Art News* (September 1966). Reprinted in *Minimal Art: A Critical Anthology*, Gregory Battcock (ed.), (New York: E. P. Dutton, 1968).

In the task of analysing temporality there have been many historical precedents which have proceeded by first analysing spatiality and then transferring the analysis to temporality via analogy.[9] The reason for this is that most people find that it is easier to discuss the nature of space than the nature of time: time has always been a 'slippery' concept, escaping the minds of even the greatest thinkers. St. Augustine remarked that he could only understand the nature of time when he was not thinking about it: 'What, then, is time? If no one asks me, I know what it is. If I wish to explain it to him who asks me, I do not know.'[10] Hence, an understanding of the relationship between space and MVA may be useful for later discussions in the chapters concerning the relationship between time and MM.

This chapter will therefore be structured in the following way: 2.1a an attempt at a definition of MVA; 2.1b the definition will be applied to MM; 2.2 a brief discussion of the aesthetics of MVA with particular reference to Judd, Morris, Andre and LeWitt; 2.3 a discussion of the perception of spatiality as it relates to MVA.

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[9] For instance Henri Bergson in *Time and Free Will: An Essay on the Immediate Data of Consciousness* (London: Dover Productions, 2001).
[10] St. Augustine, *Confessions* (Albert C.Outler (trans.)) at: http://www.ccel.org/a/augustine/confessions/confessions.html (Bk 11, Ch 14).

2.1 Minimalism Defined

2.1a Minimalism in the Visual Arts

A minimalist artwork is:

a) **an object which presents itself as it is**

b) **an object which is presented impersonally**

c) **an object which is arrived at through reductive means**

d) **an object which is presented as a whole**

(e) **(an object which is arrived at through a logical progression of procedures)**[11]

MVA a): The artwork is, first and foremost, *there* in front of you. It displays nothing which is not there – there are no illusionistic elements. In Donald Judd's influential essay 'Specific Objects',[12] he argues that his art does away with 'illusionism' and 'literal space' – 'which is riddance of one of the salient and most objectionable relics of European art.' He describes literal space as the space created 'in and around marks and

[11] 'MVA e)' is not a defining feature of MVA – hence the use of brackets. It is an auxiliary feature which some MVA displays. Its inclusion in the definition of MVA is due to its importance in the definition of MM (see below).

[12] Donald Judd, 'Specific Objects' in *Arts Yearbook*, 8 (New York, 1965), pp.74-82. Reprinted in Harrison & Wood, *Art in Theory*, pp.809-13.

colours.' [13] Literal space (as opposed to absolute space) will be discussed in some detail in the final section of this chapter.

MVA b): Although artists have their own methods and styles,[14] their individuality is not carried over into the artwork in a manner other than that of their decision to create *that* work of art in *that* way. An artwork which consists of a fibreglass cube carries within it no trace of its creator other than the fact that it may resemble other artworks created by the same artist. It does not communicate the thoughts or emotions of the artist at the moment of creation. The artwork stands by itself, autonomous and impersonal.

MVA c): The method of production may be technically complex or skilful, but the compositional elements which create the artwork are minimal – either in their quantity or their complexity or both. Much minimalist art was produced by technicians who were given very specific instructions by the artists. This alone implies that in order to achieve the perfect 'industrial' finish required by the artists, no small amount of talent was needed to actually *make* the artwork. Hence, the clause 'arrived at'

[13] Donald Judd, 'Specific Objects' in *Art in Theory*, p.813.
[14] It is worth noting that MVA is not necessarily *inimitable*. One of Dan Flavin's artworks which simply consists of a yellow fluorescent tube (*the diagonal of May 25th, 1963 [to Constantin Brancusi]* for instance) could be exactly replicated by anyone with access to the mass-produced fluorescent lighting that was commercially available in 1963.

refers not to the production of the artwork but instead to the process of 'arriving at' a finished whole from a combination of individual elements. Individual elements mean colour, shape, material/texture, and size. The reductive aspect may arise from the fact that there are only a small number of individual elements. A fibreglass cube in the style of Robert Morris might consist of the following elements: colour – white; shape – cube; material/texture – fibreglass; size – one cubic metre. There are only four distinct physical elements. The reductive aspect may also arise from the use of serial permutations on a small number of elements. Let us take a floor piece by Carl Andre entitled *37 Pieces of Work* (1969) as an example. It consists of thirty-six squares which are arranged such that they create another larger square. Each of the thirty-six squares also consists of thirty-six squares of every possible combination of six different types of metal – hence there are 1,296 small squares. In this case the elements are: colour – the six colours of the six different metals; shape – square; material/texture – the six materials/textures of the six metals; size – 2*in* x 2*in* x ¾*in*. The entire work therefore consists of only six different types of small squares. The apparent complexity of *37 Pieces of Work* arises out of the permutations to which these basic elements are subjected. However, the permutations are serial in nature so even the surface complexity is easily reducible using logic.[15]

[15] See '(MVA e)'

MVA d): The compositional elements are not discreet parts – they are a continuous part of the whole. Again, this may be illustrated by *37 Pieces of Work*. The '*37*' in the title refers to the fact that the thirty-seventh 'work' was the piece itself. Andre takes the first thirty-six pieces of work to be the squares composed from the 1,296 small squares. In a Morris cube, the six faces of the cube are not separable from the cube as a whole – a cube cannot be a cube without six faces.

(MVA e): Ideas are followed to their logical conclusion. There are no decisions made by the creator of the artwork which affect the outcome of the process. This aspect of my definition is not applicable to all minimalist artworks and hence the use of brackets. It does not usually apply to the work of Robert Morris, for example. However, the work of Carl Andre, and Sol LeWitt in particular, is distinctly serial in its construction. LeWitt's *Four basic kinds of straight lines and their combinations* (1969) consists of fifteen line drawings. The first (1) is simply fifty or so vertical parallel straight lines. The second (2) is fifty or so horizontal parallel straight lines, the third (3) is diagonal lines (left-bottom to right-top), and the fourth (4) is diagonal lines (left-top to right-bottom). Then follows a logical series of the superpositions of these four basic units: 12, 13, 14, 23, 24, 34, 123, 124, 134, 234, and 1234.

2.1b Minimalist Music

MVA and MM do share some aesthetic values. The similarities outweigh the differences to an extent such that they share the same designation 'minimalism'. There are however significant differences, as would be expected with different media, which need to be clarified. The first difference is that MVA exists in space whereas MM exists in time. Translation from space to time and vice versa via analogy is possible as mentioned above, however there is always a loss of exactitude when dealing with analogies. More will be said on the issues which surround the interaction of space and time in the final section of the chapter. I shall now attempt to relate MM to my definition of MVA given above.

MM a): This does not really apply to MM. There are usually quite a number of psycho-acoustic by-products which arise from the music. These include: the 'hearing' of overtones which are not actually there due, amongst other things, to: the use of just temperament in the mature music of La Monte Young and the Theatre of Eternal Music; the 'resulting patterns' of Steve Reich's phase music; and the 'hearing' of overtones which are not really there due to the high amplifications of Philip Glass' music. Young, Reich and Glass have all confirmed that these psycho-acoustic by-products are integral parts of the listening

experience. Whereas most practitioners of MVA[16] wanted to eschew any elements of the viewing experience which did not arise directly from the empirical relationship that the viewer had with the artwork, the practitioners of MM desired an enhancement of these elements. Reich in particular emphasises his 'resulting patterns' by amplifying them within the texture. In this sense MM is more similar to the 'Op Art' of Bridget Riley and Victor Vasarely than it is to MVA.

MM b): There is a degree of impersonality in the music produced by Young, Riley, Reich and Glass – especially when compared with the music which was being produced in Europe at the time – but the adjective 'impartial' may be more suitable than 'impersonal'. Most of the minimalist compositions made between 1958 and 1974 have titles which refer *to* the music. *Violin Phase* (Reich), *The Well-Tuned Piano* (Young) and *Music in Contrary Motion* (Glass) are titles which describe the techniques employed within the pieces (this applies to all three titles) and also describe the instrumentation (as with the first two titles).[17] This is not to say that no music had done this previously – but it is the pervasiveness of the self-referentially descriptive and austere titles which characterise

[16] Robert Morris is a possible exception; his interest in the phenomenological philosophy of Merleau-Ponty will be discussed later.

[17] Many of the works in MVA are simply titled 'Untitled', further adding to their impersonality. A notable exception is Dan Flavin who sometimes used expressive titles e.g. *corner monument for those who have been killed in ambush (for the Jewish Museum) (to P.K. who reminded me about death)* (1966).

MM.[18] It is indicative that Riley, Reich and Glass began to use more poetical titles as their styles diverged from the minimalist aesthetic.[19]

The austere nature of the minimalist titles suggests that the composers were impartial to their music. As was stated with regard to the visual artists in 'MVA b)', their music does not communicate their thoughts or emotions at the moment of creation: the music stands by itself, without displaying a creator-creation relationship. The composers were not, however, *impersonal* in the sense that the artists were. This is primarily due to the fact that MM was generally not as minimalist as MVA. This point will be clarified 'MM c)'. There it will be argued that there are generally a greater number of 'events' in MM than there are in MVA. The greater number of events which take place in MM necessarily require a greater amount of decision making on the part of the composer, hence mitigating claims for impersonality.

[18] A notable exception is Young, who from the early 1960s has been using titles which are perhaps the most poetical and 'stream-of-consciousness' that have ever been conceived. *The Second Dream of the High-Tension Line Stepdown Transformer from The Four Dreams of China* is a good example. Many of his titles do refer to the contents of the works, but usually in a cryptic and esoteric manner, such as *Day of the Antler 15 VII 65 The Obsidian Ocelot, The Sawmill and the Blue Sawtooth High-Tension Line Stepdown Transformer Refracting the Legend of the Dream of the Tortoise Traversing the 189/98 Lost Ancestral Lake Region Illuminating Scenes from the Black Tiger Tapestries of the Drone of the Holy Numbers from 'The Tortoise, His Dreams and Journeys'* – In this title the first numbers refer to the dates of the performance, '189/98' refers to the harmonic intervals being used, the 'Black Tiger' refers to Young, and so on.

[19] For instance: Riley – *A Rainbow in Curved Air* (1968); Reich – *Tehillim* (1981); Glass – *Einstein on the Beach* (1976).

MVA often uses 'spatial events'[20] as they are found in 'real life' – the world outside of the art gallery. We constantly see cubes or planks or monochromatic polygons in the world around us. The sound events created by MM are not a part of our sound world and thus imply a creator and hence a lack of impersonality. A fluorescent light on the other hand may well be just one of thousands of identical factory-made fluorescent lights.

MM c): There is no denying the absolute minimalism of a fibreglass cube or a monochrome painting. The same cannot be said of the fifty-three different modules that together comprise Riley's *In C*, and especially not the aural result with its multitudes of overlapping lines and textures. The only piece of MM which approaches the minimalism of a fibreglass cube or a monochrome painting is Young's *Composition 1960 #7*: a B and an F# 'to be held for a long time.'[21] It is the fact that MM exists in time as opposed to space which accounts for its *relative* complexity. For a piece of music to demonstrate a minimalism that compares with that demonstrated by much MVA, only a very few 'events' may take place. Taking a square monochrome painting as an example, there are only four spatial events: the four edges of the canvas which constitute the boundaries of the painting. Young's *Composition 1960 #7* has only two

[20] See 'MM c)'.
[21] See Section 3.3.

temporal events: the point at which the B and the F# begin to be sounded, and the point at which they cease to be sounded. There are no other pieces of MM which come close. Consider one of the most minimalist pieces of Reich as an example. When one hears *Piano Phase*,[22] one hears approximately eight notes per second during the periods when the pianos are in phase with each other and up to sixteen notes per second when they are not. Over the course of the twenty minute piece this means that one hears something in the region of 12,000 temporal events!

However, a large number of events do not imply that the finished product was not arrived at through reductive means. Minimalism as a quantifier of the finished product is not necessarily proportional to the reductivism of the methods by which it was arrived at. Let us again use Reich's *Piano Phase* as an example. The piece uses a twelve note phrase, an eight note phrase and two four note phrases. These phrases are phased against themselves, and in one case against each other. The actual elements that go to make up the piece are therefore the four phrases and the phasing process. Like Andre's *37 Pieces of Work* discussed in 'MVA c)', the number of building blocks (the 1,296 small squares used by Andre and the approximately 12,000 notes used by Reich) may be quite high but the end result is arrived at through a minimum of means. It is in this sense

[22] See Section 5.3.

that even though MM generally contains many more events than MVA, it is still minimalist.

MM d): This applies to some MM but not to all of it. Very roughly, one could argue that it does apply to some of the music of Reich and Glass (but not all of it), and does not apply to the music of Young and Riley. Certain compositional processes used by Reich and Glass demonstrate a cyclicality which, when carried through from start to finish can imply a sense of wholeness. Reich's phasing process is a particularly striking example. When the process has been completed the music is back at its original starting point. However, there is a sense in which the cyclicality of some of Reich's and Glass' music does not equate with wholeness: there is no reason that the process should not be endlessly cyclical (the completion of one cycle instigates the start of the next). If this is the case, as indeed it often is, then the listener feels that he or she has heard just one possible cycle out of a potentially infinite set. This is, in fact, not a mitigation of the conception of wholeness that is brought about by a fibreglass cube: the viewer of the cube has no reason to believe that the size of the cube is anything other than one possible set of dimensions selected from an infinite continuum of cube sizes.

However, the cyclicality of some of Reich's and Glass' music is the exception rather than the rule. Most MM is more readily and more accurately, as far as the composers are concerned, conceived as a somewhat arbitrary 'snapshot' of a larger, and perhaps infinite, soundscape. This is primarily due to the a-teleological nature of MM. Non-minimalist music is generally built around the idea of cause and effect, and of a progressive linearity from the start to the finish. One musical idea leads on to the next one, which in turn instigates a new idea or set of ideas. Mertens has described this as a 'kind of directedness...realized through the strong sense of harmony, which can be seen as an evolutional model aiming at a final climax.'[23] MM, almost without exception, does away with any sense of climax.[24] The music may well be directional, as is the case with all music that uses process, but it is not *directed* in the sense that it travels from a beginning to an ending through a series of teleological manoeuvres. It is not even sensible to refer to the points at which MM comes into being and at which it ceases as 'beginning' and 'ending'; more suitable terms would be 'start' and 'finish'. 'Start' and 'finish' imply that the music becomes audible at a certain point and ceases to be audible at a certain point – it continues even when the music has ceased to be audible and has been happening even

[23] Mertens, *American Minimal Music* (New York: Alexander Broude, 1983), p.17.
[24] The notable exceptions are Reich's phase pieces in which the number of lines being phased against each other increase, thus thickening the texture, i.e. *Its Gonna Rain*, *Come Out*, *Melodica* and *Violin Phase*.

before it becomes audible. This is not to say that the music is actually 'happening' when there is no performance taking place, but it is a helpful way of conceiving the nature of the start and finish of the music in question. Young, one of the most mystical of all Western composers, has hinted at this idea in the following way: '... a piece could be forever, if you let the concept happen.'[25] Musically, it is usually possible to construct the general shape of the music before its start and after its finish by inference from the content of the music whilst it actually existed.[26] Thus most MM is not presented as a whole but is instead one section of a potentially infinite whole.

(MM e): '(MVA e)' is not a part of the definition of MVA. It does not apply to enough MVA to warrant its status as a part of the definition. Neither does it apply to all MM but it does play a much greater part. Again, Young is the primary exception. His music is generally far more intuitive and less process-oriented than that of Reich and Glass. Furthermore, it lacks the repetitive aspect which is so integral to the process techniques of so much MM. With the exception of his most important minimalist work *In C*, the music of Riley is also more intuitive

[25] Young's accompanying notes to *The Melodic Version of the Second Dream*. Quoted in Potter, *Four Musical Minimalists: La Monte Young, Terry Riley, Steve Reich, Philip Glass* (Cambridge: Cambridge University Press, 2002), p.78. Unless otherwise stated, all future references to Potter refer to this book.
[26] Sometimes the exact shape of the music can be inferred, as with the cyclical music of Reich and Glass.

than logical. As will be seen in Chapters 3 and 4, both Riley and Young were very influenced by jazz and improvisation, far more so than Reich and Glass.[27] The idea of logical progression is, however, so fundamental to the minimalist output of Reich and Glass that it cannot be disregarded. Logical progression as it relates to MVA and MM can be divided into two categories: modular repetition (hereafter referred to as MR) and modular progression (hereafter referred to as MP). A module may be a brick, a line, a chord, a phrase, or some such other basic unit. Modules are the building blocks out of which logical progressions are created. In the example used in '(MVA e)' (LeWitt's *Four basic kinds of straight lines and their combinations*), the modules were the straight lines. The first drawing (1) is fifty or so vertical and parallel straight lines. Here the module (the straight line) has undergone MR – the module has simply been repeated in a regular fashion. However, LeWitt's piece works on two modular hierarchies. The first level (the fundamental level) has just been described. The second level is that in which the first four drawings (1, 2, 3 and 4) are the modules – they are now the units from which the logical progression is constructed. In this case, the logical progression is of the type MP rather than the MR of the fundamental level. The four modules create the logical progression already presented above: 1, 2, 3, 4, 12, 13, 14, 23, 24, 34, 123, 124, 134, 234, 1234. Logical progressions in

[27] Reich did have some contact with jazz and improvisation, but it is possible to consider his minimalist output as a reaction against it, rather than an embracing of it.

MM also usually take place on at least two hierarchical levels. In Reich's *Come Out* the module which forms the fundamental level is, in the first section of the piece, the phrase 'Come out to show them'.[28] This phrase undergoes MR and then undergoes MP when it is phased against itself. On the second level, the two-voice phasing is the module. The two-voice phasing is transformed into four-voice phasing and then into eight-voice phasing via MP.

I have attempted to define MVA, and in doing so outline its main characteristics. The definition of MVA was then applied to MM so that the similarities and differences between the two media were brought to light. Many of the issues raised in the discussion of MM will be elaborated on in greater detail in the following chapters. However, before embarking on a full discussion of MM I will give a brief outline of MVA as an artistic movement with the intention that it will help to put MM into its broader historical and aesthetic context.

[28] See Section 5.3.

2.2 Minimalism in the Visual Arts – A Background

To an extent it is possible to say that minimalism grew out of the techniques and tendencies that were characteristic of post-painterly abstraction and late abstract expressionism. One could argue that the pure, hard edges of the paintings of Kenneth Noland and Frank Stella grew out of the colour-fields of Barnett Newman, Ad Reinhardt and Mark Rothko. It is also possible to say that minimalism developed as a reaction to the unashamedly auto-biographical and climactic angst of the aspects of abstract expressionism that were exemplified by what was known as 'action-painting'. One could argue that the stillness and impersonality of Donald Judd and Robert Morris were in conscious opposition to the spontaneity and existentialism of Jackson Pollock and Franz Kline. Stella wrote that 'I had been badly affected by what could be called the romance of Abstract Expressionism... the idea of the artist as a terrifically sensitive, ever-changing, ever-ambitious person.' He wanted to create 'something that wasn't constantly a record of your sensitivity.'[29] One could also argue that minimalism was a reaction to the sublime and the mystic which were so often associated with the visual arts in the 1950s –

[29] Frank Stella (1966) quoted in William Rubin, 'Frank Stella' in *The Great Decade of American Abstraction: Modernist Art 1960-70*, E.A. Carmean, Jr. (ed.), (Houston: Houston Museum of Fine Arts, 1974), p.102. Reprinted in Jonathan W. Bernard 'The Minimalist Aesthetic in the Plastic Arts and In Music' in *Perspectives of New Music*, **31** (1993), pp.93-5.

for example Newman's categorically mystical *Vir Heroicus Sublimis* (1950-1) and Rothko's various 'floating' rectangles which attempt to transpose the viewer into the picture: '[w]hen you paint the larger picture you are in it. It isn't something you command.'[30]

None of the above statements are entirely true but equally, neither are any of them entirely untrue. In fact, in the early 1960s, the term 'minimalism' was not even in use. At that time it was not necessarily possible to perceive a distinction between that which would shortly be known as 'pop' art and that which would later come to be known as 'minimalism'[31] (as well as being called quite a few other less than flattering labels)[32]. It is therefore not surprising that minimalism cannot be classified as a simple reaction against, or outgrowth of, any particular prior style(s) since it was never a conscious artistic direction that was decided upon by a group of artists. Instead it seems that minimalism as a movement came about through several decisions undertaken by individuals or small groups of artists – some of which were reacting against the angst of abstract expressionism, some of which were influenced by the stillness and beauty of large areas of homogenous colour, and so on. One thing which can be

[30] From a quote in Andrew Causey, 'Rothko Through His Paintings', *Studio International*, April 1972, p.149; quoted in John Golding, *Paths to the Absolute* (London: Thames and Hudson, 2002), p.222.
[31] James Meyer, *Minimalism: Art and Polemics in the Sixties* (London: Yale University Press, 2001), pp.46-7.
[32] 'Idiot Art' and 'Know-Nothing Nihilism' are two examples of these derogatory titles quoted by Rose in her important essay 'ABC Art' reprinted in Battcock, p.276.

said with certainty is this: minimalism was an American movement practised by American artists.

It was in the medium of paint that minimalism first became a coherent idea. The stripes and targets of Noland, the reductive abstraction of Ellsworth Kelly, and the geometric line-paintings of Stella were the driving force behind the movement which would become minimalism. However, by the time that minimalism had been recognised as an autonomous movement separate from pop art, op-art and other contemporaneous trends, it was the three-dimensional rather than the two-dimensional art which was proving to be the most interesting and arresting. It is this period – roughly 1964/5 until the end of the decade – which will be the focus of this chapter. The individuals I will be especially concerned with are Donald Judd (1928-94), Robert Morris (b.1931), Carl Andre (b.1935), and Sol LeWitt (b.1928). The three-dimensional works of Judd and Morris display a pre-occupation with space, whilst those of Andre and LeWitt are more concerned with modularity, repetition and serialism.

Anna Moszynska wrote in her book *Abstract Art* that 'the Minimalist believed that no definitions of self or art were possible. Instead, one was back to what alone could be known: the object's autonomy and the

mind's powers of perception.'[33] Judd and Morris created objects whose defining characteristic was a sense of wholeness. 'The thing as a whole, its quality as a whole, is what is interesting.'[34] Striving to entirely abandon any kind of anthropomorphism from their objects and hence any reference to the world outside of the object itself, Judd and Morris were concerned with the mind's perception of the object as a thing in space, rather than any other qualities that may be implied by that object. Writing about Mark Di Suvero's wooden beam sculptures, Judd remarked that '[a] beam thrusts, a piece of iron follows a gesture... I am interested in static visual art and hate imitation of movement.'[35] However, as Morris famously remarked '[s]implicity of shape does not necessarily equate with simplicity of experience.'[36] Both Judd and Morris were concerned with the apprehension, the actual perception, of their objects by the viewer. In order to facilitate this it was necessary to produce objects which were simple in shape and colour: regular polyhedrons were the obvious choice. By using such simple monochromatic forms Morris claimed that '[o]ne is more aware than before that he himself is establishing relationships as he apprehends the object from various positions and under varying conditions of light and spatial context.'[37] The

[33] Anna Moszynska, *Abstract Art* (London: Thames and Hudson, 1995), p.210.
[34] Judd, 'Specific Objects' reprinted in Battcock, p.187.
[35] Quoted in Meyer, *Minimalism*, p.135.
[36] Morris, 'Notes on Sculpture' reprinted in Battckock, p.228.
[37] Morris, 'Notes on Sculpture' reprinted in Battckock, p.232.

two sculptors were concerned with the way in which an object occupies one's visual field, and in particular the way in which the object distorts the spatial field in which it resides. This can be analogous to imagining that space is solid and the object is a vacuum within that space. If for example a single cube is placed in a room which is itself cubical in shape, then the viewer may choose to apprehend the spatial situation as one in which the larger cube which makes up the room is interrupted by the smaller cube which is the object: 'In the most profoundly sculptural sense these simple forms really determine the space into which they are put.'[38] More will be said regarding this in Section 2.3.

Judd and Morris both showed some interest in serialism, although it was a feature of their work that was secondary. Judd in particular used repetition as a means of actualising the specificity of each of his objects. The act of repetition demonstrates the uniqueness, and consequently wholeness, of the original by showing that no matter how exactly the original is replicated, it is still not the original.

Andre and LeWitt were primarily concerned with seriality rather than spatiality. They were interested in the way in which a sense of wholeness can be produced out of a logical combination of unit elements. Andre

[38] David Antin, 'Art and Information 1: Grey Paint, Robert Morris' in *Art News* (April 1966); quoted in Meyer, *Minimalism*, p.163.

usually used MR as a way of achieving this. His famous *Lever* (1966) consisted of 137 firebricks laid side by side in a straight line. LeWitt preferred to use the technique of MP, creating superficially complex results which become suddenly simple once the viewer has discovered the process which lies behind final result. Echoing the sentiments that Reich expressed in his essay 'Music as a Gradual Process',[39] LeWitt wrote in 'Paragraphs on Conceptual Art' that 'the idea or concept is the most important aspect of the work. When an artist uses a conceptual form of art, it means that all of the planning and decisions are made beforehand and the execution is a perfunctory affair. The idea becomes a machine that makes the art.'[40] The serial aspect of MVA as it was espoused by Andre and LeWitt is of interest in terms of its striking parallel with the process-based music of Riley, Reich and Glass.

[39] '[o]nce the process has been set up and loaded it runs by itself': see Section 5.2.
[40] Sol LeWitt, 'Paragraphs on Conceptual Art' reprinted in Michael Archer, *Art Since 1960* (London: Thames and Hudson, 1997), p.69.

2.3 Minimalism in the Visual Arts and the Perception of Spatiality

Although both Judd and Morris were interested in space as it related to their three-dimensional objects, it was Morris' influential article 'Notes on Sculpture' that gave the most coherent and detailed account of what the two artists were trying to achieve. It is always dangerous to group artists together under a claim that their goals are sufficiently similar to warrant such a demarcation. Judd and Morris were certainly not in total agreement regarding their views and aims. In fact, 'Notes on Sculpture' was in part written as a response to Judd's earlier 'Specific Objects'. However, the physical output of Judd and Morris is similar enough to allow a dismissal of Judd's slightly different approach and to consider his output in terms of Morris's aesthetic outlook.

In 'Notes on Sculpture' Morris attempts to demonstrate the importance of working in three dimensions as opposed to the two dimensions associated with painting. Morris is concerned with literalness in art, and its consequent rejection of reference and representation. He asserts that two-dimensional art is necessarily concerned with, and irreversibly tied up

with, illusionism. Real space is three-dimensional. Painting refers to the three dimensions of real space using illusion, be it the traditional techniques of perspective or more recent techniques such as cubism and Rothko's depth illusion achieved by carefully arranged colour-fields. The 'optical sensibilities involved in painting'[41] act as a buffer between the object itself – the painting – and the perception of that object in the mind of the perceiver. Morris was occupied with a way in which the perception of the object would not be at a stage once removed from the object itself. The situation is presented diagrammatically below:

Painting:

OBJECT → PERCEPTUAL INTERPRETATION → PERCEPTION

Morris:

OBJECT → PERCEPTION

The only way of achieving this result is by ensuring that the object in question is three-dimensional. It is clear that Morris' ideal was an object which conforms to the adjective 'actual' as opposed to 'art'. It was for this reason that he preferred simple and regular polyhedrons such as cubes and prisms as opposed to the irregular shapes favoured by David

[41] Morris, 'Notes on Sculpture' reprinted in Battcock, p.224.

Smith and Anthony Caro. Morris wanted one's sense of personal space to be actualised by the act of entering into a spatial relationship with the object. This aspect of Morris' aesthetic will be discussed shortly. Morris is equally rooted in the actual and the physical in his views on colour. He writes that colour 'is essentially optical, immaterial, non-containable, non-tactile.' On the other hand, 'qualities of scale, proportion, shape, mass, are physical.' Hence the use of 'neutral hues, which do not call attention to themselves, allow[s] for the maximum focus on those essential physical decisions that inform sculptural works.'[42]

Morris admits that it is not possible to conceive of an object that only has one property: 'if color, then also dimension; if flatness, then texture, etc.'[43] However there do exist certain objects whose 'parts are bound together in such a way that they offer a maximum resistance to perceptual separation.'[44] These objects create what Morris refers to as 'strong gestalt sensations'. A gestalt, as defined in the New Oxford English Dictionary[45] is 'an organized whole that is perceived as more than the sum of its parts.' Influenced by his reading of the French phenomenologist Maurice Merleau-Ponty's *Phenomenology of Perception*, Morris was interested in

[42] Morris, 'Notes on Sculpture' reprinted in Battcock, p.225.
[43] Morris, 'Notes on Sculpture' reprinted in Battcock, p.225.
[44] Morris, 'Notes on Sculpture' reprinted in Battcock, p.226.
[45] *The New Oxford Dictionary of English*, Judy Pearsall (ed.), (Oxford: Oxford University Press, 2001), p.769

the way that three-dimensional objects present themselves to the viewer as phenomena which display gestalt properties. When one is confronted with a cube it is only possible to perceive a maximum of three faces of the cube. However, one 'knows' that the other faces of the cube exist. The processes by which this is knowledge is achieved are not known.[46] Morris describes them as 'perceptual theories of "constancy of shape", "tendencies towards simplicity", kinesthetic clues, memory traces, and physiological factors regarding the nature of binocular parallax vision...'[47] The gestalt of the object forms a considerable amount of the interest that a cube presents. The gestalt shape, or the 'known' shape, allows the viewer to interact with the object in a much surer manner. Towards the end of 'Notes on Sculpture' Morris compares the gestalt experience of viewing a cube with that of viewing a Baroque figurative bronze:[48]

> A Baroque figurative bronze is different from every side. So is a six-foot cube. The constant shape of the cube held in the mind but which the viewer never literally experiences, is an actuality against which the literal changing, perspective views are related. There are two distinct terms: the known constant and the experienced variable. Such a division does not occur in the experience of the bronze.

[46] Although I will give a potential answer to the question in Section 7.2.
[47] Morris, 'Notes on Sculpture' reprinted in Battcock, p.226.
[48] Morris, 'Notes on Sculpture' reprinted in Battcock, p.234.

Gestalt perception allows the viewer to enter into a spatial relationship with the cube. Since the viewer 'knows' the exact space occupied by the cube he or she can form an impression of space created by the cube. 'Created' is actually meant in a negative sense – the cube-created space is actually less than the cube-less space. The cube-less space is the space of the gallery/room/courtyard when the cube is not there. The cube-created space is the same space minus the volume of the cube. Without gestalt perception the cube-created space could only be an approximation in the mind of the viewer.

Minimalist objects actualize space in the mind of the viewer. They make the viewer aware of the spaciality of their field of vision. This is not to say that people are unfamiliar with the concept of space or are unused to existing in space; rather, the actualization makes them aware of space. The viewer is able to move about in his or her new-found space that has been created by the minimalist object. As Morris has written, '[t]he experience of the work necessarily exists in time. *The intention is diametrically opposed to Cubism with its concern for simultaneous views in one plane.*'[49]

[49] Morris, 'Notes on Sculpture' reprinted in Battcock, p.234 (his italics).

More will be said on the relationship between minimalism in the visual arts and the perception of spatiality in Section 7.2. Before moving on, it should be noted that there was a great deal of interaction between the visual artists and the composers. During the period which forms the focus of this thesis, Reich and Glass relied upon the visual art-world to provide venues, audiences and even performers. Many concerts were held in the Guggenheim Museum or the Museum of Modern Art, in the same places where minimalist visual art was exhibited.[50] Reich and Glass both had good friends within the visual arts community. In the late 1960s and early 1970s, for instance, Glass was an assistant to the sculptor and film-maker Richard Serra (they even toured Europe together).[51] Reich's 1968 piece *Pendulum Music* was premiered at the Whitney Museum of Modern Art. The performers included Richard Serra, Michael Snow and Bruce Nauman, all of whom were visual artists and film makers. La Monte Young had less links with the visual art-world; he was more concerned with the avant-garde 'happenings' of the New York loft scene. Considered by many to be the founder of minimalism, his life and work will be the subject of the next chapter.

[50] One 1973 performance of Glass' *Music in Changing Parts* actually took place in Donald Judd's Soho loft.
[51] See Potter, pp.267-70.

Chapter 3

La Monte Young's 'eternal' music: infinity and timelessness

And the end and the beginning were always there

Before the beginning and after the end

- T. S. Eliot, *Burnt Norton*

There needs a long time to know the world's pulse

- George Herbert, *Jacula Prudentum*

Young has often been considered the founder of minimalist music, and has affectionately been described as the 'grand-daddy' of minimalism.[52] The influences that were to mould his minimalist style were multifarious, ranging from the sound of the wind and drugs, to Charlie Parker, Anton Webern and John Cage. In 1958 he wrote the *Trio for Strings*, whilst still

[52] For example Schwarz, *Minimalists*, p9.

a student. Initially greeted with mockery by his teachers and (most of) his fellow students, the *Trio* was the first truly minimalist piece, and can thus be regarded with hindsight as very important indeed. It's use of extremely long notes, over an extended timeframe pointed the way to Young's later mature minimalist style.

The musical development of Young falls roughly into three useful (and very unequal) periods: 1935-1959; 1959-1961; and 1962-present day. The first of these may be seen as a period of gradual maturation, ranging from infant aural experiences to the *Trio for Strings*. The second and shortest period was also the most intense in terms of his compositional and aesthetic development. Young was introduced to the music of Cage and avant-garde performance art, which helped to crystallize his own ideas about sound, music and temporality. It was at this stage that Young composed pieces such as *X for Henry Flynt* and *2 Sounds*, and wrote concept pieces (some of which do not implicitly contain any sounds at all) such as *Composition 1960 #5* (see sections 3.2 and 3.3). The third period, discussed in Section 3.4, has largely revolved around two major on-going projects: *The Tortoise, His Dreams and Journeys* and *The Well-Tuned Piano*. Although begun in 1964, it was not until the 1970s that *The Well-Tuned Piano* was performed. A mammoth piano improvisation in just temperament, the piece can last up to six hours. In stark contrast to

The Tortoise, it has many fast passages which create 'clouds' of sound. There is also a rigorous structure which Young has gradually developed. For these reasons, *The Well-Tuned Piano* will no be discussed in this thesis. In terms of the way in which Young's duration-based minimalism can affect one's perception of temporality, *The Tortoise* is a much better example to use. Consequently, the majority of Section 3.4, and all of Section 3.5, will be devoted to the TEM and *The Tortoise*.

3.1 Aural awakenings, jazz and the *Trio*

Young claims that his first sound experience was that of the wind whistling around the log cabin in which he was raised. In an interview with Kostelanetz, he described it as 'very awesome and beautiful and mysterious...'[53] Born into a Mormon community in Bern, Idaho on 14th October 1935, the loud and continuous sounds of the American frontier would remain an inspirational force throughout Young's life. Apart from Young's evident in the sounds of his environment, he recalls playing the harmonica at the age of two, and then having guitar and singing lessons

[53] Richard Kostelanetz, *The Theatre of Mixed Means: An Introduction to Happenings, Kinetic Environments and Other Mixed-Means Presentations* (New York: Dial Press, 1968/RK Editions, 1980), p.186; quoted in Potter, p.23.

from his Aunt Norma: 'The songs I learned to sing at that time were cowboy songs.'[54] The family moved around frequently; after a brief spell in Montpellier, Bern's nearest town, they went to Los Angeles when Young was five. Here his father, Dennis, bought him an old silver saxophone and, since he was an amateur musician himself, also agreed to teach Young. This allowed Young to play in the grade-school orchestra. At the age of ten, the family moved to American Fork, Utah, for a period of about four years in which Young remembers that '[t]he natural sounds that interested me were the owls in the forest area around Lake Utah... One day I heard a harmonic resonating in the woods, without even knowing what it was; perhaps it was coming off the lake.'[55] Young's later obsession with harmonics may well have derived from experiences such as these. In 1950, when Young was fourteen, the family returned to Los Angeles, where Young stayed with his grandmother who lived by the rail tracks; he would whistle along to the train sounds as they raced by. Whilst in Los Angeles, Young attended the John Marshall High School, which provided him with his first experience of jazz and classical music. His harmony teacher, Clyde Sorenson, was once a pupil of Schoenberg, and it was through Sorenson that Young first became acquainted with the Second Viennese School and serialism.

[54] Kostelanetz, *The Theatre of Mixed Means,* p.185; quoted in Potter, p.23.
[55] Schwarz, *Minimalists*, p.19 (unattributed).

It was, however, jazz that inspired Young to follow a musical career. He had saxophone and clarinet at the Los Angeles Conservatory of Music and played in a Dixieland band. With the acclaimed jazz musicians Pete Diakinoff (tenor sax) and David Sanchez (trombone), Young had the opportunity to play for a fee at many after-school dances. The audiences, however, found their music too modern and Young 'only wanted to play pure jazz.'[56] This tendency toward musical and aesthetic ideals, even at the cost of financial affairs and publicity, would remain with him throughout his life. Although Young could quite easily have made a bigger impact in terms of the public sphere, and could almost certainly have made more money from his music, it has been his absolute refusal to compromise on matters artistic that has stopped him from doing so.

It was whilst Young was attending the John Marshall High School that he worked in a machine shop after school, in order to save money for a Selmer alto saxophone. Always aware of his environment, the machine shop provided him with yet more drones which, like those of the trains, Young would whistle and hum along to. In September 1953 Young enrolled at the Los Angeles City College where he studied counterpoint and composition with another of Schoenberg's pupils, Leonard Stein. He joined the City College Dance Band, an extremely prestigious group.

[56] Potter, p.24 (from Potter-Young correspondence).

Auditioning against Eric Dolphy (who would later play with John Coltrane) for the second alto chair, Young obviously made a big impression, since he claimed that 'people who heard me at the audition said I was like an explosion when I played.'[57] Whilst at Los Angeles City College, Young played in the orchestra and a jazz quartet. The quartet experimented with untraditional harmonic progressions and it is evident that Young was an extremely creative and athletic improviser. Two members – Don Cherry and Billy Higgins – would later join with Ornette Coleman in the development of free jazz. Young also played in the Willie Powell Big Blues Band which consisted of mainly black and Mexican musicians.[58] The only other white member was Terry Jennings, a saxophonist who was to have quite an influence on Young's musical thinking.

Young's time at City College was not, however, entirely devoted to jazz. By 1956 he was looking to open his horizons up to other genres of music. It was in this year that he wrote his first major non-jazz composition, *Five Small Pieces for String Quartet*, subtitled 'On Remembering a Naiad'. A homage to Webern,[59] it was praised by Stein who, according to Young,

[57] Schwarz, *Minimalists*, p.21 (unattributed).
[58] Potter, p.26.
[59] Prendergast, Mark, *The Ambient Century: from Mahler to Moby – The Evolution of Sound in the Electronic Age* (New York: Bloomsbury, 2003), p.96

'started telling people in my presence that I was a composer. Then I really began to think I was.'[60] The piece uses serial techniques, but far from being a run-of-the-mill Second Viennese School pastiche, it contains elements of the minimalist style which Young would later develop. Young writes that the *Five Small Pieces* contain '[l]onger static sections of pulses and ostinato figures, and even a hint of the sustenance to come in my later works.'[61]

It is informative that Young singled out Webern as the inspiration behind this early work.[62] Webern was perhaps the most experimental of the pioneers of serialism. Although it was a system devised by Schoenberg as a method of structuring his atonal expressionism, it was Webern who emancipated the Romantic nineteenth-century aesthetic of extreme expression from the serial technique. His music manifests the crystal-like mathematical beauty of serialism in exquisite miniatures, as opposed to the more expansive and orchestrally-orientated works of Schoenberg and Berg. It was this more abstract approach to serialism which appealed to later avant-garde and experimental composers. Young was also attracted to Webern's technique of repeating pitches at the same octave, creating a

[60] Schwarz, *Minimalists*, p.21 (unattributed).
[61] Quoted in Potter, p.30 (from unpublished material and programme notes in the composer's archives).
[62] Steve Reich would also find Webern to be the serialist that influenced him most; in 1992 he discussed the similarities between his *Piano Phase* and Webern's *Orchestral Variations*. See Edward Strickland, *Minimalism: Origins* (Bloomington and Indianapolis: Indiana University Press, 1993), p.197.

sense of stasis and non-development that appealed to his already developing aesthetic. Young remarks that Webern's technique is 'the same information repeated over and over and over again, in strictly permuted transpositions and forms...'[63] Finally, it was Webern's use of sparse texture, hushed dynamics and silence that appealed to Young.

After a one year stint at Los Angeles State College, Young went to the University of California at Los Angeles (UCLA) in January 1957, where he majored in music. He took courses in music theory, ethnomusicology and composition, graduating in June 1958. It was at UCLA that Young made a real break from jazz, although its influence – from saxophone playing to improvisation – never truly left him. Whilst at UCLA Young developed his own blues piano style, which he entitled 'Young's Blues',[64] had his first encounter with classical Indian music, and immersed himself in the study of serialism. It was also at UCLA that Young wrote two important transitional works, *for Brass* (June, 1957) and *for Guitar* (June, 1958), and the seminal piece of his first period, the *Trio for Strings* (September, 1958).

[63] Kostelanetz, *The Theatre of Mixed Means*, p.189; quoted in Potter, p.29.
[64] Sometimes referred to by Young as 'ka chunk chunka chunk chunka' music. Riley later described it as 'funky bebop in the right hand over some sort of walking bass in the left hand'; quoted in Potter, p.27 (from unpublished material and programme notes in the composer's archives).

UCLA's ethnomusicology department, which boasted a Japanese *gagaku* orchestra and an Indonesian *gamelan* orchestra, opened Young's ears to non-Western music. Most important was his discovery of northern Indian music. He purchased an Ali Akbar Khan[65] record and 'listened to it so much in my room that my grandmother was worried about it, and she eventually wrote "Opium Music" on the album cover'.[66] It was the dronal and improvisatory aspect of northern Indian classical music which was to have such an impact on Young's later output.

Young's 1957 piece *for Brass* was the first work to incorporate lengthy durations. It is orchestrated for two French horns, two trumpets, two trombones and two tubas. Pitches are held for durations of up to half a minute and typically the rests (and sometimes silences), last between five and eight seconds.[67] The pitches that Young employed were beginning to emphasise what he would later refer to as the 'Dream Chord' which consists of four notes and emphasises the intervals of the perfect fourth, the augmented fourth the perfect fifth and the major seventh. Significantly, the third – both major and minor – is not emphasised. Later, when Young was researching and developing his knowledge of harmonic theory, he became increasingly aware that the third is (in equal

[65] Khan was a renowned tabla player, who often collaborated with Ravi Shankar.
[66] Schwarz, *Minimalists*, p.22 (unattributed).
[67] See Potter, p.31.

temperament) the interval furthest away from its true harmonic ratio in terms of just temperament and this is probably the reason that Young has usually avoided using thirds.

Young's second transitional piece was *for Guitar*, which he composed in 1958 – only a few months before the groundbreaking *Trio*. As with some of the conceptually orientated pieces of his middle period,[68] *for Guitar* can be conceived as an exploration of the idea of sound where there is no sound. Written for the acoustic guitar (which cannot sustain tones for any considerable duration), Young employs note lengths comparable to those of *for Brass*. Hence, the listener is perpetually caught between the sound, its decay, and silence. In a live performance the listener is aware that a particular note is held for a long duration due to the performer's finger remaining on the relevant string and fret for that lengthy duration. Once the note has decayed, however, the listener can only remember that note. In this way, *for Guitar* is transitory both in terms of the *Five Small Pieces – Trio for Strings* progression, and in the progression from through-composed music to the conceptually-based music of Young's middle period. His already blossoming interest in silence and its structural and aesthetic properties came to fruition in the *Trio for Strings*.

[68] *Composition 1960 #5* for example: *'Turn a butterfly (or any number of butterflies) loose in the performance area. When the composition is over, be sure to allow the butterfly to fly away outside...'*

Described by Sandy McCroskey as 'like Anton Webern on some extraterrestrial hashish',[69] the *Trio for Strings* is arguably the first truly minimalist piece of music. It is the climax of Young's ideas regarding duration, serial technique and intervallic relationships. Young himself has said that '[i]t is probably my most important early musical statement, and I feel it actually influenced the history of music...'[70] Unlike *for Brass* and *for Guitar*, the held tones of the *Trio* are the sole material of the work. There are no short notes or fast passages as are found in the outer sections of *for Brass* and the notes and silences have longer durations than in the preceding works.

As with *for Brass* and *for Guitar*, Young uses permutations of the 'Dream Chord', but in the case of the *Trio* they are used both more systematically and more pervasively. However the sheer duration of the pitches means that it is very difficult to perceive any system or structure. To hear the piece serially or modally, one must be able to recollect a pitch which may have been played eight minutes or so before. Young further highlights this disruption by using long periods of silence between each set of pitch constellations. On the other hand, due to the consistent use of permutations of the 'Dream Chord', the *Trio's* harmonic language is sufficiently homogeneous to give it coherence and structure.

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[69] Sandy McCroskey, http://melafoundation.org/mccroske.htm, p.2.
[70] Quoted in Potter, p.34 (from a version of Young's programme notes for *Trio for Strings*).

3.2 Darmstadt and Berkeley

It is with the *Trio for Strings* that Young effectively concludes his first period and paves the way for the second. This stage of Young's development can be further divided into two periods: his time spent at the University of California at Berkeley (1958-1960) and his subsequent move to New York. Before his move to New York, Young would encounter the work and philosophy of Stockhausen – and more importantly, Cage – whilst at a summer school in Darmstadt. He put many of these new ideas into practice in pieces for Ann Halprin's dance company. His increasingly conceptual and experimental leanings would reach their climax in the *Compositions 1960* (see Section 3.2).

Young showed the *Trio* to Seymour Shifrin, his first composition teacher at Berkeley, shortly after he arrived. Unsurprisingly, it provoked uneasiness even in the relatively progressive Shifrin. In an attempt to demonstrate to Young that the serial structure was so utterly consumed by the massive durations of the sustained pitches, Shifrin organised a performance of the *Trio*. The audience was mostly limited to fellow members of Young's composition class, which included Pauline Oliveros, who would later go on to develop her own breed of minimalism. By and

large, the *Trio* was met with derision and incomprehension. Shifrin was not, on the other hand, 'out to get him'; instead he believed that Young should cease writing 'like an eighty-year-old man' when he 'should be writing music with lines and climaxes, vitality and youth.'[71] Unusually for Young, he obliged by writing three pieces for solo piano entitled *Study I*, *Study II* and *Study III*[72] which contain some Stockhausen-influenced moments.

During the summer vacation between his two years at Berkeley, Young travelled to Europe for the Darmstadt summer school[73] to attend Stockhausen's composition class. Young tentatively showed Stockhausen the scores for *Study I*, *Study III* and the *Trio for Strings*, all of which Stockhausen subsequently praised. It must have been an enormous confidence boost that Stockhausen who, alongside Boulez, was the darling of the European avant-garde, should praise the *Trio* – his most adventurous work to date.

Despite not being in attendance in 1959, Cage had been at Darmstadt the previous year and had left a lasting impression. Although Young gained much from studying with Stockhausen, it was really the music and

[71] Quoted in Potter, p.43 (excerpt from the composer's own programme note for *Study I*).
[72] *Study II* remains unfinished.
[73] Before arriving in Europe, Young stopped in New York to visit Richard Maxfield, the pioneering composer of tape music who would have an enormous influence on Terry Riley in particular.

philosophy of Cage that made the most significant and enduring impact on Young. Cage's piano-playing collaborator David Tudor was at Darmstadt in 1959 and it was through him that many of Cage's ideas and music were transmitted. The two ideas of Cage that Young found most striking – and which he would shortly incorporate into some of his own works – were the use of random numbers as a decision making device and 'the presentation of what traditionally would have been considered a non- or semi-musical event in a classical concert setting.'[74] Young also took from Cage the idea of the 'instructional' score – a score which tells the performer(s) what to do by using written instructions rather than musical notation. Cage's ideas offered Young a way out of through-composed music and into areas of performance/music that would eventually lead to his involvement with George Maciunas' Fluxus movement.

On returning to Berkeley, Young wrote four important works before his *magnum opus* of conceptualism, the *Compositions 1960.* These were: *Vision*; *Poem for Chairs, Tables, Benches, Etc. (or other sound sources)*;[75] *2 Sounds*; and *Arabic Numeral (any integer), to H.F.*[76] These pieces are transitory in the following three ways:

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[74] Kostelanetz, *The Theatre of Mixed Means,* p.194; quoted in Potter, p.44.
[75] Usually referred to as *Poem.*
[76] Usually referred to as 'X for Henry Flynt'.

(1) With the exception of *Vision*, they use unconventional sound sources (*Vision* uses conventional instruments but requires them to be played in unconventional ways)[77] which range from metal being scraped across glass to a waste bin being pounded against the wall. By the time of *Compositions 1960*, Young often dispensed with any kind of instrument altogether (and sometimes even any kind of discernable sound).

(2) The notations employed by Young are what I referred to earlier as 'instructional': they are written instructions telling the performer(s) what to do and when. They are never, however, exhaustive – in stark contrast to the *Trio* which dictates detailed instructions down to the last semiquaver. Some of the 'instructional' pieces of *Compositions 1960* do not even tell the performer(s) what to do, let alone when.

(3) They are the first pieces by Young which bear traces of conceptualism – such as playing in the dark and the possibility of a piece which has no length.

Vision, dated 12th November 1959, was written soon after Young's return from Darmstadt. The scoring is for piano, two brass instruments, recorder, four bassoons, violin, viola, cello and contrabass who are to be placed at intervals around the circumference of the auditorium. They play

[77] The *Trio for Strings* also asks the performers to use a variety of unusual techniques such as *flautando* (bowing near the fingerboard to produce a flute-like timbre).

sounds, usually unconventional, dictated by the use of random numbers (which may be arrived at through the use of a telephone directory). The entire piece is played in the dark and the beginning and ending are periods of silence, the length of which are also dictated by random numbers.

From 1959 to 1960 Young, with Terry Riley, was the musical co-director of Ann Halprin's dance company. It was for this dance company that his next three pieces were written. *Poem*, dated 21st January 1960, uses random numbers and, as in *Vision*, they are used to determine the durations of the sounds to be produced. The subtitle of the work – *for Chairs, Benches, Tables, Etc. [or other sound sources]* – gives an insight into its nature. This was the first piece by Young to use found sources as instruments. The chairs, tables and so on are dragged across the floor, creating what Young describes as 'unimaginably beautiful sustained tones.'[78] The durations of these sounds and the length of the total performance are, as already mentioned, determined by random numbers which may include zero. The score, however, does not stipulate the unit of time in which the durations are to be carried out. The piece could therefore last any length – from no length to millions of years. As Cardew has pointed out, since any activity which takes place during the

[78] Quoted in Potter, p.45 (from unpublished material in the composer's archive).

performance may be conceived as part of that performance then 'all being and happening from the very beginning of time had been nothing more nor less than a single gigantic performance of *Poem*.'[79] *Poem* is important in that it is the first piece by Young which actively explored the potentials of harmonics and overtones. Due to the nature of the sound production however, the harmonics produced will always be relatively uncontrollable; a far cry from the meticulously calculated harmonics that are to be found in the works of Young's third period.

The third transitory piece was *2 Sounds* (April 1960). Young's first tape piece, *2 Sounds* consists of a single friction sound which is then joined by another friction sound. As Cardew has put it, '[w]hen the first sound starts you cannot imagine that any more horrible sound exists in the whole world. Then the second sound comes in and you have to admit you were wrong.'[80] As with *Poem*, the harmonics produced by the friction sounds – such as tin cans being dragged over glass and a drumstick being scraped around a gong – are of utmost importance. Even though the sounds produced are 'unpleasant' in the traditional sense, the 'beauty' of the resultant harmonics is what Young wishes the piece to be judged on.

[79] Cornelius Cardew, 'One Sound: La Monte Young', *The Musical Times*, 1071485 (November 1966), p.959; quoted in Potter, p.46.
[80] Cardew, 'One Sound', p.960; quoted in Potter, p.46.

The final piece I will discuss before moving onto *Compositions 1960* is *Arabic Numeral (any integer), to H.F* or simply *X for Henry Flynt.* Henry Flynt, a Harvard-trained mathematician, was one of the core members of the New York avant-garde scene. As well as being a talented violinist, he wrote and philosophised on the avant-garde and was involved in many activities with Young. *X for Henry Flynt* (its title may reflect Flynt's mathematical interests) is one of the only pieces he wrote which uses repetition as a structural device.[81] The score invites the performer to 'repeat a single loud cluster, using the forearms, a large number of times, at equal intervals of between one and two seconds.'[82] The score does not, however, confine the instrumentation to the piano, as is demonstrated by Young's first performance in 1961 in which he hit a gong with a drumstick. The score itself is typical of Young's increasingly avant-garde approach: it states that the piece is for 'Piano(s) or gong(s) or ensembles of at least 45 instruments of the same timbre, or combinations of the above, or orchestra.'[83] The number of repetitions used are to be decided beforehand and this number should be substituted for the '*X*' in the title. Although low numbers such as 2, 3 or even 0 may be used, the piece works best when '*X*' is high.

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[81] The other was *Death Chant* (23rd December 1961) for male voices and optional carillon. *Death Chant* uses modular repetition in a similar way to that employed by Glass half a decade later. *Compositions 1961* may also be considered as repetitive – although this is only on a conceptual level, not a musical one, as shall be seen shortly.
[82] Potter, p.47.
[83] www.melafoundation.org/lmyresum.htm#works

On the tape recording mentioned earlier, Young chose the 'Arabic numeral' 1,698. As opposed to being an extremely tedious concept work, the piece is designed to awaken the listener to the multifarious harmonics present within a chord cluster, a struck gong, or whatever. Cage said the following about Young's music: 'After, say, five minutes, I discover that what I have all along been thinking is the same thing is ... full of variety ... almost in the same sense that the change in experience of seeing is when you look through a microscope.'[84] The high number of repetitions is necessary; it allows the listener to 'get into the sound', a concept which Young beginning to regard as an integral aspect of his music. Even after say thirty repetitions, most listeners would not be able to hear all that is happening. As with much other music that Young was writing at this time, the extreme number of repetitions creates a sense of 'eternity'. The piece begins and ends abruptly but the completely static quality of the music suggests that the beginning and the end are entirely arbitrary, as indeed they are; the music may be easily conceived as extending towards the temporal horizons as described above with reference to *Vision*.

[84] John Cage, quoted in Sandy McCroskey, http://melafoundation.org/mccroske.htm, p.2.

3.3 New York and the *Compositions 1960*

Having been awarded a travel scholarship from Berkeley, Young travelled to New York in the latter half of 1960. It was here that his most famous, and perhaps infamous, compositions were created: the three *Piano Pieces for David Tudor*, the two *Piano Pieces for Terry Riley*, and the *Compositions 1960*. These compositions range from the conceptual to the theatrical – and even to the impossible. For ease of reference, the 'scores' of the *Piano Pieces* for Tudor and Riley, and the 'scores' of the *Compositions 1960* are reprinted below.[85]

Compositions 1960

(#1) (Unpublished)

#2 Build a fire in front of the audience. Preferably use wood although other combustibles may be used as necessary for starting the fire or controlling the kind of smoke. The fire may be of any size, but it should not be the kind which is associated with another object, such as a candle or a cigarette lighter. The lights may be turned out.

After the fire is burning, the builder(s) may sit by and watch it for the duration of the composition; however, he (they) should not sit between the fire and the audience in order that its members will not be able to see and enjoy the fire.

The composition may be of any duration.

In the event that the performance is broadcast, the microphone may be bought up close to the fire.

#3 Announce to the audience when the piece will begin and end if there is a limit on duration. It may be of any duration.

Then announce that everyone may do whatever he wishes for the duration of the composition.

[85] In some cases, the full 'scores' have been impossible to trace; in these instances a pair of brackets will be inserted around the composition number, e.g. (#1), and either a part of that 'score' or an acknowledged paraphrase of that score will be provided.

#4 Announce to the audience that the lights will be turned off for the duration of the composition (it may be any length) and tell them when the composition will begin and end.

Turn off all the lights for the announced duration.

When the lights are turned back on, the announcer may tell the audience that their activities have been the composition, although this is not at all necessary.

#5 Turn a butterfly (or any number of butterflies) loose into the performance area.

When the composition is over, be sure to allow the butterfly to fly away outside.

The composition may be any length but if an unlimited amount of time is available, the doors and windows may be opened before the butterfly is turned loose and the composition may be considered finished when the butterfly flies away.

#6 The performers (any number) sit on the stage watching and listening to the audience in the same way the audience usually looks at listens to performers. If in an auditorium, the performers should be seated in rows on chairs or benches; but if in a bar, for instance, the performers might have tables on stage and be drinking as is the audience.

Optional: A poster in the vicinity of the stage reading: COMPOSITION 1960 #6
by
La Monte Young
Admission

(price)
and tickets, sold at stairways leading to stage from audience, admitting members of the audience who wish to join the performers on stage and watch the remainder of the audience.

A performance may be of any duration.

(#7) (score of B and F# - a perfect fifth between B3 and F#4)
to be held for a long time

(#8) (Unpublished)

(#9) (consists of a horizontal line on a card)

#10 Draw a straight line and follow it.

(#11) (Unpublished)

(#12) (Unpublished)

(#13) ...prepare any composition and then perform it as well as he can...

(#14) (Unpublished)

#15 This piece is little whirlpools out in the middle of the ocean.

Piano Pieces for David Tudor

#1 Bring a bale of hay and a bucket of water onto the stage for the piano to eat and drink. The performer may then feed the piano or leave it to eat by itself. If the former, the piece is over after the piano has been fed. If the latter, it is over after the piano eats or decides not to.

(#2) ([T]he pianist is asked to open the lid of the piano and let it fall without making any sound, and he can try as many times as he likes until he succeeds.')[86]
#3 Most of them were very old grasshoppers.

Piano Pieces for Terry Riley

#1 Push the piano up to a wall and put the flat side flush against it. Then continue pushing into the wall. Push as hard as you can. If the piano goes through the wall, keep pushing in the same direction regardless of new obstacles and continue to push as hard as you can whether the piano is stopped against an obstacle or moving. The piece is over when you are too exhausted to push any longer.

(#2) (Unpublished)

Whilst Darmstadt was viewed as the centre of European avant-garde music, it was certainly New York that was the centre of things on the other side of the Atlantic. Cage and his followers (Feldman, Brown, Wolff and Tudor in particular) were based in New York during the 1950s. The Fluxus movement, pioneered by Maciunas, and the 'loft' scene, pioneered by Ono and Young, in the early sixties further developed New York as a cultural centre. By the mid-sixties Greenwich Village folk-rock (e.g. Bob Dylan), minimalist art on display in the Guggenheim Museum and the Museum of Modern Art, and Andy Warhol's downtown Factory established New York as a cultural capital.

Young, it would seem, took New York by storm. It did not take him long to establish himself as a central figure within the New York avant-garde – which already included the likes of George Brecht, Yoko Ono, Toshi

[86] Michael Nyman, *Experimental Music: Cage and Beyond* (Cambridge: Cambridge University Press, 2000), p.85.

Ichiyanagi, Jackson MacLow, Larry Poons, and Henry Flynt. It was Young's original intent to study with Cage but Cage had recently left New York – instead Young studied with Richard Maxfield at the New School for Social Research. It is odd that Maxfield, at the leading edge of tape composition, was to have no obvious influence on Young.[87]

Young was the founding musical director of Ono's loft concerts for about a year. It was through these concerts that some of his music was disseminated. The type of 'music' that Young was writing may be rapidly discerned from a cursory glance at the 'scores' written out above. Much has been written about these works, in particular the relationships between: sound and non-sound; the audience and the performer(s); the possibility and impossibility of some of the instructions; music and performance/theatre. [88] The questions that Young posits regarding the relationships are unique and challenging, however I will concentrate those compositions which I believe display interesting concepts regarding time.

[87] The same could certainly not be said for Riley, who was introduced to Maxfield whilst at Berkeley. During the period in which Young was concentrating on writing conceptual pieces, Riley was much more interested in writing tape-based music.
[88] See in particular: Mertens, *American Minimal Music*, pp.22-7; Nyman, *Experimental Music*, pp.83-5; Potter, *Four Musical Minimalists*, pp.50-6; and Strickland, *Minimalism: Origins*, pp.137-142.

Firstly, many of the compositions suggest, specifically or by inference, that their performances may last for 'any' length of time: *Compositions 1960 #2, #3, #4, #5, #6, #7*; *Piano Pieces for David Tudor #1, #2* (both by inference); and *Piano Piece for Terry Riley #1* (also by inference). Particularly interesting is the way in which Young uses the phrase 'if an unlimited amount of time is available' in *Composition 1960 #5*. It is hard to imagine that an unlimited amount of time might be available, no matter what one's schedule. Given the context of the composition however, there is no reason that anyone need be present at any point other than the very beginning of the performance: there must be someone to let the butterfly/butterflies loose into the performance space. If the windows and doors are left open, as Young instructs that they may be, then there are two possible conclusions: (1) the butterfly/butterflies leave(s) the performance space in which case the performance is over, or (2) the butterfly/butterflies never leave(s) the performance space. In the case of (2), the mortality of butterflies would imply that it/they will die) in which case the performance *is never over.* This is the first piece by Young which, if not explicitly, then at least implicitly implies that the possibility of infinite duration.

In *Composition 1960 #7*, Young instructs that a perfect fifth be held 'for a long time'. It was probably a mixture of the desire for the aural

complexities of a perfect fifth to be fully grasped by the listener and an interest in duration for its own sake which prompted Young to specify that the dyad should be held 'for a long time'. I would posit that Young's use of long sustained tones as a method of aural comprehension from *for Brass* onwards made him realise that extreme sustenance was an interesting – and desirable – aspect of his music in and by itself. *Composition 1960 #7* is the most extreme and reduced example of this mixture between harmonic awareness and sustenance in his output (and is probably the most extreme minimalist piece in existence). Without wishing to labour the point, the fact 'a long time' does not exclude the possibility of eternity should be noted.

Finally, *Composition 1960 #10* consists solely of the instruction 'Draw a straight line and follow it'. This may, obviously, be realised in a potentially infinite number of ways. Young has on one occasion realised a performance by 'sighting with plumb lines and then drawing along the floor with chalk'[89] whilst Howard Skempton has played a single chord on an accordion for two-and-a-half hours.[90] As Nyman has pointed out, the 'straight line' may refer to 'any number of mono-directional, undeviating linear activities.'[91] These activities may also include the simple act of

[89] Nyman, *Experimental Music*, p.83.
[90] Potter, p.52.
[91] Nyman, *Experimental Music*, p.83.

doing 'nothing'. In this case the mono-directionality arises from the subject's existence within an undeviating temporal continuum.

Composition 1960#10 becomes both the process and the material for one of Young's pieces of the following year, *Compositions 1961*. Young had worked out that approximately every thirteen days he was completing a new composition. Using *Composition 1960#10* as a method for creating a new composition, on 6th January 1961 he wrote out the instruction 'Draw a straight line and follow it' twenty-nine times, giving each instruction a date thirteen days after the preceding one; it is the concatenation of these instructions which make up *Compositions 1961*. Paradoxically, all but one of the compositions which make up *Compositions 1961* were in existence before they were 'composed'. Young gave the first performance of *Compositions 1961* on 21st March 1961, and thus before many of them had actually been composed. His performance consisted of drawing the same line twenty nine times, each line exactly on top of the one preceding it.

All the compositions described in this section have been essentially conceptual; they are not concrete and sometimes do not (cannot?) exist in the empirical world. It is difficult to imagine *Piano Piece for David Tudor #3*, for instance, existing anywhere outside the mind of the

composer/performer(s)/listener(s). In Young's third period, however, these questions are inextricably bound to *music* in the more traditional sense. One's perception of temporality is dictated directly by a real audible presence, rather than the conceptual and private workings of the mind. As shall be seen however, Young's music has never been traditional in the traditional sense.

3.4 The Theatre of Eternal Music and *The Tortoise*

1961 was transitional for Young. Having established himself as a prominent figure of the New York avant-garde scene, he returned to his roots by rekindling his interest in jazz and improvisation. By the end of 1961 Young (piano) and Terry Jennings (saxophone) were playing Young's own drawn-out version of the blues. They used the traditional I-IV-I-V-IV-I(-V) chord progression but the periods between chord changes were not dictated by the 'twelve-bar' progression. The players would stay on the same chord for as long as they wished, creating a dronal rather than a progressive soundscape.

In the spring of 1962, Young returned to playing the saxophone, but had now transferred to the sopranino. He established a group of performers with whom he could develop his dronal and modal improvisatory style. In addition to some occasional players, including Jennings, with whom Young had previously worked, the core of this new group consisted of Angus MacLise, Marian Zazeela, Tony Conrad and John Cale. MacLise was a highly talented percussionist who would usually play hand-drums in a style described by as 'very fast, giv[ing] the music a rather fierce tension, though it ... gives the impression of being highly controlled, in spite of its metrical freedom.'[92] Zazeela married Young one year after she moved in with him in June 1962. Primarily a light artist, her luminous projections were an integral component of the atmosphere in which the TEM performed. She also sang drones in the nasal 'Indian' style which she and Young were to develop. Conrad and Cale were both string players. Conrad, who joined the group in May 1963, was a violinist and would go on to specialise in playing traditionally plucked string instruments with a bow. At times he would use a violin bow on instruments such as guitars and mandolins. Cale, who joined the group in September 1963, was a classically trained violinist from Wales who had come to the States to study composition with Copland. Rapidly becoming disillusioned with the then unfashionable world of 'Americana', he

[92] Potter, p.61.

settled in New York where he felt more at home with the avant-garde scene.

The aforementioned musicians formed the core of what would come to be known as the Theatre of Eternal Music (TEM).[93] At first, Conrad, Cale and Zazeela provided the drones over which MacLise's hand-drumming and Young's sopranino improvisations took place. Young played extremely fast and repetitive modal motifs over the fixed drones creating a cloud of sound which appeared to have no directional attributes. Young would soon abandon the sopranino to sing vocal drones, creating a sound world consisting entirely of drones. MacLise left the group for India in February 1964. The period whilst Young was playing sopranino improvisations may therefore be thought of as a transition from jazz to true drone music.

At this time that Young was nurturing his growing interest in just intonation. Since Baroque times (c.1700), instruments have been designed according to the equally tempered scale in which the octave is divided into twelve equal segments, each segment representing a semitone. Equal temperament was famously extolled in Bach's *The Well-*

[93] The name was actually coined in February 1965, relatively close to the split up of the TEM as it was originally conceived (and since the late 1960s the personnel of the TEM has been constantly changing). For convenience, I will refer to the group as the TEM throughout the 1960s even though the designation is not entirely accurate.

Tempered Clavier.[94] Equal temperament, however, distorts the Pythagorean ratios of just temperament. The perfect fifth, for instance, is made up of two pitches vibrating with the frequency ration of 3/2; in other words one pitch vibrates three halves as fast as the other. An octave is made up of 1200 'cents'. A cent is equal to 1/100 of a semitone. Using mathematics it is possible to work out that the number of cents in a perfect fifth should be 702.[95] Equal temperament is a compromise – it makes all the semitones of equal size. Therefore, in equal temperament the number of cents in a perfect fifth is 700. The difference between an equally tempered and just tempered perfect fourth (4/3) and perfect fifth is quite small. For most intervals on the other hand, the difference is considerable (the major third (5/4) in equal temperament is made up of 400 cents as opposed to the 386 cents that it should be in just temperament).

It is difficult to know what prompted Young to become interested in just temperament. I have previously noted his distaste for the major third, however I believe that it was Young's exposure to extreme durations which prompted his interest in just intonation – and oddly enough it would be his interest in just intonation which would further his interest in

[94] Young would have his own say regarding just temperament in his on-going work, *The Well-Tuned Piano.*
[95] See http://home.earthlink.net/~kgann/tuning.html (Part 2: How to Play with Intervals)

duration. The longer one is exposed to a set of tones, the more overtones one can hear. Young's interest in 'getting inside the sound' explains his desire to hear such overtones. Overtones do not, however, become apparent (or at least most of them do not) in equal temperament. It is the perception of overtones which is the primary *musical* agenda of Young's work with the TEM whereas it is the perception (or lack of, as will be discussed) of temporality which is the primary *aesthetic* agenda. The use of long durations sparked Young's interest in overtones; in order to hear more and more overtones, it was necessary to increase the durations even further. In this way the two agendas were intrinsically entwined.

Increasing the number of audible overtones is not only achieved by greater temporal exposure – an increase in volume is also desirable. It was for this reason that in late 1964 Conrad and Cale began to use contact microphones attached to their instruments. Eventually Cale swapped his traditional viola for an electronic one which he could amplify considerably. In conjunction with a special flat bridge he had designed in order to allow him to play three strings at once, and substituting cat gut viola strings for electric guitar strings, the result was 'a drone like a jet engine!'[96] Cale's unique viola sound would be made legendary by his

[96] Uncredited quotation in Alan Licht, 'The History of La Monte Young's Theatre of Eternal Music', *Forced Exposure*, 16 (1990), p.66; quoted in Potter, p.71.

performances with the Velvet Underground,[97] of which he was a member from 1966-1968.

The music of the TEM was fundamentally improvisatory. Before a performance, Young would dictate which frequencies may be used and in which combinations, but apart from that, the execution was largely left to the performer(s)'s discretion. The history of Young's improvisations is long, complex and largely unknown. For this reason, I shall briefly discuss one representative 'set' of improvisations.

The Tortoise, His Dreams and Journeys was begun in 1964, and only exists as 'a variety of realisations based on a central harmonic idea.'[98] *The Tortoise* Before performances, the fundamental drone – which is the first sound, the primordial sound, which the tortoise hears – is already being produced. To begin with, the fundamental drone was the motor of Young and Zazeela's turtle aquarium. The audience would then enter the performance space as if *The Tortoise* had already been in existence for an unspecified period of time. Given the nature of *The Tortoise*, this is not too far from the literal truth: *The Tortoise* may be seen as the sum total of every realisation rather than a series of isolated and autonomous spatio-

[97] *Venus in Furs* and *Heroin* for example. Both songs appear on *The Velvet Underground and Nico* album (better known as 'The Banana Album', in reference to the picture of Andy Warhol's banana which adorns the cover).
[98] Potter, p.71.

temporal realisations. Each realisation was given its own poetic title, often referring to previous realisations and to the performers, and always surrealist to the point of esotericism. *The Ballad of the Tortoise or Pierced Earrings / Drone Ratios Transmitting the Manifestations of the Tortoise Centre Drifting Obsidian Time Mists through the Synaptic Stepdown Barrier* is a good example. Performances by the TEM were highly ritualistic. The performers sat cross-legged on the floor, Young and Zazeela always wearing black, and the sound produced was so immense – both in terms of textural density and volume – as to have orchestral qualities. An observer at one performance described the experience thus: '...Young has got very close to the psychological nerve of ritual.'[99]

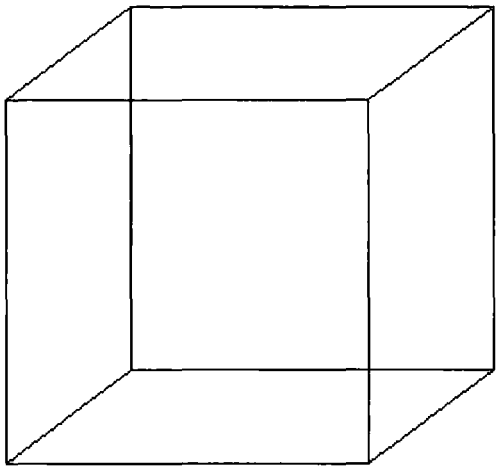
[99] Peter Yates, *Twentieth Century Music* (New York: Pantheon, 1967), p.248; quoted in Strickland, *Minimalism: Origins*, p.159.

3.5 La Monte Young and Timelessness

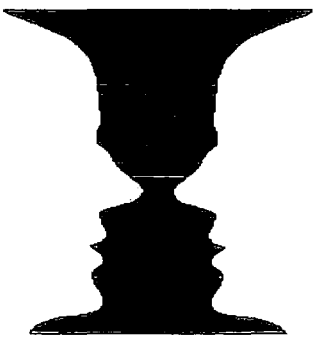
> "I dare say you never spoke to Time!"
>
> "Perhaps not," Alice cautiously replied: "but I know I have to beat time when I learn music."
>
> "Ah! that accounts for it," said the Hatter. "He won't stand beating. Now, if you only kept on good terms with him, he'd do almost anything you liked with the clock."
>
> - Lewis Carroll, *Alice in Wonderland*

A complete discussion of how La Monte Young's music affects one's perception of temporality will be given in Section 7.3. Some understanding of phenomenological philosophy is required to 'explain' the phenomena which shall merely be described below.

The drones employed in *The Tortoise* produce, I believe, two effects upon the listener's perception of temporality. These two effects can be thought of as two sides of a 'Gestalt-shift'. Consider a two-dimensional line drawing of a three-dimensional cube:



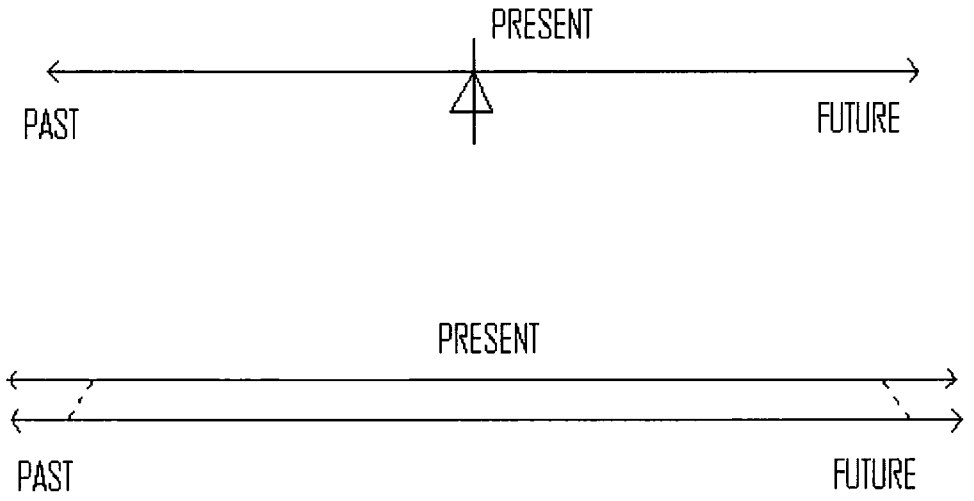
It is possible to perceive the cube as projecting from the surface of the paper in a downwards direction and to the left. Equally, it is possible to perceive the cube as projecting from the surface of the paper in an upwards direction and to the right. On the other hand, it is impossible to perceive both projections simultaneously; one or the other of the projections must be chosen. In other words, the two projections are coexistent but mutually exclusive. Another famous example is the following in which one can either perceive a candle stick or two faces in profile:



In the same way that one can choose which aspect of a Gestalt-shift one perceives, the listener is able to choose which of the temporal effects he or she wishes to experience. Both temporal effects create a different state of what I shall call timelessness. The state of timelessness is not one in which time ceases to exist, but one in which the listener *appears* to perceive no passage of time. The nature of this perceived sense of timelessness shall be described below.

As previously mentioned, there are two types of timelessness which I shall refer to as horizontal timelessness (HT) and vertical timelessness (VT). HT is a telescoping of the present into an infinite timeline, reaching out towards the past and the future. It may be conceived of as the present dissolving into a homogenous timeline in which past, present and future are meaningless. Consequently, no particular part of the timeline has priority over any other, and no part be credited with a special status, as the present usually is. This is because the present is usually perceived as being more real in both the physical and the cognitive sense: the present is, by definition, in existence whereas the past and the future are not; and one's consciousness exists only *now* rather than in the past and the

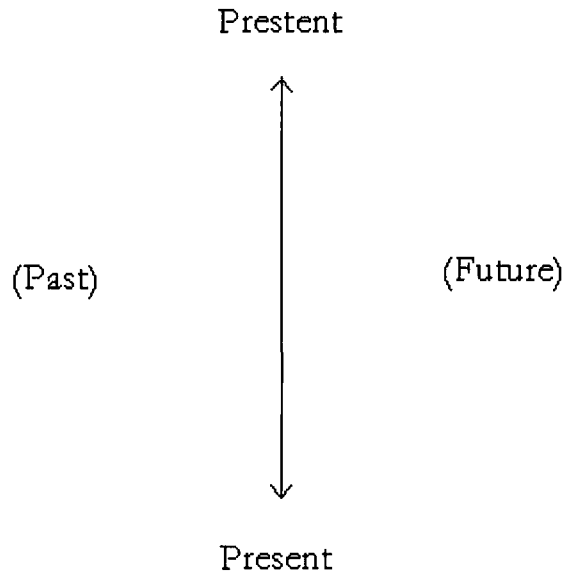
future.[100] On the traditional timeline the present is at the centre – it is the fulcrum on which the timeline balances, stretching infinitely backwards and infinitely forwards. However, in the case of HT the tip of the fulcrum can be thought of as stretched in such a way that the point which touches the timeline (which in the traditional timeline is negligible)[101] is now of infinite length. The timeline is no longer balancing like a see-saw but is supported at all times by the present:



Vertical temporality (VT) is the flip side of the Gestalt-shift. As opposed to HT in which the present is stretched to incorporate both the past and the future, VT is a compacting of the past and the future into an infinitesimal and temporally static present. The past and the future do not exist. Like HT, only the present exists but now the present's magnitude is

[100] Although, of course, one's consciousness may be directed *towards* the past and the future, i.e. recollection/prediction and retention/protention (see final chapter).
[101] It should be noted that although negligible with comparison to the timeline it is not infinitesimal. The 'present' does have a temporal length (see Section 7.1), albeit a small one.

infinitesimal rather than infinite. It is as if the traditional 'left to right' timeline (where left = past, centre = present, and right = future) has been rotated by 90 degrees (it does not matter whether this is in a clockwise or an anti-clockwise direction). The timeline has become vertical.



One's perception of time is now entirely limited to the present – a present which includes no past and no future. HT is analogous to seeing an infinite length of string from an infinite distance; VT is analogous to seeing an infinitesimal point of the string from an infinitesimal distance.

It is now necessary to move from the abstract to a description of how HT and VT are perceived whilst listening to *The Tortoise*. First however, a brief description of how one's perception of temporality relates to other

types of music must be given. When one listens to 'traditional' music, one experiences time teleologically. By 'traditional' music I mean music that:

a) displays a progressive aspect – there is a sense of cause and effect
b) displays a progressive aspect over a period of time short enough for which a cause may be perceived as such, and its effect may be perceived as a result of that cause
c) displays a temporal relationship between sounds. A sound may not be a logical, or musical, effect bought about by a cause, but it is nonetheless heard as being in a temporal relationship with other sounds

If for example, a piece begins with a C major chord, the fact that the next two chords are the dominant and sub-dominant of the key of C major, is an effect (a result) of the first C major chord. If, at a certain point, a twelve-tone row is presented, a subsequent retrograde of that tone row is an effect of the cause – the original twelve-tone row. If, in a piece by Cage, a whistle is heard, followed by a trumpet arpeggio, followed by a scream, each is perceived as in some way *relating* to the sounds that surround it in time.

In the case of *The Tortoise*, on the other hand, the changes take place over such a timescale that they are not heard as cause and effect, or in relation to each other. By the time two pitch changes have taken place, the listener may have forgotten the original pitch. At the point of pitch transition, the listener is aware of a relationship. Depending on the musicality and memory of the listener, this relationship awareness may survive until the next pitch transition. From personal experience and from hearing the experiences of others (both musical and non-musical) I must, however, conclude that in the majority of cases, the durations used in *The Tortoise* are of such a length as to render the relationships between changes unperceivable except at the time of, and for a short time after, the transition.

The lack, or virtual lack, of relationships has a profound effect on the perception of past and future – it dissolves them. The dissolution of the past and future can be, as discussed above, one of protraction (HT) or contraction (VT). *The Tortoise* has such a homogeneous and constant nature that the cognitive processes of recollection and prediction become obsolete. Let us consider that we are at the halfway point between two pitch transitions. The current pitches have been sounding for a period of time such that one's memory does not extend to the previous pitch array. Using induction we predict that the future, or at least the immediate

future, will be the same as it is now, and the same therefore as it has been in the past. It is only when the listener uses recollection and prediction that the passage of time is perceived and it is the non-use of recollection and prediction that creates a sense of timelessness.

The listener may experience timelessness in either of its two aspects, and, as with the cube discussed above, may choose between them. Somewhat paradoxically, both cases can 'feel' much the same to the listener. When the present is entirely dissolved into the past and the future in the case of HT, the timeline is made homogeneous, undifferentiable and consequently all sense of moving through time is lost, i.e. timelessness. When the sense of past and future is lost in the case of VT, we are left only with a static present. Again, all sense of movement through time is lost – again, timelessness.

It should not be forgotten, however, that the microcosmic structure of *The Tortoise* is a plethora of activity. The miniscule tuning inflections, the taking of a breath and so on, create a complex 'present'. This would seem to go against everything that has been said thus far regarding the homogeneity of the music. To an extent, the micro-activity of the music does mitigate the sense of continuity that is necessary to perceive music as timelessness – although I would argue from personal experience that

the micro-activity itself becomes perceived as homogenous after a certain amount of listening. If one listens for a only a few minutes, the said activity can be distracting. After a considerably longer period of time, fifteen minutes say, one ceases to hear the micro-activity; in the same way, if one watches a sleeping person one is originally aware of their breathing, but after a while the heterogeneous experience is homogenised into a continuous and unchanging experience. A visual analogy may also be useful: imagine looking down at a field of grass from a distance of one metre, and furthermore imagine that time is analogous to your vertical distance from the field. At a distance of one metre it is possible to see hundreds, maybe thousands, of blades of grass. As you move further from the field in a vertical direction (as you move through time) the blades of grass become less and less discernable until eventually all you can see is an undifferentiated field of green. A comprehensive explanation of timelessness will be given in Chapter 7, relating it to phenomenological philosophy. All I have given in this section is a description of the effect.

Chapter 4

Terry Riley: repetition, improvisation, and psychedelia

Time passes slowly up here in the mountains,
We sit beside bridges and walk beside fountains,
Catch the wild fishes that float through the stream,
Time passes slowly when you're lost in a dream.

- Bob Dylan, 'Time Passes Slowly' from *New Morning*

Like Young, Terry Riley gained much of his musical education from his experiences of jazz and improvisation. Consequently, much of his output has never been committed to paper. By the 1970s his improvisatory style was influenced not so much by jazz as by classical Indian music; during most of the 1970s he was a professor of Indian music at Mills College in Oakland. Even today, Riley is a 'hippie'[102] and Indian music was, particularly from the mid sixties to the early seventies, associated with

[102] One needs only to visit his website (www.terryriley.com) to realise this.

psychedelia and hippie culture. This is due in large part to The Beatles', and particularly George Harrison's, incorporation of the sitar into their more overtly 'druggy' songs.[103] Riley experimented extensively with mescalin[104] and marijuana – his experiences with drugs have had a deep impact on his music and his spiritual life. His 1969 album *A Rainbow in Curved Air* was seen by many as the epitome of drug-inspired 'serious' music, influencing bands such as The Who, Tangerine Dream and Soft Machine. He even entitled one of his tape pieces *Mescalin Mix* (1961).

Riley used repetition as the starting point for his minimalist style, as Reich and Glass would also do. As will be discussed at length in Chapter 7, repetitive minimalism can create effects on one's perception of temporality very different to those produced by the drone music of Young. In particular, the state of timelessness is not brought about by repetitive minimalism because change and progression are an intrinsic element of repetition as it is used by Riley, Reich and Glass. Riley's most important contribution to repetitive minimalism was his 1964 masterpiece, *In C*, which will be discussed in Section 4.2. It was the first minimalist piece to use repetition in a logical, and indeed truly minimalist, way. Like the pieces which followed, *In C* has an element of

[103] Harrison was a pupil of Ravi Shankar in the mid-sixties. Songs which clearly show this influence include 'Tomorrow Never Knows' from *Revolver* (1965) and 'Within Me, Without You' from *Sgt. Pepper's Lonely Hearts Club Band* (1966).
[104] A pre-cursor to the psychedelic drug LSD.

improvisation which is not found in the works of Reich and Glass, and this must be taken into account when discussing the relationship between the music of Riley and one's perception of temporality (see Sections 7.4b(iii) and 7.4c(iii)). In this chapter, an account of Riley's output before *In C*, *In C* itself, and the works which followed it will be discussed in Sections 4.1, 4.2, and 4.3 respectively, but any discussion of temporality will be put off until the final chapter. A certain amount of analysis concerning repetition and its effects on one's perception of temporality is necessary in order to understand what this relationship is.

4.1 Before *In C*

Born in Colfax, California on 24th June 1935, Riley was of Irish and Italian descent. For most of his childhood he lived a peripatetic lifestyle; at the age of five he and his family moved to Redding, but he also spent some time in Los Angeles during the War. Returning to Redding afterwards, he was exposed to twentieth century music whilst at high school. He had already shown interest in music; he had violin lessons from the age of five, and, more importantly, learned the piano by ear. Having returned from a brief spell in South Carolina, he attended the

Shasta Junior College between 1953 and 1955, all the while continuing his piano studies. He showed early talent and even considered a career as a concert pianist. In 1955 he enrolled at San Francisco State University where he played Poulenc's Concerto for Two Pianos as his final year recital. He had also been taking lessons in composition, writing in a neo-classical style. Riley graduated from San Francisco State University in 1957, married in 1958 and enrolled at Berkeley in 1959 as a graduate student. Before attending Berkeley he began composition lessons with Robert Erickson and formed an improvisatory group with Pauline Oliveros and Loren Rush.

Whilst at Berkeley, Riley studied under Seymour Shifrin as Young had done the previous year. Riley found that he was not comfortable writing in the style of academic serialism – he was far more excited about having the opportunity to collaborate with Young. It was Young who introduced Riley to the music of Stockhausen and other leading lights of the avant-garde. Stockhausen's technique of using more than one tempo simultaneously in *Zeitmasze* would prove particularly important; Riley used the technique in his early piece *Spectra* (1959). The idea would later be metamorphosed into something else entirely in *In C*.

Riley was greatly impressed and influenced by Young's *Trio for Strings*. Emulating Young's style, he composed a one movement String Quartet (31st May 1960). Although much shorter than the *Trio*, it uses sustained tones in an atonal context and extremely hushed dynamics. He also composed some tape pieces, mostly for Ann Halprin's dance group, and a graphic work, before completing his M.A. in 1961. Later that year he used parts of earlier tape pieces to produce *Mescalin Mix*, or *M...Mix* as it is sometimes known. Having been introduced to Richard Maxfield by Young, Riley was aware of some of the latest technologies – one of these was an echoplex which repeated a sound in 'an ever-accumulating counterpoint against itself.'[105] The result 'sounded just like an acid trip.'[106]

Riley then proceeded to use repetition in a piece which did not involve tape: his String Trio (1961) which was based loosely around an A minor modality. The work is significant in that Riley was to pioneer a form of minimalism very different to the sustained tones of Young. He used repetition as his structure and point of musical interest. The use of modality would also become important to Riley. Before developing his own brand of minimalism, however, he dabbled in the performance-based

[105] Potter, p.98.
[106] Interview in Edward Strickland, *American Composers: Dialogues on Contemporary Music* (Bloomington and Indianapolis: Indiana University Press, 1991), p.112; quoted in Potter, p.99.

style of Fluxus with *Ear Piece* and *Grab Bag*. Not as interesting as Young's work in the field, Riley knew that he needed some form of inspiration. This was to come from his travels on the other side of the Atlantic.

In February 1962, after a brief stop in New York, Riley and his family travelled to Europe. Here he had negative experiences with both Fluxus and Darmstadt. A more positive experience came from playing jazz piano in various bars. As with all the minimalist composers discussed in this thesis, Riley has always felt most happy performing his own music, either alone or with other musicians; his experience of playing jazz in bars confirmed his predilection for performance. He was also becoming increasingly interested in the modal jazz of John Coltrane and Miles Davis. Whilst in the Spanish town Algeciras Riley heard Moroccan music on the radio. Immediately attracted to its use of repetition and modal improvisation over a drone, he quickly realised the parallels that this music had with modal jazz. In fact Coltrane in particular was greatly influenced by Moroccan Maqamat.

Riley's most important composition in Europe was *Music for 'The Gift'*. *The Gift* was an avant-garde play by Ken Dewey. Before embarking on the project Riley had created *She Moves She*, a tape piece which uses a

time-lag accumulator. This is a piece of equipment derived from the more primitive echoplex used in *Mescalin Mix*. The piece gradually accumulates the phrase 'she moves she', along with a percussive noise, on top of itself creating a vast wash of sound. It was subsequently used as part of *Music for 'The Gift'*. Another section of *Music for 'The Gift'* uses fragments of Chet Baker and his band playing Miles Davis' 'So What', again transformed by the time-lag accumulator and looping. Riley has described the work as 'dream-like'.

Due to the assassination of President Kennedy late in 1963, the American bars and clubs at which Riley was working were closed down. Without an income he was forced to return to San Francisco early in 1964.

4.2 *In C*

In C remains a popular and oft-played piece today, and has become well established as part of the canon of twentieth century music. It consists of fifty-three modules which any number of performers, on any combination of instruments, play through in order. Octave transposition of the modules is permitted, thus rendering the score playable by almost any conceivable

instrument. Performers are instructed to repeat modules as many times as they wish before moving on to the next one.[107] Hence, even if the performers all began playing at the same time it would not take long for some to be ahead of others and some behind. The top two Cs of a piano or other keyboard instrument are played in constant quavers, providing the pulse which is necessary to keep the performers playing at the same tempo (the pulse was Reich's idea). The result is a perpetually pulsing constellation of sounds.

In C was written sometime in the spring of 1964 and given its première at the San Francisco Tape Music Centre in January 1965. As has already been mentioned, this was the first minimalist piece to be structured from repetition. The long and static drones of Young are nowhere to be seen; in their place is a veritable plethora of unceasing activity. It is quite sensible to ask how a work that contains so much activity – activity is in fact *In C*'s very essence – can be deemed minimalist. The reader will recall that in Section 2.1b Reich's *Piano Phase* was used as an example of a piece which contains several thousand sonic events but is nonetheless minimalist by virtue of the small number of units from which it is constructed and from the simple process(es) which determines their deployment. Although fifty-three units, or modules, may appear at first

[107] Performers are also permitted to rest between modules, and to miss out modules at their discretion.

glance to be a relatively large number, again calling into question *In C*'s status as a minimalist work, the pace at which each performer moves through the score is such that the overall result is relatively static. This does not mean that there is not a constant bubble of activity, but rather that the progress is very gradual in terms of content change.[108] A cursory glance at the fifty-three modules of *In C* is enough to show that the work is not actually 'in C'. The first accidental, an F#, occurs as early as module 14. Riley's use of accidentals creates some interesting modal progressions which are analysed in Potter.[109]

In Section 2.1b a distinction was made between modular repetition (MR) and modular progression (MP). *In C* contains no MP in the strict sense; however there is a psychoacoustic sense in which the process of MR by one performer may be heard as MP given the MR of another performer. For simplicity's sake, consider the case in which there are only two performers.[110] The progression of the first performer from one module to the next whilst the second performer continues to repeat the same module will affect the way in which the MR of the second performer is heard: its strong beat may be shifted by a quaver for instance, or it might create a dissonance where it once created a consonance.

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[108] A typical performance lasts between forty-five minutes and ninety minutes.
[109] Potter, pp.113-4.
[110] On the score Riley writes that a 'group of about 35 [performers] is desired if possible but smaller or larger groups will work'; quoted in Potter, p.111.

The title of this chapter is 'Terry Riley: repetition, improvisation and psychedelia' and all three of these terms are relevant to *In C*. The repetitive aspect of *In C* gives birth to its improvisatory element, and the subsequent combination of the two produces a work of art that is undeniably psychedelic. One definition of psychedelic given in the New Oxford Dictionary of English is 'denoting or having an intense, vivid colour or a swirling abstract pattern.'[111] Another definition is 'relating to or denoting drugs (especially LSD) that produce hallucinations and apparent expansion of consciousness.' *In C* is often regarded as the paradigm of psychedelia transposed into the world of 'serious' art, as opposed to the world of psychedelic rock occupied by bands such as Pink Floyd, Donovan and The Byrds. The almost limitless possible combinations of instruments that are able to perform *In C* further adds to the extraordinary colours that are available. For instance 'Bang on a Can's excellent 2001 recording features violin, 'cello, bass, mandolin, electric guitar, glockenspiel, vibraphone, soprano saxophone, clarinet, piano and percussion.

[111] *The New Oxford Dictionary of English*, Judy Pearsall (ed.), (Oxford: Oxford University Press, 2001), p.1496.

4.3 After *In C*

In 1965, Riley wrote three further pieces which used a modularly constructed format similar to that used in *In C*: *Autumn Leaves* and *Tread on the Trail* (both written early in 1965 for a jazz ensemble), and *Olson III*, (April 1967) written for voices. He also wrote several pieces for tape such as *Shoeshine*, *The Bird of Paradise* (both written in the summer of 1964), and *In Ab or is it Bb?* (October 1964). These pieces use repetition but not in the logical manner which made *In C* so successful.[112]

Following a failed attempt to reach Morocco via Mexico, Riley and his family moved into an apartment in New York in 1965, where he remained for the next four years. He became reacquainted with Young, and took part in performances by the Theatre of Eternal Music. Of most importance, as far a this thesis is concerned, were the truly improvisatory pieces which Riley wrote after *In C*, as opposed to the tape pieces and modularly constructed pieces aforementioned. Performing with the Theatre of Eternal Music must have influenced Riley's desire to improvise without the constrictions of a score.

[112] For a comprehensive account of Riley's tape pieces during this period, see Potter, pp.116-120.

The most important of these improvisatory pieces which have survived are the *Keyboard Studies* (probably 1964/5), *Dorian Reeds* (1965), *Poppy Nogood and the Phantom Band* (early 1967), and *A Rainbow in Curved Air* (1968). *Keyboard Studies* has been described by Potter as 'a collection of ideas'.[113] The most famous of the *Studies* is *Keyboard Study no. 2*, a series of fifteen modules which are to be repeated against a choice of two ostinato figures. In 1965 Riley taught himself the saxophone, and *Dorian Reeds* and *Poppy Nogood and the Phantom Band* were the outcome. Both pieces use live saxophone improvisation and tape-delayed sound, which is produced using time-lag technology. A recording of *Poppy Nogood* would eventually become the B-side of Riley's 1969 *A Rainbow in Curved Air Album.* It is a hauntingly beautiful piece which ranges from dense textures created by the conjunction of rapid playing and the effects of a time-lag accumulator, to slow melodic material in which the time-lag accumulator creates the effect of a 'phantom band' – Riley's improvised melodies are echoed a few seconds later. *Poppy Nogood* and its effects on one's perception of temporality will be discussed in Section 7.4c(iii).

Riley returns to the medium of the keyboard in *A Rainbow in Curved Air*, scored for electric organ, electric harpsichord, rocksichord, and

[113] Potter, p.122.

percussion. The melismatic and cyclic improvisations invoke the music of Morocco and India, particularly in the final section which is accompanied by dumbec and tambourine. *A Rainbow* and *Poppy Nogood* are probably Riley's most psychedelic compositions. Although they do not specifically allude to drugs, it is difficult to hear them without thinking of the hippie ethos of the late sixties. This psychedelic element to Riley's music is not present in the music of Reich and Glass who will be discussed in the next two chapters.

Chapter 5

Steve Reich and process: progress and cyclicality

There is nothing permanent except change

- Heraclitus

It is the purpose of this chapter to investigate the highly structured compositions of Steve Reich and to attempt to elucidate how his unique use of process affects one's perception of temporality. In many ways, Reich's music is the most logical of the four minimalist composers discussed in this thesis, and epitomises repetitive minimalism. The improvisation and mysticism which so pervade the music of Young and Riley are not found in the works of Reich. Instead, one finds a cold objective approach to composition which nevertheless creates music of abstract beauty, not a million miles from the early medieval polyphony which Reich was inspired by.

5.1 Musical beginnings

As has already been seen, the minimalist movement in both the visual arts and in music was largely a New York phenomenon. Reich is the only minimalist composer discussed in this thesis who is a born and bred New Yorker. New York was always, and is still, of great importance to Reich, and its influence can be discerned in his music. New York, as a cityscape, lends itself to the minimalist aesthetic. The continuously repeating grid of Manhattan's streets resembles an Agnes Martin drawing or one of Sol LeWitt's constructions. The perpendicular angles and hard edges of downtown New York, the hustle and bustle of one of the world's most heavily populated cities were to find their way into Reich's sound-world in diverse and varied manifestations.[114]

Reich's mother was a Broadway singer and lyric writer but his parents were divorced when he was one years old (Reich was born on 3rd October 1936) and his mother moved to Los Angeles. As a child, Reich criss-crossed the country by train, accompanied by his governess, Virginia, whose voice he would later record for *Different Trains* (1988). Insisting

[114] *New York Counterpoint* (1985) and *City Life* (1995) refer specifically to New York, either by name or by subject matter.

that Steve have piano lessons at the age of seven, Leonard Reich instigated his son's acquaintance with music – an acquaintance he would later regret. Leonard Reich believed that a well-to-do middle-class Jew should enter into a profession rather than take the precarious career route of composition. For a considerable period, father and son were out of contact, their relationship only resuming once Reich's name had made it into the newspapers in the early seventies.

At the age of fourteen Reich became acquainted with Bach, Stravinsky and jazz. He found the experiences a far cry from such 'middle-class favourites' as Beethoven's *Fifth*. The sense of liberation was 'as if somebody had opened up a door, saying "You've been living here all your life, but you haven't seen this room."'[115] Like Young and Riley, it was jazz which was to have the greatest musical influence on Reich's teenage life. He formed a jazz quintet in which he was the drummer: rhythm and percussive techniques would later prove crucial to Reich's compositional and aesthetic style and he still plays percussion with his ensemble 'Steve Reich and Musicians' today.

Proverb (1995) uses a phrase from Wittgenstein: 'How small a thought it takes to fill a whole life!' Majoring from Cornell in philosophy, it was the

[115] Schwarz, *Minimalists*, p.52 (unattributed).

later philosophy of Wittgenstein that interested Reich the most. Philosophy did not, however, take up all of his time; he also took some courses in music under the music-historian William Austin, a particularly progressive academic who further opened Reich's eyes. Echoing Reich's instinctive preference, Austin taught from Gregorian chant up to Bach in the first semester and then skipped straight to Debussy, Schoenberg and Stravinsky. Perhaps Reich's most lasting discovery at Cornell was the music of Perotin, a late twelfth or early thirteenth century founder of the so-called Notre Dame school of polyphony who developed such polyphonic techniques as isorhythm. Nearly all of Reich's music is polyphonic, and counterpoint is at the very heart of his work. There are very few pieces by Reich which have little or no elements of counterpoint.[116]

Having graduated from Cornell in 1957, Reich rejected his place at Harvard where he was to study philosophy as a postgraduate. Instead, he returned to New York in order to have composition lessons with Hall Overton, a composer of classical music and jazz. Under Overton's guidance, Reich learned from Hindemith's textbooks on composition and Bartók's *Mikrokosmos*. In 1958 Reich enrolled at the Julliard School, which was then extremely traditionalist, focusing mostly on 'Americana'

[116] A notable exception is *Four Organs* (1970), although, as will be seen later, there are elements of counterpoint present, albeit in a non-traditional sense.

and other such tonal music. In his class was Philip Glass although Reich has since said that they did not have much in common and has even remarked that there was a certain amount of hostility between the two.

It was outside of the somewhat stifling atmosphere of the Julliard School, however, where Reich was beginning to explore post-war serialism. 'I began to realize that there was a very large vehicle coming down my road, there were a lot of people on it, and there was keen interest in what was going on in this vehicle. This vehicle was called Webern, Stockhausen, and Boulez, and of course I got involved in it.'[117] Whilst at the Julliard School, Reich wrote a serial piece called *Music for String Orchestra* (May 1961), but rather than using the usual serial techniques of inversion, retrograde, augmentation and so on, he simply repeated the tone-row as it was, without any alterations or modifications. It is noteworthy that both Reich and Young had refused to embrace wholeheartedly the tonally and formally disorientating techniques of serialism; Young repeated pitches at the same octave so as to create some sense of stasis and Reich repeated entire tone-rows. On the other hand, it is also noteworthy that at some point during his time at the Julliard

[117] Schwarz, *Minimalists*, p.54 (unattributed).

School, he heard a tape of Young's *Trio for Strings*, and 'thought [Young] was out of his mind – as did Phil Glass.'[118]

By September 1961, Reich's relationship with his father had disintegrated to nearly nothing and so he moved to California for 'the classic reason that Americans go to California: I was running away from home.'[119] Enrolling at Mills College because Luciano Berio was teaching there, he found the atmosphere even more traditional and academic than in New York. Berio was a leading figure in post-war serialism: 'There was no question but that I had gotten the word on serialism from the horse's mouth, so I had no lingering feeling that I ought to go to Darmstadt.'[120] However, serialism, Reich was rapidly beginning to realise, was not what he wanted to write. In 1992, whilst talking about the music he wrote for *Ubu Roi* (see below), Reich said 'Goodbye, Luciano! Yes, it'll be so tonal you won't be able to bear it.'[121] Perhaps the most important lesson Reich got from his time at Mills was after Berio had inspected the score for *Music for String Orchestra* and said to him '[i]f you want to write tonal music then write tonal music.' Reich has since said '[t]hat was a very helpful remark for me, because I saw I was doing what I intuitively

[118] Schwarz, *Minimalists*, p.55 (unattributed).
[119] Potter, p.156 (unattributed).
[120] Schwarz, *Minimalists*, p.56 (unattributed).
[121] Strickland, *Minimalism: Origins*, p.183 (unattributed).

wanted to do... What moved me emotionally was always music built around one tonal centre.'[122]

Jazz was still important to Reich. In the evenings he would go to the Jazz Workshop in San Francisco to hear John Coltrane, the founder of modal jazz who also had a great deal of influence on Young and Riley. Reich also composed *Four Pieces*, whose orchestration reflect his interest in jazz: trumpet, alto saxophone, drums, piano and bass. He set up an improvisatory quintet that consisted of violin, cello, piano, and saxophone – and Reich played the drums. The results were rather disappointing, hovering in a no-man's land between atonality and free jazz. Reich attempted to control the improvisations somewhat by specifying the allowed pitches but not the rhythms, dynamics, attacks, and so on; the result was *Pitch Charts*. This method of pitch-specification whilst leaving all other parameters to the discretion of the performer is similar to that used by La Monte Young in *The Four Dreams of China*, and even has parallels with Young's later work with the Theatre of Eternal Music.

It was in fact the unsatisfactory nature of the improvisation group which led to Reich's historical meeting with Terry Riley. Reich and his ensemble played a gig at the San Francisco Mime Troupe, a group for

[122] Schwarz, *Minimalists*, p.57 (unattributed).

which Riley had already been collaborating with. In the audience that night in the autumn of 1964 was Riley who walked out after the first half. Reich was so outraged that he knocked on Riley's door the next day and demanded to know why he had left before the second half. Despite this rather unpromising introduction, they soon began talking about their music and the tension dissipated. That afternoon Riley showed Reich the score for *In C*. Reich was enthusiastic about it, and was instrumental in its first performance: he offered his group as performers and, more importantly, came up with the idea of using Cs drummed out on the piano as a way of keeping the pulse. The steady beat and modality of *In C* were an enormous help to Reich because he realised that this was the direction he wanted his own music to take. 'I wanted to deal with it as a starting point and see where I was going to go...'[123]

Reich's music up to this point had been of four different types: the academic and student-like compositions which he wrote for assessment at Mills; the free improvisation which he had been performing with his ensemble; the dada-like music he wrote for the San Francisco Mime Troupe; and some tape pieces made in the *musique concrète* vein. The Mime Troupe offered a forum in which Reich could escape from the academia of Mills and experiment with unconventional instrumentation.

[123] Schwarz, *Minimalists*, p.60 (unattributed).

He wrote the music for a production of *Ubu Roi* (1963) which was scored for strummed violin, clarinet and kazoo amplified through a traffic cone. More important were the tape pieces that Reich wrote whilst in California. One such piece was the music for an experimental film entitled *The Plastic Haircut* (1964) which involved sampling, splicing and looping extracts of crowd noise from an old LP, *The Greatest Moments in Sports*. The sounds become more and more distorted and abstract as they are placed on top of each other; Reich has later described its effect as a kind of surrealist rondo. Another tape piece was *Livelihood* (1964) which recorded samples of the sounds made inside the taxi which he was driving for a living at the time. *The Plastic Haircut* and *Livelihood* resemble Riley's slightly earlier tape pieces but Reich's tend to retain the recognisable aspects of their original sound source: 'I remember it seemed disappointing that tape music, or Musique Concrete (*sic*), as it was called, usually presented sounds that could not easily be recognized, when what seemed interesting to me was that a tape recorder recorded real sounds like speech... If one could present that speech without altering its pitch or timbre, one would maintain the original interest that speech had while hopefully intensifying its meaning and its melody through rhythm.'[124] It was this idea, together with the repetitive aspect of

[124] Steve Reich, *Writing About Music*, Kaspar Koenig (ed.), (London: Universal Edition, 1974), p.49.

In C that paved the way for Reich's first minimalist piece – a piece which would define his musical and aesthetic direction for at least half a decade.

5.2 *Its Gonna Rain*: Phasing and the aesthetics of process

Its Gonna Rain and *Come Out* were the two pieces in which Reich realised how he could set words to music in a way which did not destroy the sound of the spoken text: he captured the very essence of a text by using the (spoken) text *as* music, rather than setting the text *to* music. 'Using actual recordings of speech for tape pieces was my solution, at that time, to the problem of how to make vocal music.'[125]

One Sunday in November 1964 Brother Walter, a young black evangelist, was preaching in Union Square. Reich took a microphone to record his melodious and impassioned delivery and fragments of the recording were to prove the perfect source for Reich's first minimalist piece. *Its Gonna Rain* is split into two halves of approximately the same length. Part One consists of a short introduction in which Brother Walter preaches on the warning of the Flood. Within this introduction he speaks the phrase 'It's

[125] Reich, *Writings*, p.49.

gonna rain' and these are the three words Reich uses for the remainder of Part One. Originally he had considered manipulating the text in a collage-like manner, similar to *The Plastic Haircut* and *Livelihood.* However, by playing two loops on different tape recorders, he discovered that the cheap technology he was using failed to keep the two tapes synchronised, and consequently the two tapes went out of phase with each other. The process was extremely slow and gradual (and hence the pitch was unaffected). Reich found the result so musically satisfying that he used this process as the basis of the entire piece: [126]

> As I listened to this gradual phase shifting process I began to realize that it was an extraordinary form of music structure. This process struck me as a way of going through a number of relationships between two identities without ever having any transitions. It was a seamless, continuous, uninterrupted musical process.

Its Gonna Rain is the first example of a technique which would come to define Reich's music up until the early 1970s: the 'phasing' process. Part Two uses the phasing process but this time the two loops which are being phased with each other are in turn phased with two other loops, thus creating a four-part texture. Finally, this in turn is phased against itself, creating an eight-part texture. The phrases used in Part Two are longer

[126] Reich, *Writings*, p.50.

and consequently the words are not so easily recognisable. This, coupled with the much denser textures, eventually renders them quite meaningless. After a certain amount of time, it is literally impossible to hear the phrases. Rather, one hears a wash of sound which gains breadth and abstraction as the texture increases. The apocalyptic nature of the words are not lost however – although the sounds are disembodied from the texts, the aural result is so powerful that it surpasses the emotional content of Brother Walter's original sermon.

The phasing process not only defined Reich's subsequent techniques, but also his aesthetic approach to composition. The success of *Its Gonna Rain* made Reich realise that he wanted his music to be structured and heard as a sounding process. His views on the matter were recorded with typical clarity and succinctness in his 1968 essay, 'Music as a Gradual Process', which was reproduced in his *Writings about Music* in 1974: [127]

> I do not mean the process of composition, but rather pieces of music that are, literally, processes.
>
> The distinctive thing about musical processes is that they determine all the note-to-note (sound-to-sound) details and the over all form simultaneously. (Think of a round or infinite canon.)
>
> I am interested in perceptible processes. I want to be able to hear the process happening throughout the sounding music.
>
> (...)

[127] Reich, *Writings*, pp.9-10.

> Though I may have the pleasure of discovering musical processes and composing the musical material to run through them, once the process is set up and loaded it runs by itself.
>
> (...)
>
> What I'm interested in is a compositional process and a sounding music that are one and the same thing.

Reich's use of process, be it phasing or otherwise, has pervaded all of his subsequent music. Over the years, and particularly since *Drumming* (1971), he has been less concerned with being 'able to hear the process happening throughout the sounding music' but the processes are still there, determining the structure of the pieces.

Reich uses the term 'structure' rather than 'form' to describe the shape of his pieces. Form has historical connotations – such as sonata form, rondo form and so on – which he wishes to avoid, and suggests a constriction which has been placed *onto* the piece. The term 'structure' on the other hand implies a certain fundamentality – it is the framework and contour of the piece. In Reich's music, it *is* the piece.

Reich felt that by using process as a means of structuring his music, he was endowing it with a certain degree of objectivity: '...once the process is set up and loaded it runs by itself.' In 'Music as a Gradual Process', he writes that '[m]usical processes can give one a direct contact with the

impersonal...'[128] However, Reich was also interested in using an objective platform as a starting point for *subjectivity*. Subjectivity can arise in Reich's process music in the following two ways:

1) Through small variations that arise from imperfect performances
2) Through the mind of the listener

The latter will be discussed shortly. After *Melodica* (1966), Reich felt that the 'perfect performances' which resulted from the use of technology were a musical dead-end. He wanted to transfer the phasing process to live performance, thus introducing imperfections into the music. This was in part realised with *Reed Phase* (1966) and in full with *Piano Phase* (1967).

The subjectivity in the mind of the listener stems from each listener's unique perception of a phasing process. Analogous to the Gestalt shift discussed in Chapter 3, a phasing process 'contains' within it more than one possible way of being listened to, depending on how many phases are occurring at any particular time. Consider, for example, the phrase 'It's gonna rain' phased against itself (as in Part One of *Its Gonna Rain*).

[128] Reich, *Writings*, p.10.

Imagine further that we are at the point in the phasing process represented diagrammatically below:

Tape 1 It's gonna rain It's gonna rain

Tape 2 It's gonna rain It's gonna rain

Since the brain finds it difficult to process more than one word/syllable at once, four possible ways of hearing this are:

a) It's go-go-rain -ain It's go-go-rain -ain

b) It's It's go-rain -ain It's It's go-rain -ain

c) It's gonna rain -ain It's gonna rain -ain

d) It's go-gonna -ain It's go-gonna -ain

The diagram below illustrates the first of the four possible ways, (a), of hearing the pattern. The brackets represent the part which the brain is actively conscious of:

Tape 1 (It's go)nna (rain) (It's go)nna (rain)

Tape 2 It's (go)nna r(ain) It's (go)nna r(ain)

It was seen in Section 3.5 that the listener has a choice between two ways of perceiving a Gestalt – and it is this choice which brings an element of subjectivity to Reich's 'impersonal' music. By the time he wrote *Violin Phase* (1967), Reich had termed these different patterns that depend on how the listener decides to perceive the phasing process as 'resulting patterns' and had made them more perceptible by amplifying them on an instrument separate to the phasing process itself (in this case a violin). In Reich's words: [129]

> ...there are still enough mysteries to satisfy all. These mysteries are the impersonal, unintended, psycho-acoustic by-products of the intended process... Listening to an extremely gradual musical process opens my ears to *it*, but *it* always extends farther than I can hear... That area of gradual (completely controlled) musical process, where one hears the details of the sound moving out away from intentions, occurring for their own acoustic reasons, is *it*.

The title of this chapter is 'Steve Reich and Process: Progress and Cyclicality'. As I hope to show, the various processes which Reich employs contain elements of two seemingly mutually exclusive ideas: progress and cyclicality. The phasing process, arguably the most important of these processes as all the others are in some way related to,

[129] Reich, *Writings*, p.11.

or derived from, it is a case in point. Firstly, the process clearly contains a progression. Let us use Part One of *Its Gonna Rain* as an example. The two tapes start in phase (point A), gradually move further out of phase until they are 180 degrees out of phase with each other (point B), then gradually move closer in phase with each other until they are back to where they started (point C). The phasing process has caused an inevitable progression from point A – via point B – to point C, but point C is the same as point A. Therefore the process is cyclical as well as progressive.

How does this affect one's perception of temporality? This will be answered more satisfactorily in Sections 7.4a and Sections 7.4b(ii). A brief answer will be given below however. Once the process has been set up and loaded, it runs by itself. The listener, even if he or she cannot specifically *recollect* what has happened previously, can infer the *content* of what has happened previously. Thus, recollection of the past is not necessary for a (good) knowledge of the past. Consider this in relation to listening to 'traditional' music. If someone listens to the beginning of a symphony in C major, and hears three key changes, he or she has two methods for gaining knowledge of the original key. Either they must remember what C major sounded like, or must have perceived the modulations, remembered what the modulations were, and then gone

back through them in reverse order to arrive at the original key. Many listeners, particularly those without perfect pitch, would find the first option difficult. The second option requires a certain amount of musicianship and analytical technique at one's disposal. Needless to say, tonality and modulations are but one facet of 'traditional' music which is constantly changing.

Whilst listening to a phasing process one can also have a good knowledge of the future. One may not be able to predict the *sound* of what is to come, but one can infer the *content* of what is to come. It would seem then that a listener has an overall knowledge of the past, present and future of a phasing process. Having knowledge of the past and the future means that the listener has knowledge of the cyclical aspect of phasing; he or she knows that the original state of affairs will, unless affected by causes external to the process, be replicated at a determinate point in the future.

The phenomena of horizontal and vertical timelessness were discussed in relation to the Theatre of Eternal Music in section 3.5. In those cases, the listener's recollective and predictive functions were rendered redundant by the homogeneity of the music, and hence there was no perception of the passing of time. In the case of Reich's phasing process, the

recollective function is redundant, because the predictive function now operates in both directions on the timeline – into the past as well as into the future. There is no sense of timelessness since there is always a perception of the passage of time due to the progressive aspect of the process. The fact that the usual dichotomy between recollection (past) and prediction (future) has been collapsed (it is now prediction (past) *and* prediction (future)) – is due to the cyclical aspect of the process. Hence the perception of temporality is directionless.

It should be noted that Reich's essay was entitled 'Music as a Gradual Process.' The phasing process in *Its Gonna Rain* is so gradual that it can be difficult to perceive its progress. The perception of progress is a result of the interplay between inferences of past states of affairs, the awareness of the present state of affairs, and inferences of future states of affairs. As opposed to the effect of timelessness (that there is no passage of time), the listener perceives the effect of time retardation. This is not a sense that absolute or clock time has slowed down; rather it is a sense that musical time has slowed down. The pace at which the *music as a gradual process* unfolds is slow – as opposed to the pace at which *time* unfolds.

Time retardation, in conjunction with repetition, allows the listener to explore the sound material in a unique way. The listener can, for

example, hear a different resulting pattern with every repeat of the overlapping phrases – the phasing process is gradual enough to create only negligible differences with each repeat. In other words, the listener is afforded a much longer period of time in which to absorb every facet of the resulting sounds and can, in a sense, 'wander' around the musical space. In 'traditional' music the rate of change of events is much greater and the listener does not have time to 'linger'.

5.3 The maturing composer: from *Come Out* to *Phase Patterns*

The period of five years between *Come Out* (1966) and *Phase Patterns* (1970) was one of maturation. Reich employed the same technique, the phasing process, in all bar one (*Four Organs* [1970]) of his compositions but he refined the process and found new and more musically interesting ways of using it.

Having returned to New York in late 1965, *Come Out* was the first minimalist piece Reich wrote in his home town. It was composed for a

benefit concert which was designed to raise money for a retrial of the 'Harlem Six' – Reich was given the task of creating a tape piece out of recorded interviews with them. He chose to use the following phrase from one of the recorded interviews: 'I had to, like, open the bruise up, and let some of the bruise blood come out to show them.' As with the excerpt that Reich chose for his earlier tape piece, *Its Gonna Rain*, the fragments of speech are diatonic – in this case, 'Come out to show them' suggests C minor.[130]

Come Out is essentially a refined version of *Its Gonna Rain* 'both in choice of speech source, and in the exact working out of the phase shifting process.'[131] As Potter has pointed out, the extract which Reich uses ('Come out to show them') has a more musical shape than 'It's gonna rain' – the clearer vowel sounds and the percussive 'sh' produce a result 'more divorced from their meaning.' [132] Potter describes it as a 'phonic' approach, as opposed to the 'phonemic' approach of *Its Gonna Rain.*[133] *Come Out* is in one unbroken movement and rather than allowing the phasing process to make a complete cycle of 360 degrees, the two-part phasing splits into a four-part phasing when the phase reaches 180 degrees. Once this reaches its halfway point of 180 degrees (shown

[130] Potter, p.177.
[131] Reich, *Writings*, p.51.
[132] Potter, p.177.
[133] Potter, p.178.

diagrammatically below) the texture is thickened once more into an eight-part phasing.

Come out to show them Come out to show them Come out to show them Come out
Come out to show them Come out to show them Come out to show them
Come out to show them Come out to show them Come out to show
Come out to show them Come out to show them Come

The final phase piece which used tape, after which Reich transferred the technique to live performance, was *Melodica*. Using a rhythm very similar to that of *Come Out*, the melody – which consists of four notes – apparently came to Reich in a dream on 22nd May 1966. The four-note 'melody' is played on a melodica, a toy instrument which most closely approximated the timbre he had heard in his dream. A tape recording of this is then phased against itself. This phasing is in turn phased against itself, creating a four-part texture in the manner of the previous tape pieces. The overtones and tonal ambiguities which arose from using a pitched instrument as opposed to voice opened up new tonal possibilities which Reich was eager to explore further. For the reasons discussed in Section 5.2, however, Reich felt the need to move away from the 'perfection' of technology: 'Looking back on the tape pieces... I see that

they were, on the one hand, realizations of an idea that was indigenous to machines, and on the other hand, the gateway to some instrumental music I would never have come to by listening to any other Western, or for that matter, non-Western music.'[134]

Unsure of how to go about this, he at last tried to play a repeating piano phrase against a tape of himself playing, and attempted to phase himself against it. To his surprise he found that, with practice, it could be done. Finally seeing a way of escaping tape music, he attempted to phase against another pianist, Arthur Murphy. The success of this experiment was later crystallised in *Piano Phase*. (Before *Piano Phase* Reich wrote *Reed Phase*, for soprano saxophone and two pre-recorded soprano saxophone tape tracks. The first live piece to use phasing, it is also 'probably the first formal western composition to require circular breathing.')[135]

The first part of *Piano Phase* consists of a twelve-note phrase which is phased against itself until it has completed a 360 degrees phase shift. This is followed by an eight-note phrase which is phased against a four-note phrase, and then in the final part a four-note phrase is phased against

[134] Reich, *Writings*, p.53.
[135] Jon Gibson, accompanying notes to 'Jon Gibson: In Good Company', Point Music 434 873-2 (1992); quoted in Potter, p.181.

itself. The pitches are carefully chosen so as to create interesting and ambiguous patterns. Dynamics remain constant throughout the approximately twenty minute work, except for a brief crescendo at the very end. [136]

Composed in the same year as *Piano Phase*, *Violin Phase* was written in October and is scored for four violins, or alternatively three pre-recorded violins plus a live violinist. The first three violins are employed in the process of phasing against one another whilst the fourth has the rôle of picking out resulting patterns (see Section 5.2). [137]

> As one listens to the repetition of the several violins one may hear first the lower tones forming one or several patterns, then the higher notes are noticed forming another, then the notes in the middle may attach themselves to the lower tones to form still another... Since it is the attention of the listener which will largely determine which particular resulting pattern he or she will hear at any one moment, these patterns can be understood as psycho-acoustic by-products of the repetition and phase shifting.

Resulting patterns are present in all phasing processes and Reich's realisation of their interest as psycho-acoustic by-products led him to assign a violin to the very task of hearing the resulting patterns and

[136] For an excellent analysis of *Piano Phase*, see Potter, pp.183-8.
[137] Reich, *Writings*, p.53.

amplifying them, hence bringing them to the foreground of the texture. The resulting patterns are not always left to the discretion of the performer; sometimes Reich offers a number of patterns which the performer may or may not play. *Violin Phase* does not go against his dictum 'once the process is set up and loaded it runs by itself', however the 'dictated' resulting patterns are certainly the 'composed' element of Reich's minimalist output thus far.

In a similar way to *Come Out*, Reich at no point allows the phasing process to return to unison, and so the cyclicality that is present in *Its Gonna Rain* and *Piano Phase* is not present. In the version for live violin and tape, *Violin Phase* begins with the live violin phasing against the tape part until it is five beats ahead. The tape part then takes over the live violin's part (increasing the texture of the tape part from one violin to two violins), leaving the live violin free to pick out resulting patterns. Three of these patterns are dictated by Reich, and one is left up to the performer: '[The live violin] should play each of these, and he may add or substitute... a resulting pattern of his own choosing.'[138] The performer is directed to 'fade up' the resulting patterns so that they become more and more distinguishable from the tape texture. After a number of repetitions, the resulting pattern is then faded back down, before the process begins

[138] Quoted from the score of *Violin Phase*, Figure 16; reproduced in Reich, *Writings*, p.54.

again with another resulting pattern. After several resulting patterns have been brought to the surface the live violin resumes the phasing process, this time against the two violins already playing on the tape – thus creating a three-part texture. The phasing process continues until the live violin is nine beats ahead, and then it plays more resulting patterns, this time against a three-part texture. Furthermore, the resulting patterns are now phased against the three-part texture. The climax of the piece happens when a melodic resulting pattern is played which is longer than the 12/8 bars which make up the basic unit. Finally, the live violin plays in unison with the three-part tape texture, allowing the listener to choose his or her own resulting patterns.

In August 1968, Reich composed *Pendulum Music* which consists of three, four, or more microphones, each suspended the same distance above a loudspeaker which they are connected to. The microphones are all pulled back the same distance and are allowed to swing freely over their respective loudspeakers, creating feedback. 'A series of feedback pulses are heard which will either be all in unison or not depending on the gradually changing phase relations...'[139] caused by air resistance.

[139] Quoted from the score of *Pendulum Music*; reproduced in Reich, *Writings*, p.13.

During 1968 and 1969, much of Reich's time was occupied in creating the Phase Shifting Pulse Gate, a piece of technology which would allow a number of pulsing tones to be very gradually shifted out of phase with each other: [140]

> If the tones were all in phase (struck at the same instant), a pulsing chord would be heard. If the tones were slowly shifted just a bit out of phase, a sort of rippling broken chord would be heard which would gradually change into a melodic pattern, then another, and so on.

The machine was developed at the Bell Laboratory in New Jersey. The pieces written for the Phase Shifting Pulse Gate were *Pulse Music*, given its first performance in April 1969, and *Four Log Drums*, given its only performance at around the same time. Reich found the results musically unsatisfying. Having worked with live performers in the preceding years he realised that 'it is actually the tiny micro-variations... created by human beings... that gives life to the music.'[141] However, Reich's work with the Phase Shifting Pulse Gate was not entirely fruitless. It was the inspiration behind *Four Organs* (January 1970), his first minimalist composition that did not use phasing.

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[140] Reich, *Writings*, p.17.
[141] Reich, *Writings*, p.25.

Reich had, by now, made a name for himself, especially amongst the visual artists working in New York. It was mostly art galleries and other alternative performing spaces in which his music was played, as opposed to concert halls. His break into the concert-going mainstream came when Michael Tilson Thomas, then the conductor of the Boston Symphony Orchestra, called him up to ask whether he had anything for the orchestra to play. "'Of course, my new piece *Four Organs*.' Reich laughs uproariously. "What else would I have given them?"'[142]

The basic idea of *Four Organs* is simple: to increase the duration of a pulsing dominant-eleventh chord by augmenting one note at time, against the steady pulse of a pair of maracas. As well as owing something to the Phase Shifting Pulse Gate, the idea behind *Four Organs* can also be traced back to a piece which Reich conceived in September 1967, entitled *Slow Motion Sound*, the score of which consisted of the instruction 'Very gradually slow down a recorded sound to many times its original length without changing its pitch or timbre at all.'[143] Proving impossible with the technology available at the time, *Slow Motion Sound* remains a conceptual work, having never been performed.

[142] Schwarz, *Minimalists*, p.70 (unattributed).
[143] Quoted from the score of *Slow Motion Sound*; reproduced in Reich, *Writings*, p.14.

Nyman has described *Four Organs* as 'a phase piece turned on its side so to speak: a simple single chord... is gradually lengthened, so that what was originally a vertical consonance becomes, progressively over a period of about twenty minutes, a horizontal consonance.'[144] The piece starts in 11/8, with a dominant-eleventh chord, which originally lasts for one quaver, placed on the first and fourth beats (the maracas play continuous quavers). Individual notes from both chords are gradually augmented, both forwards and backwards. Once the 11/8 bar has been totally filled with sound, the bar lengths themselves are augmented – eventually reaching a bar length of 265 beats. The technique of substituting beats for rests would become as important to Reich in the early 1970s as phasing had been in the latter half of the 1960s.

Immediately after writing *Four Organs* Reich composed *Phase Patterns* (February 1970), which was also scored for four organs. The performers 'drum' their keyboards in a rhythm known as paradiddle. The left and right hands alternate in the following way: LRLLRLRR. This use of using a keyboard as a literal percussion instrument led Reich to 'look at all keyboard instruments as extraordinary sets of tuned drums.'[145] The structure of *Phase Patterns* is similar to that of *Violin Phase*. The first two performers phase an eight beat phrase against each other until they

[144] Nyman, *Experimental Music*, p.157.
[145] Reich, *Writings*, p.56.

are 180 degrees out of phase (one player is four beats ahead of the other). The second two performers now play resulting patterns. These performers then bring in a second pattern which is also in the paradiddle rhythm and phase against themselves, whilst the first two performers continue to repeat the background at the point they had reached.

In the summer of 1970, Reich travelled to Ghana for five weeks in order to study African drumming with the Ewe tribe. His experiences of the trip are well chronicled in his 1971 article 'Gahu – A Dance of the Ewe tribe in Ghana', reproduced in his *Writings*. On returning to New York he felt 'no desire to become either an African drummer, or an ethnomusicologist, or a composer of "African style" music...'[146] Instead, he found the experience to be a confirmation of the work he was already doing. 'It confirmed my intuition that acoustic instruments could be used to produce music that was genuinely richer in sound than that produced by electronic instruments, as well as confirming my natural inclination towards percussion.'[147] Drumming, the work which grew directly out of his experiences in Africa was to be a turning point in Reich's musical development.

[146] Reich, *Writings*, p.57.
[147] Reich, *Writings*, p.58.

5.4 The early 1970s

Composed between the autumns of 1970 and 1971, *Drumming* is in four parts with no breaks. The first is scored for drums, the second for marimbas and female voices, the third for glockenspiels, whistling and piccolo, and the fourth combines all of the forces. According to Reich, there are four new techniques used in *Drumming*:[148]

> the process of gradually substituting beats for rests (or rests for beats) within a constantly repeating rhythmic cycle, the gradual changing of timbre while rhythm and pitch remain constant, the simultaneous combination of instruments of different timbre, and the use of the human voice to become part of the musical ensemble by imitating the exact sound of the instruments.

The first of these techniques was actually anticipated in *Four Organs*, although the constantly repeating cycle of *Four Organs* was simply a continuous chord rather than a melody. Reich later termed the processes of substituting beats for rests and rests for beats as rhythmic construction and rhythmic reduction, respectively. The second technique occurs at the transitions between the four parts. In the transition between Part One and

[148] Reich, *Writings*, p.58.

Part Two for instance, the marimbas, playing in unison with the drums, gradually fade in. They start very quietly and increase in volume until they are at the same dynamic as the drums, at which point the drums fade gradually fade out. Hence, a seamless change of timbres takes place in the same way that the phasing process offers a seamless change between one rhythmic pattern and another. The changes of timbre between the parts act as key changes might in more traditional music: '*Drumming* shows that it is possible to keep going in the same key for quite a while if there are instead considerable rhythmic developments together with occasional, but complete, changes of timbre to supply variety.'[149]

Part Four's simultaneous use of instruments of different timbres anticipates much of Reich's subsequent output. Reich was now more interested in the actual *sound* of his music, rather than simply hearing the music as an outcome of a process. Even the most experienced of listeners would find it difficult to follow the complex rhythmic processes which are being carried out against each other in Part Four. However, it is more than possible to derive enough pleasure and musical satisfaction from the sumptuously rich textures without feeling the necessity to attempt to follow everything which is happening.

[149] Reich, *Writings*, pp.60-1.

The final innovation of *Drumming* is the use of the human voice, whistling and a piccolo to imitate the sounds produced by the marimbas and the glockenspiels. Reich has written that during the course of composition he would sing along to the drums he was playing, 'using syllables like "tuk", "tok", "duk", and so on.'[150] He realised the possibility of using an amplified human voice or other instrument to bring out the resulting patterns created by the percussion instruments. After much experimentation he found that the marimbas best suited a female voice singing a 'u' vowel sound, and that the glockenspiels in their low register suited a human whistle, whereas in their highest register a piccolo was required. Reich would return to this method of using the human voice to imitate other instruments in *Music for Mallet Instruments, Voices and Organ.*

Drumming has a strong feeling of ritual, both in the conception of the work, and in the manner of its performance. The timbre of Part One immediately conjures up the music of Africa – Reich's use of strong down beats in a 12/8 time signature (except of course during phase shifts) evoke the rhythms of Africa far more than many other bongo pieces which have been written by Americans.[151] The overall stasis of

[150] Reich, *Writings*, p.61.
[151] John Cage's 1943 piece, *She is Asleep*, is scored for four bongos but the rhythmic irregularities tend to strip the work of its 'ethnic' feel.

Drumming further enhances the piece's ritualistic aspect. Although there is constant activity, the only changes which are not the direct outcome of a musical process are the changes of timbre between sections. A performance of *Drumming* requires the players 'to sacrifice individual spontaneity for the greater goal of group expression... [i]t takes immense reserves of nearly yogic concentration to perform...'[152] 'While performing and listening to gradual musical processes one can participate in a particular liberating and impersonal kind of ritual.'[153]

In April 1972, after the almost orchestral timbres and tonal complexity of *Drumming*, Reich returned to smaller forces with *Clapping Music*. The work is scored for two performers who repeatedly clap a rhythm in 12/8. The first performer jumps a quaver ahead of the other after a number of repetitions in unison. After the new pattern has been repeated a number of times, the first performer again jumps ahead by a quaver. In this way, Reich eliminates the 'fuzzy transitions' of phasing, and in doing so creates 'a process of jumping directly from "notch" to "notch" of an otherwise typical cycle of phasing.'[154]

[152] Schwarz, *Minimalists*, p.75.
[153] Reich, *Writings*, p.11.
[154] Potter, p.225.

In early 1973 Reich completed *Six Pianos* and *Music for Mallet Instruments, Voices and Organ*, the last of his truly minimalist works. Between 1974 and 1976 he composed *Music for Eighteen Musicians*, a large-scale piece which was to form the transition between his minimalist music and his subsequent style which was more tonally complex and directional. Although one of the most interesting pieces he has written, *Music for Eighteen Musicians* will not be discussed in this thesis because its directionality negates the effects on temporality that his more strictly minimalist works create.

The idea for *Six Pianos* (March 1973) stemmed from Reich's desire to write a piece scored for all the pianos in a piano store. Ever aware of performance practicalities, the result was written for six upright spinet pianos. These allowed the performers the close proximity necessary for them to undertake the complex rhythms of Reich's music, and did not create the unwanted harmonics and resonances that grand pianos would have provided. *Six Pianos* is really a study in the use of rhythmic construction and rhythmic reduction, two processes which were used extensively in *Drumming*. Unlike the process used at the beginning of *Drumming* however, the start of *Six Pianos* consists of a harmonically interesting rhythmic pattern gradually constructed two quavers out of phase with an already repeating basic unit in 4/4. Therefore, once the

rhythmic construction is completed, a canon between the two voices has been set up, above which resulting patterns are brought out. *Six Pianos* is divided into three modal areas: D Major, E-Dorian and B minor.[155] Within each of these areas the processes of rhythmic construction and reduction are applied three times. The transitions between modal areas are very sudden. They serve to split the piece into three distinct sections in a similar way to the abrupt thickening of textures in *Its Gonna Rain* and *Come Out*, and the changes of timbre in *Drumming* (although the timbre changes were gradual rather than sudden).

Completed in May 1973, *Music for Mallet Instruments, Voices and Organ* is scored for four marimbas, two glockenspiels, a metallophone, three female voices, and an electric organ. It is the first of Reich's minimalist compositions to use a combination of instruments from the outset. The process of rhythmic construction set up out of phase with the basic unit, as developed in *Six Pianos*, is also used here. It is always used within an instrumental section, for instance glockenspiels against glockenspiels or marimbas against marimbas. Against these processes, the metallophone, voices and electric organ gradually augment the notes that they play or sing, a simplified version of the process used in *Four Organs. Music for Mallet Instruments, Voices and Organ* is the most

[155] See Potter, p.228.

tonally complex minimalist piece that Reich had yet written.[156] It is also the most sumptuous in terms of the timbres employed.

Drumming and *Music for Mallet Instruments, Voices and Organ* both employ more than one process simultaneously (sometimes there are many simultaneous processes, as in Part Four of *Drumming*). As previously mentioned, Reich gradually became less interested in enabling the listener to follow the various musical processes; he was growing more concerned with providing *sound* rather than sound *as process*. This change of aesthetic in his later minimalist pieces has an impact on the listener's perception of temporality. It is no longer possible to predict into the future (and the past) as it was possible to do with the phasing process when it existed by itself, or rhythmic construction/reduction by itself. The predicted outcome at some determined time of a combination of more than one species of process may be perfectly possible on paper, but to predict the results of the combination of even the simplest processes whilst actually listening to them is extremely difficult. Further difficulties arise when one takes into account the variety of timbres which are employed in Reich's later works. It is much more difficult to recognise and predict processes that occur between voices with different timbres than it is between voices with the same timbre. Part Four of *Drumming*

[156] See Potter, pp.229-30.

and *Music for Mallet Instruments, Voices and Organ* have so much information content that it is difficult, and perhaps impossible, to follow every detail.

The constant buzzing of micro-activity within an essentially homogeneous canvas has the effect, however, of causing some sense of stasis. This is similar to the micro-activity of *The Tortoise* discussed in section 3.5 – the micro-activity itself becomes homogenised after a certain amount of listening.[157] The 'constant buzzing' of Part Four of *Drumming* eventually washes over you, creating a vast swathe of sound in which it is virtually impossible to differentiate between the various processes.

[157] This was illustrated by the analogy of viewing blades of grass in filed from greater and greater heights.

Chapter 6

Philip Glass: additive and cyclic processes

Crazy Eddies Crazy Eddies Crazy Eddies Crazy Eddies Crazy Eddies

Goodbye Crazy Eddies

Crazy Eddies are the most ones

Like into a coal jacket

Are into like it has the has the ever

Ever ever ever ever ever ever ever ever the

And that is the answer to your problem, handsome

- from 'Knee Play 1', *Einstein on the Beach*

Philip Glass is one of the world's best known and highly paid composers. His audience is by no means confined to traditional concert-goers; on the contrary, his admirers range from those interested in the avant-garde to rock fans. Often criticised for 'going commercial' in the 1980s, the music he is writing now is generally more 'maximalist'[158] than that which he

[158] Schwarz, in his book *Minimalists*, refers to the post-minimalist aesthetic of Reich and Glass as 'maximalist'.

wrote in the late 1960s and early 1970s – his minimalist period – but he still uses the methods and techniques he developed during his minimalist period: repetition and additive and cyclic processes. The work which acted as a transition between a style which was recognisably minimalist and the later more traditional symphonic/operatic style which followed was his 'opera' *Einstein on the Beach* (1976). Only the truly minimalist works which preceded *Einstein* will be discussed in this chapter.

None of the other minimalist composers embraced aspects of traditional Western music as much as Glass. It is noteworthy that Glass studied with the formidable composition teacher Nadia Boulanger in Paris, who rarely strayed outside the bounds of Bach, Haydn, Mozart and Beethoven. It is also to note that unlike Young, Riley and Reich, Glass was never particularly interested in jazz or improvisation. On the other hand, this is not to say that Glass' influences were entirely traditional. Whilst studying with Boulanger in Paris, he involved himself with the avant-garde scene, particularly in the theatre-world – his collaborations included writing the music for Samuel Beckett's work *Play*.

Another major influence on Glass' minimalist style was his exposure to Indian classical music, through transcribing performances by Ravi Shankar and Alla Rakha into Western notation for a film score in 1965-6.

The experience spurred a period of travelling around North Africa, Central Asia and India in 1966-7. The modularly constructed rhythms of Indian classical music revealed to Glass a new way of conceiving the way in which rhythm interacts with musical time: rather than the Western conception of a time continuum which is *broken up* and segregated by rhythm, Indian classical music *constructs* a musical time continuum out of rhythm. This modularly-constructed musical time was the defining feature of Glass' minimalist aesthetic, and led him to develop the techniques of the additive and cyclic processes. The way in which additive and cyclic processes affect one's perception of temporality will be discussed in Section 6.3. First, however, a synopsis of Glass' life and works up until 1974 will be given.

6.1 Education and travel

Philip Glass was born in Baltimore on 31st January 1937. His father repaired radios and owned a record shop; the shop exposed Glass to what was considered at the time to be slightly 'offbeat' classical music such as

Schubert piano trios, Beethoven string quartets and Shostakovich.[159] His father would bring the records home for Glass to listen to: 'We heard all the esoteric pieces. We even had all the modern music that was then recorded...'[160] He started violin lessons at the age of six, and the flute at eight, along with composition lessons. From 1945-52 he attended the Baltimore City College where he played in various musical groups, from orchestras to theatre bands.

At the extraordinarily young age of fifteen, Glass enrolled at the University of Chicago, studying philosophy, mathematics and music. Having graduated in 1956, he secured a place at the Julliard School in New York, specialising in composition and studying under William Bergsma and Vincent Persichetti. He gained a School diploma in 1960 and an M.S. in 1962. Amongst his classmates was Steve Reich.

In 1962 Glass won a $10,000 Ford Foundation Young Composer's Award. He was living in Pittsburgh and working for a public school. Quite remarkably for such a young composer, Glass composed over seventy pieces during the two years he was in Pittsburgh. Many of these were published (some by such prestigious publishers as Novello) and

[159] www.philipglass.com/biography.html
[160] Ev Grimes, 'Interview: Education'. Printed in *Writings on Glass: Essays, Interviews, Criticism*, Richard Kostelanetz (ed.), (London: Prentice Hall International, 1997), p.13.

some won prizes. The style he was writing in was far from minimalist. Glass, somewhat deridingly, has subsequently described the music he was writing in the early 1960s as 'straight, middle-of-the-road Americana.'[161]

From 1964 to 1966 Glass studied with Nadia Boulanger in Paris. It was here that Glass was taught harmony, counterpoint and orchestration with a level of rigour that was infamous. Glass' memories of Boulanger's lessons are not entirely fond. He has related one incident in which Boulanger suggested he needed to see a therapist because he had handed in an exercise which contained hidden parallel fifths.[162] Despite, and probably because of, Boulanger's almost tyrannical approach to teaching, Glass says he 'had remade [his] technique and had learned to hear in a way that would have been unimaginable... only a few years before.'[163]

Although studying with Boulanger took up much of Glass' time in Paris, he made sure he experienced all that he could of the artistic scene there. With JoAnne Akalaitis, his new wife, he met Samuel Beckett in 1964 or 1965. Akalaitis was an actress and director: theatre was to play an ever increasing role in Glass' musical life from this point on. Akalaitis and some other Americans set up an experimental theatre group in Paris. In

[161] Potter, p.253.
[162] Schwarz, p.114.
[163] Quoted in Schwarz, p.115 (unattributed).

late 1965 they put on a production of Beckett's *Play* for which Glass provided the score. The score Glass produced was an early indicator of the direction in which his minimalist compositions would later take: [164]

> Here was a piece of music based on two lines, each played by soprano saxophone, having only two notes so that each line represented an alternating, pulsing interval. When combined these two intervals (they were written in two different repeating patterns) formed a shifting pattern of sounds that stayed within the four pitches of the two intervals. The result was a very static piece full of rhythmic variety.

During his second year in Paris, Glass was contracted to work on a psychedelic hippie film directed by Conrad Rook entitled *Chappaqua.* One of Glass' acquaintances was working as photographer on the film and he suggested that Glass would be a suitable assistant to Ravi Shankar who was the score composer. Glass' primary task was to transcribe Shankar's Indian-style music into Western notation for the French musicians. 'I spent the next few months with Ravi and his drummer, Alla Rakha. This protracted encounter with one of the great traditions of world music... had a profound effect on me.'[165] At first Glass found it difficult to transcribe the complex rhythms played by Rakha: 'The problem came

[164] Philip Glass, *The Music of Philip Glass*, (New York: Harper and Row, 1987), Robert T. Jones (ed.), p.19.
[165] Glass, *The Music of Philip Glass*, p.17.

when I placed bar lines in the music as we normally do in Western music. This created unwanted accents.'[166] Rakha picked up on this when the French musicians played back what Glass had transcribed, complaining that they were not giving an equal emphasis to all the notes. In a moment of enlightenment Glass decided to drop the bar lines altogether. He has subsequently written eloquently on the reason that this produced the desired result: [167]

> I would explain the difference between the use of rhythm in Western and Indian music in the following way: In Western music we divide time – as if you were to take a length of time and slice it in the way you slice a loaf of bread. In Indian music (and all the non-Western music with which I'm familiar), you take small units, or "beats", and string them together to make up larger time values.

Having taken a trip to Morocco the previous year, where, like Riley, Glass was impressed by North African music and Islamic art, Glass' experience with Shankar and Rakha inspired him to go to India via Central Asia in late 1966. He and Akalaitis spent four months travelling and soaking up the atmosphere. It was on this trip that Glass converted to

[166] Glass, *The Music of Philip Glass*, p.18.
[167] Glass, *The Music of Philip Glass*, p.17.

Buddhism.[168] The all-embracing multi-media Khatikali particularly inspired Glass; its integrated use of dance, theatre and music would later be refracted through minimalism in his opera *Einstein on the Beach.*

6.2 Early minimalist works

Glass and Akalaitis returned to New York early in 1967. By this time Riley's *In C* and Reich's *Its Gonna Rain* were already two years old. The couple's return to New York, however, was the start of Glass' period as a true minimalist composer. As Potter has pointed out,[169] Glass' early (and most extreme) minimalist output can be divided into two periods: 1965-8 and 1968-9. The first period may be further sub-divided: between 1965-7 Glass wrote three pieces whilst in Paris, which apart from a string quartet are no longer extant;[170] between 1967-8 Glass wrote minimalist compositions which were, unlike the pieces written afterwards, not rigorous in their use of the additive process. It was in *1 + 1* (the score is dated 11/68) that Glass first used the additive process in a rigorous and

[168] He still practices Tibetan Buddhism today. In 1979 he composed *Mad Rush*, a work for solo piano which celebrated the arrival of the Dalai Lama onto US soil.
[169] Potter, pp.271-2 and pp.273-4.
[170] The pieces written in Paris were *Play, Music for Woodwind Quartet and Two Actresses* and *Music for Small Ensemble.* As has been seen from Glass' own description of *Play*, this piece was minimalist however the other two were more serial and traditional.

logical fashion, and thus *1 + 1* acts as a watershed between his early and his mature minimalist compositions.

The pieces written after Glass' return to New York but before *1 + 1* were: *Strung Out* for amplified violin (July/August 1967); *Head-On* for violin, cello and piano (October 1967); *for Jon Gibson*[171] for soprano saxophone (February 1968); *Two Down* for two saxophones (not dated but probably written after *for Jon Gibson*); *In Again Out Again* for two pianos (March 1968); *Piece in the Shape of a Square* for two flutes (May 1968); *How Now* for solo piano (probably written in April or May 1968); and *600 Lines* for unspecified instruments (probably written in the summer of 1968).[172] These pieces displayed an affinity with his later minimalist works, especially in terms of the sound world that they created. The most important and interesting of these, at least as far as Glass' later minimalist output is concerned, are those which were written for solo performers: *Strung Out* and *for Jon Gibson.*

Potter gives a detailed analysis of *Strung Out*[173] in *Four Musical Minimalists*. Having discovered the technique of omitting bar lines whilst working with Shankar and Rakha, Glass does away with them in *Strung*

[171] Sometimes known as *Gradus*.
[172] All this information is taken from Potter, p.277.
[173] Potter, pp.278-80.

Out. The piece is entirely constructed from continuous quavers (the tempo is marked as quaver equals 144) and the performer is instructed to play 'mechanically'. *Strung Out* uses only five pitches (E, G, C, D, E) and subjects them to an intuitive form of the additive process. The title refers to three things: firstly 'that the music was strung out along a wall'; secondly 'that it had to do with the idea of stringing a violin'; and thirdly 'it played on the current colloquialism of being "strung out," i.e., at the end of one's tether, of being dragged to the very edge of something.'[174] The score was designed to be arranged in an L-shape, 'running about fifteen feet before taking a right turn out from the wall.'[175] *Strung Out* is an important precursor to the mature minimalist compositions in several ways. The amplification of the violin foresees his later predilection for high volumes. This aspect of Glass' music has often led commentators to compare it with rock music. The rhythmic interest of *Strung Out* arises from the various groupings of continuous quavers; much of Glass' later music uses only one or two note values to create rhythmic variety rather than complex rhythmic structures. The lay out of the score of *Strung Out* brings a theatrical element to the piece – the performer must walk along the score whilst playing it (*Piece in the Shape of a Square* uses a similar theatrical device). Although Glass' early minimalist works generally do not contain elements of such theatricality, *Strung Out* and *Piece in the*

[174] Glass, *Music by Philip Glass*, p.20.
[175] Glass, *Music by Philip Glass*, p.20.

Shape of a Square look forward to his later involvement with theatre and opera, and also hark back to his previous work with theatre companies in France. *Strung Out* and *600 Lines* will be discussed in terms of their affects on one's perception of temporality in Section 7.4c(i).

6.3 *1 + 1* and the additive and cyclic processes

It is useful at this stage to discuss the additive process. The process was first developed in a logical and rigorous manner in the 1968 piece *1 + 1*, scored for an amplified tabletop which is to be tapped with the performer's fingers or knuckles. Glass does not provide a written-out score but instead presents two rhythmic units, the first consisting of two semi-quavers plus a quaver, and the second consisting of a single quaver. The performer is instructed to combine the two units 'in continuous, regular arithmetic progressions.'[176] Glass then goes on to give three suggested combinations. Labelling the first unit as 1 and the second unit as 2,[177] the three suggestions that Glass gives may be represented thus:

[176] From the score of *1 + 1*; reproduced in Potter, p.271.
[177] This was also done by Potter, pp.270-1.

a) (1 + 2) (1 + 2 + 2) (1 + 2 + 2 + 2) (1 + 2 + 2) (1 + 2) etc.

b) (1 + 2 + 2 + 2 + 2 + 2) (1 + 1 + 2 + 2 + 2 + 2) (1 + 1 + 1 + 2 + 2 + 2) (1 + 1 + 1 + 1 + 2 + 2) (1 + 1 + 1 + 1 + 1 + 2) etc.

c) (2 + 2 + 2 + 2 + 2 + 1) (2 + 2 + 2 + 2 + 2 + 1 + 1) (2 + 2 + 2 + 2 + 2 + 1 + 1 + 1) (2 + 2 + 2 + 2 + 2 + 1 + 1 + 1 + 1) etc.

The term 'additive process' refers to the basic unit's gradual accrual of elements. In a) this is the addition of the unit '2'. It can be observed however, that in a) the '2' unit is subsequently subtracted – for ease of discussion, the term 'additive' refers (except in specified cases) to both the addition and subtraction of elements. The additive process, demonstrated in the score of *1 + 1*, was to inform the subsequent output of Glass in much the same way that the phasing process did for Reich[178] and the use of drones and just temperament did for Young. There is a clear similarity between Glass' additive process and the Indian method of constructing musical time rather than dividing it: 'you take small units, or "beats", and string them together to make up larger time values.'[179]

Listening to the additive process, one has the sensation that time is actually being extended and compressed by the addition and subtraction of elements respectively. In attempting to understand why this is so it is

[178] Potter, pp.271-2.
[179] Glass, *Music by Philip Glass*, p.17.

necessary to examine how one perceives time signatures in other types of music, both 'traditional' and 'modern'. In music which has a regular metre, one usually perceives the units of time to be the bars. One hears the rhythm of a piece of Mozart in 3/4 as: *1*, 2, 3, *1*, 2, 3, *1*, 2, 3, etc. The mind divides the beats into groups of three (and the performer(s) places an emphasis on the first beat of each bar), creating a kind of unity out of the three-beat bar. Furthermore, from the seventeenth- to the nineteenth-century, most music did not contain many changes of time signature. The listener came to expect that if the music had been in 3/4 for the last twenty bars, then the next bar will also be in 3/4. In other words, once a time signature had been firmly established, and this may take only one or two bars, the listener could be fairly safe in the knowledge that the time signature would stay constant.

After Debussy, and in particular, Stravinsky, changes of time signature became much more frequent – there are many twentieth century pieces which contain changes of time signature every few bars, or even every bar. In the first movement of Schoenberg's *Sech Kleine Klavierstüke*, opus 19, for instance, there are three changes of time signature within the first fourteen bars. Furthermore, the rhythms that Schoenberg uses are so complex that they destroy the feeling of unity that is created by the 'strong-weak-...' accent of the more traditional bar. Unless one is

familiar with the score prior to the piece, it is often difficult to *hear* any time signature at all, even when the time signature remains constant for several bars. Another technique which helped the composer to destroy the listener's sense of metre was the use of very complicated time signatures such as 13/8 or 11/16.

What makes Glass' additive process interesting and unique is that the time signature is constantly changing in a regular and logical fashion which can be readily identified by the listener. Glass' music has the rhythmic interest created by altering the time signature, and hence disrupting the listener's sense of where the downbeat will be placed, and yet the listener soon realises that the altered placing of the downbeat can, to an extent, be predicted. Thus Glass' music manages to bridge the dichotomy between the traditional and wholly predictable steady time signature and the more modern approach of constantly changing the time signature so that the listener loses any sense of downbeat at all. A typical sequence of time signatures used in a piece by Glass is:

12/8 18/8 23/8 27/8 30/8 32/8[180]

[180] Figures 6 to 11 in *Music in Similar Motion*. It should be noted that Glass did not usually write out time signatures in his scores.

The logical sequence is easily perceived: the number of additional quaver beats is steadily reduced, one quaver beat at a time, from six added quavers to two added quavers. Glass further emphasises the additive process by specifying that each bar, or 'figure' as they are referred to in his scores, should be repeated a number of times (the exact number is left to the discretion of the performer(s)).

It would be prudent at this point to describe Glass' other signature technique, the cyclic process. This is a process in which a repeated phrase is played simultaneously with another repeated phrase which lasts for a different number of beats. A simple example is represented below:

Line A (1 2 3 4) (1 2 3 4) (1 2 3 4) / (1 2 3 4) ...

Line B (1 2 3) (1 2 3) (1 2 3) (1 2 3) / (1 2 3) (1 ...

Line A is a repeated phrase which lasts for four beats whilst Line B is a repeated phrase which lasts for three beats. The number of beats in Line A (4) multiplied by the number of beats in Line B (3) equals the number of total beats required in order for the two lines to have cycled back into unison: 3 x 4 = 12 (the forward slashes in the diagram represent the point at which the two lines go back into unison). Glass has described the

process as 'a wheel-work: everything works simultaneously in a continuous transformation.'[181]

The most interesting results occur when Glass uses the additive process and the cyclic process simultaneously. One possible result is represented below:

Line A 1 2 3 4 1 2 3 4 5 1 2 3 4 5 6 1 2 3 4 5

Line B 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2

In this case, Line A undergoes an additive process which lasts for twenty beats and Line B is simply a three beat repeating phrase. The number of beats required for the two lines to cycle back into unison is thus 20 x 3 = 60. Hence using a superposition of the additive and cyclic processes, Glass can create a vast amount of rhythmic, and potentially harmonic, interest from limited material. A situation of even greater complexity can be achieved by a) using a cyclic process in which both lines are additive, and b) by using more than two lines.

The superposition of additive and cyclic techniques results in the simultaneous combination of progress and cyclicality that was discussed

[181] Mertens, *American Minimal Music*, p.68 (unattributed).

earlier with reference to Reich's phasing technique. The various permutations available from subjecting the simplest of phrases to the additive and cyclic processes are almost endless, and are fully explored in *Music in twelve Parts.*

6.4 Mature minimalist compositions: from *Two Pages* to *Music in Twelve Parts*

Following *1 + 1* Glass embarked on a series of pieces for open score – the type and number of instruments were not specified. Each piece had a greater textural, and consequently harmonic, complexity. Glass was now writing in a style that rivalled Reich in its use of process as a means of structure – and, like the music of Reich, the process determined the actual material out of which the piece was constructed. Reich expressed himself in the following way in his essay 'Music as a Gradual Process': '[w]hat I'm interested in is a compositional process and a sounding music that are one and the same thing.'[182] The titles of the pieces which Glass wrote indicate the ever-increasing textural complexity that he was employing

[182] Reich, *Writings*, p.10.

during this period: *Two Pages*[183] (February 1969), referred to as *Music in Unison* by Nyman;[184] *Music in Fifths* (June 1969); *Music in Contrary Motion* (July 1969); *Music in Similar Motion* (November 1969); *Music in Eight Parts* (late 1969 or early 1970); *Music with Changing Parts* (August 1970); and *Music in Twelve Parts* (April 1971 to April 1974).

Two Pages is the first example of a through-composed score which uses the additive process in a rigorous manner. The basic unit (bar 1) consists of five quavers grouped 2 + 3; the pitches used are G, C, D, Eb and F. A detailed analysis and full transcription of the score of *Two Pages* are given by Wes York in his article 'Form and Process'.[185] The score of *Two Pages* is open in terms of instrumentation. At the time it was written, the musicians playing Glass' music were crystallising into a regular group which came to be known as The Philip Glass Ensemble. The ensemble consisted mostly of keyboards, one of which was played by Reich, supplemented by wind instruments (usually soprano saxophones and flutes).[186] *Two Pages* is in unison throughout. Using the notation G=1, C=2, D=3, Eb=4, and F=5, the first additive process in *Two Pages*, referred as 'Part I' by York, may be represented thus:

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[183] There is a certain amount of controversy centred on the question of whether or not the original title of the score read *Two Pages for Steve* Reich. Unsurprisingly, Reich claims that it was whereas Glass denies it.
[184] Nyman, *Experimental Music*, p.149.
[185] Wes York, 'Form and Process', *Sonus* I/2 (1981); reprinted in *Writings on Glass*, pp.60-79.
[186] See Potter, pp.284-6.

(12345),(123451234),(123451234123),(12345123412312)

(123451234123),(123451234),(12345)

Each of the bracketed units are to be repeated a number of times determined by the performer in a solo performance, or the performers' leader in an ensemble performance. It is not specified whether the number of unit repetitions should be decided on prior to performance or not. *Two Pages* is distinctly minimalist in the sound world it creates. As York has written: [187]

> There are no dynamic changes, no new pitch materials after the initial five pulses, no changes of instrumentation, and no juxtaposition of sound and silence. Rather, and stated most simply, contexts of up to five pitches are continually shaped and re-shaped as they articulate an even and unchanging pulse.

Two Pages acts as a basis for the structure of Glass' following compositions. *Music in Fifths* is essentially a reworking of *Two Pages* (it even uses the same pitch set) but now has two lines which play in parallel fifths as opposed to the unison of the prior piece. *Music in Contrary Motion* is written for two lines which, as the title suggests, are moving in

[187] Wes York, 'Form and Process'; reprinted in *Writings on Glass*, p.61.

contrary motion. One line is simply the inversion of the other. The pitch set of *Music in Contrary Motion* is entirely scalic: A, B, C, D, E. *Music in Contrary Motion* is the first piece in which, as Potter describes it, a 'tonal motion' is perceivable.[188]

Music in Similar Motion takes the 'tonal motion' of *Music in Contrary Motion*, and, to an extent, *Music in Fifths*, to a new level of sophistication. Beginning with two lines in octave unison, it proceeds to add three more lines: 'a treble line, basically a perfect fourth higher... a bass line notably less strictly parallel than the new upper line... [and] a further top line, partly a perfect fourth above the previous treble.'[189] The resultant harmonies are often quite dissonant and produce such tonally ambiguous chords as: Bb, G, C, F. The score for the next piece, *Music in Eight Parts*, was lost for many years. Glass has subsequently described it as 'a fumbling attempt at something which I did much better when I got to *Music in Twelve Parts.*'[190]

Before Glass composed *Music in Twelve Parts*, however, he wrote *Music in Changing Parts*. Perhaps the most overtly experimental minimalist composition he had yet composed, it contains improvisational aspects and

[188] Potter, p.295.
[189] Potter, p.295.
[190] Potter and Smith, 'Interview with Philip Glass'; quoted in Potter, p.300.

uses a much more advanced harmonic palette. At one point there is a sudden change of time signature from 4/4 to 6/8 and at another a sudden modulation. Mertens writes that the 'psychological dis-orientation of the listener... [caused by the sudden modulation] contributes... to the feeling of infinity Glass's music radiates.'[191] Glass himself is quoted as claiming that *Music in Changing Parts* 'was a little too spacey'[192] for him. The improvisational aspect of the piece comes from what Glass called 'changing figures' (marked as C.F. at various points in the score). At changing figures, performers are permitted to hold a pitch suitable to the context of the music (i.e. one that is present in the score at that point) for the length of a breath. This creates points in the music where mini drones suddenly appear, but Glass was later to express his dissatisfaction with this use of improvisation.[193]

The fact that Glass wanted the ensemble to listen to each other and select appropriate notes to use as drones does, however, hints at a new interest that Glass was developing around the time of *Music with Changing Parts*' composition: the actual *sound* of what he was writing. Rather than viewing music as a convenient medium in which to convey ideas about structure and form, Glass wished to explore the possibilities of harmony

[191] Mertens, *American Minimal Music*, p.77.
[192] Quoted in Tim Page's accompanying notes to the CD reissue of *Music with Changing Parts*, Elektra/Nonesuch 7559-79325-2 (1994), unpaginated; quoted in Potter, p.311.
[193] Schwarz, *Minimalists*, p.124.

and timbre, and of psycho-acoustic effects and amplification. This change in aesthetic priority was paralleled by Reich at around the same time. Reich became interested in the possibilities of timbre in *Drumming* (1970-1). By this stage he was also articulating psycho-acoustic effects (his use of voice/piccolo to bring out and amplify resulting patterns). Glass has said of *Music with Changing Parts* that he was 'less interested in the purity of form than in the psycho-acoustical experiences that happen while listening to the music.'[194]

Music in Twelve Parts was by far the most ambitious piece that Glass had written to date. Composed over three years, from 1971 to 1974, it was the culmination of the minimalist techniques that Glass had been using since *1 + 1*, as well pre-empting the harmonic techniques which he would further develop in *Einstein on the Beach.* Lasting more than four hours, Kostelanetz has described *Music in Twelve Parts* as 'an exhaustive encyclopedic (*sic*) piece that epitomizes Glass's music in much the same way that *The Well Tempered Clavier* (1744) epitomizes J.S. Bach.'[195] The title of *Music in Twelve Parts* does not, as his other titles do, refer to the musical lines, which make up the piece but instead refers to the number of sections, or parts, that the piece is divided into. These parts usually last

[194] Richard Kostelanetz ,'Philip Glass' in *On Innovative Music(ians)* (Limelight, 1989); reprinted in *Writings on Glass*, Richard Kostelanetz (ed.), p.111.
[195] Kostelanetz 'Philip Glass'; reprinted in *Writings on Glass*, p.110.

between fifteen and twenty minutes. *Music in Twelve Parts* is scored for four organs, four saxophones, flute and two voices which sing *solfège* symbols. Glass' use of harmony was now extended from a simple two chord progression to whole chord sequences, and each part is in a different key. The tonal structure of *Music in Twelve Parts* is analysed in detail in Potter.[196] It was certainly in the realm of harmony that *Music in Twelve Parts* was most innovative. Glass realised that no listener would be able to sustain interest over a four hour piece without musical changes that were not purely rhythmic. For all of its harmonic complexity, *Music in Twelve Parts* is still, however, minimalist in a sense that *Einstein on the Beach* is not. Although both works use similar techniques over a similarly extended time-span, *Einstein*'s inherent theatricality puts it outside of the bounds of minimalism as they were defined in Chapter Two.

The lives and music of La Monte Young, Terry Riley, Steve Reich and Philip Glass have now been discussed in detail. Although there has also been some discussion of how the perception of temporality relates to their music, it has been sporadic and not presented in a logical fashion. In the final chapter the relationship between minimalism and time will be investigated rigorously and fully.

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[196] Potter, p.314.

Chapter 7

Minimalism and the Perception of Temporality

Time has been transformed, and we have changed;

it has advanced and set us in motion;

it has unveiled its face, inspiring us with bewilderment and exhilaration

- Kahlil Gibran

The future and the past, neither of which are present, are the horizons of the present

- Wolfgang Walter Fuchs[197]

Gibran, quoted above on the subject of mystical enlightenment and its effects on one's perception of temporality, writes that time 'has unveiled its face'. Regardless of whether the arguments put forth in this chapter, and indeed in this thesis as a whole, are found to be meritorious or acceptable by the reader, there is one statement that it is possible to make

[197] Wolfgang Walter Fuchs, *Phenomenology and the Metaphysics of Presence: An Essay in the Philosophy of Edmund Husserl* (The Hague: Phaenomenologica, 1976), p.71.

which would be difficult to dispute. That is, minimalist music draws the listener's attention to time. The music may not unveil time's face but by altering the way that our consciousness appears to perceive the passage of time minimalist music actualises the *awareness* of the passage of time in the consciousness of the listener. In Bernard's article 'The Minimalist Aesthetic in the Plastic Arts and in Music' he writes that: [198]

> Minimal music... more than depends on time as a medium of presentation; it is devoted to making the listener keenly aware of the passage of time. Not clock time as a rule, for the rate of passage of time certainly varies from piece to piece... [T]here is something about this sense of the passage of time that is *enforced* – something not found much, if at all, in earlier music...'

Virginia Woolf has expressed this apparent altering of the passage of time in the following way: [199]

> An hour, once it lodges in the queer element of the human spirit, may be stretched to fifty or a hundred times its clock length; on the other hand, an hour may be accurately represented on the timepiece of the mind by one second. This extraordinary discrepancy between time on the clock and time in the mind is less known than it should be and deserves fuller investigation.

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[198] Jonathan W. Bernard, 'The Minimalist Aesthetic in the Plastic Arts and Music' in *Perspectives of New Music*, **31** (1993), p.122 (his italics).
[199] Virginia Woolf, *Orlando* (Oxford: Oxford Paperbacks, 1998), p.94.

There are two reasons minimalist compositions can cause an alteration to one's perception of the passage of time. Firstly, minimalist compositions nearly always take place within 'extended' time-frames. It is very rare for a minimalist work to last less than five minutes.[200] It is evident then that minimalist music is not minimalist in the sense of being short. Secondly, minimalist compositions contain a minimal amount of information content and it is the conjunction of an extended time-frame with a low information content which results in what shall be referred to as 'information deprivation'.[201]

In this final chapter an account of Edmund Husserl's phenomenological description of one's perception of temporality will be put forth. This will be followed by a discussion of the ways in which a phenomenological account of temporality can be applied to the perception of spatiality in minimalism in the visual arts. Next, the music of Young and how it alters one's perception of temporality will be discussed in terms of phenomenology. This will lead on to a discussion of the perception of temporality in the music of Riley, Reich and Glass. Although Riley, Reich and Glass all use different musical processes, and each have their

[200] The exception is Reich's *Clapping Music* which lasts four minutes and thirty-nine seconds on the Elektra Nonesuch recording.

[201] It is this information deprivation which causes some listeners to claim that they find minimalist music to be tedious. In fact, they often find that the seemingly endless drones or the ceaseless repetition is so tedious as to make it infuriating. Some ideas regarding the way in which minimalist music *ought* to be listened in order that it is not tedious to the listener will be discussed later.

own unique aesthetic standpoint, the similarities which they display in terms of the repetitive and modular nature of their music is usually sufficient to consider them as a group when discussing the perception of temporality.

7.1 Phenomenology and Temporality

> Phenomenology is the study of human experience and of the ways things present themselves to us in and through such experience.
>
> - Sokolowski[202]

The phrase 'phenomenological approach' is often used in discussions of phenomenology. This is because the discipline of phenomenology is more akin to an approach, or a way of investigating the world, than it is to a metaphysical system. The phenomenological approach regards the role of description as being prior to the role of explanation; phenomenology is concerned with the phenomena of our experiences rather than unobservables or speculation. Perception, as the term is used in phenomenology, has nothing to do with neural processes or other biological systems but instead means the way in which we as human

[202]Robert Sokolowski, *Introduction to Phenomenology* (Cambridge: C.U.P., 2000), p.2.

beings 'see' things with our 'mind's eye'. Phenomenology is a suitable tool for analysing the way in which music (or any other art) presents itself to the perceiver because it offers no abstract theory regarding the ontology or metaphysics of its given subject – time, for example. Rather, it attempts to describe the way in which our minds are aware of, or perceive, the phenomenon of time.

Edmund Husserl is generally regarded as the founder of phenomenology and his early work on the perception of temporality has 'stood the test of time.' Other more recent phenomenologists such as Merleau-Ponty have 'tweaked' Husserl's original theory, but not in a way that alters the theory as it will be used in this thesis. The existential phenomenology of Heidegger and Sartre, and Husserl's description of intentionality as it relates to the perception of time, will not be given here as it is outside the requirements of an understanding of phenomenology sufficient for the subsequent discussion of phenomenology's relation to minimalist music.[203] A comprehensive account of Husserl's philosophy of time can be found in his book *The Phenomenology of Internal Time-Consciousness.*[204]

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[203] For an excellent account of Husserl's theory of intentionality, see 'Husserl and the Specious Present' in Shaun Gallagher, *The Inordinance of Time* (Illinois: Northwestern University Press, 1998), pp.32-52.

[204] Edmund Husserl, *The Phenomenology of Internal Time-Consciousness*, Martin Heidegger (ed.), James S. Churchill (trans.), (London: Indiana University Press, 1966).

The most famous example that Husserl used to illustrate his ideas about time was that of a melody. Husserl realised that in order to make sense of how we perceive a melody, it is necessary to dispel the myth of punctuality which had permeated Western philosophy since Descartes. Punctuality is the idea that consciousness is a temporal point of infinitesimal magnitude. Every moment is isolated – it is only by divine intervention and/or memory that we are able to perceive in a continuous manner. If the conscious present is indeed punctual, it is impossible to explain the way in which we perceive a melody: the individual notes would be heard as isolated sonic events. In order that we may hear the melody as a melody, we would have to be continuously recollecting the previous note, and the note before that, and the note before that, and so on *ad absurdum.* The use of the word 'recollection' is of the utmost importance here. Recollection is the act of bringing a past event *into* the present, so that a note that is no longer present can become so in a *remembered form* in the mind of the listener. The implications of this are obvious: in order to perceive a melody as something other than isolated sonic events the punctual present would be overloaded with recollected notes, thus producing a (probable cacophonous) chord in the mind of the listener rather than a melody which exists in time. If the listener did *not* recollect the previous notes then only the note which is sounding in the

punctual present would be made accessible to the listener, and hence the listener would perceive a succession of notes, each one seemingly random.

As has already been said, it is the programme of phenomenology to dismiss dogmas and to pay attention to what it 'feels' like to perceive: to apprehend phenomena. It is clear that most 'normal' human beings (those without memory problems or schizophrenia and so) perceive a melody in a way that is very different to either a stacked chord or a succession of unrelated sonic events. This is because the present is not, as Descartes and others believed, punctual. Rather than being an infinitesimal temporal point which constantly recreates itself (or is recreated by God) to form a continuum, the present is in actual fact blurred. Husserl contends that the present is not just the sum of everything which is being perceived *now* at time zero. Due to the processes of what he called retention and protention, there is some past and some future in the perceived present. Leaving protention aside for the moment, although it will be of importance later, it is necessary at this point to give a description of what Husserl meant by retention so that an understanding of the 'blurred' present may be achieved.

Firstly, retention is not the same as recollection. Whereas recollection *brings* an event of the past *into* the present, retention *maintains* the immediate past *within* the present. The distinction is subtle but important. Returning to the example of a melody, the things that are retained (the just-past notes) are not representations or reproductions of the original notes as in recollection – they are the actual notes themselves. The retained notes however are perceived slightly differently to the actual note occurring in the objective present. They are perceived in a different temporal mode, that of the just-past. As Thompson has written:[205]

> A retained sound is not a reverberation, an after-mage, an actual sound, like an echo or a lingering note as on a piano. Nor is it a replacement sound, that is actual, like a weak image, as when I hum to myself under my breath. A retained sound is not a representation or symbolization, as in thinking of the name of the note, or an image of it. It is not the idea of the sound, not a concept or reflection on it. A retained sound is the original sound itself, but in a different mode, the mode of presence as absent, of present-as-past.

The just-past is a period of time whose length has been argued over by phenomenologists and psychologists alike, but it is usually taken to be somewhere in the region of three to ten seconds under normal

[205] David L. Thompson, 'The Phenomenology of Internal Time-Consciousness', www.ucs.mun.ca/~davidt/TimeHsrl.html

circumstances.[206] Retention means that the listener is perceptually *aware* of just-past notes, even though these notes are no longer objectively present. The just-past however is not a homogeneous continuum but is layered such that the listener has a greater awareness of the note immediately previous to the objectively present note than to the note before that and so on. As notes sink further and further into the past they become less and less a feature of the perceptive consciousness of the listener until they are eventually a part of the perceptual past as well as the objective past, i.e. they are no longer part of the just-past, and consequently can only become present again through recollection.

A useful analogy here is that of a horizon. If an observer is at sea and is close to a ship, the ship will be a significant feature of (will occupy a significant percentage of) the observer's perceptual frame. As the ship moves further away it becomes less and less a significant feature of the perceptual frame until it passes over the horizon and is no longer a part of the perceptual frame at all. The ship can only be bought back into the perceptual frame through the process of recollection, and in this case it would not be the actual ship, but a memory of the ship. As Fuchs has written, '[t]he landscape, the world as perceived, is always present *with* its horizons; that which is present, which is seen, has also its unseen...

[206] Protention, the opposite of retention, is generally accepted as having a shorter range of something in the region of a couple of seconds.

The horizon is quasi-present, it is in being certainly, and yet it is not in being the way the perceptual object in front of me is in being.'[207]

As was stated above, the temporal horizon extends into the future as well as the past through the process of protention. Protention is essentially the same process as retention but pointing in the opposite temporal direction. In terms of a melody, protention 'is not the same as full-scale anticipation or projection' but instead 'it gives us the first and original sense of "something coming" directly upon what we have now.'[208] In other words, protention is not a process by which the listener *predicts* the immediate unactualised future but is the process whereby the listener is *aware* of the unactualised future within the present. It acts as a mechanism which ensures that our perception of temporality is continuous. Imagine looking fixedly at a painting from a vantage point sufficiently close that it takes up one's entire perceptual field. One feature of a painting is that it remains static – a painting is, after all, an inorganic object. Through the process of protention an unconscious awareness of the fact that one's perceptual field will remain constant within the immediate unactualised future is brought about. This is not the same as an active prediction that the painting will remain static, or that no one will walk between you and the painting, or that it will not suddenly fall off the wall and so on. Rather

[207] Fuchs, *Phenomenology and the Metaphysics of Presence*, p.70.
[208] Sokolowski, *Introduction to Phenomenology*, p.137.

it is an unactualised perception of what is *likely* to happen in the immediate future. Of course, things don't always happen as expected, in which case one is surprised, but for the vast majority of the time, protention acts as a transitional buffer between the present and the future.

Similarly in the case of a melody, protention does not predict in the sense that one may predict a recapitulation. Protention is more primal than this. If someone is listening to a piece of Mozart then their awareness of the future in terms of protention may be along the lines of: 'the next bar will be tonal'; 'the next bar will continue in ¾'; 'the next bar will not be played on an electric guitar'; or even 'the pianist is not about to spontaneously combust.' Even composers like Cage who embraces anarchy and chance cannot eliminate the process of protention from the listener's consciousness. It only takes a few seconds of random events to occur before the listener takes randomness or the 'unexpected' as the norm and thus the 'expected'. Even though it is by definition impossible in the case of chance to *predict* what will happen in the future, a general topology of the immediate unactualised future becomes present in the mind of the listener through the process of protention, i.e. a random aural landscape. As in the case of retention, the awareness of the immediate unactualised future stretches ahead of the perceiver to a temporal horizon,

beyond which the unactualised future can only be brought into the present via the process of prediction.

It has now been shown that rather than a punctual present of infinitesimal proportions, the perceived present is actually more complex and consists of three co-existent components:

- primal impression – the perception of what is happening *now* in objective time
- retention – the perception of the just-past within the present
- protention – the perception of the immediate unactualised future within the present

The fact that the perceived present consists of these three components will be of the utmost importance in section 7.3 which attempt to explain the way in which Young's music affects one's perception of temporality using the phenomenological account of time which has been presented above. The most important hypothesis will be that minimalist music affects the magnitude of the listener's temporal horizons, and in so doing brings about effects such as time retardation. It will also be suggested that the concept of punctual present should not be entirely dismissed out of hand in certain circumstances – it will be hypothesised that an 'apparent'

punctual present accounts for effects such as vertical timelessness. First however there will be a discussion of how phenomenology might be applied to the perception of spatiality in minimalism in the visual arts.

7.2 Phenomenology and Minimalism in the Visual Arts

As was discussed in section 2.3, some of the practitioners of minimalism in the visual arts (MVA) were concerned with actualising the perception of space in the consciousness of the subject.[209] Although a painting or a sculpture necessarily exists in space and consequently affects the total spatial field of the subject, it does not always do so in a way that brings this alteration to the foreground of the subject's consciousness. It was just this conscious awareness of spatial alteration which was the aim of artists such as Robert Morris and Donald Judd. The way in which these artists' work attempted to bring about a conscious awareness of spatiality will be given in this section.

[209] This is not true of those artists who were more concerned with serialism such as Andre and LeWitt. Although their work is an important aesthetic parallel to the repetitive music of Riley, Reich and Glass and hence was discussed in Chapter 2, the discussion of MVA in this chapter will be confined to the work of Morris and Judd.

It does not take much reflection to realise that it is impossible to perceive an isolated point as an isolated point. When a subject perceives a point, he or she necessarily perceives the space around that point as well. Furthermore, if the original point is magnified to such an extent that it fills the subject's spatial field it can no longer be regarded as a point – a point is a space with infinitesimal dimensions. So, in the perception of a point the subject also perceives the space around the point, and it is in fact this surrounding space which defines the point as such.

For the sake of simplicity, the discussion will at this stage be confined to two dimensions, i.e. painting. Within a painting there are usually areas of colour which are more or less homogenous. These can range from areas of less than a millimetre up to areas of considerable size. Consider for example the upper right-hand corner of Rembrandt's *The Nightwatch* (overleaf).

Rembrandt van Rijn – *The Nightwatch* (1642, oil on canvas, 363 x 437 cm, Rijksmuseum)

Although there are continuous gradations of tone, the overall space is dark; there is a high degree of uniformity. Marked boundaries occur at the flag on the left, and the hats and heads and diagonal spear below. The area within these boundaries will be referred to as the spatial horizon, analogous to the temporal horizon which was discussed in section 7.1. If the viewer focuses on any point within this spatial horizon, it is only the focus point itself which is in direct focus; all other points are to a greater or lesser extent a part of the perceiver's peripheral vision. The viewer is perceptually aware of all other points within the spatial horizon, but those

points closest to the point of focus have a greater degree of prominence within the perceptual frame than those points which are further away. However, it is still possible to contend that within a spatial horizon all points are apprehended directly and immediately by the perceiver, in a similar way to that of the just-past and immediate future which are both present within the temporal horizon. In other words, all points within the spatial horizon (referred to henceforth as points A) are *retained*[210] in the perception of the viewer. Points outside the spatial horizon (points B) on the other hand, are perceived of as being separate from those within the spatial horizon. Given that the viewer is sufficiently close to the canvas, in order for points B to be perceived they must be *recollected.* Points B are only present within points A in a recollected mode; they are not actually *there* within the spatial horizon but are a recollection or representation (re-presentation) within the mind of the viewer.

Now consider a monochromatic minimalist painting. The boundaries of the spatial horizon are no longer defined by elements within the painting but by the edges of the canvas itself. The painting *is* the spatial horizon because the horizon has been extended to an extent such that it

[210] The act of visually observing painting and sculpture is not temporally constrained as the act of hearing a melody is. The eye is free to wander over and around the canvas/sculpture at will. Consequently there is no need for a distinction between retention and protention when discussing space rather than time. For the sake of consistency, and since it is a less esoteric term, retention shall be used throughout this section.

encompasses the entire painting. There is no need to recollect any part of the painting whilst focusing on any point within the painting, and similarly there is no need to predict: all points in the painting, because they are all within the spatial horizon, are directly apprehended by the viewer and are perceived as one, and at once.

It is now possible to extend the discussion to three dimensions. Consider one of Robert Morris' monochromatic fibreglass cubes. In section 2.3 gestalt perception was discussed in relation to the viewer's experience of a cube: 'The constant shape of the cube held in the mind but which the viewer never literally experiences...'[211] As Morris wrote, it is impossible to ever *literally experience* the form of a cube since our perceptual experience is limited to the two-dimensional image which is received by our eyes (although our brain does re-interpret this two-dimensional image into a three-dimensional one). The maximum number of sides simultaneously available to the viewer's perceptual field is three – only half of the total number of sides. Morris referred to the gestalt knowledge of the structure of the cube as the 'known constant', as opposed to the 'experienced variable' of actual perception. It is possible to explain the gestalt knowledge of the cube in terms of retention. Just as, when looking at a monochromatic canvas, the viewer apprehends the totality via the

[211] Morris, 'Notes on Sculpture'; reprinted in Battcock, p.234.

process of retention occurring within the spatial horizon, the same process allows the viewer to apprehend the parts of the cube which are hidden from direct view. Even though these unseen parts of the cube are not *actually* present within the viewer's perceptual field, as the just-past tones in a melody are not *actually* present in the objective present but are so in the conscious present, so too are the unseen parts of the cube present in the consciousness of the viewer. As with retained tones, the unseen parts of the cube are not recollected or predicted by the viewer, they are an actual part of the viewer's perceptual consciousness. It is the simplicity of the 'primary structures' of MVA which allows for a totally accurate perception of the object. In the case of more traditional sculpture, an ornate Baroque statue by Bernini for instance, the intricacies and details of the statue allow for only a prediction or a recollection of the invisible parts, not a retention. In traditional sculpture the spatial horizon is restricted to that which is available to the eye whereas with MVA sculpture the viewer has a total and immediate knowledge of the object.

7.3 La Monte Young and Timelessness Revisited: a phenomenological approach

As it was in the beginning, is now, and ever shall be.

- from *The Book of Common Prayer*

I worship that transcendental seat... where there is eternal existence of transcendental time, who is ever present and without past or future and hence is not subject to the quality of passing away even for the space of half a moment.

- *Brahma Samhita*, Part 6, Verse 56

La Monte Young thinks that the experience of time is of the utmost importance to his music. All music exists in time,[212] but one of the aims of Young's music is to alter the listener's (and performer's) perception of the passage of time in such a way that the listeners (and performers) become aware of the concepts of, or even appear to experience, eternity and timelessness. One needs look no further than the name of his

[212] Apart from Cage's *0'00''* (perhaps).

ensemble, The Theatre of Eternal Music (TEM), to realise the importance of the 'eternal' within Young's aesthetic outlook.

In Chapter 3 I posited that Young's music can induce two different states of timelessness: horizontal timelessness (HT) and vertical timelessness (VT). The drone music of the TEM can cause the listener to perceive either HT or VT since they are the two sides of a Gestalt shift. HT was described as a telescoping of the present so that it encompasses both the past and future. It homogenises the traditional tri-partite timeline (past-present-future) into one continuous present. The existential reality, and hence primacy, of the present within the traditional timeline has been transformed into a present which is eternal; there are no past or future to distinguish the present. VT on the other hand rotates the traditional timeline by 90 degrees, creating a present of infinitesimal rather than infinite magnitude. Again, there are no past and future, only a present. In both cases a sense of timelessness is bought about through of a lack of past and future, and hence a lack of temporal directionality – it feels as if time has ceased to pass and is standing still.

7.3a Horizontal Timelessness

> I was aware too of a bodily feeling which was not exactly desire but was rather something to do with time, a sense of the present being infinitely large.
>
> - Iris Murdoch, *The Italian Girl*

It is possible to explain how HT may arise by applying the concepts of retention and protention as they are described by phenomenological philosophy. The drone music of the TEM contains very little information content compared to traditional music, and presents this information over a very long period of time. This deprivation of sensory information leads to an *apparent* considerable lengthening of what were referred to earlier as the just-past and the immediate (unactualised) future. The reason for this is twofold. Firstly, since the time between the presentation of one piece of information and the presentation of another can be in the order of minutes (in non-minimalist music the time between two pieces of information is usually of the order of seconds and often fractions of seconds), there is no need to recollect what has happened previously or to predict what will happen in the future. The constancy of the sound means that, since what was happening, say, one minute ago is the same as what is happening now, all of the preceding minute is available to the listener

as retained sound. This, at least, is what it feels like to the listener. In reality the listener does not retain all of the previous sound, but it appears that way because what *has* been retained three seconds ago is the same as the sound that was occurring one minute ago. Similarly, there is an apparent lengthening of the immediate unactualised future. The listener rationally uses inductive reasoning to assume that what is happening now will also be happening in the future. The period of the immediate present is increased from the one or two seconds of traditional music to a period which is considerably longer.

The second reason for the apparent lengthening of the present is this: the changes which do take place in the music are sufficiently similar to each other that they approach a degree of homogeneity which allows for the apparent lengthening of the present to encompass the entire piece. There are by and large no changes of dynamics, no rhythms, no changes of timbre, and no changes of instrumentation. The only changes which occur are changes of pitch. These changes of pitch happen infrequently and it is often difficult for the listener to remember the last change of pitch, let alone the one before. Due to the lack of change a strictly heterogeneous sound is transformed into a homogeneous sound in the mind of the listener.

As was discussed in section 3.5, the heterogeneous experience of watching the breathing of a sleeping person can, after a sufficient amount of time, become a homogeneous experience. A useful analogy to recall is that of the field of grass. At a distance of one metre from the ground thousands of blades of grass are perceivable. As you move further and further from the field in a vertical direction the blades gradually blend into a continuous patch of green. The vertical distance from the field can be thought of as a movement through time. Just as the just-past and the immediate future appear to be extended between sonic events, so too can they be thought of as extending past sonic events to the beginning and ending of the piece.

Again it is important to emphasise that the just-past and immediate unactualised future do not *actually* extend right back to the start and forward to the finish. They remain the same as under usual circumstances – in the case of retention for instance, the brain cannot possibly have retained everything that has previously happened. To claim that it has done so would be absurd. It is also extremely unlikely that anyone could recollect everything that has happened previously. Similarly with protention – the immediate unactualised future is still a rather small distance ahead of the objective present. It would be ridiculous for a listener to claim that he or she can 'protain' what will happen even a few

seconds into the future, let alone all that is to come. The reason that the listener can experience HT is that he or she is consciously aware of the almost (and sometimes absolute) indistinguishableness between what *is* being retained and protained and what is actually outside of the temporal horizon of the conscious present.

7.3b Vertical Timelessness

Vertical timelessness, that mode of timelessness in which the timeline is rotated by 90 degrees so that there are no past or future but only a present of infinitesimal magnitude, cannot be accounted for by the extension of the conscious present. In the case of VT, it is actually something akin to a punctual present which the listener experiences. The punctual present was dismissed by Husserl because it could not account for the way in which we experience the passage of time. However it is this aspect of punctuality which can be used to explain VT since the concept of the punctual present assumes that the present is discrete rather than continuous.

The experience of VT is one in which there appears to be no passage of time – the present is a static present which does not 'move forward' through time (or alternatively, does not have the future moving through

the present into the past)[213]. The homogeneity of the drone music of the TEM can cause the listener to become unaware of the past and the future because the past and the future are the same as the present and are therefore indistinguishable from them. Rather than experiencing the HT side of the gestalt switch in which the listener 'zooms out' and hears the sound as a whole from start to finish, the listener may experience VT in which the similarities of the past, present and future cause them to 'zoom in' on the present since the past and future cease to have any real meaning as entities different from, and separate from, the present. The temporal horizon contracts to the punctual present so that there are neither retentive nor protentive aspects to the conscious present – the present has become punctual or 'point-like'.

Again, it should be reiterated that the listener's consciousness does not *actually* become punctual since Husserl effectively demonstrated that the concept of punctuality is inconsistent with experience. However, the listener's experience *resembles* what it would feel like if the punctual present was a reality – a lack of temporal progress, as if time had stood still.

[213] These two different ways of conceiving the passage of time are, as has already been mentioned, logically identical.

7.3c The Limits and Implications of the Perception of Timelessness

There are very few types of music which can invoke a sense of timelessness. The key feature that the music must demonstrate is homogeneity combined with longevity. If homogeneous music does not take place over a sufficiently lengthy period of time it will fail to invoke timelessness because the listener will not have received a sufficient amount of information to suggest to him or her that it will continue into the future in the same was as it already has done in the past. Consider a (non-existent) drone piece by the TEM which lasts for only twenty seconds. The listener is justified throughout these twenty seconds to predict that something will change – a melody will enter perhaps, or there will be a chord change. If the piece lasted for a minute the listener is now less justified to predict change, and he or she becomes less and less justified as the timescale increases. One minute however is not really long enough for the listener to 'get into the sound' as Young puts it, or to '[elevate consciousness] to a realm of awareness where the revelation of the true meaning of the universe – its eternal and unchanging essence – can be joyfully experienced.'[214] From personal experience, and from the experiences of others, I would suggest that the minimum amount of time which it takes for a listener to begin to perceive temporality as a static

[214] Ravi Shankar, 'On Appreciation of Indian Classical Music', http://www.ravishankar.org/indian_music.html

timelessness is in the order of a few minutes. Obviously, however, the longer the listener is exposed the more likely he or she is to perceive temporality in this way, and the more vivid this perception will be.

It should be clear by now that the relationship between the perception of timelessness and information content is inversely proportional. In other words, the more information content a piece of music contains, the less likely it is to have the ability to evoke a sense of timelessness in the listener. However, as with the longevity of a piece, there is an information content continuum at the two poles of which are very sparse music is most likely to evoke timelessness in the listener, and dense music with a large information content is least likely to evoke a sense of timelessness. Much of Young's output would certainly reside in the former of the two camps but not all of his minimalist works were as sparse as the music he wrote for the TEM. It was mentioned in section 2.1b that *Compositions 1960 #7* is perhaps the most minimalist work of Young's output, consisting of only two continuous and unchanging drones. *Compositions 1960 #7* can certainly evoke a very strong sense of timelessness in the mind of the listener. *Trio for Strings* on the other hand has a non-negligible information content in terms of its pitch structure and rhythms but the extremely extended timescale over which a performance takes place mitigates the apparent quantity of information in

the mind of the listener. This is one of the reasons that, not only can the *Trio* be regarded as a minimalist piece, it can evoke a sense of timelessness in the listener. The perception of timelessness is likely to be not as strong as that evoked in a performance by the TEM but is nonetheless possible (similarly with other non-drone works by Young: *for Brass* and *2 Sounds* for instance).

A major implication of the perception of timelessness is that it alters one's conception of the beginning and the ending of the music. As Kramer has written regarding 'vertical' pieces: [215]

> A performance needs to start and stop, but in the absence of an overriding linearity, starting and stopping become arbitrary... Because the music is substantially unchanged throughout... we listen to an arbitrary bounded segment of a potentially eternal continuum.

('Vertical music', according to Kramer, is music which exists in 'vertical time' by which he means: '[a] temporal continuum of the unchanging, in which there are no separate events and in which everything seems part of an eternal present.')[216] It may therefore be sensible to refer to the 'beginning' and the 'ending' as the 'start' and the 'finish' respectively.

[215] Jonathan Kramer, *The Time of Music: New Meanings, New Temporalities, New Listening Strategies* (London: Collier Macmillan, 1988), p.386.
[216] Kramer, *The Time of Music*, p.454.

The arbitrary nature of the start and the finish of much of Young's music is further enhanced by some of his score instructions: in *Compositions 1960 #7* the perfect fifth is to be held 'for a long time'. Young gives no indication as to whether a 'long time' means five minutes, five hours or five centuries. Similarly, the number of repetitions in, and hence the length of, *X for Henry Flynt* is to be decided by the individual performer(s).

In Section 7.2 it was noted that the total knowledge of a primary structure, a cube for instance, may be obtained by a viewer whose visual field is restricted to three faces at most by means of an extension of his or her perceptual field through a process analogous to that of retention/protention which was discussed in Section 7.1. In essence, the viewer has a knowledge of the object which is greater than that allowed by his or her visual senses alone. In the same way, the perception of timelessness allows for an immediate knowledge of the work as a whole. This is not always a total knowledge, although in the case of *Compositions 1960 #7* it may be, but an approximation towards a total knowledge which is for all intents and purposes indistinguishable from an actual total knowledge in the mind of the listener. As was mentioned earlier, the listener may have forgotten a pitch change which occurred six minutes ago but the *apparent* sensation of timelessness brought about by

the extreme homogeneity of the music allows for an *apparent* total knowledge.

Total knowledge, apparent or otherwise, has certain implications in terms of the variety of listening strategies which the listener may choose to adopt. This is because the listener is not constrained to 'following' the music. In listening to most traditional music the listener must, in order to gain a full appreciation, attend to what is happening at the present moment. This is not to say that the attention is confined entirely to the present –the listener may be cross-referencing between a phrase which for example appeared in the dominant in the exposition but now appears in the tonic in the recapitulation. Furthermore, as stated in Section 7.1, Husserl showed that in order to perceive a melody as a melody, one must perceive the immediate past and future. However, a high (sometimes total) degree of the listener's attention is awarded to the present moment. This does not have to be the case when listening to music which evokes a sense of timelessness. On the contrary, Kramer has made the point that one is able to 'move around the sound' as one would a sculpture. He describes the act of viewing a sculpture thus: [217]

[217] Kramer, *The Time of Music*, p.57.

> When we view the sculpture, we determine for ourselves the pacing of the experience: We are free to walk around the piece, view it from many angles, concentrate on some details, see other details in relationship to each other, step back and view the whole, contemplate the relationship between the piece and the space in which we see it, close our eyes and remember, leave the room when we wish, and return for further viewings.

Similarly with much of Young's music the listener is able to concentrate on various aspects in their turn, be it the overtones, the texture, a particular instrument or what you will. The uniformity and lack of change allows the listener to 'travel' around the sound without fear of missing anything. The same can be true, to an extent, with regards to traditional music but it is usually impossible for the listener to concentrate fully on one aspect without missing another. In the case of Young's music the listener is free to concentrate on one aspect of the music safe in the knowledge that the other aspects will remain unchanged and will therefore be available for future attention in due course.

In the chapter entitled 'Time and Timelessness' in Kramer's book *The Time of Music*, he begins with a discussion of schizophrenia, a mental condition in which some sufferers cannot distinguish between the past, present and future. According to one patient: 'Time has stopped; there is no time... The past and the future have collapsed into the present, and I

can't tell them apart.'[218] The experience of timelessness can be terrifying; the regular passage of time is, after all, such an intrinsic and necessary part of our existence in the world that any apparent alteration, and especially suspension, is bound to have major consequences. As Woolf puts it: [219]

> For what more frightening revelation can there be than that it is the present moment? That we survive at all is only possible because the past shelters us on one side and the future on another.

The listener who experiences timelessness whilst listening to music however is not usually 'terrified'. It was asserted above that the alterations to the listener's temporal horizon are only apparent alterations; they are not real as in the case of a schizophrenic or someone under the influence of drugs. The actual consciousness of the listener is still firmly rooted within the 'normal' passage of time, but his or her 'perception' of the perception of temporality is altered. Timelessness as experienced through music is therefore one stage removed from timelessness as it can be experienced in its most pure and terrifying form. Nevertheless, perceiving timelessness through music is a profound experience which should not be dismissed lightly. It is perhaps for this reason that Shankar

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[218] Frederick T. Melges, *Time and the Inner Future: A Temporal Approach to Psychiatric Disorders* (New York: Wiley, 1982), p.xix; quoted in Kramer, *The Time of Music*, p.375.
[219] Virginia Woolf, *Orlando*, p.285.

describes the experience as a 'revelation of the true meaning of the universe – its eternal and unchanging essence.'

7.4 The Perception of Temporality in Repetitive Minimalism

The most obvious difference between the music of Young and that of Riley, Reich and Glass is that whereas Young's music is based on *duration*, the music of Riley, Reich and Glass is based on *repetition*. This has implications concerning the way in which it affects one's perception of temporality. Like Young, the three composers of 'repetitive' minimalism expressed an interest in time and believed that their work necessitated a new way of thinking about musical time. Glass for example has written that his music has: [220]

> ... disposed of traditional concepts that were closely linked to real time, to clock time. Music is not literal interpretation of life and the experience of time is different. It does not deal with events in a clear directional structure... Music no longer has a mediative function, referring to something outside

[220] Mertens, *American Minimal Music*, p.88 (unattributed).

> itself, but it rather embodies itself without any mediation. The listener will therefore need a different approach to listening, without the traditional concepts or recollection and anticipation.

Glass' observation about his own music is telling. It demonstrates his acknowledgment of time as an important facet of his music and the way in which it is perceived. When Glass writes that the listener will 'need a different approach to listening, without the traditional concepts of recollection and anticipation' he is implying that his music is in some way non-directional (the concepts of recollection and anticipation are directional concepts rather like vectors – recollection pointing into the past, and anticipation into the future). The 'traditional concepts' of recollection and anticipation, which Glass claims to have disposed of, are linked to 'clock time', or objective time as it has been previously referred to.

In what way does Glass' music dispense of the need to recollect and anticipate, and why does this mean that his music exists in a time that is different to objective time? The answer lies in the use of repetition. The act of repetition makes the processes of recollection redundant although it will be argued below that prediction, or anticipation as Glass refers to it,

is still an important cognitive process in listening to repetitive minimalism.

7.4a Ideal Repetition, Prediction and Time Retardation

For the sake of simplicity, let us first consider what will be referred to as 'ideal' repetition (IR). 'Ideal' means that each repetition is identical to the previous one, in terms of pitch, duration, timbre and every other parameter.[221] Upon first consideration it would appear that whilst listening to IR the listener is able to recollect that what has happened in the past is the same as what is happening in the present, and to predict that what will happen in the future will be the same as what is happening in the present. However this is not quite an accurate description of the listener's cognitive process. After a period of time[222] the listener is no longer *recollecting* past repetitions but instead he or she is using inference to *predict* the past.[223] By their very nature, the individual repetitions within an IR process are not especially memorable, and become less so as the number of repetitions is increased. It would be unlikely that most listeners would be able to *recollect* a repetition that happened fifteen repetitions ago. This is because of the 'sameness' of

[221] Despite being written in Paris in 1893 and hence seemingly very much out of the bounds of this thesis, Satie's *Vexations* is an excellent example of IR.
[222] This obviously depends on the rapidity of the repetitions but can be very short.
[223] This was first discussed in Section 5.2 in relation to Reich's phasing process.

each repetition: the listener is unable to distinguish one past repetition from another. The listener would however be able to *infer*, from the knowledge that the repetitions have been continuous and unchanging, that the repetition which occurred fifteen repetitions ago was the same as it is now. In other words, the listener is predicting what happened in the past based on the knowledge that the repetitions have been uniform, as well as predicting what will happen in the future based on what has happened in the past and what is happening in the present. The listener's cognitive processes have been reduced from recollection and prediction to prediction alone, albeit a prediction which operates in both directions on the timeline – this is what shall be referred to as 'prediction-based listening'.

One important effect of prediction-based listening is the sense in which the passage of time appears to become directionless. Prediction is traditionally associated only with the future, at least in terms of listening to a piece of music. In the case of IR on the other hand, prediction is now associated with both the future and the past. Since the listener is using the same cognitive process to 'project' the past and the future onto the present, the listener finds that there is no longer the traditional distinction between the past (that which is known) and the future (that which is

unknown).[224] Consequently the listener perceives an apparently directionless temporal continuum. This lack of directionality is not however the same as the apparent timelessness which was discussed in Section 7.3. Timelessness is a sense that time is not passing – that the present has become a static eternity because of the continuity of the sound. Although prediction-based listening is apparently directionless, there is always a sense of progression, both from one note to the next within a repeated module, and also from one module to the next. The fact that each module is identical can lead to a sense of cyclicality[225] but cyclicality is in itself a type of progression or at least 'movement'.

Apart from *X for Henry Flynt*[226] there are no minimalist pieces which consist entirely of IR. Most repetitive minimalism does however contain a considerable amount of IR. The repeated modules of *In C* for instance are ideally repeated, i.e. each repetition of the module is played at the same pitch, with the same rhythms and so on. Further examples of minimalist pieces which contain IR are *Piano Phase* and *Two Pages*. However, the effects on one's perception of temporality which are bought

[224] There is an apparent paradox here: in the case of IR surely the listener has a far better knowledge of the past than usual; after all, the events of the past are the same as those of the present. The fact that the listener does have a good knowledge of the past cannot be denied. The important thing however is that the listener's knowledge of the past is *gained* through a different cognitive process, i.e. prediction rather than recollection. Therefore, although prediction-based listening predicts that which is unknown (the future), it also *predicts* that which *is* known (the past).
[225] Cyclicality will be discussed at greater length below.
[226] A piece, incidentally, by Young as opposed to Riley, Reich or Glass.

about by IR are always diluted because the IR which occurs in repetitive minimalism is either: (a) interrupted by a change to the unit which is being repeated (*Two Pages*); (b) played against non-IRs (*Piano Phase*); or (c) played against other IRs (*In C*). There are also other changes which can occur to IR such as the sudden doubling of another instrument or tape track (e.g. the doubling of resulting patterns in *Violin Phase*). What is more, there are some situations in which there is no IR at all, but merely repetition which resembles IR; the repetitive aspects of the improvisations in Riley's *A Rainbow in Curved Air* for instance. However, the aforementioned are the three most common and important examples of the 'dilution' of IR in repetitive minimalism. These three situations will be discussed in Section 7.4b. First however, another important effect of repetitive minimalism will be investigated.

Time retardation was first mentioned in Section 5.2 in relation to Reich's phasing process but it is actually an effect which is bought about by all musical processes which take place gradually – and is thus relevant to all repetitive minimalism. It should be immediately apparent to the reader that whilst the previous discussion has argued that repetitive minimalism can make time appear to be directionless, the concept of time retardation necessitates some kind of directionality because without direction it is impossible to see how something can be retarded (slowed down). The

seemingly incompatible concepts of directionless time and time retardation (which implies direction) can be coexistent: just as the listener is able to choose between perceiving HT and VT when listening to the music of Young, so too can the listener choose between perceiving directionless time and directed time when listening to repetitive minimalism. As in the case of the choice between HT and VT, the listener is faced with two sides of a Gestalt shift, and the two sides are brought into focus by 'zooming out' and 'zooming in' respectively. In the case of repetitive minimalism the listener can zoom in to perceive directionless time or zoom out to perceive directed (but retarded) time.

Reich has written:[227]

> By "gradual" I mean extremely gradual; a process happening so slowly and gradually that listening to it resembles watching a minute hand on a watch – you can perceive it moving after you stay with it a little while.

The final clause in the quote above is important. If one listened to a musical process for only a small amount of time it would probably not be possible to hear it as a process; instead it would be heard as IR. The gradualness of the process obviously necessitates a considerable period of

[227] Reich, *Writings*, p.11.

time for the process to be 'worked out', but also necessitates that the listener listens for a period of time before he or she can even perceive that there is a process at work. Once the listener has established the presence of a musical process, it is possible to zoom out from the directionless 'pseudo-IR' and, in so doing, to perceive direction.

The time-scale over which the process occurs however is such that the listener perceives time retardation; the passage of time appears to have slowed down. This is because the rate at which new information is given to the listener is so much slower than in non-minimalist music. Even in very slow non-minimalist music such as a movement marked *largo*, the time between one event and another is never more than a few seconds, even in the most extreme cases, and furthermore each new event is often a new piece of information. It is the latter which is of most importance as far as repetitive minimalism and time retardation are concerned. As was mentioned in Section 2.1b with reference to *Piano Phase*, the time between musical events in repetitive minimalism can be very short. Performances of *Piano Phase* can contain thousands of notes and the tempo is more like *presto* than *largo*, but the information content is very low and is presented extremely gradually. It is this extremely gradual presentation of information which creates a sense of time retardation.

The perception of time retardation is not however limited to music – there are countless other processes which occur at rates low enough to induce the appearance of time retardation: watching clouds on a still day; watching a slowly dripping tap; 'placing your feet in the sand by the ocean's edge and watching, feeling, and listening to the waves gradually bury them';[228] and 'watching a minute hand on a watch'.[229]

7.4b Case Studies in Repetitive Minimalism Part 1

The effects of repetitive minimalism on the listener's perception of temporality will now be discussed in relation to *Two Pages*, *Piano Phase*, and *In C*. All three pieces are paradigmatic of the early minimalist output of Glass, Reich and Riley respectively, and are 'undiluted' by the more mature, and less minimalist,[230] techniques of the composers' later output. Pieces which are representative of the composers' more mature minimalist output will be dealt with in Section 7.4c.

There are three main types of change which occur within repetitive minimalism: sudden change; gradual change; and what shall be referred

[228] Reich, *Writings*, p.9.
[229] Reich, *Writings*, p.11.
[230] In the case of Glass these include non-unison writing and the cyclic process (e.g. *Music in Twelve Parts*); in the case of Reich they include the use of multiple processes happening simultaneously and the use of timbre (e.g. *Drumming*); and in the case of Riley they include free improvisation and time-lag (e.g. *Poppy NoGood and the Phantom Band*).

to as 'random' change. *Two Pages*, an example of sudden change, will be discussed below in Section 7.4b(i); gradual change is displayed by *Piano Phase* which will be discussed in Section 7.4b(ii); and indeterminate change is displayed by *In C* which will be discussed in Section 7.4b(iii). At the end of each section (where applicable), brief examples of other pieces which display similar types of change will be given. It should be noted at this point that all of the concepts discussed below (time retardation, temporality hierarchies, etc.) are applicable to all examples of repetitive minimalism to a greater or lesser extent. However, they are discussed with reference to pieces that I feel particularly exemplify the concept in question, or offer a simple example of it.

7.4b(i) Sudden Change: *Two Pages*

The sudden changes which occur in *Two Pages* when a note (or set of notes) has been added (or subtracted)[231] to form a new unit, act as a definite marker in the mind of the listener. These sudden changes are like the boundaries between fields of IR.[232] Within a period of IR the listener may perceive directionless time but this depends on how long the IR is sustained for – after only a few repetitions the listener can usually

[231] As was stated in Section 6.3, the additive process refers to both the addition and subtraction of notes.

[232] In his analysis 'Form and Process in *Two Pages* of Philip Glass' Wes York refers to IR as 'external repetition' or 'process Alpha'. The analysis is reprinted in *Writings on Glass*, pp.60-79.

recollect previous repetitions and so does not need to 'predict' them.[233] The periods of IR have two functions in terms of the effect they have on the listener's perception of temporality. Firstly they create an apparent lack of direction which is an interesting temporal phenomenon in itself, and secondly they consolidate the additive process. They do this by allowing the listener enough time to gain a full knowledge of the contents of the unit which is being repeated and they also allow the listener to become familiarised with the module in question in such a way that the sudden change, when it comes, is all the more noticeable and therefore effective.

All repetitive minimalism contains a coexistent sense of directionless time and of clear progression; it is the simultaneity of these two apparently incompatible temporal phenomena that is one of the primary factors which makes repetitive minimalism so interesting to listen to.

As has already been seen, *Two Pages* displays a lack of directionality during periods of IR, and also a sense of progress in terms of the additive process. The additive process further highlights the element of progress because of the logicality of its additions/subtractions. As was shown in Section 6.4, Part I may be represented thus:

[233] It is for this reason that I believe performances of Glass' music are more effective the larger the number of repetitions.

(12345),(123451234),(123451234123),(12345123412312)

(123451234123),(123451234),(12345)[234]

There is a clear progression from module 1, (12345), to module 4, (12345123412312), which is achieved through a perfectly logical additive process which may be represented thus:

(x),(x + [x-1]),(x + [x-1] + [x-2]),(x + [x-1] + [x-2] + [x-3])[235]

The listener, once aware of the process, is often able to predict what will happen next[236] and is consequently aware of progression in the sense of a direction or a teleological aim as well as in the more mundane sense of a general movement. The progress demonstrated by Part I is however cyclical in nature – the endpoint is identical to the starting point. Many, but not all, of Glass' additive processes demonstrate this cyclical nature.

It should by now be apparent that *Two Pages* can create several alterations to the way in which the listener perceives temporality which

[234] The numbers refer to the following pitches: G=1, C=2, D=3, Eb=4, F=5.
[235] Where x = 12345.
[236] This is not always the case. On hearing module 4 for instance the listener has no way of predicting whether module 5 will be (123451234123121) or (123451234123). The listener *is* however able to predict that it will probably be one of these two alternatives, or at least that module 5 will not depart from module 4 in any substantial manner.

depend on how far he or she 'zooms' into or out of the music. It is for this reason that *Two Pages* may be said to demonstrate a hierarchy of temporal perceptions (which will henceforth be referred to as a 'temporality hierarchy'). In *Two Pages* the temporality hierarchy is structured thus: on the lowest level is the non-directionality of IR; above this is the progress of the additive process; next is the cyclical nature of the additive process; and finally there is the progress of moving from one additive process to the next. There is in fact a fifth level: that which is perceived when the listener 'zooms out' to regard the piece as a whole. In his analysis of *Two Pages*, York shows at length that the piece has a tri-partite structure consisting of what he describes as the 'exposition', the 'juxtaposition' and the 'varied return'. The final part, Part V, is in fact an inversion of the additive process used in Part I. Hence there is a degree of cyclicality, or at least return, on the fifth hierarchical level as well as on the third.

Not all pieces by Glass which employ the additive process have the same hierarchical structure as *Two Pages* but all of his additive process music does display a temporality hierarchy to some degree. *Music in Similar Motion* does not, for instance, demonstrate cyclicality on the fifth

hierarchical level (the beginning and the ending are quite different).[237] Where hierarchical structures do occur, adjacent levels usually display an alternation between a directionless perception of time and a directed perception of time. This can lead to an interesting and sometimes disorientating listening experience if the listener is prepared to 'move around' within the temporality hierarchy. The perception of temporality in Glass' music assumes a new degree of complexity when he combines the cyclic process (see Section 6.3) with the additive process.

Six Pianos, a brief analysis of which was given in Section 5.4, is a study in the process of rhythmic construction and rhythmic reduction: '... gradually substituting beats for rests (or rests for beats) within a constantly repeating rhythmic cycle...'[238] The constantly repeating rhythmic cycle is the IR which forms the canvas on which sudden changes – the gradual addition and subtraction of notes – are made to take place. Like *Two Pages*, the beginning of *Six Pianos* is pure IR. After a number of repetitions two of the pianos which have previously remained silent play on the seventh quaver of the eight-beat rhythmic pattern. This sudden change acts a boundary point between two fields of IR in an identical way to the additions and subtractions of notes in Glass' additive process. However, one aspect of *Six Pianos* is different to *Two Pages*;

[237] For a diagrammatic representation of the score, see Potter, p.297.
[238] Reich, *Writings*, p.58.

this is Reich's use of sudden changes of mode. As was noted in Section 5.4, the piece moves from D major to E-Dorian to B minor. This harmonic progression adds another level to *Six Pianos*' temporality hierarchy. Furthermore, at the points of modality change, there are also new rhythmic cycles against which the process of rhythmic construction is applied. The temporality hierarchy of *Six Pianos* may be summarised as follows: the perception of non-directional time within fields of IR; the perception of directed time due to the process of rhythmic construction; the perception of directed time which is caused by the harmonic progression and the concurrent changes to the rhythmic cycle. *Six Pianos* is a less cyclical piece than *Two Pages* and does not demonstrate as sophisticated a temporality hierarchy.

Clapping Music is even simpler in its construction because it lacks pitch and therefore harmonic progression. *Clapping Music* does however display a cyclicality which *Six Pianos* lacks – *Clapping Music* is essentially a phase piece, but the phasing process is sudden rather than gradual. The temporality hierarchy of *Clapping Music* can therefore be regarded as such: the perception of non-directional time within fields of IR; the perception of directed time due to the (sudden) phase process; the perception of non-directional time which is caused by the cyclical nature of the phase process (the end of *Clapping Music* is identical to the start).

Reich's music does not always display an alternation between a directionless perception of time and a directed perception of time between adjacent levels within the temporality hierarchy as Glass' music does. On the other hand, it is usually the case that in all repetitive minimalism the first level is non-directional whereas the second is directional. This first/second level alternation between non-directional and directional time is a fundamental cause of repetitive minimalism's unique and interesting relationship with the listener's perception of temporality.

7.4b(ii) Gradual Change: *Piano Phase*

Reich's phasing process and its effects on the perception of temporality were briefly discussed in Section 5.2. The two effects which were noted were the replacement of recollection with prediction, and time retardation. The former has already been discussed but will be re-addressed in terms of the phasing process below. The latter was only touched upon in Section 5.2 and so will be given more attention here.

The apparent perception of time's non-directionality whilst listening to a phasing process is not quite the same as, but is in many ways similar to, that which is experienced whilst listening to IR. The obvious difference

between phasing and IR is that the former involves progression as well as cyclicality whereas the latter is purely cyclical. It is the progressive element of phasing which gives rise to the difference in the perception of directionless time. Unlike the IR fields which occur in *Two Pages* however, the gradual phasing process of *Piano Phase* is uninterrupted. For this reason the repetitions of *Piano Phase* can, although they are not perfect IR, cause the listener to perceive non-directionality for much longer periods of time, and consequently in a more primal and 'undiluted' manner.

The phasing process makes it even more apparent than pure IR that it is the cognitive process of prediction rather than recollection which the listener uses. The subtle changes which occur with every repetition are even more difficult to recollect than the indistinguishable homogeneity of IR. The listener is forced to predict what has happened (and obviously what will happen). The prediction 'feels' more like a prediction traditionally feels like: it has a degree of uncertainty which is lacking in the case of IR. Just as traditional predictions which are directed into the future are by their very nature uncertain – what they are predicting has not yet been actualised – so too are the listener's predictions into the past. This is particularly true of Reich's previous tape pieces, *Its Gonna Rain*

and *Come Out*, in which there is often a distortion of the individual syllables such that the total result can sometimes be quite unexpected.

The listener's temporal horizon is altered in a way which is both similar and yet different to the way in which it can be altered by Young's music; whereas Young's drone music can appear to extend the temporal horizon infinitely into the past and infinitely into the future, the phasing process appears to extend the temporal horizon only finitely in both directions. There are regions in the past and future which are outside of the bounds of retention and protention whose outer limits define the temporal horizon, and therefore the listener has no access to these regions but for the process of prediction. For this reason the listener does not perceive a state of timelessness, but rather a finite extension of the temporal horizon – the listener perceives a finitely extended present.

It is the progressive aspect of the phasing process which makes for a finite rather than an infinite extension of the temporal horizon – the music is constantly changing, albeit in a very gradual way. The combination of process and gradualness leads to the unique way in which phasing processes are perceived. The listener is faced with a choice between hearing the music as static and hearing the music as a temporally directed progression in much the same way as a listener can choose between

hearing HT or VT in the music of Young. The listener is able to zoom in and out of the music in the same way as he or she can whilst listening to *Two Pages* or *Piano Phase*. In other words, the listener can choose between perceiving directionless time and directed time. The former is perceived when the listener zooms in and hears what is virtually indistinguishable from IR; the latter is perceived when the listener zooms out and hears the gradual process unfolding. This choice would not be possible if the process was not extremely gradual – without the gradualness of the process the listener would be unable to zoom in and perceive directionless time because what he or she would find would not sufficiently resemble IR.

It is also the gradualness of the unfolding of the phasing process which can create the sense of time retardation. It is important to note however that it is musical time rather than clock time which appears to be retarded. The extremely gradual presentation of relatively homogeneous information leads to the perception that the temporal continuum *in which the music is taking place* has become elongated or stretched – causing a consequent retardation of the perceived passage of time.

Somewhat paradoxically on the other hand, there is a sense in which the listener also feels that time has sped up ('time acceleration'). Many

listeners have found, myself included, that time appears to pass more quickly than usual whilst listening to even the most extreme cases of minimalist music such as *Piano Phase*. It is the listener's perception of objective time which has sped up – obviously objective time, or 'clock time', has not sped up but instead it is the listener's *perception* of objective time which has sped up. This is the opposite effect to that which is induced by watching the proverbial paint dry.

The reason for the listener's apparent perception of time acceleration is that the listener becomes absorbed in the unfolding of the process. Repetitive minimalism has a degree of perceivable logic to it that is possibly unmatched by any non-minimalist music. Even the highly organised and logical fugues of Bach, or the intricately formulated works of Boulez cannot match repetitive minimalism for its perceivable logic: the former because the form of the fugue still leaves room for much decision-making and creativity on the part of the composer; and the latter because Boulez's mathematical structures are largely unperceivable (particularly to the uninitiated). It is the pure, and often simple, logic of the processes which allow the listener to become fully absorbed with them. The logic and inevitability of the phasing process in *Piano Phase* is a process which the listener can 'latch onto' in a similar manner to the way in which a listener 'latches onto' a melody. It is the *continuity* of the

phasing process however which allows the listener to become so completely absorbed over such a long period of time.[239] There are no changes other than those which are brought about by the process itself. A melody on the other hand usually lasts for only a few bars. At the cessation of the melody, the listener 'latches onto' something else, be it the same melody repeated, or a different melody, or what have you. This total absorption of and in the gradually unfolding process with no discontinuities or breaks to interrupt the listener's attention can cause the listener to perceive time acceleration. Talking about his experience of a performance of Satie's *Vexations*, Kramer has written: 'After what seemed forty minutes I left [the performance]. My watch told me I had listened for three hours.'[240]

The apparent paradox between the listener perceiving time retardation and time acceleration can be explained in the same way as the apparent paradox between the perception of HT and VT, and the perception of directionless time and directed time. The listener 'zooms into the music' and perceives time retardation, but can also 'zoom away from the music' and perceive time acceleration. The concepts of time retardation and time acceleration are equally applicable to non-phase pieces. *Two Pages* for

[239] The Nonesuch recording of *Piano Phase* lasts nearly twenty minutes.
[240] Kramer, *The Time of Music*, p.379.

instance can be perceived in either way, as can all pieces of repetitive minimalism.

7.4b (iii) Indeterminate Change: *In C*

As would be expected, this also holds true for *In C*. However, the extent to which time is retarded and accelerated is mitigated somewhat by *In C*'s use of improvisation and consequently its indeterminate qualities. Time retardation does still occur but too a lesser extent because *In C* has a comparatively higher information content than any of the works previously discussed in Section 7.4b. Each new module is not only unique but often differs considerably from its immediate neighbours. This is in opposition to the comparative similarity between one unit and the next in *Two Pages* for instance. Furthermore, the improvisatory nature of *In C* means that even when two modules are being repeated at the same time, they will not always, and in fact not usually, be repeated synchronously with each other. This obviously causes *In C*'s information content to be considerably increased.

The relative homogeneity of *Two Pages* and *Piano Phase* rendered the cognitive process of recollection redundant and replaced it with prediction; the sound produced by a performance of *In C* on the other

hand is sufficiently heterogeneous to render recollection relevant once more – in other words the past is sufficiently *distinguishable* from the present (and by inference the future) to allow the listener to recollect rather than predict the past. Consequently, the sense of directionless time which is apparent in *Two Pages* and *Piano Phase* is no longer apparent in *In C*. Due to *In* C's indeterminacy furthermore, the listener is no longer able to predict the future in anything other than the broadest of terms. The conjunction of the reinstatement of the process of recollection with the listener's lack of future-orientated predictive power creates a much more traditional perception of the passage of time in the mind of the listener – time once again has a direction from the past into the future.

This is not to say that *In C* is entirely devoid of temporal interest because it does, albeit in a mitigated sense, share some of the temporal characteristics with the music of Reich and Glass. As was mentioned above, it is possible to perceive a degree of time retardation and acceleration because although *In C* has a higher information content than *Two Pages* or *Piano Phase*, its information content is nevertheless much lower than that of most non-minimalist music. This, combined with the lengthy time frame over which *In C* is designed to unfold,[241] leads to a decidedly 'minimalist' listening experience. The reduced temporal effects

[241] Riley suggests that a performance should last '... between 45 minutes and an hour and a half'; quoted in Potter, p.113.

that *In C* has on the listener are also found in many of the more 'mature' minimalist compositions of Reich and Glass, and indeed of Riley. These will now be discussed in Section 7.4c.

7.4c Case Studies in Repetitive Minimalism Part 2

The temporal effects which are experienced whilst listening to the early minimalist compositions discussed above should be considered as 'pure' effects. Most of the 'mature' minimalist compositions of Reich, Glass and Riley display some or all of these 'pure' temporal effects but usually to a lesser degree, or at least in a more diluted manner, than is experienced in the earlier works of each composer. It is also the case that there is a gradual diminution of 'purity' from the very early works (of Reich and Glass in particular) to the first 'mature' works. The progression of Reich's output from the 'pure' phase pieces of *Its Gonna Rain*, *Come Out* and *Piano Phase*, through *Violin Phase*, *Pulse Music*, *Four Log Drums*, *Four Organs* and *Phase Patterns* to *Drumming* is one of an expansion of techniques. *Violin Phase* for instance brings harmony and resulting patterns into the equation, thus adding a level of complexity absent in the earlier works. *Four Organs* is akin to 'a phase piece turned on its side'[242] and consequently creates an entirely different listening experience to

[242] Nyman, *Experimental Music*, p.157.

Piano Phase, and so on. These new techniques necessarily affect the way in which the listener perceives temporality.

Reich's first 'mature' composition was *Drumming*, which was at the same time the culmination of all of his previous minimalist techniques. The enormously complex and rich tapestry of Part Four in particular cannot be considered in the same light as the early phase pieces and so must be considered separately. After *Drumming* Reich continued to develop his musical language in new directions, but Part Four of *Drumming* is probably the most *aurally* complex piece he has ever written. It is for this reason that it was possible to consider *Six Pianos*, which was written after *Drumming*, in the same section as the much earlier *Piano Phase* above.

There is a similar progression in the output of Glass. Glass, however, wrote some minimalist pieces before he had perfected and crystallised his main minimalist technique – the additive process. These pre-additive compositions do create some of the temporal effects such as time retardation and some sense of directionless time but to a lesser degree than that displayed by his early additive pieces such as *1 + 1*, *Two Pages*, *Music in Fifths* and *Music in Contrary Motion*. The very early minimalist compositions such as *600 Lines* and *Strung Out* will be briefly discussed

below. After *Music in Contrary Motion* Glass wrote *Music in Similar Motion*, *Music with Changing Parts* and then *Music in Twelve Parts*, the latter being very similar to Reich's *Drumming* in terms of the aesthetic development of the two composers. *Music in Similar Motion* and *Music with Changing Parts* are transitional pieces in which harmony is used in a calculated way (as opposed to the purely resultant harmony which arises in *Music in Fifths* and *Music in Contrary Motion*). These transitional pieces also display 'diluted' versions of the 'pure' temporal effects of the earlier additive pieces such as *Two Pages*. Like *Drumming*, the aural complexity of *Music in Twelve Parts* necessitates a separate discussion regarding its effects on the listener's perception of temporality.

Unlike Reich and Glass, Riley's output after *In C* is not a gradual development into a single piece which displays a climactic culmination of techniques and aesthetic values – instead it is a progression into a more improvisational style which took repetition and modality as its basic framework. In Riley's own words: '[I] never wrote any more music after [*In C*]; I started improvising.'[243] The one page notation technique which Riley used in *In C* was generally not used in his subsequent pieces.[244] The

[243] Robert Palmer, 'Terry Riley: Doctor of Improvised Surgery', *Downbeat*, 42/19 (20th Nov 1975), p.17; quoted in Potter, p.120. Potter points out that this is in fact not the case – however, it is the sentiment that is of most importance.

[244] As Potter has observed, two little-known jazz pieces (*Autumn* Leaves and *Tread on the Trail*) were composed after *In C* which require the performers to progress through modules in a similar fashion to *In C*.

aural complexity of *Keyboard Studies* which followed *In C* lacks *In C*'s complexity of timbre and rhythm. *Keyboard Studies* is more akin to the early works of Reich and Glass discussed above in Sections 7.4b(i) and (ii) than it is to the sound world of *In C*. The 'trippy' psychedelic sound worlds of *Dorian Reeds*, *Poppy Nogood and the Phantom Band* and *A Rainbow in Curved Air*, with the former two's use of the time-lag accumulator and the latter's raga-like melismatic improvisations, offer the listener an experience which is a long way removed from that of *In C*.

In the following pages three case studies which display the less 'pure' forms of temporal effects that are found in Reich's, Glass' and Riley's music will be discussed in much the same way as was done in Section 7.4b.

7.4c(i) Disorientation: *600 Lines* and *Four Organs*

600 Lines, written as a practice piece for the Philip Glass Ensemble, has been described by Potter as '...unlikely to be successful in performance.'[245] A 2003 recording by Alter Ego[246] has fairly conclusively confirmed this. At fifty minutes long, it is difficult to remain focused on the music; other subsequent Glass pieces are of comparable length, but

[245] Potter, p.282.
[246] Released on the Stradivarius label, catalogue number STR33649.

without the additive structure the listener is constantly disorientated in a confusing and non-logical manner. The disorientation that a listener experiences whilst listening to a 'sudden change' in an additive process is only brief; the listener soon works out what has happened, and how it relates to what has happened in the past, and what may happen in the future. The lack of any perceivable causality within *600 Lines* means that the listener is constantly disorientated by alterations to the pitch order, expansions and contractions, the addition and subtraction of rests, and so on. However, the disorientation is permanent since there is no logical framework in which the listener can place him- or herself. It is this constant disorientation that makes *600 Lines* so difficult to listen to, and indeed ineffective.

This is not to say that all such similarly unstructured yet repetitive music is doomed to failure. The extremely effective *Triadic Memories* and *For Bunito Marcos* by Morton Feldman manage for instance to create interest out of irregular regularity. Writing about *Triadic Memories*, Feldman states: 'Chords are heard repeated without any discenrable pattern. In this regularity ... there is a suggestion that what we hear is functional and directional, but we soon realize that this is an illusion: a bit like walking the streets of Berlin – where all the buildings look alike, even if they're

not.'[247] I believe that the reason Feldman succeeds where Glass fails lies in a difference of intention. Feldman was concerned with the sounding music, the aural experience of listening to music. Glass on the other hand was, in the 1960s at least, concerned with the way his music was constructed more than the way that it sounded. Once this has been recognised, it is not difficult to understand why *600 Lines* is the inferior work.

Putting aesthetic judgements aside, the effect which *Triadic Memories* and *600 Lines* have on the listener's perception of temporality is the same – a seeming contraction and elongation of the 'temporal unit'. Louis Goldstein, in his essay 'Morton Feldman and the Shape of Time' has described this effect beautifully: [248]

> During the course of performing *Triadic Memories* my own sense of time is stretched and tugged in ways I never before experienced. There come moments when the unit of time I am measuring in my mind suddenly doubles and simultaneously begins to move at half the previous tempo... Sometimes the effect is one of utter tragedy, when in spite of great effort, time finally does break down and an awareness of terrifying emptiness is discovered... The listener can find himself or herself struggling to maintain footing...

[247] Morton Feldman, 'Crippled Symmetry', *Morton Feldman Essays*, Walter Zimmerman (ed.), (Kerpen: Beginner Press, 1985), p.127.
[248] Louis Goldstein, 'Morton Feldman and the Shape of Time' in *Perspectives on American Music Since 1950*, James R. Heintze (ed.) (London: Garland Publishing, 1999), p.75.

This could be equally well applied to *600 Lines* in which the constantly changing 'metre' and 'downbeat' (the terms are used loosely because they are largely subjective) appear to contract or elongate the temporal unit. The temporal unit is not a fixed unit but instead it is the subjective unit of time in which the listener perceives the progress of the music. As Goldstein has suggested, it is not just the temporal unit's length which is variable, but also the tempo of the music in relation to the temporal unit.

The term tempo as it is used here should not be taken too literally; Feldman does not indicate a desired tempo in his score, and *600 Lines* is to be played in strict tempo (all quavers are equal throughout). Instead, tempo as conceived here is a 'perceived' tempo – the speed at which the listener *perceives* the music to be progressing. Perceived tempo can be easily demonstrated: imagine a piece in which there is a constant crotchet movement and a constant semiquaver movement. If the listener regards the crotchet as the fundamental note length (e.g. the piece is in 4/4) then the perceived tempo is four times as slow as it would be if the listener regarded the semiquaver as the fundamental note length (e.g. the piece is in 16/16). As *600 Lines* unfolds Glass adds and deletes rests which has the effect of altering the perceived tempo from crotchets to quavers and vice versa.

600 Lines is made up of six hundred lines of music, each exactly thirty-two quavers in length, and so the temporal unit could be perceived as a constant thirty-two quavers. In actual fact, the perceived temporal unit is constantly changing within the constant thirty-two quaver line: it expands and contracts as 'downbeats' occur in varying positions within the line, and as rests are added and subtracted. This effect is even more apparent in *Strung Out* in which there are no rests but instead a constant quaver motion. The number of quavers which are grouped together however is constantly changing and so the perceived temporal unit – the quaver group – is constantly changing in length. Within the first three lines for instance[249] the perceived temporal unit undergoes the following quaver lengths: 5, 6, 7, 4, 5, 5, 3, 4, 5, 5, 5, 6, 4, 4, 5, 4. The inconstancy of the perceived temporal unit is further confused by Glass' use of slurring within quaver groups. If slurs rather than quaver groups are taken as the perceived temporal unit then the perceived temporal unit undergoes the following quaver lengths in the first three lines: 2, 3, 2, 2, 2, 3, 4, 4, 3, 2, 2, 3, 3, 2, 2, 3, 2, 3, 2, 2, 3, 2, 4, 4, 4, 3, 2, 4. The disorientation to the listener that this would cause is readily apparent.

[249] Reproduced in Potter, p.287.

Alterations to the length of the perceived temporal unit are also integral to the experience of listening to Reich's *Four Organs*. In the first section of the piece a chord is gradually expanded both forwards and backwards within a constant eleven beat unit, henceforth referred to as the basic unit, from a single quaver in length to a full eleven quaver beats in length. This is temporally disorientating for two reasons: first, a basic unit of eleven quavers is 'irregular' (at least to the ears of a Western listener); more importantly and interestingly, it is very difficult for the listener to gauge where he or she is within the basic unit because the chord length is constantly increasing both forwards and backwards. This causes the listener to perceive the temporal unit as the constantly altering chord itself as opposed to the unchanging eleven beats in which it resides.

In the second section of *Four Organs* it is the basic unit which is gradually augmented until it reaches 265 beats in length. Since the basic unit is now totally filled with sound (although not always the full chord), it is the basic unit itself which can become the perceived temporal unit. This is not always the case, especially once the basic unit has reached a considerable length. As the basic unit grows in length it is becomes more likely that the listener will revert to a perceived temporal unit that is shorter than the basic unit itself. All perceived temporal units are, as has already been stated, extremely subjective and so it is therefore

unsurprising that some listeners revert to a perceived temporal unit which is shorter than that of the basic unit earlier than others, and that once this is done the length of the perceived temporal unit varies from person to person, and even from basic unit to basic unit.

Unlike the constantly changing perceived temporal unit in *600 Lines* and *Strung Out*, the perceived temporal unit of *Four Organs* changes in a structured and logical manner. It only ever increases in length (in both the first and the second section), rather than endlessly expanding and contracting in an ad hoc fashion. In the first section furthermore, there is always a period of IR (Reich specifies three to six repetitions in the score) between each lengthening of the chord. These factors go to make the experience of *Four Organs* less disorientating than *600 Lines* or *Strung Out* but at the same time more interesting because the listener is more aware of the disorientating aspect due to its location within a logical process.

7.4c(ii) Complexity: *Drumming* and *Music in Twelve Parts*

It was suggested above that Part Four of *Drumming* is Steve Reich's most aurally complex score. The sheer volume of aural information that is contained in Part 4, together with the fact that, apart from the very

beginning, it is not presented by itself but at the same time as other information, means that the listener cannot always hear 'the process[es] happening throughout the sounding music.'[250] The listener can focus on one timbre within the 'orchestra' and recognise a particular process at work, but to analyse more than one process at a time is virtually impossible as each timbre is essentially working independently of the other two. Time retardation is consequently less apparent: the information which the listener receives is not given as gradually, as homogenously, or over such an extended time frame[251] as Reich's previous minimalist compositions. Directionless time is, on the other hand, apparent in Part Four of *Drumming* because the overall sound, as opposed to information, is relatively homogeneous (except at the beginning). The bewildering complexity of Part Four actually has a very similar effect to the extreme simplicity of pure IR. This can best be demonstrated by using the 'field of grass' analogy which was first used in Section 3.5: just as when one moves in a vertical direction from a field of grass the complex micro-activity becomes blurred into a relatively homogeneous green field, so too does the complex micro-activity of Part Four blend into a relatively homogenous sound once the listener has remained with it for a period of time. Consequently, the cognitive process of retention becomes redundant

[250] Reich, *Writings*, p.9.
[251] Part Four lasts only 9'44'' on the 1988 Nonesuch CD version, catalogue number 7559791702.

and the listener is left only with prediction – and hence the perception of directionless time.

Music in Twelve Parts demonstrates similar effects on the listener's perception of temporality that *Drumming* does. The situation with *Music in Twelve Parts* is however further complicated by its extreme length (a performance usually lasts over four hours), and the fact that each of the twelve parts is essentially autonomous. The four parts of *Drumming* are all variations on similar phasing and rhythmic construction techniques. Their greatest point of divergence is timbre. The case is quite different with *Music in Twelve Parts*. Each of the parts represents another facet of Glass' compositional technique, from the augmentation and diminution of Parts Two and Five, to the unison chromaticism of Part Ten. *Music in Twelve Parts* therefore presents a much more heterogeneous listening experience than *Drumming*. Leaving the discontinuity of its sectional nature aside for now, the individual parts of *Music in Twelve Parts* often display a degree of complexity comparable to Part Four of *Drumming*. The combination of additive and cyclic processes creates a shimmering and plethoric sound which can confuse and disorientate the listener. The effect is similar to that caused by a Bridget Riley or a Mark Tobey painting where the (static) lines create a seemingly restless visual image which constantly changes as the viewer's position changes relative to the

painting, and as the viewer's focus changes. In the case of *Music in Twelve Parts*, it is the movement through time which causes the constant changes to what is seemingly quite static music. Most of the parts cause the same effects on the listener's perception of temporality as Part Four of *Drumming* does – a mitigated sense of time retardation, and the perception of directionless time.

There are some parts however which within themselves display major discontinuities. After 4'48'' the additive process of Part Four suddenly 'becomes a ... single, unsettled chord that sweats, strains and ultimately screams for resolution...'[252] This discontinuity has a similar effect upon the listener as for example the change from two-part phasing to four-part phasing in *Come Out*, or the switch from the first section to the second section in *Four Organs*. Before *Music in Twelve Parts* there are no such major discontinuities within Glass' minimalist output, and consequently no such major causes of the effect of directionality. Similarly, in Parts Eleven and Twelve Glass uses harmonic motion for the first time, further reinforcing the perception of directionality. As has already been mentioned, the parts themselves each contain their own musical material and processes so that as the music unfolds the listener hears twelve different parts, some of which have distinctive sections within them.

[252] Tim Page, liner notes to the 1996 Nonesuch CD recording of *Music in twelve Parts*, catalogue number 7559793242.

Music in Twelve Parts thus demonstrates a characteristic similar to that already witnessed in *Two Pages*: alternating strata of directionality and non-directionality, but this time on a much larger scale. On the other hand, each part is of sufficient length (they usually last between fifteen and thirty minutes) that for the majority of the time the listener is enveloped in a highly complex and relatively homogeneous sound world, similar to Part Four of *Drumming*.

7.4c(iii) Improvisation: *Poppy Nogood and the Phantom Band*

The effect of listening to *Poppy Nogood and the Phantom Band* is very similar to that of listening to an Indian raga. The constantly varying improvisation is never entirely predictable, but neither is it ever entirely unpredictable. Also, the 1969 Columbia recording of *Poppy Nogood* is just one realisation, just as each performance of a raga is merely one realisation of that raga. Furthermore, in both a raga and in *Poppy Nogood* there are some obvious points at which major changes occur, such as the entry of the tabla in the 'gat' section of a raga, or the transitions between the three sections of *Poppy Nogood.*[253] The contrasting sections of *Poppy Nogood* create a sense of structure which is absent in *In C* (there are modal areas within *In C* but their boundaries are blurred to such an extent

[253] These have been identified by Potter, p.130.

as to render them insufficient to act as sectional boundaries). Within the sections of *Poppy Nogood* however, the 'phrases refuse to form a hierarchy and are therefore heard to some extent as arbitrary.'[254] The arbitrariness, or non-teleological development, of Riley's improvised phrases, together with their degree of relative verisimilitude, create an effect of non-directionality which is similar to that which is found in *Drumming*, *Music in Twelve Parts*, and indeed Indian ragas. As with the 'mature' minimalist compositions of Reich and Glass which have already been discussed, *Poppy Nogood* creates the effects of time retardation and non-directional time, but to a mitigated extent as that created by *In C*.

7.5 Conclusion

Before making any conclusions I would like to stress that altered perceptions of temporality are necessarily subjective, and are therefore unable to be treated as an exact science. Consequently, all of the above discussions are to some extent fallible – a listener may simply say that he or she has never experienced any of the effects which I write about. This

[254] Kramer, *The Time of Music*, p.55. He is referring to *A Rainbow in Curved Air*, but the observation applies equally well to *Poppy Nogood*.

does not however 'prove' that the effects do not exist; merely that one particular person has not experienced them. On the other hand, all of the temporal effects which have been discussed have been experienced by me, and by several other people with whom I have discussed the subject. This is not to say that whilst I am listening to a piece of minimalist music I will experience all of the temporal effects all of the time. And it is also not to say that the discussion of temporal effects in this thesis is exhaustive. I think it is quite possible, and indeed highly likely, that some might describe the same effects in a completely different way, and that others have experienced effects which I have not written about. All I can say in defence of the necessarily subjective nature of this final chapter is that the effects described have been experienced by me, and that there are no temporal effects which I have experienced whilst listening to minimalist music which I have not included in this thesis.

It has long been acknowledged that minimalist music affects one's perception of the passage of time. Some have claimed that it makes everything seem to move slower, others just the opposite; some have claimed that time appears to have disappeared, others that it makes them more aware of the passage of time. I hope to have shown in this thesis that minimalist music certainly does affect one's perception of temporality but more importantly, I hope to have given a comprehensive

account of the many different ways in which one's perception of temporality may be altered. Different types of minimalist music produce different effects – most notably the difference between Young's duration-based style and the repetition-based style of Riley, Reich and Glass. Even within the same piece though, it is perfectly possible to experience a variety of temporal effects, some of which are the complete opposite of each other.

Before discussing the relationship between minimalist music and time, I will first mention Chapter 2 and Section 7.2 which were chiefly concerned with minimalism in the visual arts. The artists' concern with the viewer's perception of spatiality has obvious parallels with the composers' concern with the listener's perception of temporality. Given that the aesthetics of MVA and MM are reasonably similar,[255] it is unsurprising that there are certain similarities between the artists' conceptions of space, and with the composers' conceptions of time. I mentioned at the beginning of Chapter 2 that time is traditionally considered to be a more 'slippery' concept than space, and for this reason it would be useful to discuss MVA before considering MM. I believe, however, that useful as this may have been, the discussion of MVA in Chapter 2 was an invaluable insight into the ideas and aesthetic opinions

[255] See Section 2.1.

of the 1960s. This thesis has been primarily concerned with minimalist music and how it relates to time, but an historical framework in which minimalism as a movement can be contextualised in nonetheless important. Furthermore, the amount of personal crossover between the visual arts, dance and music in the 1960s was unprecedented. One need only look at the first performance of *Pendulum Music* to realise its importance.[256]

It has been the purpose of this thesis to make a detailed study of the relationship between minimalist music and time. Many commentators have merely observed that minimalism is inextricably bound up with time, but have not explained in any detail what it is about minimalist music that should make this so. Bernard, already quoted at the beginning of this chapter, is a case in point: [257]

> [Minimal music] is devoted to making the listener keenly aware of the passage of time... [T]here is something about this sense of the passage of time that is *enforced* – something not found much, if at all, in earlier music...'

[256] *Pendulum Music* was premiered at the Whitney Museum of Modern Art, and was performed by Richard Serra (artist and filmmaker), Michael Snow (filmmaker), Bruce Nauman (artist), and James Tenney (musician).
[257] Jonathan W. Bernard, 'The Minimalist Aesthetic in the Plastic Arts and Music', p.122 (his italics).

Having made this statement he does not go on to say what that 'something' is. Mertens does a little better by stating that minimalist music's a-teleological and non-dialectical qualities place it in 'macro-time', which he claims is 'beyond history'.[258] Mertens approaches the problem with Adorno and left-wing politics of culture in mind – an interesting standpoint but not one which helps us to understand the mechanisms behind the 'how and the why' of the problem.

In contrast, I have attempted to shed new light by tackling the problem using a phenomenological approach; firstly by analysing Young's music in terms of Husserl's theory of how we perceive the passage of time, and secondly by creating my own theories about how we perceive repetition, lack of information content, and extended time frames in relation to the music of Riley, Reich and Glass. It has been my intention to describe *why* we perceive temporal effects, and not, as Mertens has done, to use these temporal effects as part of an aesthetic programme.

By discussing specific pieces of minimalist music I have gone one step further than previous commentators; not only by giving detailed examples of how the temporal effects may come about, but also by demonstrating that different minimalist techniques create different temporal effects. This

[258] Mertens, *American Minimal Music*, p.92.

has dispelled the conception that it is possible to analyse the temporal effects of *Trio for Strings* in the same way as one would analyse the temporal effects of *Drumming*. It has also shown that even within a given composer's output, one must be careful not to over-generalise – *Strung Out* and *Music in Twelve Parts* are very different and should be treated as such. In this regard, I hope to have shown that (with the exception of Young) the more 'mature' minimalist compositions of the late 1960s and early 1970s create temporal effects which are comparable with those of the minimalist composers' earlier works, but to a mitigated extent. With the increase in complexity of minimalist music, there is a consequent increase in the distillation of temporal effects.

I would like to finish this thesis by saying that I believe the phenomenological approach to describing how listeners perceive temporality could and should be applied to many other types of music – the indeterminate music of Cage, or the incredibly complex music of Ferneyhough for example. Furthermore, the approach need not be restricted to discussions of temporality; it could for instance be equally well applied to the listener's perception of musical 'space'. I hope that this thesis has demonstrated the merits of the phenomenological approach as a tool for description, and most importantly has described how

minimalist music affects our conceptions of the way in which time passes.

Bibliography

Adams, John, 'Steve Reich' in *The New Grove Dictionary of American Music*, H. Wiley Hitchcock & Stanley Sadie (eds.) (London: Macmillan, 1986), IX, pp23-6.

Alloway, Lawrence, 'Systematic Painting' in the exhibition catalogue *Systematic Painting* (New York: The Solomon R. Guggenheim Foundation, 1966); reprinted in Gregory Battcock, *Minimal Art*, pp.37-60.

Alloway, Lawrence, *Topics in American Art Since 1945* (New York: Norton, 1975).
Archer, Michael, *Art Since 1960* (London: Thames and Hudson, 1997).

Battcock, Gregory, *Minimal Art: A Critical Anthology* (London: Studio Vista, 1969).

Bergson, Henri, *Time and Free Will: An Essay on the Immediate Data of Consciousness*, (London: Dover Productions, 2001).

Bernard, Jonathan W., 'Theory, Analysis, and the "Problem" of Minimal Music' in *Concert Music, Rock and Jazz since 1945*, E. West Marvin and R. Hermann (eds.), (New York: Rochester, 1995).

Bernard, Jonathan W., 'The Minimalist Aesthetic in the Plastic Arts and Music' in *Perspectives of New Music*, **31** (1993).

Bockris, Victor and Malanga, Gerard, *Up-Tight: The Story of the Velvet Underground* (London: Omnibus Press, 1996).

Butterfield, Jeremy (ed.), *The Arguments of Time* (The British Academy: Oxford University Press, 1999).

Cage, John, *M: Writings '67 - '72* (London: Calder and Boyars, 1973).

Cage, John, *Silence: Lectures and Writings* (London: Clader and Boyars, 1968).

Chapman, T., *Time: A Philosophical Analysis* (London: D. Reidel Publishing, 1982).

Cockburn, David, *Other Times: Philosophical Perspectives on Past, Present and Future* (Cambridge: Cambridge University Press, 1997).

Cohn, Richard, 'Teleology, Craft, Tradition, and Analysis in a Minimalist Context: Transpositional Combination of Beat-Class Sets in Steve Reich's Phase-Shifting Music' in *Perspectives of New Music*, **30** (1992).

Colpitt, Frances, *Minimal Art: The Critical Perspective* (Ann Arbor: UMI Research Press, 1990).

Corbin, Henry, 'Cyclical Time in Mazdaism and Ismailism' in *Man and Time - Papers from the Erasmus Yearbooks* (New York: Pantheon Books Inc, 1957).

Dennis, Brian, 'Repetitive and Systematic Music' in *The Musical Times*, **115** (1974).

Dreier, Ruth, 'Minimalism' in *The New Grove Dictionary of American Music*, H. Wiley Hitchcock and Stanley Sadie (eds.), (London: Macmillan, 1986), III, pp.240-2.

Eliade, Mircea, 'Time and Eternity in Indian Thought' in *Man and Time - Papers from the Erasmus Yearbooks* (New York: Pantheon Books Inc, 1957).

Epstein, Paul, 'Pattern, Structure and Process in Steve Reich's *Piano Phase*' in *The Musical Quarterly*, **72** (1986).

Fraisse, Paul, *The Psychology of Time*, Jennifer Leith (trans.), (London: Harper & Row, 1963).

Frascina, Francis (ed.), *Pollock and After: The Critical Debate* (New York: Harper and Row, 1985).

Fried, Michael, 'Shape as Form: Frank Stella's New Paintings' in *Artforum* (November 1966).

Fried, Michael, 'Art and Objecthood' in *Artforum* (June 1967); reprinted in Battcock, *Minimal Art*; pp.116-147.

Friedman, Ken (ed.), *The Fluxus Reader* (Chichester: Wiley-Academy, 1998).

Gagne, Cole and Caras, Tracy, *Soundpieces: Interviews with American Composers* (London: The Scarecrow Press, 1982).

Gale, Richard M. (ed.), *The Philosophy of Time: A Collection of Essays* (London: Macmillan, 1968).

Gallagher, Shaun, *The Inordinance of Time* (Illinois: Northwestern University Press, 1998).

Gann, Kyle, 'La Monte Young's *The Well-Tuned Piano*' in *Perspectives of New Music*, **31** (1993).

Gena, Peter and Brent, Jonathan, *A John Cage Reader* (New York: C F Peters Corps, 1983).

Gillmor, Alan, 'Satie, Cage, and the New Asceticism' in *Contact* **25** (Autumn, 1982).

Glaser, Bruce, 'Questions to Stella and Judd' in *Arts News* (September 1966); reprinted in Battcock, *Minimal Art.*

Glass, Philip, *The Music of Philip Glass* (New York: Harper and Row, 1987).

Golding, John, *Paths to the Absolute* (London: Thames and Hudson, 2002).

Goossen, E.C., 'Two Exhibitions'; reprinted in Battcock, *Minimal Art.*

Greenberg, Clement, *Art and Culture* (Boston: Beacon Press, 1961).

Greenberg, Clement, 'Recentness of Sculpture' from the exhibition catalogue *American Sculpture of the Sixties* (Los Angeles County Museum of Art, 1967); reprinted in Battcock, *Minimal Art*, pp.180-6.

Griffiths, Paul, *Cage* (London: Oxford University Press, 1981).

Griffiths, Paul, *Modern Music and After* (Oxford, Oxford University Press, 1995).

Heylin, Clinton, *From the Velvets to the Voloids: A Pre-Punk History in a Post-Punk World* (London: Penguin Books, 1993).

Hopkins, David, *After Modern Art: 1945-2000* (Oxford: Oxford University Press, 2000).

Hughes, Diane Owen and Trautman, Thomas R. (eds.), *Time: Histories and Ethnologies* (University of Michigan: University of Michigan Press, 1995).

Judd, Donald, *Complete Writings 1959-1975* (New York: New York University Press, 1975).

Karolyi, Otto, *Modern American Music: from Ives to the Minimalists* (London: Cygnus Arts, 1996).

Knox, Kenneth, 'The Parametric Music of Terry Riley' in *Jazz Monthly*, 13/5 (1967).

Knox, Kenneth and Knox, R., 'Relax and Fully Concentrate: The Time of Terry Riley' in *Friends Magazine*, 20 February 1970.

Kostek, M.C., *The Velvet Underground Handbook* (London: Black Springs Press, 1992) .

Kostelanetz, Richard and Darby, Joseph (eds.), *Classic Essays on Twentieth Century Music* (New York: Wadsworth Publishing, 1996).

Kostelanetz, Richard (ed.), *Esthetics Contemporary* (New York: Prometheus Books, 1989).

Kostelanetz, Richard (ed.), *Conversing with Cage* (London: Omnibus, 1989).

Kostelanetz, Richard (ed.), *John Cage* (New York: Da Capo, 1991).

Kostelanetz, Richard (ed.), *Writings on Glass: Essays, Interviews, Criticism* (London: Prentice Hall International, 1997).

Kramer, Jonathan, D., *The Time of Music: New Meanings, New Temporalities, New Listening Strategies* (London: Collier Macmillan, 1988).

Kreitler, Hans and Kreitler, Shulamith, *Psychology of the Arts* (Durham: Duke University Press, 1972).

Le Poidevin, Robin and MacBeath, Murray (eds.), *The Philosophy of Time* (Oxford: Oxford University Press, 1993).

Le Witt, Sol, 'Paragraphs on Conceptual Art' in *Artforum* (June 1967).

Leepa, Allen, 'Minimal Art and Primary Meanings'; reprinted in Battcock, *Minimal Art.*

Lucie-Smith, Edward, *Movements in Art Since 1945: Issues and Concepts* (London: Thames and Hudson, 1995).

Lyotard, Francois, *The Lyotard Reader*, Andrew Benjamin (ed.), (Oxford: Blackwell, 1998).

Merleau-Ponty, Maurice, *Phenomenology of Perception* (London: Routledge, 2002).

Mertens, Wim, *American Minimal Music* (New York: Alexander Broude, 1983).

Meyer, James, *Minimalism : Art and Polemics in the Sixties* (London: Yale University Press, 2001).

Meyer, L.B., *Music, the Arts and Ideas* (Chicago: Chicago Press, 1967).

Morley, Paul, *Words and Music: A History of Pop in the Shape of a City* (London: Bloomsbury, 2003).

Morris, Robert, 'Notes on Sculpture' in *Artforum*, (February 1966 and October 1966); reprinted in Battcock, *Minimal Art*, pp.222-235.

Moszynska, Anna, *Abstract Art* (London: Thames and Hudson, 1995).

Norris, Christopher (ed.), *Music and the Politics of Culture* (London: Lawrence and Wishart, 1989).

Nyman, Michael, *Experimental Music: Cage and Beyond* (Cambridge: Cambridge University Press, 2000).

Nyman, Michael, 'Steve Reich, Phil Glass' in *The Musical Times*, 112/1539 (May 1971).

Oesterrich, Norbert, 'Music with Roots in the Aether' in *Perspectives of New Music*, **16** (Fall-Winter 1977).

Parsons, M., 'Systems in Art and Music' in *Musical Times*, 117/1604 (October 1976).

Potter, K., *Four American Minimalists: La Monte Young, Terry Riley, Steve Reich, Philip Glass* (Cambridge: Cambridge University Press, 2002).

Potter, K., 'The Recent Phases of Steve Reich' in *Contact*, **29** (1985).

Potter, K. & Smith, Dave, 'Interview with Philip Glass' in *Contact*, **13** (Spring 1976).

Prendergast, Mark, *The Ambient Century: from Mahler to Moby – The Evolution of Sound in the Electronic Age* (New York: Bloomsbury, 2003).
Reich, Steve, 'Texture-Space-Survival' in *Perspectives of New Music*, 26/2 (summer 1988).

Reich, Steve, *Writings About Music,* Kaspar Koenig (ed.), (London: Universal Press, 1974).

Rose, Barbara, 'ABC Art' in *Art in America* (October 1965); reprinted in Battcock, *Minimal Art*, pp.274-297.

Roth, Moira and Katz, Jonathan D., *Difference/Indifference: Musings on postmodernism, Marcel Duchamp and John Cage* (G & B Arts International, 1998).

Rouget, Gilbert, *Music and Trance: A Theory of the Relations Between Music and Possession* (Chicago: University of Chicago Press, 1985).

Sandford, Mariellen R., *Happenings and Other Acts* (London and New York: Routledge, 1995).

Sandler, Irving, *American Art of the 1960s* (New York: Harper and Row, 1988).

Schaefer, John, *New Sounds: A Listener's Guide to New Music* (New York: Harper and Row, 1987).

Schmied, Wieland, *Mark Tobey* (London: Thames and Hudson, 1966).

Schwarz, David, 'Listening Subjects: Semiotics, Psychoanalysis, and the Music of John Adams and Steve Reich' in *Perspectives of New Music*, 31/2 (Summer 1993).

Schwarz, Robert K., *Minimalists* (London: Phaidon Press, 1996).

Schwarz, Robert K., 'Steve Reich: Music as a Gradual Process, Part I' in *PNM*, **19** (1980/1) and 'Part II' in *Perspectives of New Music*, **20** (1981/2).

Silverman, Susan, *Time and the Problems of Self-Definition and Uncertainty: Proust, Beckett and Stravinsky* (Stanford: Humanities Honors Program, Stanford University, 1989).

Smith, Dave, 'Following a Straight Line: La Monte Young' in *Contact*, **18** (Winter 1977-8).

Smith, Dave, 'The Music of Phil Glass' in *Contact*, **11** (Summer 1975).
Sokolowski, Robert, *Introduction to Phenomenology* (Cambridge: Cambridge University Press, 2000).

Strickland, Edward, *Minimalism: Origins* (Bloomington and Indianapolis: Indiana University Press, 1993).

Toop, David, *Oceans of Sound: Aether Talk, Ambient Sound and Imaginary Worlds* (London: Serpent's Tail, 1995).

Turetzky, Philip, *Time* (London: Routledge, 1998).

Unesco, *Time and the Philosophies: At the Crossroads of Cultures* (Paris: United Nations, 1977).

Vieru, A., 'Generating Modal Sequences: A Remote Approach to Minimal Music' in *Perspectives of New Music*, **30** (1992).

Westphal, Jonathan and Levenson, Carl (eds.), *Time* (Indianapolis: Hackett Publishing Company, 1993).

Wijers, Louwrien, *Fluxus Today and Yesterday* (New York: Dutton, 1993).

York, Wesley, 'Form and Process' in *Sonns*, **1/2** (1981); reprinted in Kostelanetz (ed.),*Writings About Glass.*

Young, La Monte and Zazeela, Marian, *Selected Writings* (Munich: Heiner Friedrich, 1969).

Zak, Albin, *The Velvet Underground Companion: Four Decades of Commentary* (London: Omnibus Press, 1997).

Zimmermann, Walter (ed.), *Morton Feldman Essays* (Korpen: Beginner Press, 1985).