

Universidade de Évora
Departamento de Artes Visuais

Mestrado em Artes Visuais e Intermédia

Criteria for graphic representation in musical scores.
Visual elements in musical scores.

Rachel Alexandra Consitt Bochmann

Supervisor: Prof. Dr. Filipe Rocha da Silva

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Abstract

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The inter-disciplinarity between music and visual art has been explored by leading theorists and philosophers, though very little exists in the area of the visual interpretation of graphic musical scores.

This study looks at how the graphics of musical notation and symbols affect the performer in transforming them into sound, with particular reference to contemporary scores that use non-conventional notation to create an interpretation through suggestion. Other sound-visual relationships are explored, including synaesthesia, temporality and the interconnection between work of art and audience or public.

This dissertation aims to be an innovative study of contemporary musical scores, from a musical as well as visual perspective. Finally, it takes a step further with drawings of my own, directly inspired and motivated by the music. These no longer fulfil a conventionally notational function for the musician, yet the potential for a re-interpretation is ever-present.

Resumo

Critérios para a representação gráfica em partituras musicais.

A interdisciplinaridade entre a música e as artes visuais tem sido explorado por conceituados teóricos e filósofos, embora não exista muito na área da interpretação visual do grafismo de partituras musicais.

Este estudo investiga como os grafismos na notação e símbolos musicais afectam o intérprete na sua transformação em som, com referência especial a partituras contemporâneas, que utilizam notação menos convencional para a criação de uma interpretação por sugestão. Outras relações entre o som e o visual são exploradas, incluindo a sinestesia, a temporalidade e a relação entre obra de arte e público.

O objectivo desta dissertação é a de constituir um estudo inovativo sobre partituras musicais contemporâneas, simultaneamente do ponto de vista musical e visual. Finalmente, também vai mais longe, incluindo desenhos da própria autora inspirados e motivados pela música. Estes já não cumprem uma função de notação convencional para o músico, embora existe uma constante possibilidade de uma reinterpretação.

Acknowledgements

Throughout the period of research and in writing up this dissertation, I have had the support of many in different ways. In particular, I should like to thank:

Filipe Rocha da Silva, my supervisor, for his insightful contributions and suggestions for research. His patience in the reading and re-reading of my work in its final stages has been fundamental to the completion of this dissertation;

Christopher Bochmann, my father, who has been of invaluable help to me throughout the course of my work, not only in his advice on musical matters and the loan of numerous scores and recordings, but also for the use of his compositional work;

My family, who have been a constant emotional, creative and financial support throughout this period of study;

The many friends who have supported me throughout this whole process.

Thank you to all.

Criteria for graphic representation in musical scores

Visual elements in musical scores

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1. Introduction

“She thought, without exactly wording the thought, how strange and godlike was a composer’s power, who from the grave could lead through sequences of emotion, which he alone had felt at first, a girl like her who had never before heard of his name, and never would have a clue to his personality.”

Thomas Hardy, *Tess of the D’Urbervilles*¹

Thus Thomas Hardy highlights the prosperity and qualities of a musical score, through referencing the recreated emotions originally documented by a now-dead composer, and expressed in musical notation. And so the role of the musical score becomes apparent.

The graphic representation of sound onto paper takes form in many ways and has evolved throughout the centuries into a systematic collection of symbols, in similar fashion to the written word and script. Even today, this evolution is taking place, particularly in the field of computers and technology – we have now incorporated new symbols into everyday text for this very reason, and the same is mirrored in musical notation with the emergence of music-writing programmes such as Finale and Sibelius.

The earliest forms of musical notation to have been found were produced in Nippur at around 2000BC. The notation takes the form of a series of symbols placed in a line above written text. Precursors to that which evolved into what is now standard notation, the Greeks also indicated music in a similar way. Later, in the Arab world, Al-Kindi (801-873 AD) developed a system of alphabetical annotation. Producing fifteen treatises on music theory, his pure Arab tone system is still used in Arab music today.

In monasteries in Europe, for the purposes of notating Gregorian chant, monks began to use a system similar to that of the Greeks – symbols placed above text as an indication of music. However, this served more as a reminder to someone who was already familiar with the melody in question, as opposed to guiding someone reading it for the first time.

A staff (stave) was therefore introduced to address the problem of precise pitch. Originally only a single line, this later developed into a 4-line stave (such as in the following *fig. 1.1*), attributed to Guido d’Arezzo (995-1050 AD), known as the founder of the standard music stave.

¹ HARDY, Thomas – *Tess of the D’Urbervilles*. p.101.



fig. 1.1

Also attributed to him, is the use of a solmisation system, the act of assigning names to notes of the scale. This originally produced a hexachordal system with the notes Ut-Re-Mi-Fa-Sol-Laⁱⁱ; later this system evolved into Dó-Ré-Mi-Fá-Sol-Lá-Si-Dó (the last Dó making the octave), while in Anglo-Saxon usage the notes are given names of the alphabet from A (Lá) to G (Sol).

Time and duration in notation were not an issue at first, because the main use of notation was to record melodies, and the music would naturally follow the flow of the syllables of language (the text). At first, around the 10th century, a system of relative proportion for duration and rhythm was developed, while a system like the present – where, very basically, the shape of the note indicates its length – did not come about until the 14th centuryⁱⁱⁱ.

Staves of varying numbers of lines were used up until the 17th century, while the modern 5-line staff was first used in France and became almost universal only by the 16th century. Now, modern musical notation indicates pitch and time on the page, thus:

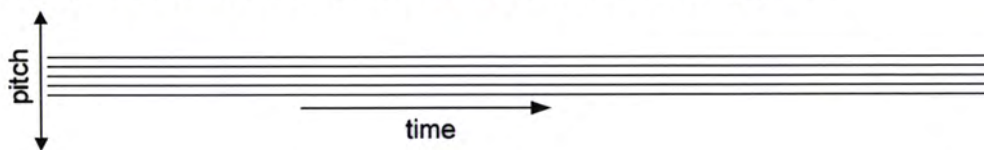


fig. 1.2

ⁱⁱ These letters were derived from the first syllables of the Hymn *Ut queant laxis* or *Hymnus in Iohannem*, a plainchant hymn to John the Baptist written by Paulus Diaconus, in the 8th century. Each line starts on a different note of the hexachordal scale: *Ut queant laxis*; *resonari fibris*; *Mira gestorum*; *famuli tuorum*; *Solve polluti*; *labii reatum*; *Sancte Iohannes*.

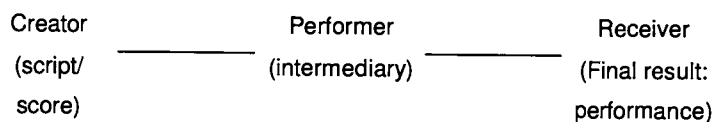
ⁱⁱⁱ The so-called *Ars Nova*, championed by Philippe de Vitry and Guillaume de Machaut.

The function of a score is to portray the parts of all players together on the same page. The term 'part' is given to the individual contribution of each player – that which, in a musical group (orchestra, ensemble, etc...), each player has on their own music stand.

There are millions of musical scores, dating back to many centuries ago, that still exist and are still played today. The ability to notate music, and therefore the clarity of a score is imperative in creating a documented record for future use, not only for the purposes of recreation, but also for education. The techniques used by composers such as Bach, Mozart and Beethoven (among many others of varying periods), have been studied, analysed, added to and built upon, allowing for an in-depth evolution of notational technique up until the present day. It is frightening to imagine a hypothetical situation in which these composers, having coordinated the musicians of their time to play by ear or by heart (in a similar fashion to many popular groups today – eg: Jazz), will have consequently jeopardised the prosperity and legacy of their music and genius, for future generations. The pure joy of experiencing a Dvorak symphony, or a Beethoven sonata would have been lost forever, and consequently our depth of musical knowledge would be practically non-existent. The existence of these masters' recorded notation allows musicians of today not only to learn and share in their legacy, but also add to it.

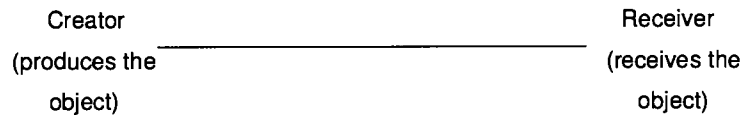
So the existence of a musical score allows interpreters to recreate the desired outcome without the necessary presence of the composer. The composer Igor Stravinsky stated: "It is necessary to distinguish two moments, or rather two states of music: potential music and actual music. Having been fixed on paper or retained in the memory, music exists already prior to its actual performance. [...] The musical entity thus presents the remarkable singularity of embodying two aspects, of existing successively and distinctly in two forms separated from each other by the hiatus of silence."^{IV} He refers of course to the existence of the musical score, in itself representing a time axis to be transformed into physical sound at a later date. Music therefore requires the existence of two kinds of musician: the creator and the performer. Other performance arts similarly involve a script or guide as the initial act of creation, put into action later again by the performer.

To reach the receiver or listener of a piece of music or other performance art, the 'object' created by the composer is necessarily transmitted through that intermediary role of a performer:



^{IV} STRAVINSKY, Igor – Poetics of music: in the form of six lessons. p.121.

However, where a visual (static) object is the final result – eg: a painting, drawing, sculpture, etc., the intermediary role of the performer is dispensed with, as the object produced by the creator is the same object to be received by the receiver:



Throughout this dissertation, I will encounter musical scores that I believe can easily fit into both of these categories – musical scores that are not only musically valid for a future performance, but also visually valid works of art in their own right. Similarly, there also exists the potential of an established work of visual art such as a painting, being taken on by a performer to produce sound.

The position and perception of the receiver is always different to that of the creator, whether the object in question goes through an intermediary or not. A lot of this hinges on the final presentation, and consequently alerts us to the risk that the creator takes when presenting his work to the public. There is a great deal of responsibility attributed to this final presentation of the creator's work, influencing the public's view of the object, and potentially changing the original or intended meaning of the creator. In music, the performer's role is critical here, as is his interpretation of the creator's musical score.

Above all, sound (organised sound = music) is the final product of a musical score. Therefore, the clearer the symbols written by the composer to aid the performer in his interpretation, the more accurately the performer will be able to interpret the score. However, the word 'accuracy' deserves special attention. What is accuracy in music? When a composer writes a piece for an instrument, yes, he expects the notes he writes to come out in tune, and the rhythms, tempos, amplitude and articulation to be accurate in a relative form. Much of the performer's 'accuracy' depends on how clear the notation communicates the composer's intentions to the performer. This is delved into in depth in chapter 2, and especially how a composer's choice of notation can produce different psychological attitudes in the performer, and thereby influence the performance.

Yet with so many competent instrumentalists who leave no margin for 'error' in their interpretation, why are some better than others? Why are Itzhak Perlman and Maxim Vengerov considered two of the best current violinists, while there are thousands of others who can play the same pieces with musical 'accuracy', yet are not as great? Leaving aside mere questions of publicity techniques, involving the great interpreters, there exists a sense of humanity in their interpretation, in imparting a 'loving care'^v to the music. The artistic experience is the ultimate goal of the artist, and the age-old question of 'What is the purpose of the arts?' becomes the crux of the matter. Thomas Hardy (to refer back to the initial quotation) portrays the girl being

^v STRAVINSKY, Igor – Poetics of music: in the form of six lessons. p.124.

led through a sequence of emotions while she hears a piece of music. Who has not been moved by a piece of music (whatever style) at least once, and felt some sort of emotion?

At the other end of the scale is the problem of a score being a restriction to the performance of music: a barrier to achieving that “artistic experience”. A point often argued among musicians is whether a soloist should play by heart or read from his part in concert (curiously string players conventionally play by heart while wind players often do not). Through my experience of having studied the violin, I believe that the soloist should perform in concert without the music. There are many reasons for this: firstly, a soloist will have practised the work so rigorously and intensely that it should be imprinted on his mind anyway; secondly, from an audience's point of view, it looks better not to have a music stand blocking the soloist; and finally, the music sheet is the technical guide or 'instruction manual' for the correct notes – the player studies from this and practises until the technical aspect has been mastered and surpassed. Once this has been done, he can begin truly to feel and understand the music – so, if he is still stuck looking at the notes, he will be stuck in the technical aspect, and not allow himself to be sufficiently at ease to transform the technique into music (art). Again, the artistic experience is crucial, as the role of the score comes as a guide for technique and execution, while the true embodiment of music as art is that indefinable extra that transcends the notation and speaks from the soul of the performer to that of the receiver.

The visual aspect of a musical performance is another form in which a sound-visual relationship can be approached. Everyone can picture the traditional format of a musical concert: musicians in black suits, sometimes in tails, with a formal code of conduct throughout performance. However, this simple aspect has been approached in varying forms by many recent composers. Here in Portugal, composer Patricia Almeida^{VI} wrote the work *Fati Necessitas*^{VII} played by the GMCL^{VIII}, where the performers should all dress in black but perform barefoot. Alain Kremski^{IX}, French composer and pianist, wrote a piece in the 60s specifically designed to be performed in an installation of sorts: a cellophane box. Here the performance space was enclosed in cellophane sheets and spray-painted in particular colours and shapes.

Of course, these are just a few examples of how the performance of music has undergone a visual transformation, and they help highlight the different forms in which changing the visual context of a musical concert can take place. Many audiovisual relationships have been experimented with, particularly in recent years, but the most common form in which to find this, apart from the obvious arts connected with music such as ballet, dance or opera, is in the media of film or video. It is here that one of the most direct forms of this relationship occurs, as both the sound and the visual progress in the same time frame, adhere to duration, proportion

^{VI} ALMEIDA, Patrícia Sucena – b. 1972. Portuguese composer.

^{VII} ALMEIDA, Patrícia Sucena – *Fati Necessitas* (2005) for instrumental ensemble.

^{VIII} GMCL: Grupo de Música Contemporânea de Lisboa (Lisbon Contemporary Music Group)

^{IX} KREMSKI, Alain – b. 1940.

and time structure, among other aspects. The composer Skryabin experimented with a direct temporal-visual relationship with *Prometheus: Poem of Fire* (discussed in chapter 3).

Eisenstein^X collaborated closely on some of his films with composer Prokofiev^{XI}, and according to the latter, had the utmost respect for music, often adjusting his montage to “preserve the integrity of the musical fragment”^{XII}. During the process of incorporating music into his work, Eisenstein and Prokofiev would work out how to proceed: either the composer would look at the whole un-edited section of film and compose something from which the film director would later have to edit his montage; or to compose the music once the section of film had already been edited. While in the latter, it is the film director's ‘architectural’ plan that must be followed by the composer using appropriate techniques of composition to follow the ‘rhythm’ of the film, in the former, the architectural plan is decided by the composer, which the film director must follow. In two so different types of structure (music and film), although they both progress in time, it was the correspondence of the feelings, general idea and sequence of the film and music, that the duo of Eisenstein and Prokofiev managed to achieve so greatly. In Eisenstein's *Nonindifferent nature*, he highlights the various types of correspondences, for example, “the texture of an object or a landscape which can be matched with a timbre in the music; the possibility of synchronising a series of close-ups with a certain rhythmic pattern in the music (...)”^{XIII}. These correspondences (among many others) are key to a successful audio-visual relationship, some of which I have also used in my personal work (chapter 4).

In the art world of today, there is a growing importance of attempting to understand the potential of an inter-disciplinarity among the arts. Many have studied this; many have experimented with inter-disciplinary performances or objects of art, many of them taking a leaf out of Wagner's attempt at a true *Gesamtkunstwerk*^{XIV}. In all practicality, this total work of art has so far proved impossible, as it is rare for one person to possess an equal level of imagination and technical knowledge of more than one of the Arts at the same time. However, today's technology and resources in Electronic Music make it increasingly likely to achieve something closer to the concept of *Gesamtkunstwerk*. Therefore, as the arts gradually lead to a greater syncretism, it is increasingly impossible to think of them as completely separate. There is a growing inter-disciplinarity everywhere, allowing the creator of one art to borrow aspects

^X EISENSTEIN, Sergei – b. 1898 – d. 1948. Soviet Russian film director and film theorist.

^{XI} PROKOFIEV, Sergei Sergejevich – b. 1891 – d. 1953. Russian composer who became one of the most influential composers of the 20th century. Some of his most well-known works are *Classical Symphony*, the ballet *Romeo & Juliet* and *Peter and the Wolf*.

^{XII} EGOROVA, Tatiana – *Soviet Film Music: an historical survey*, 1967, cit. in ROBERTSON, Robert – Eisenstein on his audiovisual collaboration with Prokofiev.

^{XIII} EISENSTEIN, Sergei - *Nonindifferent Nature: Film and the Structure of Things*, 1945 cit. in ROBERTSON, Robert – Eisenstein on his audiovisual collaboration with Prokofiev.

^{XIV} *Gesamtkunstwerk*, or ‘complete art-work’ in German, is the concept of a total integration of all the Arts, so that none of them have greater importance than the other. Principally defended by Richard Wagner (1813-1889) the theory is that, because the Arts should all come from the same part of the mind, a perfect balance between them should be able to be achieved.

from others. This is found in many situations, one of which is the topic of this dissertation: the use of visually graphic notation in musical scores and the graphic representation of music.

Graphic musical scores is the term given to those scores where the composer has used shapes that do not adhere to conventional musical notation in his work. These can vary from those that still hold some resemblance to conventional symbols, to others which do not. They can be of a more pictorial nature, and sometimes even be considered objects of visual art in their own right. In common musical practice nowadays, while composers are continually producing works of this nature, it is still not very common to find this kind of music played, and it often produces feelings of uncertainty and, therefore, fear among interpreters. Even among musicians who regularly play contemporary music, completely graphic scores generally amount to unfamiliar territory. This is as a result of a general lack of education and investigation regarding this subject area. New and even more unconventional symbols are being produced even today, making it difficult to keep up with the production rate. But graphic symbols began in scores decades ago, albeit tentatively at first.

One of the aims of this dissertation is to bring to light and categorize some of the possibilities that are already in existence. It is not intended as a study for the teaching of musicians, nor as a study for visual artists to understand music. It is a study in which a musician's usually subconscious visual perception of a musical score becomes conscious, and analyses the visual stimuli present in this context. There are many different visual aspects to a musical page in both conventional and non-conventional notation such as visual stimuli, spatial/temporal relationships, aesthetic influences and background/cultural influences, on a scale from the most conventional forms of musical notation, to those that some may not even want to term musical notation.

This study also aims to understand a correlation between visual art and visual music. Is there such a thing as a possible systematisation of sound and vision? References to already existent and historical studies regarding this topic are touched upon, as well as personal experience and speculation as a result of my training in music and the visual arts.

In a practical form, the study culminates in examples of some of my own practical realisations of the graphic representation of music.

2. Musical notation: from symbol to image

In the analysis of musical scores, it is imperative to consider the role of the interpreter or performer. Scores are meant and designed to be read and interpreted by a musician, therefore the form of notation used on the page plays an important role in how the musician is going to interpret the symbols and signs into sound. Conventional musical notation, of course, uses the symbols to convey the idea of the resultant sound, much in the same way as the written word uses the symbols of letters, etc, to convey meaning. However, there is always a risk that the composer takes in placing the notated form of his idea into the hands of a musician: are the symbols he has written sufficient in conveying to the musician the desired outcome? Musical notation does not only involve pitch and rhythm or duration with the different placements of the notes, but also loudness and quietness (amplitude); whether a note should be staccato or more rounded (articulation); as well as a number of other nuances, including the overall attitude in which the music should be played. So the composer has the choice of creating a more or less rigorously notated score, consequently leaving either more or less to the personal interpretation of the musician:

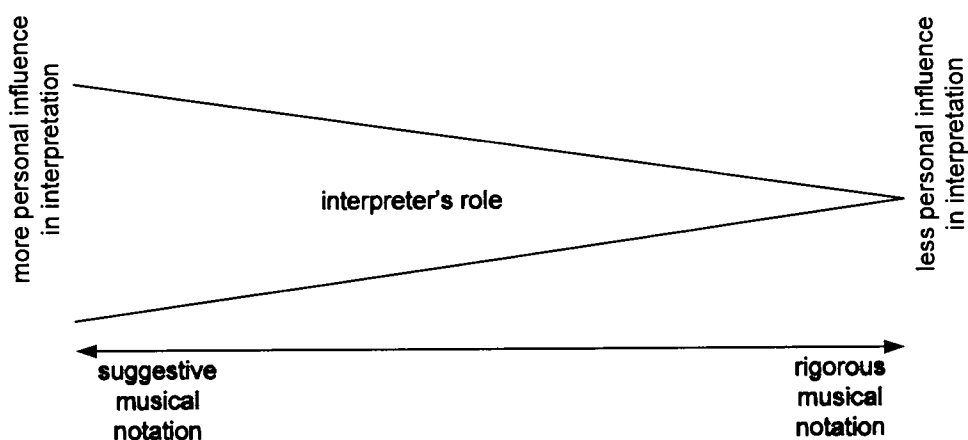


fig. 2.1

Yet the question still arises: how rigorously should a score be notated so as to limit the interpreter's individual voice as much as possible? However much a composer attempts to control the outcome of his music, the 'human' aspect will always be present, in a more or less controlled form. This is a crucial aspect of the artistic experience. However, the composer also possesses the choice of leaving that element of 'humanity' up to the interpreter, begging another question: how much does the composer want to risk in the interpretation of his music in choosing a less rigorous style of notation? Nowadays, with the increasing use of electronics and computing in the performance of music, a lot of the 'human' input simply does not exist, indeed it is often not even relevant. This is a more recent choice permitted through modern technology that composers can also now consider. On this subject of an interpreter's 'performative role' in

music, Stravinsky^{xv} says: "The problem that now besets the totalitarian serialist is how to compose 'surprise' since by electronic computer it doesn't exist (though in fact it does, even if every case is computable; even at its worst, we listen to music as music and not as a computing game). Some composers are inclined to turn the problem over to the performer – as Stockhausen does in his *Piano Piece No. XI*. I myself am inclined to leave very little to the performers. I would not give them margin to play only half or selected fragments of my pieces. Also, I think it inconsistent to have controlled everything so minutely and then leave the ultimate shape of the piece to a performer (while pretending that all possible shapes have been allowed for)."^{xvi} As a composer, he discusses precisely that 'risk' of allowing the interpreter's view of the written music to define the final form of a piece of music.

Stravinsky's reference to electronic music as a result of the use of technology also brings up another interesting point: how important is the 'human' role of the interpreter, and therefore the artistic experience, in the arts? The gradual increase in the use of technological reproduction, not only as an artistic form incorporated in the arts but also as a means of distributing the arts to the masses (via audio recording, video recording, photography, etc...) has widely influenced human contact with the artistic experience. In music, the use of audio technological reproduction has been investigated by various pioneering composers such as Karlheinz Stockhausen^{xvii} and John Cage^{xviii}. The latter's *Europera 5* is the perfect example of the use of technological reproduction for the creation of a new work. Two singers perform five opera arias of their own choosing, 'accompanied' by a pianist with six different opera excerpts. Simultaneously, there is also a 78-rpm victrola player playing six old historical opera recordings, a performer playing a pre-recorded tape, a radio and a silent television. This 'collage' of 18th and 19th century opera, mixing live with previously recorded performances, allows the audience to be transported back and forth across time via the use of different forms of reproduction, that are each individually related to a particular era, even if the sense of fusion is more conceptual than musical. Of course, in this case the combination of sounds at any moment is purely aleatory, even if each strand of the texture has its own sequential logic. The whole idea of this work allows for different resultant sounds in each of its different performances, allowing for much personal input from the performers (singers), yet they are still limited by the pre-recorded sounds.

Other works allow original natural sound to be manipulated technologically and distorted in a number of forms, such as Stockhausen's *Hymnen* (1966-67)^{xix}. One of his most celebrated works, an orchestra accompanies a magnetic tape, where various national anthems are

^{xv} STRAVINSKY, Igor – b. 1882 – d. 1971. Composer.

^{xvi} STRAVINSKY, Igor – Stravinsky in conversation with Robert Craft. Pref. by David Brew; Middlesex: Penguin Books, 1962. 301pp. p.125.

^{xvii} STOCKHAUSEN, Karlheinz, b. 1928 – d. 2007.

^{xviii} CAGE, John, b. 1912 – d. 1992. *Europera 5*, 1991. The last of his five *Europeras*.

^{xix} The first and only performance of this work in Portugal was performed by the Orquestra Sinfónica Juvenil (Youth Orchestra) in June 2005, Culturgest, under the musical direction of Pedro Amaral.

recorded and transformed electronically, allowing for the distortion of pre-recorded sounds to be contemplated as a new work of art. Again, the 'live' performers are limited by the magnetic tape as, even when at some points throughout the work, the actual musical notation is relatively 'free' (allowing for personal interpretations), the time limit of each of these sections is strictly controlled.

In such cases as these mentioned here, the progression and development of technological reproduction has allowed for new processes and therefore new works of art to be created. However, this has allowed for a new risk to arise: that of distancing this type of artwork from the purpose and essence of art: the technical process becomes the work of art, instead of the means to arrive at a final work of art. Also encountered more and more frequently is an aesthetic value given to that which is of a more conceptual than intrinsically artistic nature. I am of the opinion that, while John Cage's revolutionary work enjoys conceptual success in its impact on society (particularly in his use of technological reproduction), his musical style and endeavours were considerably bland and uninteresting, proof of which is that his works are much more commented on than performed. It is his process and concept that generated more interest than the final outcome of one of his pieces. He showed, therefore, great revolutionary achievement regarding concept and thought.

Technological reproduction is more commonly used to reproduce whole works of art for appreciation elsewhere. Principally, for the visual arts photography is dominant, for music audio reproduction, and film (linking temporal, audio and visual aspects) can be used for a number of different areas. Before these inventions, it had been impossible for a public to view a work of art or hear a piece of music without experiencing each directly. Intention and decision involved in visiting an exhibition or attending a musical concert were necessary, making it imperative to be in the presence of the original. This is now no longer necessary.

Nowadays, photographic reproductions of famous works of art such as paintings and sculptures, allow them to be viewed out of their original context and divorced from the original works. That which would have been seen only by the few who found themselves in that country and in the place in which the work was exhibited, is now viewed on the internet, in publicity, on television, in snapshots taken by friends on holiday, all of which creates the possibility of a growing familiarity with famous works of art without ever seeing the original directly. The same is true of the performance arts: temporal forms of reproduction also have the final result of the work reproduced in such diverse forms as radio, CD, television, DVD and, of course, on the internet. These situations have allowed for a global knowledge of things that originally would not have been possible. It is now literally possible to view these famous works of art in completely different (and sometimes contradictory) circumstances. Walter Benjamin^{xx} wrote: "[...] technical reproduction can put the copy of the original into situations which would be out of reach for the

^{xx} BENJAMIN, Walter – b. 1892 – d. 1940. German-Jewish Marxist literary critic and philosopher.

original itself. Above all, it enables the original to meet the beholder halfway, be it in the form of a photograph or a phonograph record. The cathedral leaves its locale to be received in the studio of a lover of art; the choral production, performed in an auditorium or in the open air, resounds in the drawing room.^{xxi} The work of art is now accessible to everyone: the *Mona Lisa*^{xxii} is recognised by almost everyone on the planet, as is the famous beginning of Beethoven's *5th Symphony*^{xxiii}. These famous works of art are being reproduced and copied at a phenomenal rate; so much so, that it seems almost needless to attempt to come into contact with the original. The socio-cultural aspect of the arts has so completely changed that to become familiar with them, it is no longer fundamental to do so first-hand. In music, what has this done to the role of the interpreter? For the sole purpose of gaining knowledge, it is no longer needed to view the performers first-hand, meaning that to watch an interpreter now, is purely for the joy of the artistic experience. Even of new works that are being produced today, reproduction is almost immediate after its first unveiling to the public.

Today, through technological processes that allow the human eye to experience that which naturally is not possible, a more detailed experience of many works of art is now possible. The painted ceiling of a church or cathedral such as the work of Michelangelo in the Sistine Chapel, a powerful and moving work of art, is so out of reach of the human eye that a close-up reproduction of the detail no doubt allows for a more detailed knowledge of the painting. For music and other performance arts the same is also applicable, generating ever expanding industries (record companies, etc.), as a result of which, people from across the globe now have the opportunity of widening their cultural knowledge and creating an all-round more cultured world and society in which we now find ourselves.

However, is our perception really enhanced? Do we experience artistic reality more faithfully? On a technical level, technological processes of recording have evolved to allow for progressively more and more cutting and editing, aiming to achieve the clearest possible form of the image or work recorded. The result of this is a progressive disappearance of error in the reproduction of the performing arts: that which is part of human nature to create (mistakes; nuances; etc.) and consequently an integral part of the artistic experience, is gradually being erased from our experiences. In music, the 'errors' are more and more frequently edited out, technologically producing a performance that is more faithful to the original musical score than a live, human performance could ever achieve, yet creating a sort of 'mock' performance. This type of situation is most commonly seen with the outrageous editing involved in the world of pop music, that can be instantly recognised when a singer performs a live concert and by no means lives up to the public's expectations created by their recorded release. Also in visual art,

^{xxi} BENJAMIN, Walter – The work of art in the age of mechanical reproduction. 1935.

^{xxii} DA VINCI, Leonardo, b. 1452 – d. 1519. *Mona Lisa*, started in 1503, and finished shortly before the artist's death in 1519.

^{xxiii} BEETHOVEN, Ludwig van, b. 1770 – d. 1827. *Symphony n° 5 in C minor, Op.67*, 1804-08. Famous for its opening motif, it has been reproduced worldwide to the extent of being used as mobile phone rings, doorbells, etc.

however good a photographic reproduction of a painting may be, those unique brush-strokes, nuances of colour, etc... possessed only by the original will never fully be understood – the photograph can never live up to the original painting. However, sometimes people who see the *Mona Lisa* are disappointed by its size – they have become so used to its reproductions that when faced with the original, their expectations of a ‘grandiose’ work have been let down.

As regards the role of a musician in interpreting a work of music from the musical page into sound, there is a great deal of responsibility hinging on the part of the performer to portray and transmit the idea and work of the composer as faithfully as possible: the receiver relies on the performer to do so. This is even more so now, as we are all bombarded with near ‘perfect’ technological performances of a work, that when a musician performs a known work, the expectation is always high – possibly even higher than human capacity in some cases. So the performer is expected to put into effect as exactly as possible the indications set down by the composer in his score, requiring a combination of musical competence and experience to allow the faithful transmission of the composer’s intention to reach the audience.

This point now defines two sides to the role of the performer, creating two new roles: that of the executant and of the interpreter^{xxiv}. The executant produces a technically expert execution of the musical score, not adding anything beyond that which the score specifically dictates, while the interpreter’s role involves carrying out his proper function as musician: that of understanding the music sufficiently to transfer the artistic experience to the listener. However, “every interpreter is also of necessity an executant. The reverse is not true.”, states Stravinsky: to be able to perform, a technical knowledge and competence are an absolute prerequisite, yet without this, any form of interpretation is useless. He goes on to say that “[...] no matter how scrupulously a piece of music may be notated, no matter how carefully it may be insured against every possible ambiguity through the indications of tempo, shading, phrasing, accentuation and so on, it always contains hidden elements that defy definition, because verbal dialectic is powerless to define musical dialectic in its totality.”^{xxv} The musical score is as complete as possible in its instructions to the performer regarding *crescendos*, *diminuendos*, accents and all other forms of notation, yet while the executant is expected to translate all the given indications into physical sound, it is the interpreter who, in addition to the excellence of translation, brings to the sound a “loving care”^{xxvi} (as Stravinsky so eloquently puts it); nuances; and an all-round sense of humanity.

Having recently performed Tchaikovsky’s^{xxvii} 5th *Symphony*^{xxviii} I recall that during one rehearsal the indication of *pianissimo* was brought to our attention by the conductor. At the beginning of the first movement, all instruments playing (clarinet, ‘cellos, double-basses) are

^{xxiv} STRAVINSKY, Igor – Poetics of music: in the form of six lessons. p. 122.

^{xxv} STRAVINSKY, Igor – *Idem, Ibidem*. p. 123.

^{xxvi} STRAVINSKY, Igor – *Idem, Ibidem*. p.124.

^{xxvii} TCHAIKOVSKY, Peter Ilyich – b. 1840 – d. 1893.

^{xxviii} TCHAIKOVSKY, Peter Ilyich - Symphony No. 5 in E minor, Op. 64, 1888.

presented with the indication of *pp* (*pianissimo*). However, according to the function of each instrument, there are different types of *pianissimo*. There is the *pp* of a melody, which has probably the most important expressive function. There is the *pp* of the bass which in tonal music supports the melody and harmony and defines the chord inversions; the bass has an important role but is secondary to the melody. There is the *pp* of the harmonic filling that puts into real sound the harmonic fields defined by the combination of melody and bass; naturally this is hierarchically less important still. There can be many other functions still: that of a counter-melody (a 'secondary-primary' function); that of notes that merely define rhythmic articulation; etc. This highlights the importance of the interpreter's role: while the work could be performed by a mere executant (or even a computer) using the exact same *pianissimo* in all instruments, common sense used by the interpreter and a sensibility to the function of the musical parts leads to a better understanding, and consequently a more human rendition of the work. As Stravinsky again states with regards this sense of 'humanity': "The realization of these elements is thus a matter of experience, intuition and talent of the person who is called upon to present the music."^{xxix}

When studying the forms of crossover between two such different elements as vision and sound, it is important to establish the two furthestmost points first – the extremes – so as to identify the varying degrees of a crossover between the two more easily. At the one end of the sliding scale is the pure 'visual' element, where there exists an apparently static form of art – that which we see on a page or canvas: painting or drawing, where the visual marks created are not specifically coded symbols, as in musical notation. At the other end is the element of pure 'sound', where an obvious temporal element is dominant: the symbols used in musical notation represent specific sounds, and consequently objects within a time frame.

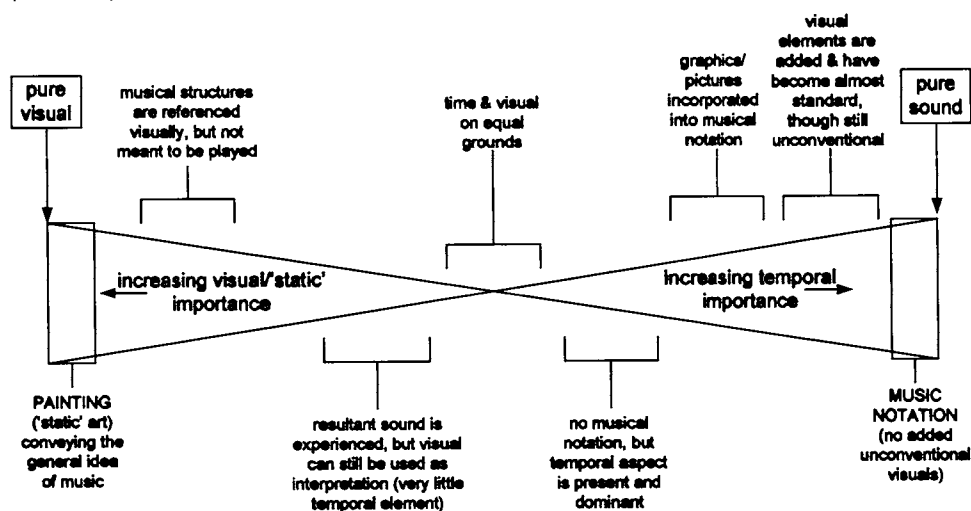


fig. 2.2

^{xxix} STRAVINSKY, Igor – *Idem, Ibidem*. p. 123.

Between the two extremes, a scale can be created pin-pointing the gradual overlap of one art-form with the other, so that while on the right-hand side, a temporal element is dominant (where sound/music is the final result); on the left, more importance is given to the static (where the visual object is the final result). This culminates in the centre with works that can ideally be looked at on equal terms, although to encounter this is somewhat difficult, as naturally, we tend instinctively to give greater importance to either the temporal or the static element.

The following study proposes to analyse the visual elements in musical scores at various stages of progression between the element of 'pure sound' and 'pure visual' and how these varying degrees influence the interpreter. Making use of the scale in fig. 2.2, the following chapters are placed at strategic points along that line, beginning with the most conventional forms of musical notation, where the interpreter's role in interpretation is somewhat limited, towards a dominantly visual notation (musical symbols are not used), where a more 'suggestive' nature is present in the written page of a musical score to the musician.

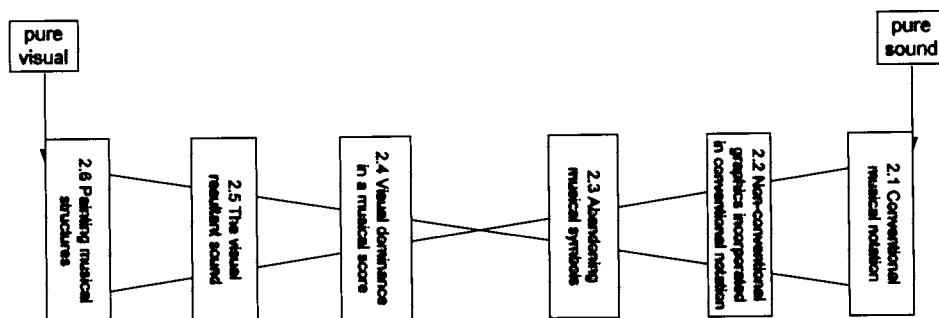


fig. 2.3

2.1 Conventional musical notation

At this end of the scale, traditional or conventional musical notation takes precedence. Much in the same way as with the written word, music reads from left to right and is made up of different symbols representing pitch, time, rhythm, dynamic level (or amplitude), tempo, etc. As with words, the interpreter (performer) is trained and skilled in identifying these various symbols, and therefore transforms them into sound (it is intentional or planned sound that is termed music). Under the term 'conventional', I classify that which is taught in music theory classes; that which has been used for centuries; that which can be recognised all over the world by any competent musician, without any need for special indication of new or foreign symbols. Conventional formats of written music also apply: 5-line staves to be read from left to right, spaced evenly so as to facilitate the reading of the music.

However, music can never just involve the simple, almost mechanical transfer of those symbols on the page into sound, like computer generated technology now provides us with (eg: midi files). It is the interpreter's job to bring that tricky term 'musicality' or 'performativity' to the notes he is given to play. He can be influenced in a number of ways by the visual impact he

receives as he observes the musical page. Here begin the psychological tricks that can influence the musician, namely those of a visual nature.

2.1.1 Visual tricks with musical symbols

In a musical score or individual part, the visible symbols on the page are there to tell the performer which note to play, how long for, and generally at what intensity. In certain situations however, different combinations of symbols can be used to facilitate the reading for the performer. For example, if a violinist is given this figure:



fig. 2.4

This note is a harmonic, always a tricky type of note to perform, as it involves finding the exact place on the string to place one's finger lightly, so as to produce the correct type of string vibration and consequently the correct resulting note. In this case, the expected result is F#, and the notated figure shows exactly that resultant note^{xxx}. Although the note written in this example sounds and looks like it should be somewhere just over halfway up the E string (as it would be if not a harmonic), the performer in reality has a number of different forms of producing this note at his disposal, which do not correspond at all to this first figure. By placing the 1st finger in a certain place on another string (a stopped note) and lightly brushing the 4th finger against the string in the correct place a perfect fourth above this 1st finger, the combination of intervals between the fingers causes the correct kind of vibrations on the string, and so the resultant note is in fact the intended F# harmonic. This complicated thought process takes time in preparing, and is therefore often quite complex for the performer to associate in one glance of the written music. However, this can be helped if the composer has previously given thought to this. He can instead write the exact same resultant note, but by changing the symbols, indicates how to do it rather than the mere result:

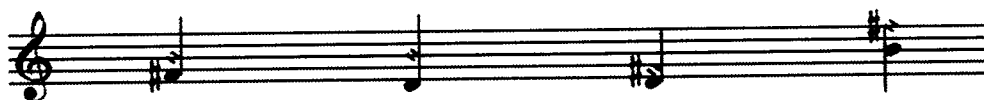


fig. 2.5

In each of these four figures, the bottom note indicates the bass note that should be 'stopped' (stopped = the finger should be placed firmly on the string), or if it happens to be an open string (as in the 2nd and 3rd figures – D string), it can be used as such. The diamond-shaped note indicates the place on the string where another finger should lightly brush the string so as to create the correct vibrations for an F#.

^{xxx} Harmonics that correspond to the open strings of an instrument (for a violin they are G,D,A and E), are relatively simple to perform as the point to touch is halfway along that string. Other notes that do not correspond to open strings are trickier to perform.

The first figure would very probably provoke in the performer a feeling of panic and apprehension: 'Help! How do I do it?', and consequently take time while the deciphering took place. The second, however, will simply be played as it is written, with less need for deciphering. In my personal experience of playing in an orchestra, this kind of difference in notation is life-saving. As musicians attempting to portray a composition in sound, our musical parts are there to guide us through the performance. Of course before any performance, rehearsals have taken place, so that we know what to expect and what is coming next, and the page acts as our guide as we read and play the music (a performance would never involve sight-reading – unless of course, as could be the case in more contemporary music, that is the composer's wish). Yet as our eyes follow the music at a constant pace, always anticipating what is to come next (much in the same way as reciting a rehearsed speech), we cannot afford to lose time in remembering how to play a complicated note. During the rehearsal period, we will have incorporated our own written annotations over our parts to remind us of problem areas or additional information and therefore facilitate our reading in later performances, yet if less of this is needed, the better, and the cleaner and simpler our page will look. Generally then, if shown the visual symbols of how to play a note instead of the resultant note, our experience is facilitated greatly. This shows that even in conventional symbols an immediate visual impact is ever present, and relevant symbols must be chosen with care by the composer to facilitate his communication to the performer. The score can show the performer how to produce the result or can show what the result should be. The latter is obviously closer to an artistic representation.

2.1.2 Colour references

References to colour and colour symbolism are and have been commonly used in music, whether simply as a form of personal inspiration to the composer, or even incorporated into the music in such a way as to also influence the performer's or even audience's view or preconception of a work. As Goethe states in *Theory of Colours*: "That a certain relation exists between the two [melody and colour], has always been felt; this is proved by the frequent comparisons we meet with, sometimes as passing allusions, sometimes as circumstantial parallels."^{xxxI} A visual dimension has the ability to create an enormous impact on what we feel or perceive about our surroundings. Every visual artist, whether a painter, photographer, designer, interior designer, etc., is aware of the crucial aspect of the sensation a visual situation can cause. The most basic concept of this, taught even in Primary School, is the difference between warm and cool colours. Reds, oranges and yellows are classified as warm colours and consequently relate to passion, anger and other strong human emotions that can be transferred to emotions felt in association with music. Likewise, cool colours (blues, greens) are related to serenity and calm. Two examples of colour association in existent musical works follow:

^{xxxI} GOETHE, Johann Wolfgang von – *Theory of colours*. p.163.

Sir Arthur Bliss A Colour Symphony (1921-2)

As the title of this work immediately suggests, the colour references play an important role. The four movements of the symphony themselves were given titles of colours:

I Purple – *Andante maestoso*

II Red – *Allegro vivace*

III Blue – *Gently flowing*

IV Green – *Moderato*

As the audience reads the names of the movements in the programme, they will immediately think of the colour while listening to the music. They may possibly even wonder to themselves these colours have been translated by the composer. Obviously, the physical colours themselves are not directly connected to the notes, tunes, melodies, harmonies, etc... of the music in a systematic way. It is rather the idea of the colours that is referenced, and is meant to be thought of in relation to the whole of the music. This is where colour symbolism comes into play. What do we associate with different colours? How do they make us feel? Different cultures have different connotations for colours, which now in a multi-cultural society will always be an influence in colour perception. For example, in our Western culture, the colour *white* is most commonly associated with purity and signifies life, while in certain Eastern cultures however, *white* is the traditional colour of mourning (that which *black* would be to the West).

In the case of Bliss's symphony, the composer was principally influenced by heraldry; his associations to the colours of his four movements are of a Western nature:

I Purple – *Andante maestoso*

Purple reflects "...the colour of amethysts, pageantry, royalty and death."

II Red – *Allegro vivace*

"Red is the colour of rubies, wine, revelry, furnaces, courage and magic."

III Blue – *Gently flowing*

"...the colour of sapphires, deep water, skies, loyalty and melancholy."

IV Green – *Moderato*

"Green is the colour of emeralds, hope, youth, joy, spring and victory."^{xxxii}

I myself, while listening to a recording of this work and with prior knowledge of these associations attributed by Bliss, can picture the colours referenced. Even the indications at the beginning of each movement not only establish the speed but also help to describe the character (*andante maestoso*; *allegro vivace*; *gently flowing & moderato*). However, as I have not yet had the opportunity of playing in this work, I can only imagine what it would be like as a performer. As mentioned earlier, it is obvious that the individual notes themselves do not relate to an individual colour, but rather the attitude attributed to each movement. A majestic posture

^{xxxii} Bliss quoted in the informative booklet *in: SIR ARTHUR BLISS – A colour symphony, checkmate suite*. [Audio recording].

and attitude will be required for the first movement while the instrumentalists may imagine a scene of royalty and grandeur, as opposed to a more serene attitude with regards the third.

Messiaen *Couleurs de la Cité Céleste* (1963)

In this work by Messiaen^{xxxiii}, written references of colours are indicated at certain stages throughout the score, designed to gear the conductor towards the creation of the essence of that colour. Note the references to colours: *sardoine rouge*; *émeraude verte*, *bleu saphir*, *et or*; *rose*, *mauve*, *et gris* in a page of the score:

The image shows a page of a musical score for Olivier Messiaen's *Couleurs de la Cité Céleste*. The score is for a full orchestra and includes the following parts: 1st and 2nd Clarinets, 3rd Clarinet, 1st, 2nd, and 3rd Trumpets, 2 Cornets, 1st and 2nd Trombones, Piano, Cymbals, Bells, and Gongs. The tempo is marked 'Lent' with a quarter note equal to 50 (♩ = 50). The score is divided into three measures, each with a different time signature: 4/8, 2/8, and 3/8. Below the score, three color references are indicated with arrows pointing to specific moments in the music: 'sardoine rouge' under the first measure, 'émeraude verte, bleu saphir, et or' under the second measure, and 'rose, mauve, et gris' under the third measure. A bracket spans these three color references.

colours referenced at different stages in the score

fig. 2.6

Olivier Messiaen was known to experience a personal relationship between colours and sound, in the form of synaesthesia (discussed in chapter 3.1). In this score, the purpose is not to determine in any specific way, which colours should be experienced by the audience or performer. They are personal references of Messiaen's as a result of his synaesthetic experiences (he attributed a personal colour-code in particular to the degree and type of dissonance/consonance of the harmonic complexes), placed in the score as not only an

^{xxxiii} MESSIAEN, Olivier – 1908-1992)

indication of his own experience and inspiration, but also as a means of aiding the conductor in his own interpretation of his musical direction. As with the symbolism of colours mentioned with reference to Bliss's work, here, it is again, the individual references the conductor feels regarding these colours that comes into play. He is not expected to act upon these references, but rather take them into consideration in his attitude and posture.

2.1.3 First visual impression of a musical page

The first impression of the overall visual aspect of a musical page to any musician (while most of the times subconscious) can influence his general idea of the work. A visual influence of a page on a basic level, as with written word, has the ability to encourage pre-supposed ideas of the content of the information provided. Such influences can be caused by many different factors, such as the type of typography used. Of course nowadays, music is almost all transcribed to the computer on programmes such as Sibelius or Finale; before this, prints were made; and before that all parts and scores were written out by hand. Naturally, differences in handwriting will have been a basic influence, in that a 'cleaner' hand would give the impression of a more structured and simpler construction to read, as opposed to a 'messier' hand. Computer-written music has of course, a generally 'clean' and structured appearance, and can be configured to have more lines and bars of music on a page, therefore looking denser; or less lines and bars on a page, making it look brighter and more spaced apart. It allows the composer or the person transcribing the music to 'play' as it were with the visual format, until the final outcome is satisfactory in portraying an appropriate first impression to who ever reads it.

However, another way a visual influence can be achieved is through a choice involving the content of the music: the use of the musical symbols, i.e. notes. The composer can, for example, choose a certain note value that will visually have a different overall effect on the eye than another. In musical notation, note values are graphically simpler symbols when they have a higher note value, than with a lower value, and therefore look less intense:

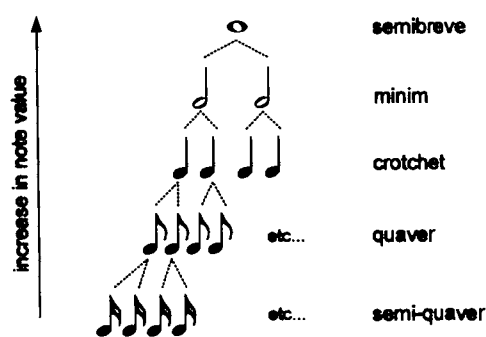


fig. 2.7

The visual symbols are simpler and cleaner as the note value increases. Consequently in general terms, a page containing shorter note values looks 'blacker' and more intense than a page containing longer note values.

To illustrate how this can affect notation and the way it looks, here is an excerpt from a trio by Schubert^{xxxiv}. This first example is an excerpt from the composer's original work:

1.

original notation of Schubert trio
(excerpt from beginning)

4/4 bar

value = 4 x

fig. 2.8

The original notation is written in a 4/4 bar - that is 4 crotchets per bar. In this next second example, the note value has been halved twice, making the bar 4/16 (4 semi-quavers per bar):

2.

same excerpt Schubert trio
note values halved twice

4/16 bar

value = 4 x

fig. 2.9

^{xxxiv} SCHUBERT, Franz - Trio in Bb (1st movement and part of 2nd only), D.471, Sept 1816.
SCHUBERT, Franz - 1797 - 1828.



Although the music sounds exactly the same, the page looks more intense, as opposed to the next third example, where the note value has been doubled twice (4/1 – 4 semibreves per bar), making the same music look cleaner and airier. Consequently, the music needs to take up a second page, so that the longer note values fit on the staves:

3.
 same excerpt Schubert trio
 note values doubled twice
 4/1 bar
 value = 4 x o

fig. 2.10

These two 'experimental' examples are greatly exaggerated to the extent that they are musically ridiculous (no composer would use these extreme note values for this type of music), yet they illustrate the sort of effect that can be achieved by varying the basic note-values. Thanks to the change of speed indications at the top of each excerpt ($\text{♩}=80$; $\text{♪}=80$; $\text{♩}=80$), when these three examples are played on the computer programme, the listener will hear precisely the same music three times, with no change whatsoever in sound between any version. Of course, this is the result of a computer-generated sound. Although the rhythms and notes technically manifest themselves in the same way, a human interpreter will view each page of music in a different way. Because of the preconception that a 'blacker' musical page is faster and consequently more intense, requiring a deeply concentrated attitude towards the reading of it, a performer will naturally present a more intense outlook to the deciphering, which will naturally transmit itself into the way he performs the music. This is a way in which the composer has the ability to transmit his intentions regarding attitude simply through musical symbols.

I was rehearsing Mendelssohn's^{xxxv} 5th Symphony^{xxxvi} when I wrote these lines, and throughout the rehearsals (particularly the first few, while still sight-reading), I came across this

^{xxxv} MENDELSSOHN, Félix – b. 1809 – d. 1847.

^{xxxvi} MENDELSSOHN, Félix – Symphony No. 5 *Reformation*, 1829/30. It celebrated the 300th anniversary of the Lutheran Church.

sort of visual psychology in my part (2nd violin). The third movement is written in a 2/4 bar – a constant pulsating, ominous rhythm is almost a constant throughout the entire movement, played by the lower stringed instruments creating the changing harmony, while a haunting melody is played by the 1st violins over the top. The overall sound is relatively slow, yet provides an intense, deep and overpowering section of music, that does not pause for a break to breathe throughout. To support this feeling, the choice of note value creates an intense and very black aspect to the page:

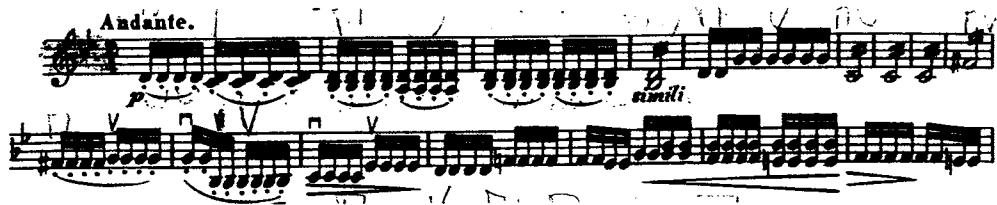


fig. 2.11

These first two lines of the 2nd part illustrate this perfectly – although the speed of the music is relatively slow and simple, the psychological effect of the way it has been written creates a dark page, which is reflected in the style of the resulting music.

In a very different example in the first movement of the same work, there is a particular moment which caught my notice nearer the end, in the last *meno allegro* section. The music is fast here, but light, with an aim to be constantly moving ahead, with 'airy' melodies jumping from one instrument to another:

fig. 2.12

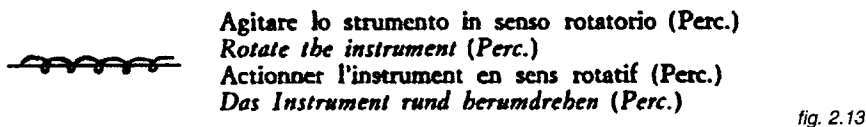
The bar here is 2/2, the note value being higher than that of the third movement (minim instead of quaver), allowing for this section of music that is definitely a lot faster, to look more spaced apart, lighter, freer, and less intense. Again, this visual influence that the performer has to deal with, is on a parallel with the resulting music and melodies that are produced.

This influence to a musical page has also had influence in previous times, especially in the Renaissance. For example, a text about night is often accompanied paradoxically by faster music because of the darker appearance of shorter note values on the page.

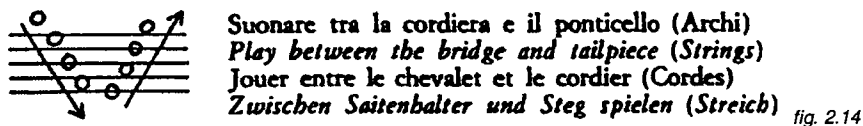
2.2 Non-conventional graphics incorporated in conventional notation

In the natural evolution of any subject there exists a constant updating and invention of material, to which music is no exception. Particularly in contemporary music, new symbols have been created to allow for a freer interpretation of the music by the interpreter. As contemporary classical music veers away from traditional musical sound, it makes use of a number of visual symbols designed to communicate new forms and styles of musical sound to the performer. Some of these symbols have now become of standard use among contemporary composers, although updates of them still continue while composers find a constant need to adapt them or even create new ones to suit their compositional needs. Consequently, there are many scores in which an explanatory page at the beginning is included to aid the conductor or instrumentalist in the interpretation of the subsequent notation.

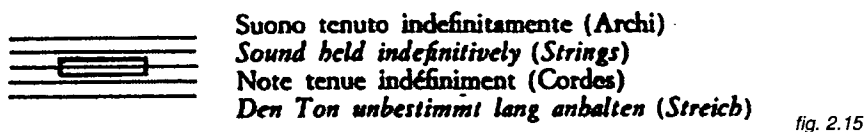
In an oboe concerto^{xxxvii} by the composer Bruno Maderna^{xxxviii}, the composer indicates the meanings of the un-conventional symbols to be found throughout the work. A few of these symbols use graphics that physically mirror and at the same time determine the movements the musician should make when creating that note or sound.



Here, the spiral indicates the physical movement of the rotation of the percussion instrument so as to create the particular desired effect or sound, while in the following example, with the help of the graphic arrow symbols, and the circular figures that allude to notes or harmonics, the image poses an almost visual re-enactment of the physical movement the string player is to perform with his bow:



In the next example, the composer 'plays' with the graphics of traditional notes (a breve), which has a determinate value and speed, and creates an allusion to that note in this form of an extra-long rectangle:



Using the simple lines that a normal note would have yet changing the contour of it, he allows the musician to realise that this is a note like any other, it should be played at the pitch the symbol is found on (in this case, if on a treble-clef staff, the note would be B), with the difference that the length of it is not pre-determined.

^{xxxvii} MADERNA, Bruno – "Konzert für oboe und kammerensemble". 1962.

^{xxxviii} MADERNA, Bruno – b. 1920 – d. 1973.

In this following work – *Eight Songs for a Mad King*^{xxxix} by Peter Maxwell Davies^{xl} - although a large percentage of the score uses conventional notation indicating specific notes to be played, there are a number of visual indications present that do not adhere to the classical canon of musical symbols.

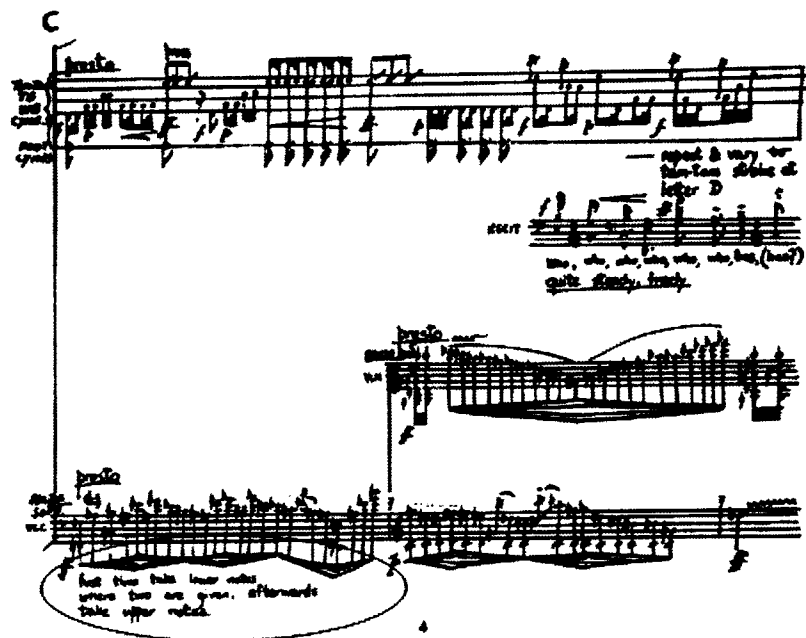


fig. 2.16

On this page of the score, what is the significance of these diamond-like shapes? How are they meant to be played? This part of the musical symbol is conventionally characterized by straight lines, and according to the number of lines present, the note value changes: 1 line = quavers; 2 lines = semiquavers; 3 lines = demisemiquavers; etc... the more lines, the shorter the note value. So in this example, the changing number of lines indicates an accelerando or rallentando according to whether the notes appear to look more like quavers, demisemiquavers, or any other value in between. However, when this occurs in such a short space of time like here, it effectively results in a certain rhythmic irregularity. So the visual aspect of this diamond-shaped figure mirrors the effect the sound will have: as the shape opens and more lines appear, the pace quickens, as when the shape closes and less individual lines are visible, the pace slows.

This particular diamond-shaped figure designed by Davies is unique to him, however, a similar figure has already become standard in contemporary music and from which Davies's figure sprang. The figure is always in a triangular format; either opening or closing, gradually increasing the number of lines to therefore increase the note value and the pace, and vice versa. Many composers of the 20th century have used this before to create an accelerando or

^{xxxix} DAVIES, Peter Maxwell – “Eight songs for a mad king”: for male voice and instrumental ensemble, 1969.

^{xl} DAVIES, Peter Maxwell – b. 1934.

rallentando. In this example from a piece by Christopher Bochmann^{XLI}, the accelerando occurs from a quaver to a semiquaver:



fig. 2.17

Peter Maxwell Davies, however, adapted this figure to suit his needs in this work, and chose to create his own version of the figure. Although the explanation for how these figures should be played is understandable and makes sense when referring to symbols of conventional notation, it could also refer back to the idea of a 'blacker' page looking faster and vice versa. Therefore it seems that figures like these could sometimes also be interpreted in an opposite way: as the diamond-shape becomes clearer and more spaced apart, the pace should slow, while as the shape closes again to become darker, the pace should quicken. However, as many of these new figures are not yet part of a fully universal symbol system, it is understandable that there may be a confusion, making the explanatory page at the beginning of a score all the more necessary, or, indeed, including explanatory notes throughout the work as Davies clearly does.

Another interesting adaptation of an already standard figure into a new form by Davies, seen throughout the same work, is shown in the following example. A cluster is the presence of all consecutive notes within certain limits - on a piano, it is as if someone places the palm of their hand on a section of the keyboard and presses down all the notes that their hand covers – a 'cluster' of notes. The composer can choose to create a cluster in a number of forms: if the cluster is reached by the sum of the notes being played by different instruments, then, of course, each instrumentalist's part will notate the note(s) he is to play. If, though, an instrument is technically able to create a cluster on its own (eg: piano), instead of writing a group of all the individual notes together on the staff, the composer can create a block of colour covering the range in which the cluster should take place:

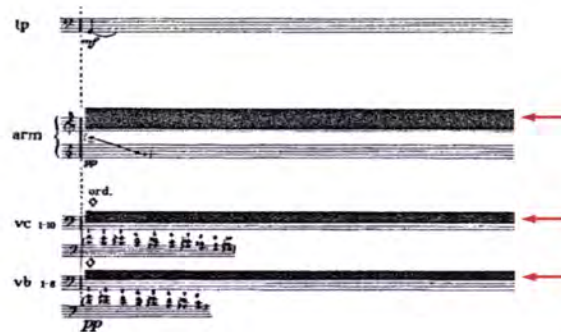


fig. 2.18

^{XLI} BOCHMANN, Christopher – b. 1950.

This figure has become of standard use in this situation, but yet again, Davies has decided to adapt it to suit his work. He has created a triangular block of colour that starts off as a B Major chord and gradually, by filling in the vertical gaps in the chord, transforms into a cluster:



fig. 2.19

As the music moves along the staff in time, when the triangle begins to take shape the pianist will gradually fill up the B Major chord with more notes within the range that the triangle covers, so as to end up eventually as a cluster.

With the examples highlighted, along with many more present in contemporary music, it can be generally agreed upon that the lines and shapes used to create new symbols are graphically similar to what happens physically or technically on an instrument, or the instrumentalist's actions. As onomatopoeic words sound like the sound or entity they are describing (eg: 'bang' sounds like a bang), so do these symbols tend to reflect the musical occurrence.

2.3 Abandoning musical symbols

With the emergence of a more suggestive type of music in recent years, there are some situations in which conventional musical symbols are gradually being abandoned from the score – no note symbols/ keys/ staves that even the layman has come to identify as music. For example, *Kanon für Streichorchester*^{XLII} by Penderecki^{XLIII} (first three pages of the score shown below) shows how a similar system has been devised so as to read the music from left to right, therefore in a 'temporal' aspect, yet not adhering to conventional forms and layouts of musical notation:

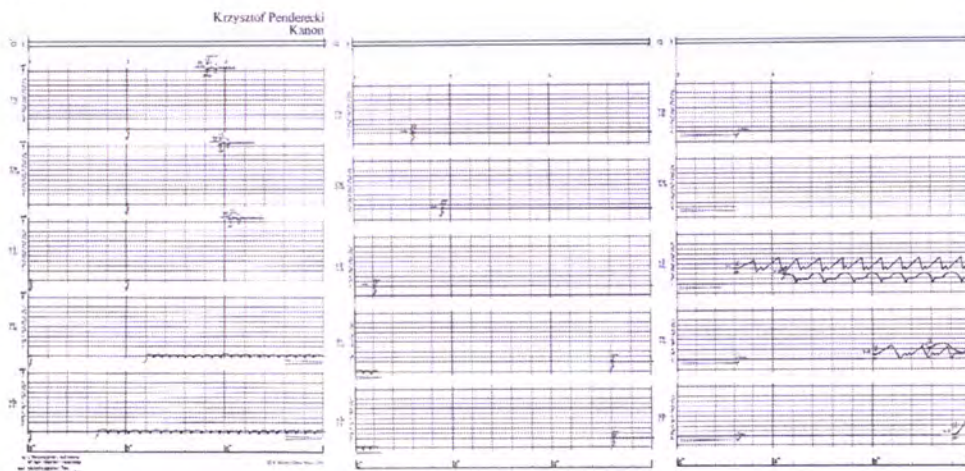


fig. 2.20

The new symbols used do not adhere conventionally to a specific pitch or note duration, so they become of a more suggestive nature to the performer: the visual notation suggests that which the performer should attempt to create into sound. Again, many of these symbols may mirror or reflect the performer's physical actions. In Penderecki's piece, the following symbol for glissandos (explained on a page at the start of the score), reflects the physical pattern the string players' fingers should make in performing the glissando on the string:

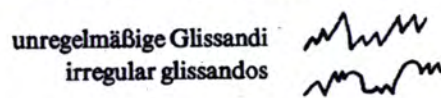


fig. 2.21

In conventional notation and 'pre-contemporary' music, a glissando is made by showing two notes on a staff, with either a straight or a wavy line between them. Admittedly, glissandos were not specifically notated around Mahler's time (c. 1890), and so adhere to a more modern form of sound. However, in this case of Penderecki's work, the glissandos are not simply one up or down between a start and end note, but rather an irregular (as he puts it) and constant sliding of sound. These glissando lines can be seen in a page of the score (next page):

^{XLII} PENDERECKI, Krzysztof – "Kanon": für Streichorchester.[Score] Germany: B. Schott's Söhne. 38pp.

^{XLIII} PENDERECKI, Krzysztof – b. 1933.

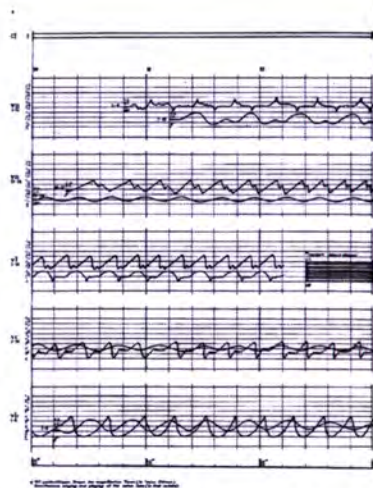


fig. 2.22

These glissando lines are also accompanied by certain regular wavy lines, also explained at the start of the score:

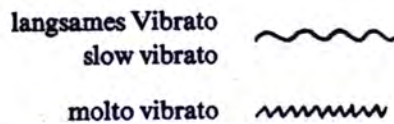


fig. 2.23

The string player controls his vibrato by the intensity at which his finger vibrates on the string. This can be made to be more frenetic or calmer, as the style of music dictates – usually this depends on a previous knowledge of the period or style in which the music was written and the performer will naturally adhere to those limits. Any kind of indication about the sort of vibrato from the composer was conventionally always written as *molto vibrato* or *langsames vibrato* over the staff. However, the use of wavy lines as opposed to written indications allows the composer to give different speeds and intensities to the different types of vibrato. Although only the two extremes have been shown in the example above, this allows for a range of other intensities to exist between the two. By comparing the different intensities of the lines he finds throughout the work, the performer can recreate his vibrato accordingly along that scale. Also, this allows the composer to create an indication for irregular vibrato patterns, or types of vibrato that are constantly changing.

In this work by Penderecki, while a lot of the notation is visually completely different to that of a work which uses conventional notation, there are still a lot of similarities to be found to traditional forms and layouts of written music. The most obvious is the use of a time/ pitch axis, where the eye follows the visual line in pitch and time:

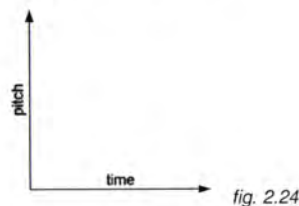


fig. 2.24

With pitch, the higher the note, the higher up it is placed on the page. With time, as with written word, the music is read from left to right. This is also true for *Kanon für Streichorchester*, where the music is written in a temporal format across the pages of the score:

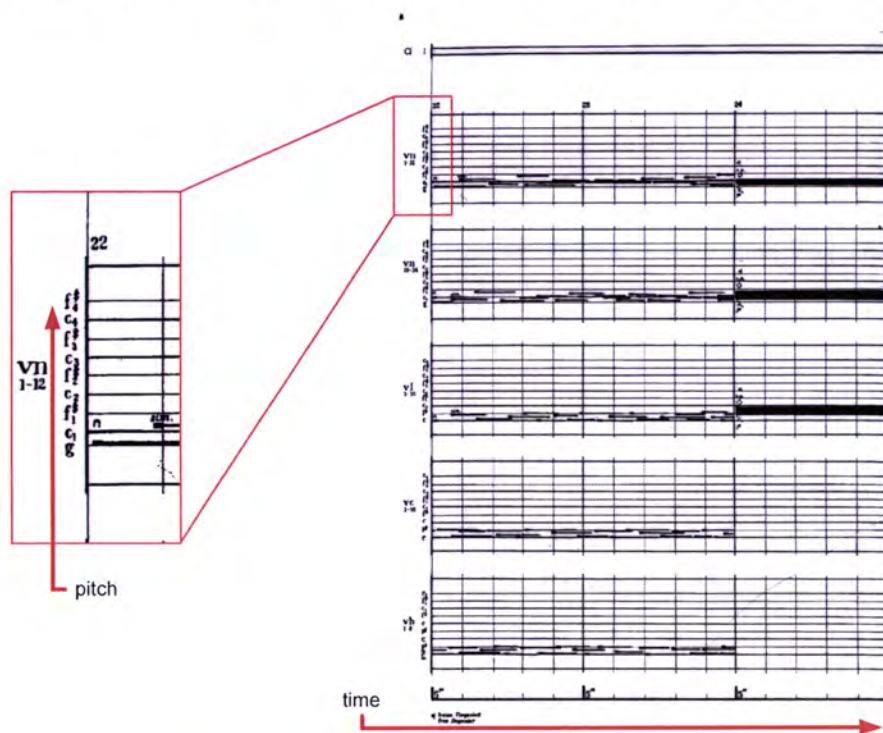


fig. 2.25

On the left hand-side, note references indicate pitch: from F# - C - F# - C - etc... for each horizontal line, so that every two lines represent an octave (twelve semitones), and every line represents an augmented fourth (six semitones). Every vertical line represents a second in time, so that each thicker line appears every 5 seconds. The time axis is therefore strictly defined, while the pitch is still not entirely specified: the figures placed up and down this axis find themselves within ranges of augmented fourths, without specifically defining which particular note should be played. The interpreter should therefore adapt his choice of notes within that range, according to whether the figures are found nearer the top or bottom of that section. As a whole, this work contains a similar layout and format to that which is conventional, albeit with the absence of conventional symbols and staves, allowing for a more suggestive approach to pitch.

2.4 Visual dominance in a musical score

In recent years, composers have been toying with the conventional formats of a musical page. Take, for example, this page from Peter Maxwell Davies's *Eight Songs for a Mad King* (1969):

3. THE LADY-IN-WAITING (Rep. Mad King's fancy)

The flute has a dialogue with the King, replying to his phrases (with mimicking parodying versions of them, freely), & accompanying him with the given figures discreetly, in any order, quite freely.
The percussion player intersperses & accompanies with bird-calls (toy), mocking. The other players execute mechanical bird noises (mechanical nightingales, &c.).

fig. 2.26

Why has Davies changed the format of this musical page? He still uses basic conventional notation (albeit with a few exceptions already dealt with in previous chapters), yet has decided to create a visual difference to its layout. There are a number of different levels on which this affects the performer. This work by Davies is based on a series of poems inspired by a miniature mechanical organ playing eight tunes, once belonging to King George III. "The flute,

clarinet, violin and cello [...] represent on one level, the bullfinches the King was trying to teach to sing. The King has extended 'dialogues' with these players individually."^{XLIV} These extended 'dialogues' as Davies calls them, can be seen in no.3 (pictured above) with the flute, and subsequently in nos. 4, 6 & 7 with the cello, clarinet and violin.

With a knowledge now of the story influencing this work and the 'conversations' between the King and his birds, the overall visual influence of this page can be related to the shape of a bird cage. The symbolism of a trapped bird stuck behind bars, a feeling of claustrophobia, singing to be let free – possibly begging the King to allow him out, throughout these 'dialogues'. The other musicians have to follow the pattern of their lines of music, and are led on a strict path that emphasises the lines making up the bars of the cage, while the flute's line is the cross-bar near the top, trapped by the other lines. The flute 'sings' in reply to the King, while being kept behind the strong vertical bars.

Meanwhile, symbolism aside, the physical line of music for the flute is cut off by the vertical lines belonging to the King and other instruments, allowing for a visual picture of how this 'dialogue' will take place. As written at the bottom of the page by the composer, the flute will play 'freely', interspersing with the King, allowing for a personalised version every time the work is performed. Although his musical line is made up of definite symbols that indicate specific notes, due to the un-conventional layout of the musical lines, the exact moment in which he should play in relation to the other voices/instruments is not determined, hence the indication to play 'freely'. So, as opposed to Penderecki's work (fig. 2.25), here, pitch is defined more specifically due to the use of conventional notation on a staff, while time is not. Indeed, the individual lines of music contain a variety of note values, indicating rhythm and individual note duration, however, the vertical (or harmonic) combination is aleatoric: individual instrumentalists are not compelled to play at a particular point in time in relation to others.

Veering away from the technical aspect of this page, the influence of the overall aspect of the page is also intended to influence the performers on a psychological level. As this work is in a sense 'theatrical', in that the eight songs (of which this excerpt is part of the third) portray the madness of King George III and his mad ideas towards these birds, this 'picture' incorporated in the score allows the interpreters to become more involved in the personalities and trials of their characters. The flautist can see that his line is visually stifled by the lines of the others, allowing him to more easily access the emotions of a caged bird, while the other stronger lines represent a sort of 'holding of the fort', influencing the musicians to stand their ground in a decisive way. So the advantage of the use of this layout is in the psychological portrayal the musicians interpret the music in – their performance becomes part of the story of

^{XLIV} DAVIES, Peter Maxwell – quoted in the introduction to his score. "Eight songs for a mad king": for male voice and instrumental ensemble, 1969.

the work, and allows them to better understand the meaning and context of the music they are aiming to interpret.

2.4.1 Abandoning the temporal aspect of a score

Up to this stage, the temporal aspect of a musical score (being read from left to right) together with the use of helpful symbols (whether conventional or not) has been dominant (albeit gradually becoming less of an importance). The purpose of the score so far has been to aid the performer in the interpretation of the symbols and figures on the page into sound, and consequently to make his life as easy as possible. But in recent times, the composer has taken on a new role on top of his existent role of creating guidelines for a future sound to be performed. This can be classified as allowing aspects of the role of a visual artist to be incorporated into the musical score. As an example, three isolated pages of the score of *La Passion Selon Sade*^{XLV} by Bussotti^{XLVI} show how this far this particular score has veered away from a conventional musical sheet:

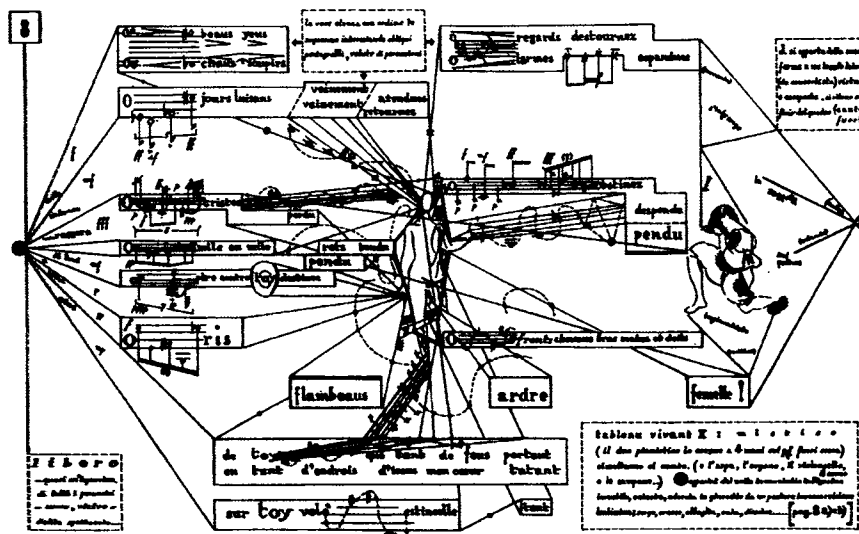


fig. 2.27

For the performance of this type of music, the notation is not intended as a specific indication of what to do, as a conventional musical score does with the use of musical notes. Here, the notation appeals to the psyche of the performer, to interpret what he or she feels by looking at the page.

^{XLV} BUSSOTTI, Sylvano – “La Passion selon Sade”: mystère de chambre avec tableaux vivants. 1966.
^{XLVI} BUSSOTTI, Sylvano – b. 1931.

Among the 'drawings' and figures incorporated on the pages, there is of course an obvious reference to conventional musical notation – staves are present (particularly in *fig. 2.29*), as well as notes and other conventional musical symbols:

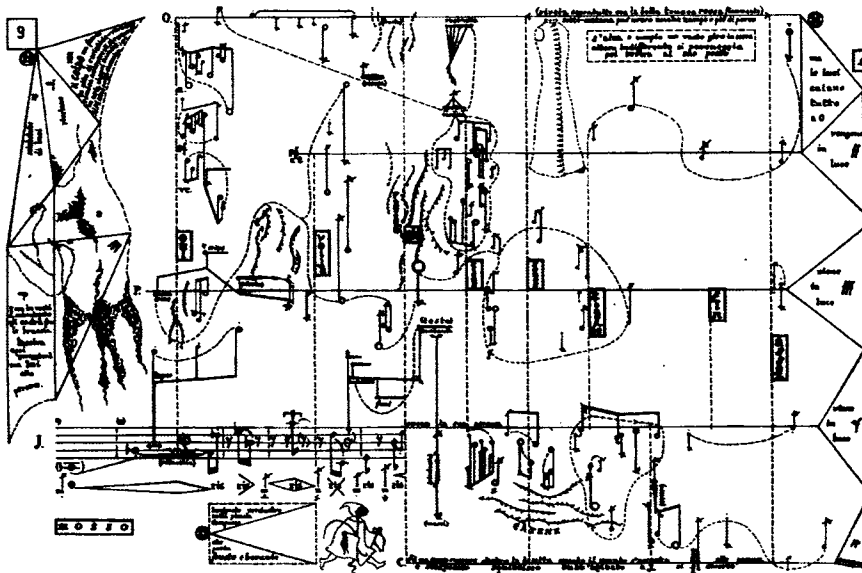


fig. 2.28

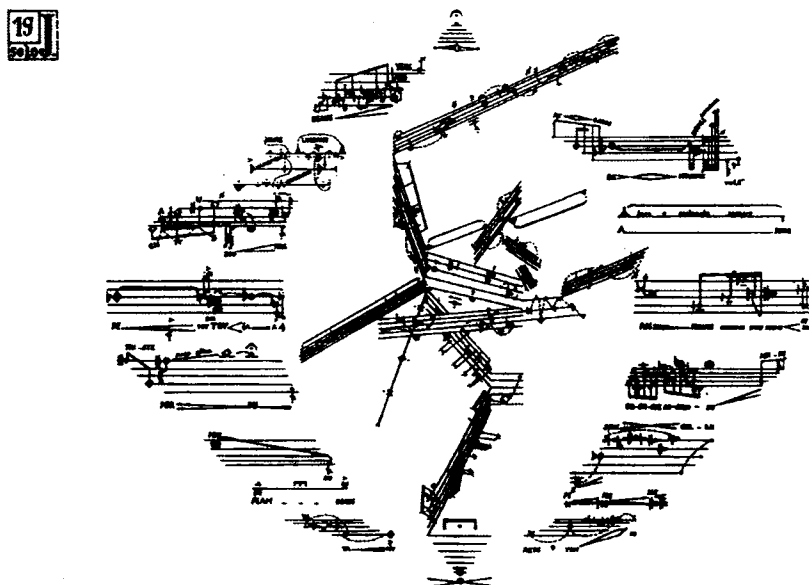


fig. 2.29

In particular this last example can be placed on a parallel of sorts with Peter Maxwell Davies's 'bird cage' (*fig. 2.26*), as the references to conventional notation are still present while the layout of the staves has been presented differently and unconventionally. The presence of clearly musical figures and references is of an importance as of course, appealing to a musician trained to read musical notation, images as these will have a different effect from what they would on someone who is not trained as such.

Looking at the pages of this score is no doubt a pleasurable experience. Conventionally, the role of a musical score is solely to provide the performer with guidelines to interpretation, and is never viewed by the public, as this interaction is not relevant. In sections of reviews of performances of this work, many references are made and praise is given to the musical language and values, while no reference is made to the visual of the score itself. I have no doubt of the artistic integrity of the resultant sound, yet this does raise the question of the reason why Bussotti decided to create these compelling drawings. They are, of course, designed for the enrichment of the musicians' artistic experience – transmitting to them a feeling or idea that they should attempt to portray in their interpretations. I believe that he wished for a personal interpretation by the performer to be more dominant than any specific or exact sound that he could have portrayed through conventional notation.

This work could be an example of a close inter-disciplinarity between music and drawing, strived for by so many current and past artists. The resultant work of art is made up of both music and the visual: a visually dominant score, as well as music created from it. However, these two forms are only viewed separately from one another by an audience, with the exception of the musicians themselves. The interpreters are the only beings to live both experiences simultaneously.

2.5 The visual resultant sound

The general purpose of a musical score so far has been to provide relevant and understandable symbols for the performer to interpret into sound and music. Recently a new form of score has come about documenting the sound that is heard onto paper – instead of the score happening before the sound, it is the sound that happens before the score, rather like the chicken and egg debate.

This has come about principally due to the emergence of the use of technologically (re)produced sounds in a live performance, for example on a magnetic tape as in *Kontakte*^{XLVII} by Stockhausen (excerpt shown on next page). With the use of electronic sounds throughout the entire work which the 'live' performers must follow, a section in the score is created to map out the course of the sounds on this tape through time.

^{XLVII} STOCKHAUSEN, Karlheinz – *Kontakte* 1958-60. This work exists in two versions: 1. Electronic music; and 2. Electronic sounds, piano and percussion.

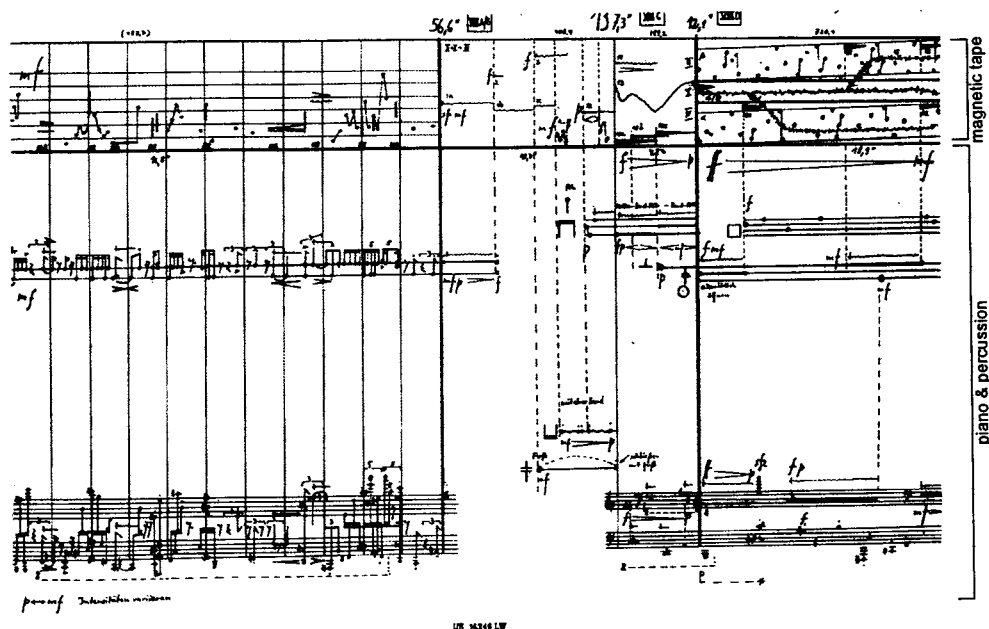


fig. 2.30

Here, the vertical or harmonic combination is not aleatoric as with Peter Maxwell Davies's work: that which the pianist and percussionists must play is placed in a specific time-frame in relation to the magnetic tape, leaving a rigorous line for them to follow. The magnetic tape will stop for no one, so, as opposed to a performance made up only of live performers, the music will continue even if something goes wrong: the 'live' musicians are forced to keep up and catch up with the rigour of the magnetic tape throughout the whole work.

The top line of the pages of the score (as shown in fig. 2.30) is dedicated to a visual interpretation by Stockhausen, of that which is heard on the magnetic tape. This line is incorporated so as to aid the musicians in identifying where they are in the time-frame of the tape provided, in accordance to what they hear through the amplifiers. None of the symbols here are identified previously in any sort of explanatory page, so they are purely of an interpretative nature on part of the composer, and consequently of an associative nature for the performers. A time-axis is definitely and clearly defined: referenced seconds relating the time-frame for different sections over the score are incorporated. A pitch axis is also present, although not specifically defined: while the lines drawn are placed strategically further up or down the lines, reference to specific notes is not present. This is also not necessary, as this line is not to be interpreted by anyone, but to act merely as a means of association of sound.

2.6 Painting musical structures

At this end of the scale, visual art in the form of drawing or painting takes precedence. For the first time in this chapter, the final visual result is not created as a guide for later interpretation into music. It is however, the final result in its own right. Many artists throughout the centuries have used the idea of music as inspiration for works of art in various different

ways. From using the idea of an already existent piece of music as inspiration for a painting; to using musical structures as a basis to create visual shapes. At the beginning of the twentieth century though, with the emergence of abstract painting, was a period in which many visual artists took a more in-depth view of this inter-disciplinary relationship, among others are Kandinsky^{XLVIII}, Klee^{XLIX} and Mondrian^L.

A talented violinist, the expressionist, cubist and surrealist artist Paul Klee chose to pursue painting over music, although it continued as a constant in his mind. The majority of his painting and drawing was informed by his love for, and dedication to musical forms and concepts, and his journey in creating art on a parallel to music deepened throughout his life. One of his main interests to begin with was the element of time in both of these art forms: "I am continually being made aware of parallels between music and the fine arts. As yet they defy analysis. It is certain that both art forms are defined by time."^{LI} In *Paul Klee: Painting Music* by Hajo Düchting, the author summarises Klee's definition of a temporal aspect in painting as: "...the process of creating an image, the expressive strokes of the brush, the genesis of the final effect. Music took on the role of mentor by demonstrating the temporal process within a piece of music and also serving as a metaphor for a new, creative painting that could reveal the temporal aspect with its own unique means."^{LII}

Klee's impetus and desire to paint sprang from his belief that the innovative possibilities in music had already passed their prime, while they had not yet done so in painting: "What an attractive destiny it would be, to master painting today (just as musicians once did)."^{LIII} In short, his goal became to create a new foundation for painting. "By the beginning of the twentieth century, the idea of incorporating musical elements into painting had become widespread and was often mentioned in an attempt to explain various approaches to abstract painting."^{LIV} But these so called explanations and reviews put forward at the time angered Klee and provoked sarcasm from him. His own interest in music was more profound and came from a depth of technical knowledge.

2.6.1 Rhythm in painting

Attempting to gain a deeper understanding of temporal elements or rhythm in music and therefore translate them into painting, Klee studied the structures of musical compositions in great detail. In this following example (next page), Klee looks at two bars of *Sonata no. VI* by Bach. While the musical notes are found at the top of the page, his references to pitch, and qualitative and quantitative rhythms in time are registered underneath:

^{XLVIII} KANDINSKY, Wassily – b. 1866 – d. 1944.

^{XLIX} KLEE, Paul – b. 1879 – d. 1940.

^L MONDRIAN, Piet – b. 1872 – d. 1944.

^{LI} Klee, Paul *cit. in* DÜCHTING, Hajo – Paul Klee: painting music p.9.

^{LII} DÜCHTING, Hajo – *Idem, Ibidem* p.10.

^{LIII} Klee, Paul *cit. in* DÜCHTING, Hajo – *Idem, Ibidem* p.10.

^{LIV} DÜCHTING, Hajo – *Idem, Ibidem* p.13.

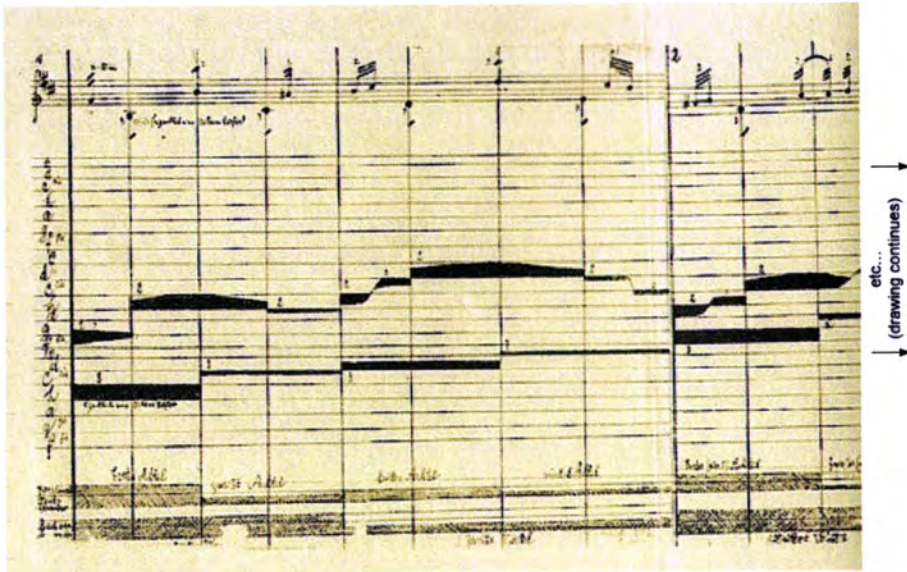


fig. 2.31

This example is, of course, merely a sketch for the artist's own reference to be used later. In a series of paintings related to rhythm, Klee used horizontal lines as in this sketch, for a basic structure. The horizontal lines would be divided by a vertical (or slanted) line and each division filled with colour, so as to give the painting a rhythmic structure. A horizontal line could be divided in halves, thirds, quarters, etc... in much the same way as a semibreve in music can be divided to form other shorter note values. Klee called this 'cardinal progression' and can be seen in the following example *Monument in Fertile Country*^{LV}:



fig. 2.32

^{LV} KLEE, Paul – Monument in fertile Country, 1929-41. Watercolour and pencil on paper. 45.7x30.8cm. Kunstmuseum, Berne.

Painter Mondrian was also concerned with the use of rhythm in his painting. While traditionally, a painting is looked at in one instant, the eye of the viewer then glimpses across the space, attributing a temporal aspect to the viewing of an apparently static work of art. Mondrian's concern was whether it was possible to control or influence the order in which a viewer looked at a work, and whether this could be classified as creating rhythm in painting. In his *Composition with Color Planes and Gray Lines 1*^{LVI}, he believed the viewer's eyes would follow the lines of equal thickness and gray tone through his grids of squares, therefore leading him through the painting almost as if it were a quickstep dance:



fig. 2.33

Klee also referred to this in his essay *Creative Confession*: "There are paths laid out in an art work for the eye to follow as it scans the ground rather like a grazing animal [...] The image is created from movement, is itself fixed movement and is recorded in movement (eye muscle)"^{LVII} This 'movement' he mentions naturally relates to time, as movement can only happen in a temporal element.

2.6.2 Klee's polyphonic painting

While Klee showed a preoccupation with rhythm, nearer the end of his life he began what he called 'polyphonic painting'. Polyphony in music is a musical texture when various parts of equal importance are superimposed. Klee coined this phrase in painting to describe the work he produced at the end of his Bauhaus period (with transparent, overlapping layers of paint), and consequently to his continuing work (1930s onwards), in which complex compositions were comprised of a variety of formal elements superimposed on one another. This period also included a technique similar to that of Pointillism, which Klee termed 'divisionist painting'. He attempted to relate the depth of technically and traditionally complex structures present in music into painting, continuing in his aim to allow painting to reach an equal level to that which music had already achieved. This period in his work is not instantly recognisable as adhering to any

^{LVI} MONDRIAN, Piet – *Composition with Color Planes and Gray Lines 1*, 1918. Oil on Canvas. 49x60.5cm. Private collection.

^{LVII} KLEE, Paul – *Creative confessions cit. in DÜCHTING, Hajo – Paul Klee: painting music* p.66.

uniformity in style, ranging from line drawings, watercolour drawings and oil paintings. One particular painting from the start of this period introduces 'polyphonic painting' in its simplest form – *Polyphonic Setting for White*^{LVIII}:

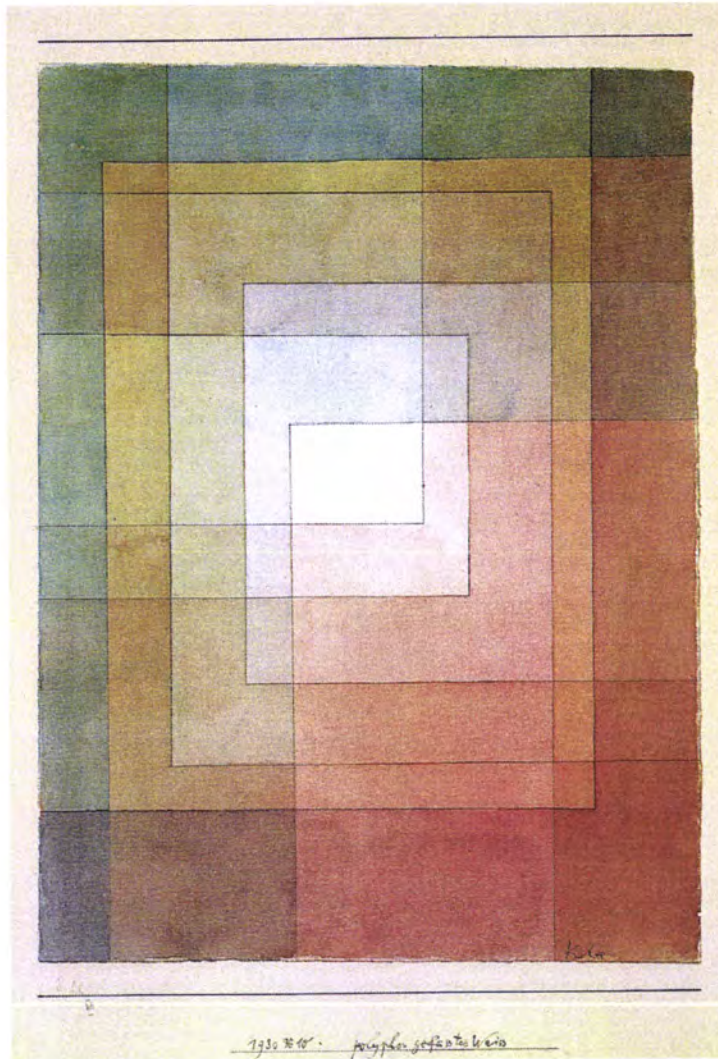


fig. 2.34

Using clearly superimposed blocks of colour separated by defined lines, while an obvious relation to music is not immediately recognisable, the reference (also aided by the title of the work) is relevant. I can imagine a musical chord gradually being filled with the notes in its harmony by instruments joining in one after the other. However, it is not necessary to view this painting and immediately think of its musical relevance. Klee has simply used structures of music as an influence to create (and achieve) painting in its own right, while music lends its technically stricter construction to this visually dominant art form.

^{LVIII} KLEE, Paul – *Polyphonic Setting for White*, 1930. Watercolour with pen and ink on paper. 33.3x24.5cm. Kunstmuseum, Berne.

2.6.3 Visual poetry

Poetry has often been likened to music in discourse and philosophical terms, as a result of its conscious use of rhythmic and phonetic aspects to heighten the semantic. Unlike prose, the rhythm has been carefully considered regarding choice of word, placement of word in a sentence and overall scanning. Poetry can therefore be considered a sort of 'music of words'. And just as in all the other arts, where rigorous rules for different types of poetry were followed as an organised pre-existent structure into which the words were inserted (eg: Shakespeare's sonnets), new styles not adhering to any pre-determined form have emerged, and are now constantly being adapted and replaced with new forms. One of these forms of innovation to be observed, particularly in the context of this dissertation, is the poet's visual use of the page, for example in this poem by Ana Hatherly^{LIX}:

se queres achar
 amiga
 fala

afirma
 a desnudada
 honrada
 sandez
 roaz

oh com que espanto histriónico
 com que espaço periférico
 domina

o
 r
 a
 s
 g
 o
 d
 o
 s
 u
 s
 p
 i
 r
 o
 !

fig. 2.35

This page, part of a volume of poems entitled *O Cisne Intacto*^{LX}, clearly makes use of the available space on the page, giving it a format that immediately influences at first glance. The words of the poem have been placed strategically to influence the reader's perception of the meaning. The last 'line', in diagonal descent down the left side of the page gives this poem its most radical placement of letters, but the reason for – or one of the reasons for it – is quite

^{LIX} HATHERLY, Ana – b. 1929. Portuguese poet and visual artist. She dedicated a series of articles and essays to her research on Portuguese visual poetry of the Baroque era, a subject that greatly influenced her personal work.

^{LX} HATHERLY, Ana – *O Cisne Intacto*. 1981.

simple. The last word is 'suspiro' (a sigh/sigh of relief/letting out of air) and, written in this format, allows the reader's eyes to descend the page in correlation with the air coming out of his mouth – in a sense, its placement can be considered onomatopoeic. Hatherly's placement of the words in this poem require the reader to pause before reading a word placed on a different line, while it is clearly still part of the same 'poetic line'. Here is a direct reference to how the rhythm of speech can be influenced by visual stimuli. In her visual work, Hatherly also pays particular attention to calligraphy and the use of words in space in her creation of 'rhythm', resorting predominantly to the media of drawing to explore these relationships.

Christian Morgenstern^{LXI} took a visual play on poetry to a further extreme – an extreme I believe to be closer to music (and ahead of his time). This is the page of his poem *Fisches Nachtgesang* (Fish's Nightsong):

Fisches Nachtgesang

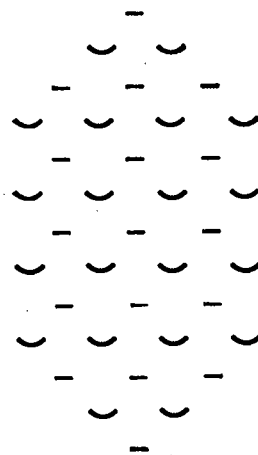


fig. 2.36

Visually using the space of the page as Ana Hatherly also does, this poem lacks words – it is in fact a visual representation, much like the non-conventional symbols I have analysed in music. Adopting an overall fish-like shape, the individual symbols also acquire the shape of a fish's scales. Visually, the curved lines remind me of that graphic way of representing closed eyes, making more reference to the word in the title 'nightsong'. The 'poem' can be interpreted in many different ways from the purely visual to the creatively vocal. In the interpretation that I have experienced, each line may represent an 'out-take' of breath, while each curved line represents an 'in-take' of breath, for example. The reader's mouth adopts the shape of a fish's mouth in producing the required sounds – almost onomatopoeically – and the meaning of the

^{LXI} MORGENSTERN, Christian – b. 1871 – d. 1914. German author and poet.

poem is transmitted through these sounds, rather than through the meaning of words, just as in music. The interpretations are many.

As a result of its lack of language, I believe this poem to be closer to that of a musical score – in a different context, it could even in a sense be considered a musical score, as the result is not the language of words and their meanings.

What is then, the difference between poetry and music if, as in this case, symbols instead of meaningful language have been used to produce a result? I believe that in its crossover with music, this particular poem is an exaggeration of the purpose of poetry; yet it still adheres to the purpose of poetry as it expresses through sound that which can be considered language – the language of a fish, perhaps.

Similarly, in using the graphic to re-enforce the semantic, Laurence Sterne^{LXII} used the visual in an evolutionary way for his time. In his novel *The Life & Opinions of Tristram Shandy*^{LXIII}, he speaks of death in chapter twelve – suddenly, there are two solid pages of black ink. There is no writing – just these black pages, preceded by the quote from Shakespeare's *Hamlet*: "Alas poor Yorick"^{LXIV}. This shows a very early use of the page in a visual format – solid black representing the absolute 'finite-ness' of death. In this work there are numerous other examples of visual or graphic instances inserted among the pages of prose, perhaps showing that in certain cases, the visual can express more than words alone – the visual can in fact, coupled together with prose, create an even stronger emotion than either can separately, in this inter-disciplinary use of the visual among the language of prose.

Calligraphy also comes under this umbrella of visual poetry. Henri Michaux^{LXV} explored calligraphy in great detail, while also taking influence from non-Western forms of writing. His preoccupation with signs allowed the themes *graphics as poetry* and *graphics as the aesthetics of writing* to become a preeminent theme in his work – the sign as the conveyor of writing, rather than meaning through words. Throughout his life, Michaux experimented with signs, in a sense to confront the Western sign system. One of his most famous experimental drawings/poems on calligraphy can be seen in the following excerpt from *Narration*^{LXVI} (next page):

^{LXII} STERNE, Laurence – b. 1713 – d. 1768. Irish-born English novelist.

^{LXIII} STERNE, Laurence – *The life & works of Tristram Shandy*. 1759.

^{LXIV} "Alas poor Yorick" comes from the grave-digger's scene in Shakespeare's *Hamlet*, when Hamlet is recalling a dead friend.

^{LXV} MICHAUX, Henri – b. 1899 – d. 1984. Belgian poet, writer and painter.

^{LXVI} MICHAUX, Henri – *Narration*. 1927.

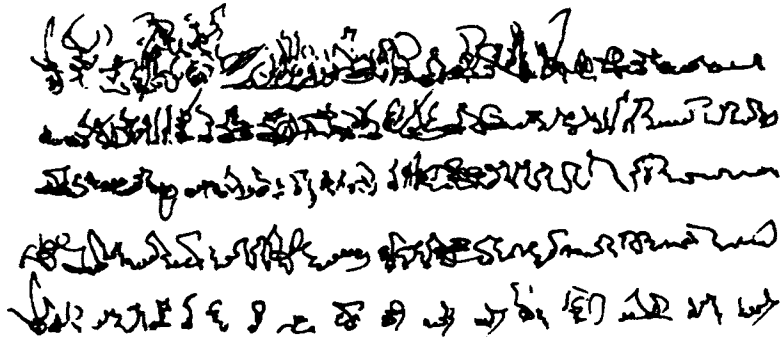


fig. 2.37

The excerpt shown here comes in the category 'Asemic writing', a largely unexplored topic. We cannot read this 'writing', but the 'squiggles' look like writing and so imply a time-axis (from left to right) which the visual alone cannot transmit. There is no fixed meaning to these lines, as their meaning is open. The viewer (or reader) can interpret the 'poem' as he wishes – in much the same way as a musician can with Bussotti's scores. A parallel can be made here with musical scores that portray non-conventional notation yet still make use of a time axis – such as with Penderecki's score pictured in *figs. 2.20 & 2.22*. Nevertheless, one major difference should also be stressed: Penderecki's notation is meant to be interpreted into sound, while Michaux's notation is not – it is to be considered silently. An interesting experiment could take place however, if a musician attempted to interpret Michaux's 'squiggles' into musical sound. Reading from left to right (as the 'notation' implies), it could be largely similar to reading a score such as Penderecki's, which also uses line 'squiggles' (*fig. 2.21*) to indicate pitch and relative duration. Similarly, this kind of interpretation can be mirrored by an interpretation of my drawings (chapter 4).

Calligraphy has also been used in painting by numerous artists, whether to portray meaning through the language of words among the visual canvas, or to produce a kind of rhythm in painting. Portuguese artist, António Sena^{LXVII} has explored the superimposing of language and meaning in a visual context. In a series of works near the end of the 70s, he presented graphical pieces containing dispersed numbers, lines and notes, although they were not directly legible. In his use of calligraphy in painting and drawing, he explored the beginning of meaning in the world, superimposing meaning and language, particularly regarding the meaning of death. The use of the visual re-enforced the meaning he wished to portray through his use of calligraphic styles, in much the same way as in musical scores, where 'blackier' pages implied a visually different meaning to 'whiter' pages.

In a more international context, Cy Twombly^{LXVIII} is also known for using words and calligraphic-style graffiti in some of his work: "His life experiences feed into his work. A period

^{LXVII} SENA, António – b. 1941.

^{LXVIII} TWOMBLY, Edwin Parker (Cy) Jr. – b. 1928.

spent working as a cryptographer for the US Army leads to experiments with Surrealist techniques of automatic writing in the calligraphic tangles of his arbitrarily titled first canvases^{LXIX}, said a review on his recent exhibition at Tate Modern, London. He used calligraphic styles, whether or not to portray meaning, but in any case to pose the question: what is the difference between writing and painting? This is a recurrent theme in many artists' work, and goes back to Michaux's ideas about the visual aspect of calligraphy.

On another inter-disciplinary note, Lutoslawski^{LXX} composed *Trois Poemes d'Henri Michaux*^{LXXI}, based on three of Michaux's works: *les Pensées* (Thoughts); *le Grand Combat* (The Great Combat); and *le Repos dans le malheur* (Repose in misfortune), from his volumes *Plume*^{LXXII} (first and third poems) and *Qui je fus*^{LXXIII} (second poem). These poems are, in actual fact, poems with meaningful language in them (unlike Michaux's *Narration*) – Lutoslawski, after deciding the format for his piece (in three movements), then used the poems for inspiration and incorporation of the text for the choir. The text suggests the music but is rarely, if ever, distinguishable by ear. On the relationship of the text and its role in his composition, Lutoslawski stated in the introduction for a BBC programme in 1965, that "...if the words of the text were to have been just another sound element of music, it would have been abuse, artistic insincerity or at least a misunderstanding". Here, his respect for the other art-work is sincere, and comes back to the idea of an art-work where all parts are equal: one is not dominant over another. The piece largely uses the technique of controlled aleatorism – Lutoslawski goes on to say that "The performers are allowed a lot of freedom in treating the rhythmic values of their parts. [...] The mind of each performer is therefore a factor which I strive to include in the set of means of composing. This attitude opposes a mechanical, abstract approach to sound." This freedom plays on the musicians' capacity of interpretation and intuitive reaction to the score: a first step in the direction of Bussotti's 'drawing' scores. Much in the same way as Michaux's ideas of his *Narration*, personal interpretation is of crucial importance – this shows a correlation between his poems and the music that Lutoslawski produced about them.

^{LXIX} Quote from THE TIMES, 17th July, 2008 in <http://entertainment.timesonline.co.uk/>

^{LXX} LUTOSLAWSKI, Witold – b. 1913 – d. 1994. Polish composer. Now considered one of the leading European composers of the 20th century.

^{LXXI} LUTOSLAWSKI, Witold – *Trois poemes d'Henri Michaux*. 1962-3. For 20-voice choir and orchestra of 23 musicians.

^{LXXII} MICHAUX, Henri – *Plume*. Paris, 1938.

^{LXXIII} MICHAUX, Henri – *Qui je fus*. Paris, 1928.

3. Non-notational sound/visual relationships

“One day I must be able to improvise freely on the keyboard of colours:
the row of watercolours in my paintbox.”

Paul Klee^{LXXIV}

Coloured music. Musical colour. Why bring these two seemingly different entities together, particularly when a logical connection between them does not exist? When we focus in more detail on the two entities in question, it is first necessary to determine the characteristics of each one, with their similarities and differences. Music and visual art, while both appealing to the senses and our emotions, do so via different organs of the body. While information from visual art is predominantly received in the brain via the eyes, so information from music is received via the ears. Roger Scruton states in *The Aesthetics of Music*: “[sounds] are objects of hearing in something like the way that colours are objects of sight, and they are missing from the world of deaf people just as colours are missing from the world of the blind”^{LXXV}. Although it might be seen more correct to adapt this statement so as to include those who are tone-deaf or colour-blind, nevertheless, the point is that principally, the visual arts are created for a visual appreciation, while music is created for an aural appreciation.

3.1 Mimesis in the arts

Probably one of the first to distinguish differences in an aesthetic context among the arts was Gotthold Ephraim Lessing, in his *Laocoön: An Essay on the Limits of Painting and Poetry*^{LXXVI}, in the 18th century. He studied the difference between the visual arts and literature by comparing the ancient Greek sculpture of Laocoön and his sons with Virgil's verse in the *Aeneid*:

*Ille simul minibus tendit divellere nodos
perfusus sanie vitas atroque veneno,
clamores simul horrendos ad sidera tollit:
qualis mugitus, fugit cum saucius aram
taurus et incertam exussit cervice securim.*

English translation:

He, while to rend their knots he strives amain,
His fillets with black venom drenched and gore,
Uplifts to heaven heart-piercing shrieks; as when,
'Scaped from the altar, bellows a maimed bull,
That from his neck shakes off the erring axe.



fig. 3.1

^{LXXIV} KLEE, Paul *cit.* in DÜCHTING, Hajo – Paul Klee: painting music. Back cover.

^{LXXV} SCRUTON, Roger – *The aesthetics of music*. p 1.

^{LXXVI} LESSING, Gotthold Ephraim – *Laokoon oder über die Grenzen der Malerei und Poesie*.

Lessing characterized poetry as a temporal art and painting as a spatial art, so his theories regarding poetry can largely be transferred to music. He produced a mimetic theory on the difference between the spatial (painting) and the temporal (poetry).

Mimesis, translating into the Latin as *imitatio*, meaning imitation, is a Greek term that has become increasingly important in the study of art, performance and literature. It has long been used to refer to the relationship between an image and its original, indeed, the imitation of reality. Mimesis is a broad term and is used in relation to many subjects. In the biological world for example, the ability to imitate has become, in many cases, a crucial aspect of existence: animals have evolved into perfecting the ability to imitate another animal's call; to imitate their surroundings and blend in, and therefore use imitation as a fundamental part of their lives: survival.

It is also within Man's nature to imitate, reproduce and attempt to copy nature. Walter Benjamin wrote in *On the Mimetic Faculty* in 1933: "Nature creates similarities. One need only think of mimicry. The highest capacity for producing similarities, however, is Man's. His gift of seeing resemblances is nothing other than a rudiment of the powerful compulsion in former times to become and behave like something else. Perhaps there is none of his higher functions in which his mimetic faculty does not play a decisive role."^{LXXVII} So this 'mimetic faculty' of human nature, referring to Man's need to create imitations of nature (in this case, via the Arts) is constant. It is consequently a central theme among philosophers and theorists when discussing the arts and aesthetics. The concept of mimesis has been crucial in the formation of theories relating to the essence of artistic expression. How far away from its real original is a work of art? What characteristics distinguish a work of art from the real? How do we, human beings, respond to works of art? It explores how the symbols ever-present in the world created by people, can relate to the 'real' world; how the nature of the human to copy and imitate can create something new, that may or may not eventually assume an essence of the power of the original.

While their philosophies differ greatly, mimesis was central to the theories of both Plato and Aristotle. In general terms, while Aristotle's view of representation was that of a dynamic activity, and therefore a positive attitude, Plato's concern was in relation to the truth, rejecting the notion of representation and posing a critical perspective. He believed that when something attempts to imitate the forms of another thing, that new mimetic being has distanced itself from the original, or the truth, and therefore the mimetic world will always be inferior to the original. His theory begins with the art of creation, not representation. Creation is divided into two parts; divine and human, the latter being already an imitation. However, because divine art objectifies itself in nature, making nature already a representation of the divine, whatever humanity may attempt to imitate from it, will already be thrice removed from its essence (the divine). So what

^{LXXVII} BENJAMIN, Walter – On the mimetic faculty. (1933). *cit. in* POOTZ, Michelle – *Mimesis* [On line] in <http://csmt.uchicago.edu/glossary2004/mimesis.htm>, in University of Chicago, Theories of Media.

the imitator is attempting to create will always be far from the truth, and however skilled that imitator may become, he could never attain the real truth. Art that is created therefore also has the ability to trick and deceive those not on their guard into accepting the image as its essence. Plato's position on mimesis is that of an illusion manifesting itself in art, literature and music, so will always be viewed as distant, misleading, untrue and consequently inferior.

Aristotle however, theorizes that it is within human nature to imitate, and defines mimesis as the perfection and imitation of nature. In *Poetics*, his treatise on mimesis, he shows that he is not against representation in the arts (in this case literature) as Plato is, but that Man is a mimetic being and that the arts he produces are natural expressions of humanity. He writes that the instinct of Man to imitate is "...as inherent in man from his earliest days; he differs from other animals in that he is the most imitative of all creatures, and he learns his earliest lessons by imitation."^{LXXVIII} Here one recalls the stages of growth and awareness of a young child: how evolution into the adult world is begun by the imitation of parents or elders, and that lack of such has shown in various cases, to result in a frail or dysfunctional being.

In opposition to Plato, Aristotle views the art of imitation as an essential factor in Man's evolution. Mimetic works, or works of art, are such that Man is not deceived into believing that they are the 'real'. Man recognizes aspects of his own experiences of the world in what is represented, creating a personal level he can relate to, while learning more about nature and therefore converging towards the 'real'. In addition to representing the 'real' in nature, the mimetic function is also to beautify, possibly exaggerate in relation to what is real, giving rise to the concept of fiction. A painted portrait can also incorporate other aspects of characterization into its visual elements. A facial expression has the power to give the subject different countenances: a proud and arrogant expression was often painted on the portrait of a king or general, for instance; famously, Da Vinci's *Mona Lisa* and her enigmatic smile has perplexed spectators for centuries, simply as a result of her humanity; so the character as well as the physical appearance can also be portrayed by the angle, posture, expression, etc... of the subject.

Referring back to Lessing, his view was that painting was a highly mimetic art, as it can share physical properties such as forms, colours and contours, directly with its real original, so that the signs and symbols it uses can be based directly on nature. The visual arts can represent the horrible by showing the horrible; while literature can not show us the horrible directly, but uses symbols and signs (letters and words) that individually mean nothing (the same can be associated to music, regarding the signs and symbols of musical notation), but as a whole allow us to create a bigger picture that can relate us to that original 'horrible' image or feeling. He reached this conclusion because he believed that while Virgil's written account of

^{LXXVIII} ARISTOTLE – *Poetics*. cit. in POOTZ, Michelle – *Mimesis* [On line] in <http://csmt.uchicago.edu/glossary2004/mimesis.htm>, in University of Chicago, Theories of Media.

Laocoön's scream "has a powerful effect to the ear", he saw the sculpture as not depicting the horror of what the reality would have been, but rather a beautification of the scene, so as not to be too distressing on the eye. To depict physical suffering realistically would cause too much pain for the viewer: consequently the suffering was toned down; expressed through beauty. This shows the power and directness that the visual can have on Man, and consequently how in visual art (particularly in this case), the artist decided to tone down his representation of the real. So the essence of the real transmitted through Virgil's words, although being represented indirectly, has a more powerful effect on Man than the direct representation of Laocoön's scream made visible in the sculpture. Lessing therefore moves on from Aristotle's view that mimesis is confined to the imitation of nature, towards the concept of the creativity of an individual or artist, and eventually artistic expression.

More recently, Edvard Munch's painting *The Scream*^{LXXIX} is thought of as a closer representation of the reality of the horrible: considered an icon of existential anguish, it portrays feelings of isolation and fear, appealing more strongly to our human emotions than the more beautified expression on Laocoön's face.

So according to Lessing, a visual (spatial) art is mimetically direct, as it makes use of a direct imitation of reality, while music (temporal art) is mimetically indirect, using signs and symbols to portray reality. The question now is to determine how they indeed represent and imitate reality.

20th century artist and theorist Wassily Kandinsky delved deep into the relationship between music and art, stating in his influential thesis *Concerning the Spiritual in Art*^{LXXX}, that music fails miserably when attempting to express material appearances: "The sound of a farmyard in music is never successfully reproduced, and is an unnecessary waste of time."^{LXXXI} Musical works that have used animal noises or characteristics as a theme, are, for example, Rimsky-Korsakov's *Flight of the Bumblebee*^{LXXXII}, or Saint-Saëns' *The Carnival of the Animals*^{LXXXIII}, in which the actual sound is not attempted to be imitated, rather the essence is transmitted. Similarly and also relevant is Beethoven's *Pastoral Symphony*^{LXXXIV}, where an afternoon in the countryside is alluded to: actual sounds that would be heard in the reality of the situation are not present, it is indeed the essence of that afternoon that is brought to life^{LXXXV}.

^{LXXIX} Munch, Edvard - *The Scream* (1893). Casein/waxed crayon on paper (cardboard). 91 x 73.5cm. Nasjonalgalleriet (National Gallery) Oslo.

^{LXXX} KANDINSKY, Wassily – Über das Geistige in der Kunst.

^{LXXXI} Idem, *ibidem*. p. 42.

^{LXXXII} RIMSKY-KORSAKOV, Nikolai, b. 1844 – d. 1870. *Flight of the Bumblebee*, 1899/1900

^{LXXXIII} SAINT-SAËNS, Camille, b. 1835 – d. 1921. *Le Carnaval des animaux: fantaisie zoologique*, 1886.

^{LXXXIV} BEETHOVEN, Ludwig van, b. 1770 – d. 1827. *Pastoral Symphony (no.6)*, 1807/08.

^{LXXXV} There are exceptions to this near the end of the 2nd movement where we hear representations of the nightingale on the flute; the quail on the oboe; and the cuckoo on the clarinet.

Much the same occurs in the visual representation of flowers or foliage, for example. Gothic architecture uses the forms of leaves to create its leaf-mouldings. It does not however, expect us to contemplate them as leaves; but by using the imitation of their forms, invites us to use our pre-existing experience of the light and movement in leaves, and attribute their qualities to the architecture in question. Similarly, a flowery pattern found on wallpaper does not ask the viewer to contemplate 'the flower', but to attribute to the overall image, the idea of its essence:

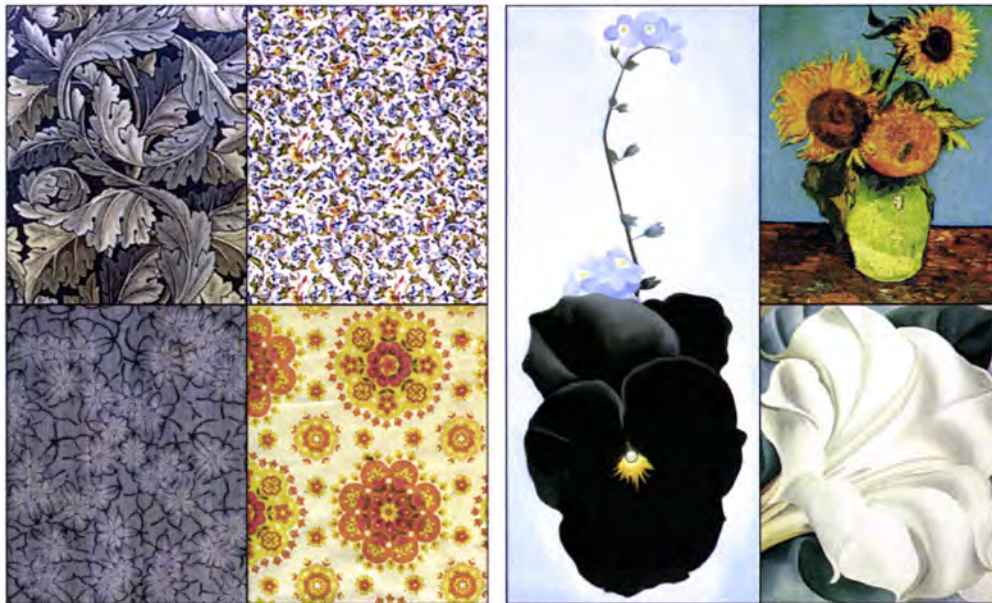


fig. 3.2

Note the patterns on the left, in which the essence, feelings and light of foliage or flowers is alluded to; while on the right, the flowers are presented to the viewer for contemplation as themselves.

So there are two different forms of representation of 'the real': that which is presented to the viewer for contemplation of the object itself (e.g. a painting of a flower); and that which is presented to trigger the idea of the object (e.g. a melody representing the idea of bird-song; a flowery pattern representing the idea of a flower)^{LXXXVI}.

Kandinsky says that the essence of nature can be imparted by every one of the arts in its own way, not by imitation, but "...by the artistic divination of its inner spirit. [...] With few exceptions, music has been for some centuries the art which has devoted itself not to the reproduction of natural phenomena, but rather to the expression of the artist's soul, in musical sound."^{LXXXVII} Here he supports Lessing, in suggesting that as music is more suggestive of nature or character, it has the ability of more easily arousing human emotion, while visual art can fall into the error of becoming a poor imitation of an exact reality without expressing 'the

^{LXXXVI} SCRUTON, Roger – The aesthetics of music. p. 120.

^{LXXXVII} KANDINSKY, Wassily *in* Über das Geistige in der Kunst, (Concerning the Spiritual in Art), p. 41.

artist's soul'. He says that the role of painting "...is now to test her strengths and methods, to know herself as music has done for a long time, and then to use her powers to a truly artistic end."^{LXXXVIII} The goal of the arts is to impart the very essence of the 'real': so far, indirect mimetic arts, namely music, have been able to reach this point more consistently than the direct mimetic visual arts such as, in Kandinsky's case, painting.

Although all opinions and theories mentioned here regarding representation and mimesis are still relevant nowadays, certain aspects have progressed and transformed. Take for example the visual arts as a result of the movement of the grotesque: in some of Cindy Sherman's work, such as the following from the series *Sex Pictures*, 1992, the work has the possibility of producing an obviously repugnant sensation, as she visually represents the repugnant and revolting:



Untitled # 264, 1992
[Sex Pictures]
Colour photograph
Edition: 6
127 x 190,5 cm



Untitled # 263, 1992
[Sex Pictures]
Colour photograph
Edition: 6
100 x 115 cm

This clearly works against Lessing's theory of 'beautification'. Visual art however still adheres to an order that is directly mimetic.

There also exist certain situations in which music has become less of the indirect mimetic order: some contemporary music has begun to represent reality more directly. For example, in Berio's *A-Ronne*^{LXXXIX} for eight voices, one of the male voices suddenly produces a great and sonorous burp, although the burp may not be intended to transmit any digestive disorder but rather a general lack of artistic constraint.

The emergence of technology and mechanical reproduction in contemporary music also allows for the gradual inclusion of a more direct representation of reality into what was originally indirect, as in many of Karlheinz Stockhausen's works^{XC}. However, probably one of the most prominent composers in the genre of electronic music is Pierre Henry^{XCI}, whose *Variations pour une porte et un soupir* (*Variations for a door and a sigh*), 1965, uses the technological

^{LXXXVIII} Idem, *ibidem*, pp. 42-43.

^{LXXXIX} BERIO, Luciano, b. 1925 – d. 2003. *A-Ronne*, 1974.

^{XC} STOCKHAUSEN, Karlheinz, b. 1928 – d. 2007. Such works in the genre of Electronic music include *Gesang der Jünglinge*, 1955-56.

^{XCI} HENRY, Pierre, b. 1927. Of the Paris school of Electronic Music, under Pierre Schaeffer.

reproduction of the sound of a squeaky door as a basis for 25 short pieces, electronically enhanced to produce contrasting sounds.

Consisting of the conciliation or joining together of contradictory and heterogeneous beliefs to create a new and different system, syncretism is often discussed in the context of belief, custom and religion. In the arts, the most common example is opera, where different arts (in this case the scenic arts; music; and dramatic literature) come together in a new form of artistic expression. Peter Maxwell Davies's piece *Vesalii Icones*^{XCII} is a prominent example of an attempt at inter-disciplinarity and syncretism of the arts, as it includes not only music, but also ballet, drawing (etching) and religion. For solo cello, male dancer & small ensemble it uses the Stations of the Cross & the anatomical engravings of Andreas Vesalius in *De Humanis Corporis Fabrica* (1543) as a basis for combining Music and dance. The composer's idea of superimposing one on the other (slightly modified to include the Resurrection), was the main idea for the piece. A direct reference to these can be seen at the start of each of the fourteen movements, as the dancer can be seen in each of the positions of the skeletons in Vesalius' original engravings. The dancer has a set of three super positions: 1- the Vesalius illustrations, 2- the Stations of the Cross and 3- his own body; similarly, the music is made up of three different levels of music that interact with each other: plainsong, "popular" music and the composer's own music. Says Peter Maxwell Davies: "...just as the dance is not an attempt to act out literally the Vesalius drawing or its accompanying Station, so the Music does not attempt to illustrate in a traditional way the moods of the Dancer, but works out its own inter-relationships between my own present style and the fragments of the Good Friday plainsong."^{XCIII}

In modern and contemporary times, the distinction between the various arts which were previously clearly differentiated, has become less and less accentuated: another example of a growing syncretism. More and more, generalisations in terms such as 'performance arts', 'scenic arts', and even 'visual arts' are constantly used to team together what was originally individualised: terms such as theatre, music, painting, sculpture, etc... These originally separate arts are now almost simply channels through which to arrive at a final artistic result, grouped together under broad titles. One almost feels that this is the result of an increasingly prominent 'political correctness' present in our society now. One cannot refer to the term 'art' or 'painting' singularly anymore, without having to address all other visual arts. The 'political correctness' is such that a generalised term must be used so as not to leave out any other technique.

So while not only music and the visual arts, but all arts were originally studied and discussed as separate and isolated entities, so were their individual forms of representation contrasted, as mentioned earlier in relation to Plato, Aristotle and Lessing's theories of different

^{XCII} DAVIES, Peter Maxwell "Vesalii icones" 1969.

^{XCIII} Peter Maxwell Davies, quoted in the Composer's Note, Boosey & Hawkes' edition of *Vesalii Icones*

mimetic orders in separate arts. In the current artistic world however, it is no longer possible to do so, as a consequence of the constant cross-over, interchanging and inter-disciplinarity among the arts. The representational situation of the arts therefore cannot be concretely or separately defined as it previously was, but is leading to the creation of a new syncretic study of the arts now and in the future, which must incorporate all theories at once. New theories are constantly being created and many already exist. There will also soon no doubt be newer theories of mimesis and representation of the arts in our ever-changing society.

3.2 Synaesthesia & colour/sound systematisation

For many centuries, there has been a close connection between sound and colour. As Goethe states in *Theory of Colours*: "That a certain relation exists between the two, has been always felt; this is proved by the frequent comparisons we meet with, sometimes as passing allusions, sometimes as circumstantial parallels."^{XCIV} Appealing principally to different senses, both colours and sounds "... are presented to a single privileged sense-modality"^{XCv} states Roger Scruton in *The Aesthetics of Music*: in other words, while you hear any sound, you cannot see, touch, taste or smell it; similarly, while you see a colour or shape, you cannot hear, touch, taste or smell it. Yet there seems to exist a certain parallel that has been the quest of many to examine and determine a form of systematisation for.

Synaesthesia is the term used for the condition where an individual receiving a stimulus in one sense modality, simultaneously experiences a sensation in another. Originating from the Greek *syn* (together) and *aisthesis* (perceive), any combination of senses can be involved so many different forms and cross-overs have been recorded, from seeing a colour when hearing a sound, to sensing a bitter taste when seeing a shape like a square, for example. Chromosthesia (or often termed *audition colorée*) is the term used for the particular synaesthetic experience between colour and sound. Throughout history, it has become known that certain people – *synaesthetes* – experience the sensation more strongly (such as physically seeing spots of colour before their eyes, whether they want to or not) than many others who may just experience an inner feeling of a colour when hearing music. Indeed, many of us associate colours to sounds, or even other entities such as numbers, or letters of the alphabet. This is generally due to a previous experience (eg: coloured alphabet cards used to help children to learn at an early age), that has become ingrained in our memories and so presents an inner feeling of colour association later on. Synaesthesia however, while still being studied medically and scientifically today, is thought to be unrelated to subconscious experiences.

Some of the most famous composers known to have experienced the phenomenon were Franz Liszt, who saw colours when he heard music; Nikolai Rimsky-Korsakov; Alexander Scriabin; and Olivier Messiaen, who experienced a more complex form of synaesthesia, where

^{XCIV} GOETHE, Johann Wolfgang von – *Theory of colours*. p.163.
^{XCv} SCRUTON, Roger – *The aesthetics of music*. p. 1.

the structures of musical chords themselves produced synaesthetic colours. Often in his musical scores, he notated the colours he sensed at certain stages throughout the Music. This can be seen, among others, in his piece *Couleurs de la Cité Céleste* (1963)^{xCVI} as shown in *fig. 2.6* (chapter 2), where at certain stages throughout the score, written indications of colours are incorporated, designed to gear the conductor towards the creation of the essence of that colour.

Synaesthesia is a very personal sensation. While one person may see the colour yellow upon hearing a particular sound, for someone else that same chord can generate a completely different colour, so these annotations of Messiaen's are unique, and mean simply to aid the conductor in the expression of his own musical direction.

However, even among those non-synaesthetes, and although an exact scale of sound-colour correspondences has never been reached (and is unlikely to do so in any precise form as a result of varying experiences from person to person), there do exist certain natural relationships. Kandinsky himself states: "... the sound of colours is so definite that it would be hard to find anyone who would try to express bright yellow in the bass notes, or dark lake in the treble."^{xCVII} According to scientific experiments (eg: The Luscher Colour Test, by Max Luscher), colour affects us physically: lengthy exposure to red surroundings provokes an increase in blood pressure, respiration and heartbeat rates concluding that red is an exciting colour, while exposure to blue produces the reverse effect. Therefore a visual dimension in colour has the ability to create an enormous impact on what we feel or perceive about our surroundings.

In a series of tests reported by psychologist D.M.Howells^{xCVIII} associating colour with sound, it was found that in interpreting colour into music, musicians tended towards a similar interpretation each time. "These studies indicate that intense, light lemon-yellow is associated with high pitch, piercing sound and loud dynamics. Light colours ascend, initiating high-pitch production from the musician. (...) Cadmium red would be played in the mid-range of an instrument, with intense sound and steady rhythmic pulsations. (...) Dark blue, a serene colour, evokes the feeling of low, sustained tones and slow rhythms. If dark colours appear heavier, then dark blue recedes in space and descends by weight and, hence, will be low in pitch."^{xCIX} This can be related to an allusion to nature: light/ the sun comes from above, while dark/ the ground is below. This spatial reference to colour can be related to the typical format of a landscape painting – if pitch is superimposed on one of these paintings, the higher the note, the closer it is to the sun and vice versa. Similarly, regarding amplitude, dark colours can be likened to night-time when it is generally quieter, while light colours can be likened to the day-time,

^{xCVI} MESSIAEN, Olivier – "Couleurs de la cite céleste": pour piano solo, 3 clarinettes, 3 xylos, orchestre de cuivres, et percussion métalliques. Paris: Alphonse Leduc, s.d. 74pp.

^{xCVII} Wassily Kandinsky – Über das Geistige in der Kunst (Concerning the Spiritual in Art) in POAST, Michael – Color music: visual color notation for musical expression. LEONARDO, Vol. 33, No.3, pp.215-221, 2000.

^{xCVIII} POAST, Michael – Color music: visual color notation for musical expression.

^{XCIX} POAST, Michael – Color music: visual color notation for musical expression. p. 216.

when it is human nature to be busiest and therefore louder. "Colour meaning associated to sound meaning can be altered by different shades of the same colour. For example, light blue evokes more flowing rhythms, higher pitch and faster tempos than dark blue. The subtle gradations of colour relationships in a musical score thus regulate the nuances of musical interpretation."^c In this example, light blue can be likened to day-time and flowing water, while dark blue can be likened to night-time and deep, still water (eg: the ocean).

Synaesthesia of course happens the other way around too. Well-known visual artists such as David Hockney, Wassily Kandinsky, Paul Klee and many others are associated with this phenomenon, although in many different forms. When Jazz first appeared on the scene, there were a number of artists who used this new musical expression as a reference for their work. But how did those artists transmit music to their visual arts? An exhibition recently shown at Pallant House Gallery in Chichester entitled *Eye-Music: Kandinsky, Klee and all that Jazz* prompted journalist Martin Gayford to report in the Telegraph: "...it would be absurd to suggest that a patch of green in a painting was influenced by Charlie Parker or Sonny Rollins. It is more a feeling and improvisation." He also made reference to Matisse's series of paper cut-outs entitled *Jazz* (1947), where one can in turn relate Matisse's own words: "One cannot expect to translate the symphonies of Beethoven into painting". Is it the 'essence' mentioned earlier that is transmitted here? Or can a form of systematisation really be possible?

Attempts at determining a systematic parallel between colours and sounds has been delved into by a number of artists and musicians throughout history. Even today this continues, particularly with the use of technology as an aid. A systematisation of colour and sound can be likened to 'number-painting' where colours have been given numbers, so, if the numbers 1-2-3-4-5 appear, the corresponding paint colours will be placed in that order. Usually in this sort of context, also, for example in a box of coloured pencils, the colours are placed from lightest to darkest, and then numbered, or, failing that, the colours are placed in the same order of the colours of the rainbow. However, if an attempt is made at doing the same with music, for example with the keyboard of a piano, surely it must be simple? What springs to mind though, is: where to start, and what order to place the colours in. Also, if different shades of a colour, as mentioned by Poast above, allude to different tempos or even different pitches, the keyboard-paintbox connection can not be made standard.

Composer Alexander Skryabin found himself particularly fascinated by the psychological effects of a colour-music experience and set about creating a system to investigate the emotional experiences of this phenomenon. As a synaesthete himself, he experienced colour changes from one key to another (as opposed to from one note to another), allowing him to create a system of colour-key correspondences. Skryabin's colour scale was personal to his own synaesthetic sensations, therefore on a grander scale the results are murky

^c POAST, Michael – Color music: visual color notation for musical expression. p. 216.

and imprecise. Bulat Galeev (a Tatar who founded the colour-music electronics laboratory in Kazan), created this chart: *Scriabin's Musico-Chromo-Logo Schema*.

SCRIABIN'S MUSICO—CHROMO—LOGO SCHEMA*

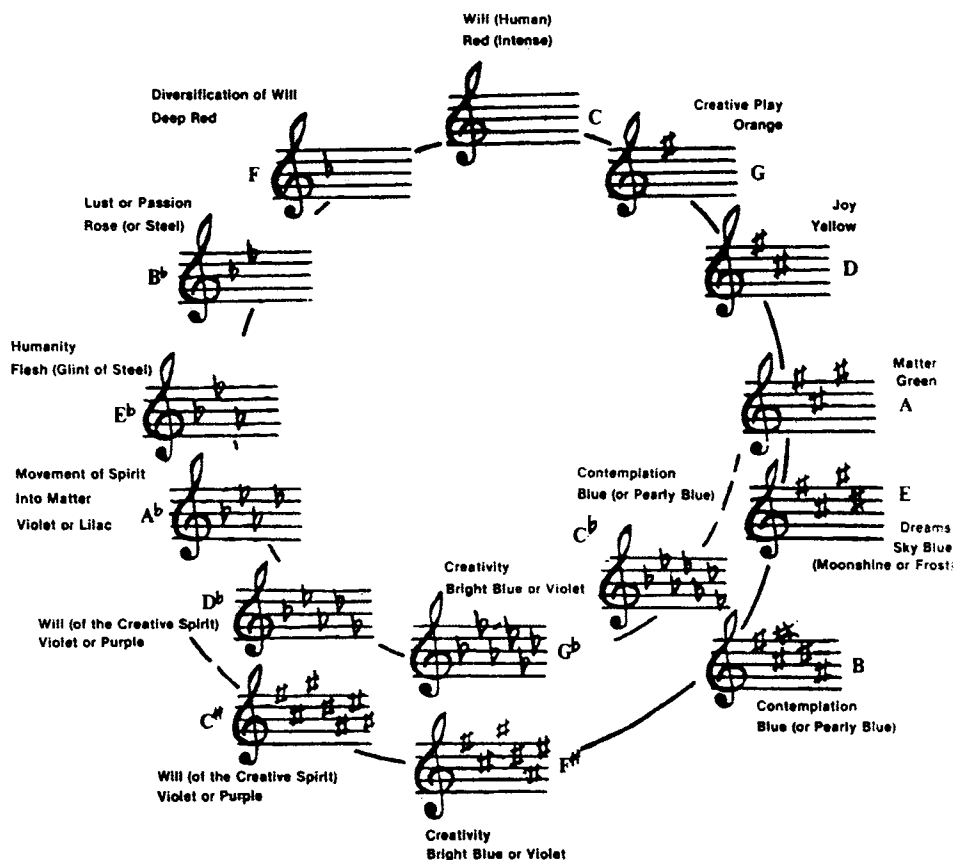


fig. 3.3

The circle/spiral represents the keys in music (in intervals of fifths), with C Major/A minor in the centre at the top. For each key, he has associated Skryabin's personal sensations: note the descriptive words as well as the colours next to each key.

In his music, Skryabin attempted to incorporate these colours, probably most famously with his colour organ. He included in the score of his *Prometheus: Poem of Fire* (1908), an instrument called a Luce, which had not yet been invented at the time. Also called a colour organ, it is a 'keyboard for light', its function being to bathe the performers, viewers and indeed the whole space in coloured lights throughout the performance of the piece. In the first page of the score (next page), note the top musical line belonging to the Luce. As Faubion Bowers describes in the introduction to the Dover score, the Luce's line is "...notated on a single music staff. The upper of two pitched lines denotes the root of the changing harmonies; the lower line

inches along glacially symbolizing involution and evolution: the breathing in and out of the Cosmos.”

The image shows a page of a musical score for an orchestra. At the top, the tempo and mood are indicated as "Lento. Brumeux. n. n. d. e. o." followed by "più lento", "a tempo", and "avec mystère". The score is divided into several sections of instruments:

- Woodwinds:** Flute piccolo, Flutes I & II, Flute III, Oboes I & II, Oboe III, English Horn, Clarinets in Bb (I, II, III), Bass Clarinet in Bb, Bassoon I & II, Bassoon III, and Contrabassoon.
- Brass:** Horns I through VIII, Trumpets in Bb (5), and Trombones/Tuba (8).
- Percussion:** Timpani, Cassa (Cymbals), Piatti (Cymbals), and Tam-Tam.
- Keyboard:** Piano.
- Strings:** Violins I & II, Viola, Violoncello (Cello), and Contrabasso (Double Bass).

The score includes various musical notations such as notes, rests, and dynamic markings (pp, ppp, f, mf, etc.). There are also performance instructions like "con cord. ondes, recueilli" and "sur la touche".

fig. 3.4

The machine was built for Skryabin by a professor of electrical engineering at the Moscow Technikum Alexander Mozer, and was played with a series of electrical switches that would project the appropriate colour in synchronisation with the orchestral music. Although this instrument is only really associated with this piece, the concept of it had already existed. Louis Bertrand Castel's *clavecin oculaire* (1734), attracted the attention of Telemann and Rousseau.

Also Karl von Eckartshausen in 1791, D.D.Jameson in 1844, Bainbridge Bishop in 1881, A.Wallace Rimington in 1895, A.B.Klein in 1921, and Thomas Wilfred in 1925, are all names associated with the idea of a keyboard or organ of colours and light. Here, Paul Klee's quote regarding a keyboard of colours springs to mind.

Josef Matthias Hauer^{Ci} was an Austrian composer and music theorist. In a biography by Walter Szmolyan^{Cii}, the following table was highlighted, to show Hauer's ideas on a colour/sound relationship:

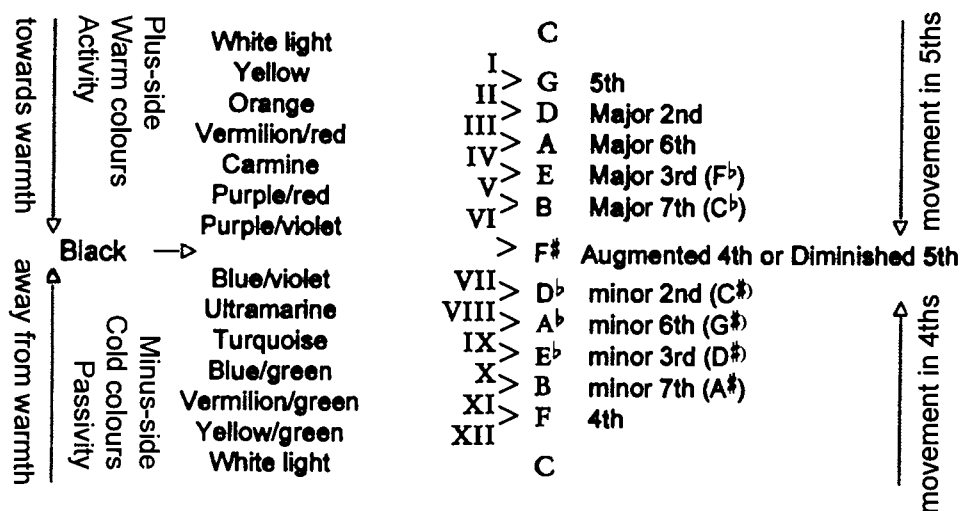


fig. 3.5

Hauer was a composer who developed a new method of composition based on all twelve degrees of the Chromatic scale. In systematizing his new techniques (*Zwölftonmusik*^{Ciii}), it became helpful to him to introduce a number of non-musical parallels which would clarify the new (non-tonal) relationships between notes. He drew both on colours and on moods or emotions (his attributions of colours can be seen in the table in fig. 3.5). Colours were attributed in such a way as to equate the colour-wheel to the musical cycle of fifths. The sequence of fifths follows acoustic principles (based on the natural harmonic series) and was crucial to the organisation of tonal music in which it determined the signatures of the various different keys; Hauer regarded his system to be an evolution of tonality.

^{Ci} HAUER, Josef Matthias – b. 1883 – d. 1959.

^{Cii} SZMOLYAN, Walter – J.M.Hauer. Wien: Verlag Elisabeth Lafite, 1965. 80pp.

^{Ciii} Twelve-tone music is usually attributed and related to Schönberg. Hauer's *Zwölftonmusik*, although of a slightly different nature, preceded this, and was the cause of much bitterness for Hauer when his system was somewhat 'left in the background'.

The following diagram shows the cycle of fifths in the form of a spiral, indicating how the ascending fifths (C-G-D-A-E-B-F#....) and the descending fifths (C-F-B_b-E_b-A_b-D_b-G_b....) become enharmonically the same (F#=G_b) where the spiral overlaps:

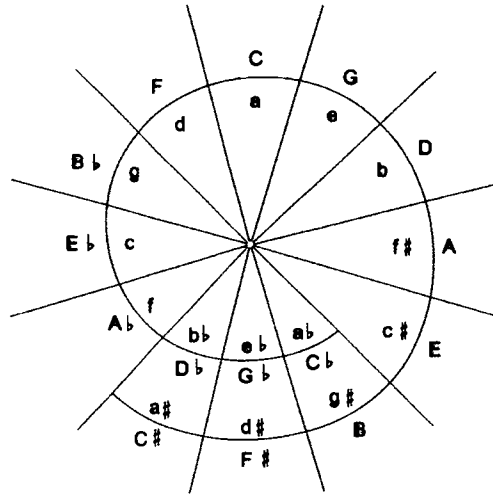


fig. 3.6

The next diagram indicates the keys by key-signature; with the exception that the overlap of the spiral has been eliminated, the diagram describes the same phenomenon (cycle of fifths):

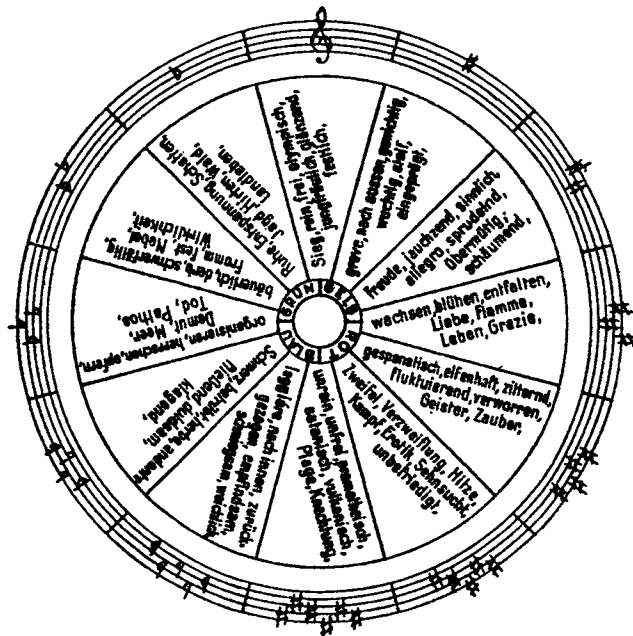


fig. 3.7

In this circle, Hauer attributed moods and emotions to the various keys. Visibly noticeable in the centre circle are the four colours yellow (Gelb), red (Rot), blue (Blau) and

green (Grün), indicating the general colour he attributed to sections of the circle. The moods he attributed are also very interesting. Take, for example two contrasting keys such as C and F#:

- C victorious; pure; freedom; Olympic; virginal: brilliant; festive.
- F# unclean; un-free; promethean; satanic; volcanic; Plague; knavery.

Once again, the visual or emotional aspects that Hauer attributed to music were personal to him – another example of how a universal systematisation system can never be reached. His ideas clearly differ from those of Skryabin, and consequently of others who have attempted a form of colour-music systematisation. Art is, therefore, always personal, and never universal.

With the emergence of technology, many artists and composers have resorted to the use of computers and programming in their art. Contemporary composer Hans-Christoph Steiner has, for example, made use of *Pure Data* (Pd), a real-time graphical programming environment, allowing him to produce works such as *Solitude*, where the graphics portrayed are a visual indicator of the computer-generated sound:



fig. 3.8

In this score, the temporal element still occurs from left to right. In his own words, he describes how the score works: “Each colour represents a sample. Each sample controller has two arrays: the brighter, bigger one on top controls sample playback; and a smaller darker one at the bottom controls amp and pan.”

This use of technology still does not create a universal form of systematisation for a sound/colour relationship. The use of these kinds of graphics in computer software allow for a ‘personal’ (or in this case technological) system for representing sound in a visual way. The colours programmed into the computer each represent a particular type of sound, and by looking at the score of *Solitude*, one can easily see where similar sounds are repeated throughout the piece. The computer itself recognises the shapes and colours that have been programmed into it, and will produce the relative sound. However, once again, this systematisation is unique only to the user of the system – in this case, a computer.

3.2 Temporality

While many theories and theses have been put forward in recent decades on the topic of temporality, traditionally, time is viewed as a linear progression of past, present and future. Therefore, a temporal dimension is one of the principal characteristics associated with Music. Performance of Music has its own stipulated time. Any piece of Music presents a specific sequence of events, each with an specified duration. Quite apart from the melodic or harmonic

interest, the juxtaposition, order and duration of each section is important in establishing logical sequence (musical discourse) as well as proportion and balance. The musical score is the written guide that stipulates to the performer which notes to play in succession, and therefore constitutes a tangible object of temporality. As with the written word, conventional musical notation is written and read from left to right, forcing the performer to follow this format in a temporal dimension.

As a result, Music is traditionally an art of principally temporal representation, while the visual arts, specifically painting, drawing & sculpture are principally of a spatial representation. This means that while painting (and others) can depict the whole in a singular moment, music always depicts the whole in succession, just as Wassily Kandinsky stated that: "Music [...] has at its disposal duration of time; while painting can present to the spectator the whole content of its message at one moment"^{CIV}. Here, Clement Greenberg's^{CV} investigations and writings on the topics of 'temporality' and 'instantaneity' come to the fore. He found these two apparently opposite terms to be present in many paintings and sculptures, created as a result of the process by which we (the viewer/public) perceive the work of art. He criticised the view put forward by Lionello Venturi^{CVI}, that, at first glance, only a vague impression of a picture is perceived, and the use of time is needed while we analyse all the components and come to a full understanding of the whole picture. Greenberg writes in his criticism of Venturi^{CVII}: "Doesn't one find so many times that the "full meaning" of a picture – i.e., its aesthetic fact – is, at any given visit to it, most fully revealed at the first fresh glance? And that this "meaning" fades progressively as continued examination destroys the unity of impression?"^{CVIII} He believed that even if a full understanding of a work of art is not grasped in one moment of time, the 'instant' view is imprinted into the eyes, to be reactivated later. The instant is that 'at-onceness' (phrase coined by Greenberg) of the full impact on a viewer's eyes in one moment, while time either interferes with that original first impression, in a way de-constructing it, or used retroactively to build upon it. However, Greenberg's idea of instantaneity is not single or isolated, but can be repeated in a "succession of instants"^{CIX}, while each of the instants remains an instant by itself. The overall unity of a picture is therefore created by a series of 'instants'.

Lacan^{CX} divided the process into three logical moments: 1- the instant of the glance; 2- the time for comprehending; 3- the moment of concluding. However, he also writes that "the time for comprehending can be reduced to the instant of the glance, but this instant can include

^{CIV} KANDINSKY, Wassily – *Über das Geistige in der Kunst*. p. 42.

^{CV} GREENBERG, Clement – b. 1909 – d. 1994. American art critic.

^{CVI} VENTURI, Lionello – b. 1885 – d. 1961. Italian art critic and historian.

^{CVII} Greenberg criticised Venturi's *Painting and Painters: How to Look at a Picture* (1945), in his own *On Looking at Pictures* (1945).

^{CVIII} GREENBERG, Clement – *On Looking at pictures* (1945) *cit. in* KAJIYA, Kenji – *Deferred instantaneity: Clement Greenberg's time problem*. p. 208.

^{CIX} GREENBERG, Clement – *Idem, Ibidem*. p. 213.

^{CX} LACAN, Jacques – b. 1901 – d. 1981. French psychoanalyst and psychiatrist.

all the time needed for comprehending"^{CXI}. This idea is shared with Greenberg, in that instantaneity naturally includes the subsequent time for comprehending, termed either 'retroactive temporality' or 'deferred instantaneity'. In conclusion therefore, according to Greenberg, the total experience of a work of art develops in the course of time.

When it comes to music, the work of art obviously requires the use of time for the beholding and understanding of the whole, and the 'instant' becomes not as relevant as with the visual arts. However, during the listening of a piece of music, the listener's perception could be classified also as a logical sequence of 'instants', as at any given moment throughout, one only has the memory of previous instants and the prospect of future instants. The appreciation of music is cumulative in that each instant is appreciated in the light of what has gone before, all of which conditions what is likely or not to come later. When the piece has finished, the listener has the memory of what took place in time in the past, and cannot look back at just one instant to recall the whole. So in a way, music is an art that can only be appreciated in a group of carefully ordered instants that make up a logical whole, and cannot, as with the visual arts, be regarded retroactively in its entirety. Memory of a piece, however, can be likened to Greenberg's 'instant', or the overall aesthetic impression left by the listening process.

In recent times, with the emergence of new media in the visual arts such as film, photography, video, installation and performance, temporality of a similar kind to that of music, has become increasingly relevant in the field of the visual arts. In turn, with the pioneering work of such 20th century composers as John Cage and Sylvano Bussotti, with his artistic and predominantly visual musical scores, the visual in music has also been treated more consciously. Works of art have consequently now become more experimental in their inter-disciplinarity, where temporality and instantaneity cannot be linked solely to either one or another – therefore leading, again, to a greater syncretism among the arts.

^{CXI} LACAN, Jacques – Logical Time *cit. in* KAJIYA, Kenji – Deferred instantaneity: Clement Greenberg's time problem. p. 211.

4. Drawing Work

My drawing work takes influence from already existent works of music, in particular contemporary classical music, or at least from the beginning of the 20th century onwards. I feel that in this period, Music, as indeed all the Arts have expanded to beyond their own realm of techniques, in some cases even over-lapping with each other. My choice in the pieces I have used as a starting point for my drawing is purely of a personal nature, taking into consideration that which I am familiar with, and that which inspires some sort of emotion in me, whether positive (in most cases) or negative.

The aim of my drawing work is to create drawings/paintings based on different works of music by different composers. The resultant works aim to visually embody the structure and overall mood of the pieces of music by showing their ideas to the viewer in one single instant. As Kandinsky stated, "Music [...] has at its disposal duration of time; while painting can present to the spectator the whole content of its message in one moment"^{CXII}. It is in this moment that I want to convey to others what I have interpreted from a piece of music. Thomas Hardy's quote from *Tess of the D'Urberville's* at the start of this work refers of course, to that which is transmitted via a musical score. In all the Arts, emotions, feelings, moods, are transmitted from the creator to the receiver via the work of art. In my drawing work, I am aiming to transmit to the visual receiver, that which was transmitted to me as an aural receiver. As a result, any form of sound systematization will be of a personal nature, and therefore subject to the interpretation of others. I did not choose a visual art connected to time (like video, for example) for the simple reason that I want to grasp the music in one single moment.

As delved into in detail in the theoretical aspect of my work, the objective of a musical score is to provide communication from the composer to the interpreter or performer, so as to best execute the final result of a musical work: organised sound, or music. This sound is my starting point to create a visual object that I understand to convey whatever aspect I believe that the sound conveys. What I am doing is changing the outcome of a composer's incentive – from aural to visual, albeit subject to my interpretation and analysis.

So the original score is the guide for a piece of music in sound, which is a guide for a visual piece of work – my final product. Thinking back to graphic music scores that look like drawings in themselves (eg: Sylvano Bussotti's *La Passion Selon Sade* exemplified in *figs. 2.27, 2.28 & 2.29*), could my drawings be re-interpreted by a musician back into sound? This is a possibility I would like to consider possible. My curiosity lies in the difference that both sound pieces would portray – how different (or similar) would the re-interpretation from my 'drawing-score' be from the original? Also, if the musician were already familiar with the original work of music, to what extent would this affect his portrayal of my drawing?

^{CXII} KANDINSKY, Wassily – *Über das Geistige in der Kunst*. p.42.

In effect, it is the overall artistic experience that I wish to convey through my final drawings.

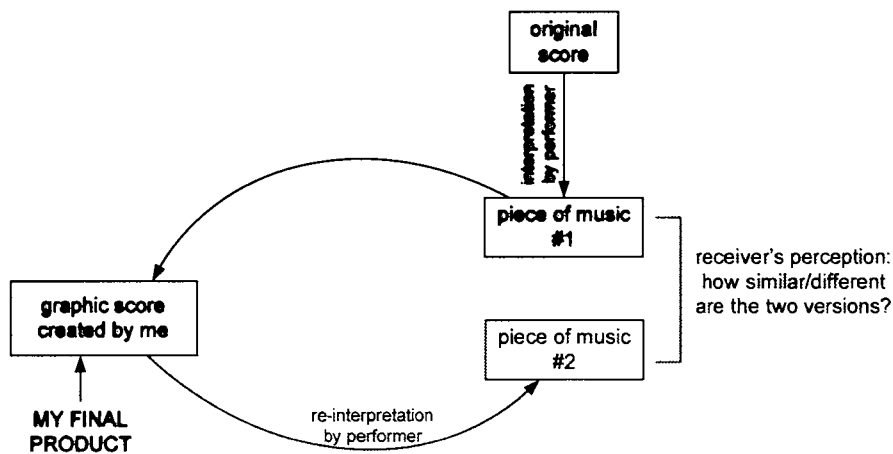


fig. 4.1

These questions are fascinating, and in the future could be an interesting indicator as to how the inter-disciplinarity between music and the visual arts can take form.

The works I have and am currently producing do not adhere to conventional musical notation, as they aim to visually annotate the moods invoked by the music: by 'moods' I mean to refer to the feelings or references expressed in music. For example, I would personally classify Smetana's *Vltava* from the symphonic cycle *Má vlast (My Fatherland)* as possessing a series of moods throughout: calm, agitated, traditional, happy, celestial, etc...

There are however, a few aspects of similarity between my drawings and musical notation which remain. In most cases, the graphic register I choose of black ink on white paper strongly alludes to the written documentation of music – a score – although in some cases I have chosen to expand out of that self-imposed restriction. This may be as a result of a piece feeling more figurative as opposed to explanatory.

The all-important time/pitch axis dominant in musical scores also plays a role in how I have chosen to use the space of my sheet of paper.

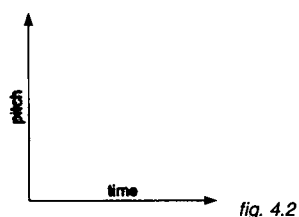


fig. 4.2

This spatial aspect has managed to creep into my drawing work in certain pieces. Sometimes, as the progression of the piece of music works from left to right, so I have also used this sort of progression. In other cases, higher pitches are often found at the top of the page, and vice-versa.

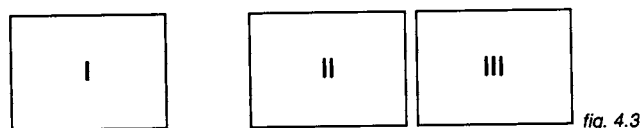
In some cases, references to musical notation, whether conventional or non-conventional, also arise. For example in contemporary music, clusters (as mentioned in chapter 2) are graphically signalled by a block of colour (black). As a reference to this type of sound, I have sometimes used blocks of black or shading in the drawings, to indicate an intense cluster of sound. In opposition, blank or whiter areas can reflect a less intense moment in the music.

4.1 Explanations and analyses of works produced

4.1.1 Edgard Varèse (b.1883 d.1965) – *Octandre* (1923)

Born in France but spending most of his life in the United States, Varèse lived through an era when “Stravinsky was preoccupied with neoclassicism, when Schönberg was formulating the twelve-tone system, when Webern was revealing new dimensions beyond the pitch-duration relationship, and when Bartók was teaching the values of non-Western music”^{CXIII} – all in all, an era of revolutionary thought, technique, and above all change. Varèse himself though, talked about music being “spatial, “sound set free” yet “organised”^{CXIV}, indeed he coined the phrase “organised sound” in music, meaning that certain rhythms and timbres can be grouped together. He was one of the first to experiment with electronics in music, namely in *Déserts*^{CXV} which received a hostile reaction from the public. Chou Wen-chung wrote of his music: “Far from being an intellectual exercise, his music is full of suggestive qualities that stimulate the listener’s imagination”^{CXVI}.

In *Octandre*^{CXVII}, Varèse used an uncharacteristically traditional division of movements (three), although II and III are played together, with no interval. This fact is a reference to be considered in the final setting up of the pieces to be exhibited, using the following idea for their separation in the mounting of them:



I chose to use this work as a reference for three drawings, principally because, when listening to the three short movements, they seem to come together very easily as a whole. Even to the un-trained ear, there is an obvious sense of beginning, development and end, bringing together the elements displayed earlier. Because of the range of rhythms and pitches provided by the diverse timbres of each instrument, one can clearly hear very distinct lines (some on their own, some over-lapped with others) throughout the work.

^{CXIII} WEN-CHUNG, Chou – CD booklet – p.6.

^{CXIV} VARÈSE, Edgard – *cit.* In CD booklet – p.6.

^{CXV} VARÈSE, Edgard – *Déserts* – for wind, percussion and electronic tape. 1950-54.

^{CXVI} WEN-CHUNG, Chou – CD booklet – p.6.

^{CXVII} VARÈSE, Edgard – *Octandre* – for flute, clarinet, oboe, bassoon, horn, trombone, trumpet and contra-bass. 1923.

To familiarize myself with the piece and to highlight the points that stand out, I began by listening to it over and over again without making any notes. Only after having it somewhat ingrained in my mind did I listen to it with the score in front of me as a guide. Finally, I annotated the most important aspects of mood, style and instrument, and those fragments that stood out to me from the rest. The following diagrams show a verbal and slightly graphic representation of my interpretation.

Preliminary annotations:

Movement I 2'34"

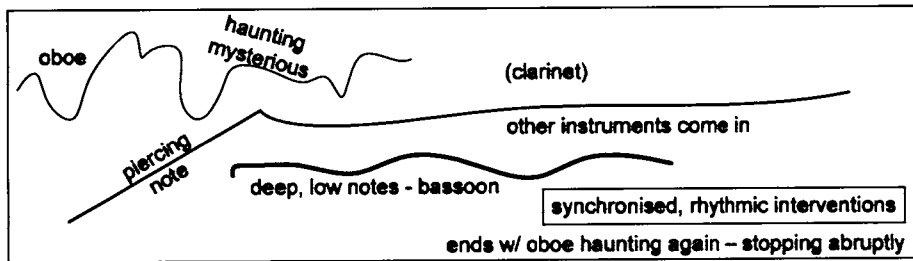


fig. 4.4

Movement II 1'46"

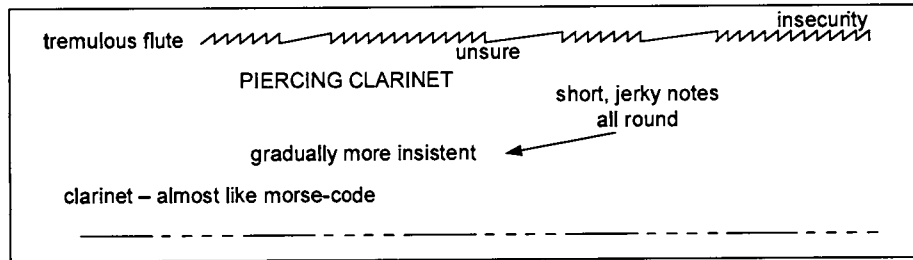


fig. 4.5

Movement III 2'18"

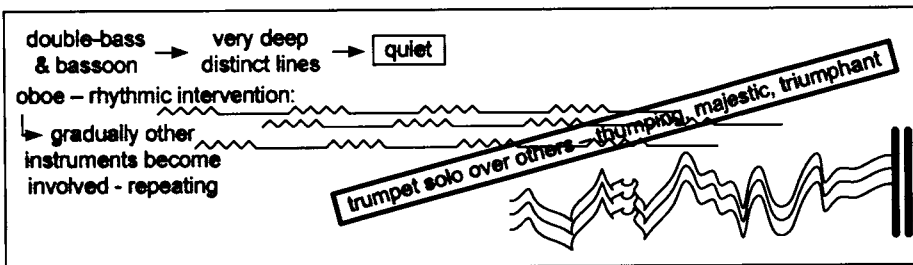
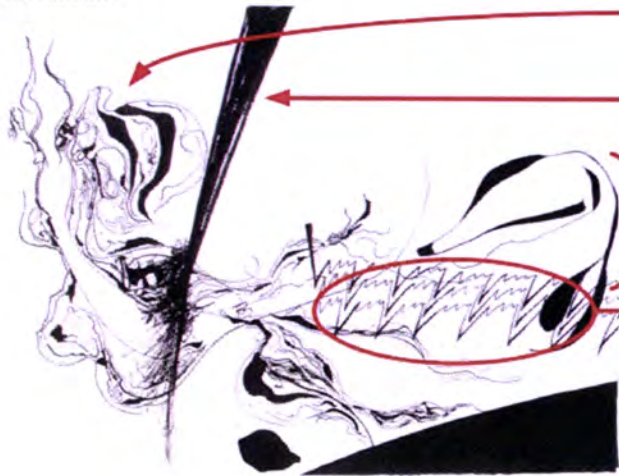


fig. 4.6

These annotations present a range of simple adjectives or word-sound relationships that sprang to mind at the time, as well as visually graphic annotations indicating the abstract movement of the musical lines. It is important to realise that these annotations display not only moods (eg: "unsure; insecurity" in movement II), but also certain facts, such as reference to which instrument is playing. These facts also help give an idea of a mood of a sound, because of the pitch and timbre that that certain instrument is associated with. The double-bass and bassoon, for example, have a very deep pitch, and naturally influence my idea of a sound from the simple knowledge that they are playing. There is a certain reference to time and pitch in these 'graphs'. I have used the rectangular spaces in similar fashion to how a written page or a

musical score is to be read: from left to right, and top to bottom. Pitch can be seen referenced in some the wavy lines in, for example, movement III. Rhythm is also referenced, for example, in movement II, with a reference to a 'morse code-like' rhythm played in the clarinet.

Movement I



The haunting of the oboe makes its way throughout the beginning, and sets the scene for the whole of the movement.

Interception by a piercing note, that gets confused with the haunting and the other instruments that come in.

The thick black moments represent the deep notes on the bassoon, in a way also haunting like the oboe, but within a different range.

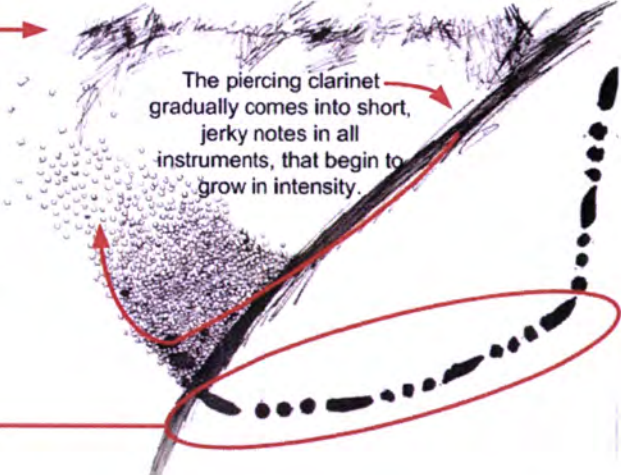
The rhythmic interventions near the end of the piece while the oboe emerges and starts to haunt again.

The movement ends abruptly.

The flute is unsure of itself, almost like a nervous student playing their first recital. Notes may not come out as intended, they may tremble, just as the pen does here. It's almost rasping.

Again, the clarinet is dominant with its morse code-like rhythm. I chose to relate this graphically to morse-code, and allude to the internationally-recognised system of lines and dots, because the sound itself is so clear and un-cluttered. It is almost as if it is trying to get a message across, like morse code itself.

Movement II



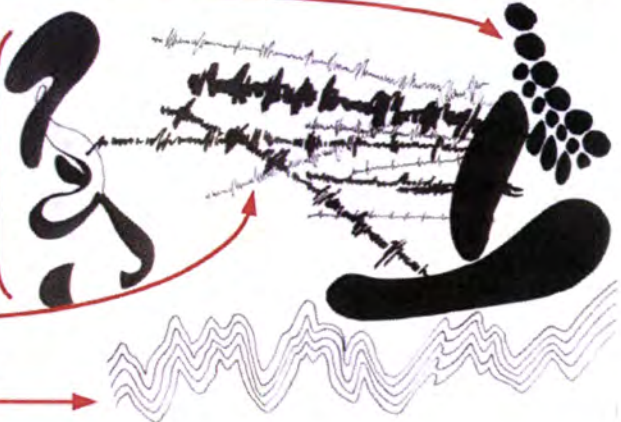
The piercing clarinet gradually comes into short, jerky notes in all instruments, that begin to grow in intensity.

The majestic and definite sounds of the trumpet eclipse all other sounds.

Movement III

Lines of melody in canon repeated throughout the range of instruments, at different pitches, coming in at different stages.

The first sounds of the movement are deep and distinct in the double-bass and bassoon. The overall sound is round and somewhat soothing.



The synchronised lines in various instruments at once end the piece. A certain reference can be made to the rhythmic interventions of the 1st movement.

fig. 4.7

4.1.2 Christopher Bochmann (b.1950) – *Lament* (2001)

Born in England, my father has been living in Portugal for the last thirty years. According to the online Classical Composers Database, “his musical style has been through a phase of considerable complexity and has made much use of aleatoric procedures. In recent years, his works have become somewhat simpler, thus following certain aspects of a post-modernist trend without resorting to neo-tonality”^{CXVIII}

Commissioned by the Portuguese group *Orchestrutópica* in 2001, *Lament* was written at around the same time of the 11th September tragedies, and became a result of the composer's direct reaction to those happenings. In his own words, Bochmann talks of his work: “Some will try to attach a programmatic explanation to the work. Although this is quite possible, and each person's reading is valid for them, it was not planned that way. The work speaks of emptiness and sorrow rather than any pictorial description”. By ‘pictorial’, he talks of those who wish to relate the 9/11 happenings directly to the sounds in the music. It is however, the emotion he describes that he wished to portray, and not any narrative programme. This concentration on the general mood rather than the more specific pictorial or narrative aspect, harks back to religious art of the 16th century: in contrast to the art of the Catholic and Orthodox churches that favoured images of saints and deities, the Protestant churches eschewed the pictorial, considering it to be the worship of idols (idolatry – like Aaron's Golden Calf^{CXIX}), opting rather for the idealistic vision of Moses. This frequently resulted in a greater development of the religious theme through the less specific art-form of music, than by visual means.

I have had the opportunity of playing in this work with the contemporary music group of the Orquestra Sinfónica Juvenil. Although unfortunately the opportunity of performing it in concert never arose, we nevertheless rehearsed it extensively. It is this experience that sparked my interest in including it in my drawing work. Performing a piece allows for a different understanding of the overall sound, and in this case, my knowledge of the work prospered, as with each rehearsal more layers of sound and depth were unravelled. The ‘emptiness’ and ‘sorrow’ referred to earlier by the composer is also one of the aspects that interests me in his piece. It is the overall mood conveyed that is important, and not, as he states, a ‘pictorial description’.

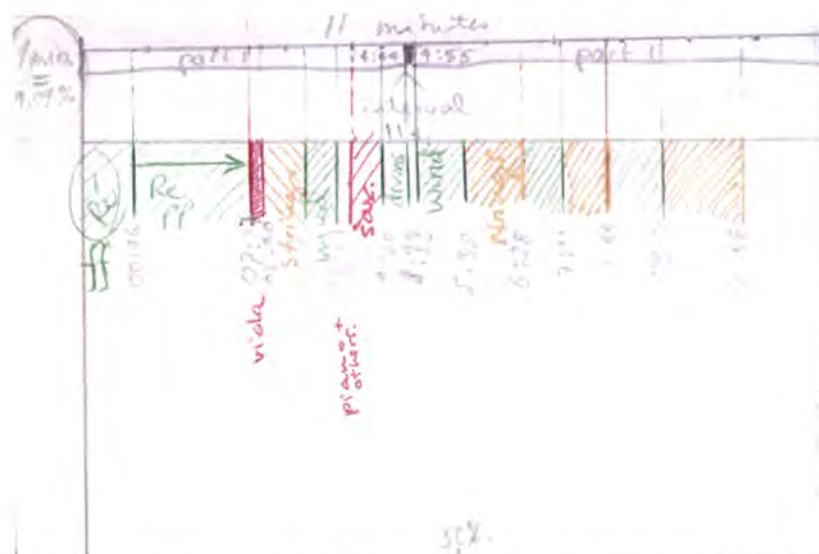
Set in two parts, the first is extremely agitated, while the second alternates between different instruments (principally wind vs strings), creating an eerie effect. In describing his piece, the composer prefers to let the music speak for itself, but nevertheless states that: “lacking words that live up to the expression for which the music is a vehicle, I would simply throw out words like brutality, futility, emptiness, extinction; and the possibility of a positive seed of hope for a future renaissance. Could the trombone be the phoenix that rises out of the

^{CXVIII} Classical Composers Database - <http://www.classical-composers.org/comp/bochmann>

^{CXIX} The Golden calf was an idol created by Aaron to satisfy the Israelites while Moses was up on Mount Sinai. This is according to the Hebrew Bible, while the Q'uran says it was made by Samiri.

ashes?" In this last rhetorical question, he refers to the gradually rising glissandos of the trombone in the final section of the piece - this reference could, in some way, be considered a figurative description for that section.

To begin analysing the work, it felt logical to divide it into sections, not only the two parts of the piece itself, but also in a proportional separation of sections, personal yet obvious to me. I divided the piece in a temporal analysis, using an amateur audio recording of one its performances, as well as my personal experience of the content of the piece:



At the top of this sketch-diagram, The 2 parts of the work have been divided proportionately, as have all the various different sections identified underneath. The first half sees the note Ré (D) highlighted, as this note is 'thrown out' as it were, by the different instruments in succession, and overlapping. This can almost allude to a war scene, where bombs and guns are constantly being fired from different machines, from different places. A section is dedicated to the viola, then the strings, wind, piano and saxophone. The 1st part finally finishes off with an explosive solo from the percussion. The 2nd part of the work, as portrayed by the contrasting sections identified in green and orange, involves a 'see-saw' effect between the rasping strings and the wind. Every now and then in this section (although not specifically identified in this diagram, the trombone appears playing a glissando.

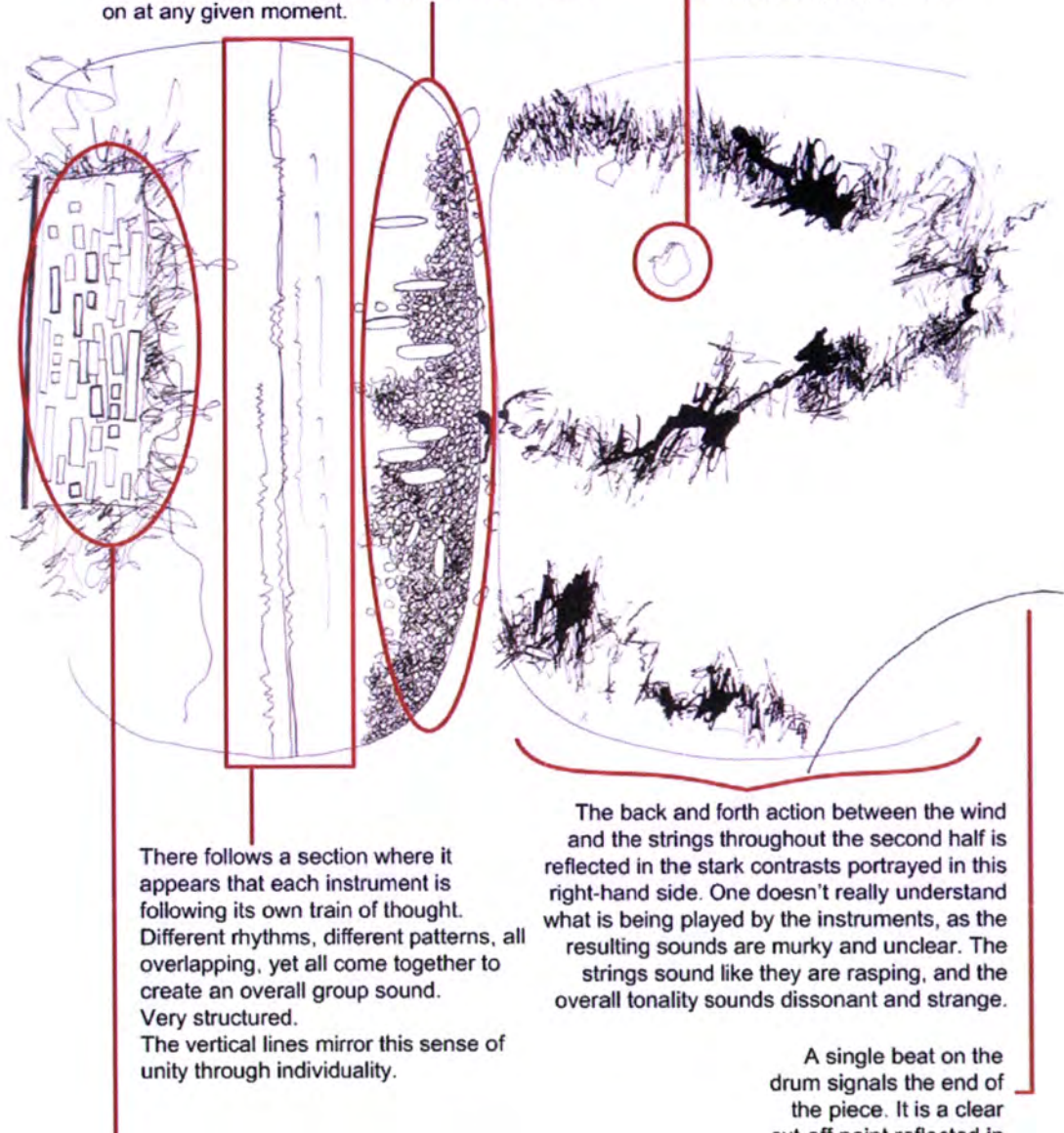
Having identified the various sections according to the instruments and style of music playing at the time, this served as a guide for creating sketches that resulted in the final drawing.

In the final drawing, I also used a temporal format to some extent. As the piece is divided into two very different parts, I also divided the page similarly, allowing the preliminary impressions of the piece to be seen on the left-hand side of the page, while the end is at the bottom of the right-hand side.

The saxophone enjoys a solo moment, followed by the end of the first half culminating in a dramatic solo from the percussion.

The graphic register used here reflects the sounds heard – short notes, coming from many different places at once – one doesn't know where to focus on at any given moment.

This figure is reserved for the haunting trombone. Through repetitive glissandos, it never seems to arrive at its destination. This solitary figure represents its loneliness among all the other group sounds.



There follows a section where it appears that each instrument is following its own train of thought. Different rhythms, different patterns, all overlapping, yet all come together to create an overall group sound. Very structured. The vertical lines mirror this sense of unity through individuality.

The back and forth action between the wind and the strings throughout the second half is reflected in the stark contrasts portrayed in this right-hand side. One doesn't really understand what is being played by the instruments, as the resulting sounds are murky and unclear. The strings sound like they are rasping, and the overall tonality sounds dissonant and strange.

A single beat on the drum signals the end of the piece. It is a clear cut-off point reflected in this line that also cuts off the corner of the page.

Opening: confused, loud crashing from all instruments. Very dramatic. Followed by the note 'D', passing from instrument to instrument, echoing simultaneous happenings on many different planes. The 'boxes' reflect this in a visual form – of varying durations, yet all at the same register.

fig. 4.9

Analysing my drawing in a more pictorial context, I can say that the first half can reflect the destruction, drama, shock and brutality involved in an attack such as the 9/11 incidents referred to by the composer. The different graphic registers (boxes, sharp lines, lots of small circles, 'confusing' scribbling), allude to the shock factor of many different explosions and happenings taking place at once. The public does not know where to look, what to listen to. What is coming next? The sheer confusion, agitation, distress and consequent trauma caused by the unexpected.

The second half is the aftermath of the shock. The confusion of the lines can be likened to rubble - the mess caused by the destruction, while wafting in and out of a calm silence - a silence that reflects death. Here is the settling dust after the storm, and the emptiness representing loss. As referred to by the composer, the trombone could in fact be the 'phoenix rising from the ashes' – the 'hope' that, at this stage, has hardly even begun to take shape.

4.1.2 György Ligeti (b.1923 d.2006) – *Lux Aeterna* (1966)

Ligeti was a Romanian-born composer who later became an Austrian citizen. He is well-known in the world of classical music, but to the general public, his music is recognised as having been used for the films *2001: A Space Odyssey*, *The Shining* and *Eyes Wide Shut*. Only after having decided to use this piece for my next drawing, did I discover that it was used for Stanley Kubrick's 1968 film *2001: A Space Odyssey*. In a first comparison of this type of film to *Lux Aeterna*, I personally cannot understand any sort of connection. Thinking deeper into the matter however, I can imagine that an 'out-of-world' idea can easily be linked to the two.

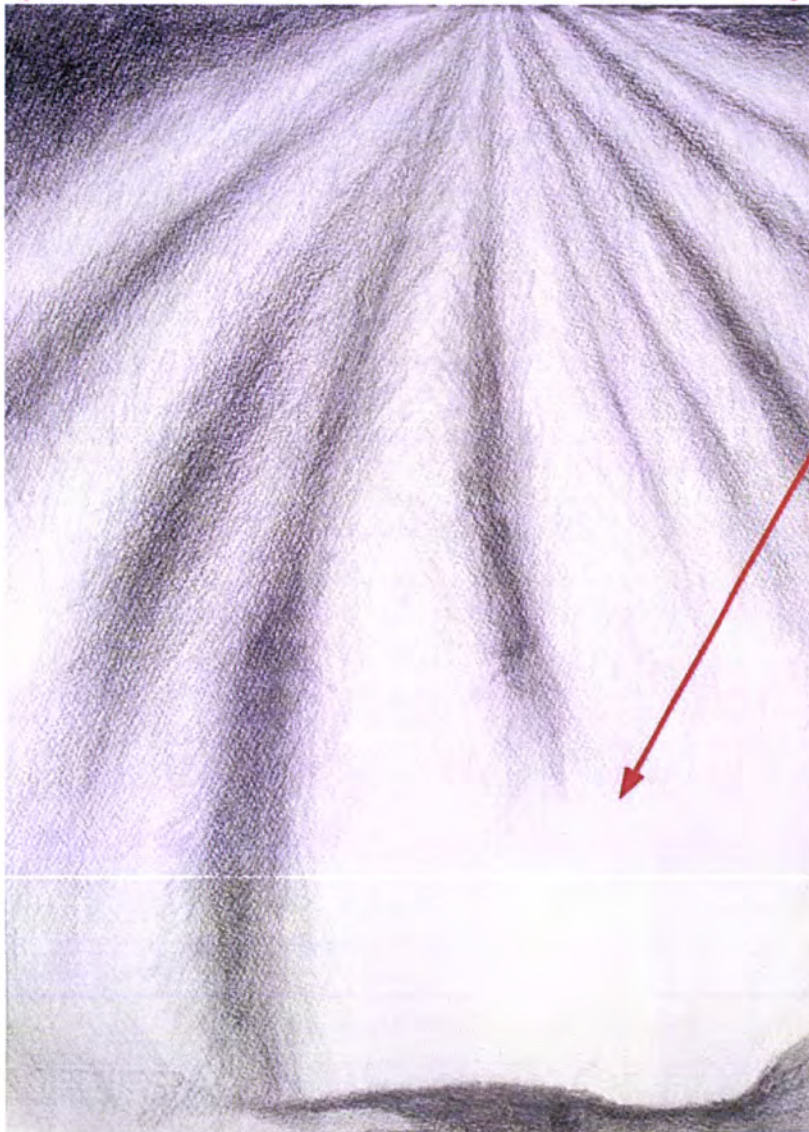
Lux Aeterna was written after Ligeti's *Requiem* (Mass for the Dead) in 1965. For 16-part unaccompanied chorus, it sets another passage from the Roman Catholic Mass: *Lux aeterna luceat eis, Domine, cum sanctis tuis in aeternum, quia pius es. Requiem aeternum dona eis, Domine; et lux perpetua luceat eis* (Let eternal light shine upon them, O Lord, with Thy saints, for Thou art merciful. Eternal rest grant them, O Lord; and let perpetual light shine upon them). In *Lux Aeterna*, Ligeti focuses more on the timbre of the voices, rather than melody, harmony or rhythm. In a general personal description of the work, I feel it to be eerie, with some of the singing voices almost resembling deathly screams, although in a calm way, rather than a shocking way. The overall sound reminds me of a religious setting, rather like an angelic or other-worldly entity. The work does, however, adhere to a structure in which moments of clarity appear among moments that are 'out of focus'. Christopher Bochmann aided me with a general analysis of this structure in the following format. The black notes are the 'melodies' that are combined in canon to produce unfocused sound masses, or cluster chords, while the white notes (also including the first note of the whole sequence), represent the focused moments.



fig. 4.10

I have therefore identified around ten 'focused' moments, interspersed with the 'unfocused', highlighted in the drawing:

Not only did I want the allusion to rays of light shining downwards as a result of the topic 'eternal light', but I also wanted to reference the *'focused-unfocused-focused-unfocused'* structure of the whole piece. I have divided these 'rays of light' then, into the number of clear moments present throughout the piece, interspersed with unclear shading, representing the cluster chords. The shape that the 'rays' produce at the top of the page allude to a sort of 'cupola' or arch, typical of a religious building.



With an absence of any recognisable melody, I decided to allow this drawing to adhere slightly more to a pictorial or figurative aspect, to 'tell a story'. This involves the 'eternal light' shining down, creating an area of white 'nothing' in the bottom right-hand corner, accented by a darker 'floor'. This 'nothing' represents the dead – they are physical bodies no more, and the light is shining upon them, creating a somewhat 'celestial' countenance.

fig. 4.11

4.2 Drawing work vs Musical score

In the analysis of my work, I have chosen to superimpose words, ideas and thoughts onto reproductions of my drawings. The reason for this is to describe my personal course of action in deciding what kind of shape, shade, line, etc... should go where, and why, in relation to the object of origin: the music. These annotations describe my thought process, while they also present a mini conclusion about what I have created through drawing. These pages (figs. 4.7, 4.9 & 4.11) almost look like comic strips, where words are used to describe the story of the picture, whether through speech bubbles or descriptive introductory sentences. If I refer back to fig. 4.1, I believe that which I have put in grey, particularly together with these verbal annotations, could more easily aid a musician in a consideration for re-interpretation into sound.

Words and language hold a vital role in our societies across the world, and are therefore a welcome and often very necessary connection between two apparently very different entities (in this case music and painting). The universal language of words is a powerful way of achieving an affiliation between the arts. I have come to this conclusion foremost as a result of the many instances in which I have used language as an intermediary between the original music and visual work. For example, imagine the application of concepts such as the word "busy". When applied to the arts, what does the word "busy" mean? Probably, most people will agree that the image below on the left would be suitable to place in connection with the word "busy", while the image on the right would not:

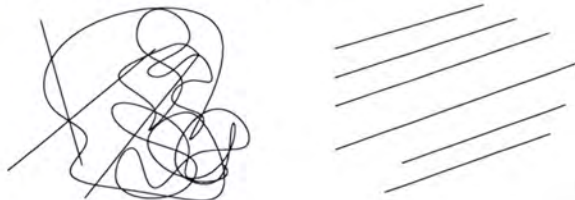


fig. 4.12

The same can probably be said for the next two works: on the left, representing a "busy" piece of artwork, Pollock's *Eyes in the Heat*; and on the right, representing a "not-busy" piece of artwork, Mondrian's *Composition with Red, Blue, Black and Gray*.



fig. 4.13

Translating this to music, one can say that a piece like Stockhausen's *Gruppen* (1955) could be associated with the word "busy" and therefore the image on the left; while a calmer piece like Tavener's *The Protecting Veil* (1987), would not. The role of those 'calligraphic' artists and poets are also of note here, as their use of language can also be considered a universal 'bridge' of understanding on a parallel with the other arts. Constantly used in association with the arts by critics, historians and philosophers, metaphors and adjectives are a common outlet for the expression and description of works. The roles of these uses of language create a parallel between the descriptions of music and painting, and therefore become vital in connecting these two arts: the ideas that a piece of music contains can be connected to the ideas that a painting contains through the use of descriptive words.

For a re-interpretation of my drawings into sound, I believe the words I have added can aid the performers in creating their new sounds, in such a way as these new sounds will not be completely distant from the original music. Now the role of the interpreter becomes dominant: can the interpreter also be a composer of sorts? There is, of course, a great deal of personal creation that the interpreter will have to produce, in a similar way as with those musical scores which possess ambiguous notation. However, the role of an interpreter is merely to interpret what has been put before him, and however personal that interpretation may be, is always influenced by something previously created by someone else – therefore an interpreter can use certain aspects of a composer's role to achieve a more personal interpretation, but the role of creator can solely be attributed to the composer.

I believe that, in answer to a question I put at the start of this chapter, as well as in *fig. 4.1* (how different (or similar) will the re-interpretation from my 'drawing-score' be from the original piece of music?), that the overall resultant sound will definitely be different. However, particularly if viewed in conjunction with my explanations of my personal associations, I believe that certain aspects will remain. For example, in my drawing of *Octandre, Movement III* (*fig. 4.7*), the lines of melody that are repeated in canon eventually by all instruments will of course not mirror the exact melodies of the original as they are not distinguishable (by pitch or rhythm). However, the fact that similar lines are superimposed on one another, at slightly different angles, thicknesses and intensities, implies that different instruments of different timbres represent each line, and therefore should come in, repeating what each other has done, at intersections to one another. Similarly, in *Octandre, Movement I* (*fig. 4.7*), when the oboist knows that a particular graphic figure is a representation of his instrument's part, he will focus specifically on that part, and take note of the adjective 'haunting' when improvising his part.

Generally in my drawings, the structure and mood of the piece has been portrayed, while an exact melody or particular pitch has not – therefore some of these aspects will be similar to the original, while they will naturally possess new qualities of interpretation.

Then there is always the possibility that the interpreter is familiar with the original piece of music. If such is the case, some of the less defined aspects of pitch and melody which are not expressed specifically in the drawings, may result in being closer to the original. Unless the interpreter knows the original completely by heart, the resultant sound will still be a mere approximation of the original. However, this last possibility would rather defeat the purpose of the experiment – that which is to produce a new resultant sound from the intermediary annotations of my drawings.

When mounting my work in the final exhibition, I feel it will add to the experience to include my annotations about each drawing. This will be not only to inform the public of my intentions, but also to show the reasons behind my drawings, and the direct musical connection. Without my 'worded' annotations, the work could be critiqued as drawing of its own accord, which is not its purpose – it must be known that the drawings reflect musical sound directly.

5. Conclusion

This study establishes the extent to which a graphic score can really determine the character of the music, how the visual can influence a musical interpreter, and intends to establish the different categories of visual criteria in musical scores, as well as addressing common issues and dilemmas in an inter-disciplinary context.

Having analysed scores from a visual angle, not forgetting of course my own knowledge of music, I can affirm that many different factors come into play in the relationship between score and performer – predominantly factors of a subtle and personal nature, that naturally, as in all art, provoke different reactions from person to person.

5.1 Relationship between score and performer

A person that looks at graphic scores with no specific knowledge or understanding of musical notation will have a different view from those with musical training. For example, a musician may look at Bussotti's scores and, although they do not adhere to conventional musical notation, will be able to highlight aspects among the graphic/figurative notation that he can recognise and translate into sound. Some musical notes are found in Bussotti's scores and those, of course, can be translated directly into pitched sound – however, those 'figurative' drawings that have been incorporated will, based on the intensity of the line, its spatial position on the page, etc., allow the musician to incorporate his preconceptions about musical notation, using the traditional time/pitch axis, and ideas on musical intensity (black notes vs white notes – blacker score vs lighter score). Someone who is not musically trained and looks at the same score – for example *fig. 2.27* (p.37) – and sees the outline of a central human figure and another on the right in a different position, may have ideas of what these figures mean, and imagine sound that will reflect an impression created by those figures. This does not mean that a musician will not also do the same when faced with figurative drawings – his ideas on a story or feeling based on those figures will of course also be valid in his interpretation, but always in addition to his understanding of conventional notation.

There is no doubt that some of the musical scores shown in this study (particularly in chapter 2) are visually and aesthetically pleasing. This will also have an influence on the viewer/performer, as it is commonly known that when someone likes something (whether visually, or the idea of it, etc...), the 'at ease-ness' and aesthetic opinion will be transmitted through the outcome.

One will also note that many scores make use of words. As I concluded in chapter 4, the language of words is universal – an adjective can be used to describe a piece of music, a painting, a building, a piece of furniture, a human being, indeed almost anything. In a page of Bussotti's score, (*fig. 2.27* – p.37) isolated words are indeed present: *flambeaux, ardre, obstinez* – which will, of course influence those who read them in their idea of the resultant sound.

The use of language in the visual arts is also worthy of note, including titles given to paintings. Paul Klee, mentioned at the end of chapter 2 (p.43), delved deep into how to transfer musical technique into painting or drawing. He also gave music-related titles to some of his paintings. His use of the words *polyphonic*, *operatic* and *harmony* in many of his titles – words obviously connected with music (some more than others) – instantly allows the viewer to think of music when looking at the painting. In a sense, this is similar to the explanations of my drawings (chapter 4): if a viewer looked solely at my drawings with no background information on them, there is no reason why he should relate them to music, yet with the explanations, not only can a viewer relate the visual to a type of sound, but a musician can also understand the structure of the painting and therefore the piece of music, more easily. Similarly, when looking at one of Klee's paintings with the word *harmony* in the title (eg: *Blue-Orange Harmony*, 1923), just the reference to music via this word allows the viewer to contemplate the painting in a different light – a 'musical light', perhaps.

After analysing the research and ideas of those musicians or artists in the systematization of a parallel between music and the visual – particularly as regards colour –, I concluded that any form of parallel will always be of a personal nature. This means that when interpreting notation into sound, the outcome will always vary from musician to musician – indeed, regardless of the existence of any non-conventional notation, there are varying interpretations of music which use solely conventional notation – while the notation is specific and more restrained, major differences in interpretation occur. This means that, if such variety already exists prior to the incorporation of graphics and non-conventional symbols, when a more suggested interpretation is required, the variation between different interpretations will be still greater. It is part of human nature to possess different opinions and judgements – therefore, one of the principal attributes of music (and of all the arts) is its ability to remain human. This 'humanity' is essential in the arts and, particularly with an increasingly computerised world where everything tends to become more uniform, it becomes even more important to allow that 'humanity' to exist and stand out.

Yet to what extent does our background, upbringing and culture influence our judgement, and consequently influence a performer's interpretation of a suggestive form of notation? In Aldous Huxley's *Brave New World*^{CXX}, his society is 'conditioned' to perform certain tasks in a futuristic scenario (rather like societies in the art world). For example, a section involving the 'conditioning' of babies so that they will grow up not to appreciate nature, describes how, in a room full of pretty flowers, the babies receive electric shocks when they crawl towards the flowers – this is repeated day after day until, subconsciously, those babies grow up to associate flowers with discomfort and pain. Although this is an example of extreme

^{CXX} HUXLEY, Aldous – b. 1894 – d. 1963. English writer. *Brave New World* is his most famous work, often talked about on a par with George Orwell's *1984*.

subconscious associations, biologically, we nevertheless adhere to the same 'conditioning' – one of the reasons for such a diverse world society. So, people from different backgrounds who view 'suggestive' musical scores, will no doubt come to different conclusions and, therefore, present different outcomes of interpretation. How differently people perceive suggestive scores such as Bussotti's will in part be the result of a direct influence from their subconscious childhood 'conditioning'.

5.2 The artistic experience: music, visual arts and the public

"Music is the air I breathe and the planet I inhabit. The only way I can pay my debt to music is by bringing it to others, with all my love."

Cathy Berberian

In the 18th century, philosophers and colleagues Moses Mendelssohn^{CXXI} and Lessing^{CXXII} took it upon themselves to systematize the arts, and consequently defined the purpose of art as "[...] the presentation to the imagination (or soul) of an intuitive representation of the object, to elicit pleasure."^{CXXIII} It is a combination of this pleasure and the human need to immerse itself in the representational features of the arts, that build up to the creation of the artistic experience.

All the arts are destined to come into contact eventually with some sort of audience, spectator or viewer, although the current familiar contexts of an art gallery or musical concert were not always their destined final result. Religious, ritualistic or social contexts are prominent in the history of the birth of the arts and their purpose – consequently, the relationship between work of art and public has changed dramatically. As part of a religious ceremony, a work of music such as a liturgical chant or motet would have been incorporated into the ritual, much as a religious painting of Christ on the cross at an altar would have become an icon for worship. Although the quality of the work is imperative, the public's response was not to contemplate the work of art as a work of art in its own right, but to use it to support their faith. Ancient cave paintings or pre-historic sculptures come under this same umbrella of arts with a ritualistic purpose, and in music the composition of dances for different contexts was an important aspect of social culture in such diverse forms as folk and courtly dances. Social and political movements and revolutionary actions were portrayed through the arts, so as to move the masses. French artist Jacques-Louis David^{CXXIV} was considered highly influential in his time, producing paintings supporting the French revolution to be viewed in public by a large population of France, stirring them towards a political uprising. Similar examples can also be found in music, like for example, the connection of Verdi's operas with the Risorgimento.

^{CXXI} MENDELSSOHN, Moses – b. 1728 – d. 1786. German Jewish philosopher.

^{CXXII} LESSING, Gotthold Ephraim – b. 1729 – d. 1781. German writer, philosopher, dramatist, publicist, and art critic.

^{CXXIII} SHAW-MILLER, Simon – Visible deeds of music: art and music from Wagner to Cage. p.7.

^{CXXIV} DAVID, Jacques-Louis, b. 1748 – d. 1825.

It was only relatively recently that the public musical concert began to emerge as music's principal context for communication, requiring the audience to engage in 'silent listening'^{cxxv}, and art galleries and museums became the destined home for the visual arts. The original social and religious uses of the arts afore mentioned are of course still in use today. However, the arts are now bunched together under the title of 'entertainment': they have taken on a new meaning in which their final result is to be received by an audience intent on focusing solely on them – the final result is focused on by the expectant public as a work of art in its own right. It is these artistic experiences that the arts live for: the public's experience of feeling for themselves the essence of humanity and nature that the creator attempts to transmit through his work.

The artistic experience involves the contact of the receiver with the work of art. Apart from the use of the principal senses involved in the communication of the various arts (music=hearing; visual arts=sight), the human being also has at his disposal other senses which are naturally active at the same time, allowing for a fuller appreciation of the experience. In a musical concert, the visual context in which the music is being performed reinforces the aural information transmitted to the audience: for example, a concert of classical music performed in a concert hall in the evening, with the proper dress code for musicians, etc., creates a different artistic experience from that of the same repertoire played by the same musicians performed in an open-air arena in casual clothes. Stravinsky himself states that it is "[...] not enough to hear music, but that it must also be seen." The reverse can also be true: the sounds, ambience and atmosphere at a museum or gallery affect our notion of the space and consequently the art work. Stravinsky also mentions another aspect important to the artistic experience: education. He says of the experience of watching a performer, that it is an "...education not only of the ear, but of the mind."^{cxxvi} The slightest gesture, movement, expression, or air is noticed by the experienced (and sometimes the inexperienced) eye, adding another set of values dependent on the act of performance, similar to those in choreography. The performer is required to perform not only the musical aspect to the best of his ability and technique, but to possess a knowledge and familiarity with the style of the works being performed, requiring "[...] a very sure taste for expressive values and for their limitations, a secure sense for that which may be taken for granted [...]"^{cxxvii}. Therefore, a level of appropriate correspondence between the aural and the visual is necessary, which is most commonly acquired by imitation of a visual experience. A violin student for example, will have some idea of the appropriate movements he should create for different types of music, by having seen the movements of experienced violinists in similar situations.

The visual experience of music is indeed helpful in creating a more fulfilling experience of what is in principal only an aurally experienced art, for both the audience (with or without

^{cxxv} SCRUTON, Roger – The aesthetics of music. p.438.

^{cxxvi} STRAVINSKY, Igor – Poetics of music: in the form of six lessons. p. 129

^{cxxvii} *Idem, Ibidem.* pp 128-9

musical knowledge), and the student who is learning his trade. Similarly, the artistic experience of visiting a museum or exhibition is imperative for any aspiring visual artist. The ways in which a space is used to accommodate a particular artist's work and the formal and appropriate forms of hanging different types of artworks, contribute an important factor in the education of the visual arts: learning by example, just as in music.

In the visual arts, sound has also become an important issue in more recent times: in the great museums, there exists a 'silence' that is not absolute, but a mixture of whispers, footsteps, the occasional door opening or closing, and more recently, the distant sounds of artworks which use recorded sound.

The 20th century genre, Sound art, which can take the form of installation, video, film, acoustics, audio media, and site-specific works of art is inter-disciplinary in nature, and appeals to the public's reactions to sounds found in different contexts, atmospheres and environments. There are recognised works of sound art as early as the 1920s, in the Dada movement, with works by such artists as Tristan Tzara^{CXXVIII} and Hugo Ball, who co-founded the Cabaret Voltaire in Zurich in 1916, a nightclub which became pivotal in the founding of the Dada movement. Some shows which Tzara integrated included the use of poetry and singing, sometimes producing piercing or shrieking sounds, accenting elements of noise music.

In the 1950s and 60s, the Fluxus movement gave the name for the network of Neo-Dada artists, composers and designers who blended different artistic genres and media together, and consequently produced many inter-disciplinary works in the genre of sound art. John Cage explored the concepts of everyday sounds in his music, as well as the concept of silence and social and visual behaviour in his 4'33"^{CXXIX}, his famous 'silent' piece of music, where the instrumentalist comes on stage, sits at his instrument, looks at the music and waits for the duration of 4 minutes and 33 seconds. Nam June Paik^{CXXX}, also part of the Fluxus movement, inspired by such artists and composers as Joseph Beuys, Wolf Vostell and Karlheinz Stockhausen, became interested in electronic art (and is consequently considered one of the principal founders of video art). Combining his video, music and performance, Paik worked in collaboration with 'cellist Charlotte Moorman^{CXXXI} when he moved to New York in 1964. Together they produced numerous pieces (some of which caused social upheaval), for example *TV Cello*^{CXXXII}, where they stacked television screens to form the shape of a 'cello and, while Moorman sat behind it and created the movements of playing, images of her performing appeared on the screens. Another instrumentalist strongly influenced by the visual, Laurie

^{CXXVIII} TZARA, Tristan – b. 1896 – d. 1963. Romanian/French poet, essayist and performance artist.
^{CXXIX} CAGE, John – 4'33", 1952. Pronounced 'four minutes, thirty three seconds'.
^{CXXX} PAIK, Nam June – b. 1932 – d. 2006. Korean-born American artist.
^{CXXXI} MOORMAN, Charlotte – b. 1933 – d. 1991. American 'cellist and performance artist.
^{CXXXII} PAIK, Nam June – *Tv Cello*, 1971.

Anderson^{CXXXIII}, initially trained as a sculptor, has produced musical art-performance pieces with unusual techniques like the use of magnetic tape instead of horse-hair on a violin bow, again calling into question our preconceived notions of what each individual art-form should be.

Sound is invasive in that it pierces the ear and the receiver cannot get away from it (another reason for our modern day 'sound pollution' being of a social preoccupation). An interesting experiment involving a work by Brian Eno^{CXXXIV}, *Music for Airports*^{CXXXV}, a relatively gentle piece of music (one of his early ambient pieces), came about when someone had the idea of actually playing it in an airport. There were numerous complaints however, from disturbed passengers, as a result of the unresolved tones and strange sounds present in the piece. The airport went back to playing their habitual 'muzak' which, with its familiarity and almost 'camouflage-like' quality of blending into a busy atmosphere, apparently has a far greater calming effect on passengers. This proves how atmosphere and ambient sound truly has an effect on our inner psyche, and the importance of experiments in sound art today allows us to become aware of the most appropriate sound for different atmospheres and contexts.

Nowadays a new form of artistic experience has been added to the traditional canon: that produced by technological reproduction. "Around 1900 technical reproduction had reached a standard that not only permitted it to reproduce all works of art and thus to cause the most profound change in their impact upon the public; it also had captured a place of its own among the artistic processes."^{CXXXVI} One of these 'artistic processes' is, of course, the afore mentioned 'sound art'.

We live now in a society where the cult of the so-called 'celebrity', a role that depends wholly on the existence of technological reproduction, has become disproportionately dominant. The performer is recorded for posterity, allowing the ephemeral to be perpetuated: performance was always a live act, but now can be constantly repeated artificially. The famous performers of the past (instrumentalists, actors, singers, etc...) would have been famous throughout their lifetime, yet after their deaths their memories would not have lived on to the extent to which they do now. Although Pavarotti has now died, his voice lives on, and he will still be considered one of the greatest singers of all time: most of us had never seen him live, yet all are familiar with his looks, posture and powerful voice: a musical celebrity. This situation does not affect the visual arts in the same way, as the nature of the work of art (painting, sculpture, etc.) is already destined to be recorded for posterity, but the wider distribution of knowledge of works of visual art, through reproduction, have also created the celebrity in the art world: Damien Hirst's famous shark in formaldehyde, *The Physical Impossibility of Death in the Mind of Someone Living*, or Tracey Emin's *Bed* are works that most of the population have never seen first-hand,

^{CXXXIII} ANDERSON, Laurie – b. 1947. Plays the violin and keyboards in various experimental musical styles.

^{CXXXIV} ENO, Brian – b. 1948. English musician who is best known for his compositions in ambient music.

^{CXXXV} ENO, Brian – *Music for airports*, 1978.

^{CXXXVI} BENJAMIN, Walter – *The work of art in the age of mechanical reproduction*. 1935.

yet many are familiar with them: the artists have become 'celebrities'. Yet in this case, it is perhaps the work of art that has greater exposure – of these two examples of modern art, how many of the general population can attribute a name to it? In a social, celebrity-filled world, music very often has the ability to create more immediately famous people (whether they be singer or composer), while in the world of the visual arts, it is the work of art that may get more 'column inches' than its creator. This is the result of the visual's ability to be instantaneous, while music requires time to be appreciated (Greenberg's instantaneity and temporality in chapter 3).

This cult of celebrity, while promoting the success of talented and well-deserving artists, has also produced a superficial level (particularly in the pop culture), dramatically increasing over the last century, in such a way that the musical performer in question becomes the centre of attention and the work of art is relegated to almost secondary importance. An audience has been created that attends a performance solely because of the fame of the performer, regardless of the content. Recently in Lisbon's *Rock in Rio* popular music festival (2008), soul/jazz singer Amy Winehouse delivered an embarrassing performance of very low quality, much to the disappointment of many of her fans. Yet as I watched this event on television, I could not help but marvel at the encouraging and adoring whistles, shouts and posters emanating from her audience, showing how the content of her performance was hardly in question at the time, by comparison with her physical presence on stage.

On a global level, technological reproduction allows the public to become familiar with works of art they would never be able to experience without such information available – as a result of which we are globally more cultured. Yet we have become lazy about wanting to know more. Stravinsky says of the reproduction of music, that "...it relieves the listener of all effort except that of turning a dial."^{CXXXVII} We may potentially be more cultured because we have access to more information, but we are also less cultured because we do not take advantage of what we have.

So what is the public's role in the arts today? Have we become a society where our concentration span is of a maximum of five minutes? In a recent article in the Sunday Times^{CXXXVIII}, its title brings up more questions regarding society's relationship today with the arts: "Why is abstract modern art such as Pollock's so acceptable to the public, when atonal music such as Stockhausen's is seen as mad, asks David Stubbs"^{CXXXIX}. While accepting the fact that a gallery like the Tate Modern is currently one of the biggest attractions in Europe, Stubbs says that when it comes to music, "... the vast majority of the public tend to take a more robustly conservative line, preferring "proper" music, with tunes, lyrics that mean something

^{CXXXVII} STRAVINSKY, Igor – Poetics of music: in the form of six lessons. p. 135.

^{CXXXVIII} STUBBS, David – Fear of music: why people get Rothko but don't get Stockhausen. book review in The Sunday Times, 31 May 2009. Culture Magazine, pp. 8&9.

^{CXXXIX} STUBBS, David - freelance British music journalist and author.

(...). Although modernist music and modernist art came about at around the same time (at the start of the 20th century), it seems that now unfortunately, on a social level, music has not yet managed to achieve what visual art has: a direct social parallel does not exist. One of the reasons for this is what Stubbs refers to as “the aura of the original”, which visual art possesses, while music struggles with this concept. Original works of art can be sold for millions and even occasionally make news headlines, while music can only survive through the direct concert, or reproduction (CDs, etc...) – an equivalent can be found in the ‘Artist’s rights’ business, where music by living composers or those who have died within the last 70 years is liable to performing rights (this also applies to playwrights of course). However, the aspiring artist today may well be able to make a tidy profit on selling an original painting; the aspiring composer producing parallel work of equal quality however, “...will have to get what he can via reproduction. This typically means a limited edition of 500, generating barely enough profit to buy a muffin in the Tate café.”^{CXL}

Also, there is the character of music itself, compared to that of the visual arts. According to Stubbs, music is a more invasive art. He gives the example that Munch’s *The Scream* is silent – if it were to be portrayed via sound or music, the public would be seriously disturbed. Paying due to the visual though, he says that “Great visual art, of course, is capable of making a great impression, but even large-scale works are not invasive or circumambient in the way that music is.” The public can shut its eyes to a work of visual art – and can spend the time it chooses, to appreciate it.

5.3 Terminology

Defining a term for the type of score analysed in this dissertation has been an interesting but problematic endeavour. The words *visual*, *sound*, *music*, *eye*, among many others have been used in so many different ways and different contexts that numerous different definitions have resulted. *Visual music* is a term used for music that has been transformed into a visual context with the use of film, animation or computer graphics – using a parallel time-scale. The term *colour music* has also been used for this type of media art, although it has also been used by Michael Poast – writer for Leonardo journal - in which he asserts: “Colour music is a notation system composed of painted colours and shapes to provoke musical responses (...)”^{CXLI}. *Eye music* is often referred to as the graphical aspect of scores (such as those analysed here) that, when the music is performed, are not passed on to the listener – it is therefore a term that describes what the musician’s eye sees in the process of the production of musical sound. This term was also used for the title of an exhibition in Chichester in 2007: *Eye Music: Kandinsky, Klee and all that Jazz*, whose objective was to celebrate “(...) the way in which music sustained and inspired abstract art in the early 20th century. From Bach to Debussy, Schönberg, and Messiaen, musicians showed a way beyond figurative or decorative

^{CXL} STUBBS, David – *Idem*, *Ibidem*.

^{CXLI} POAST, Michael – Color music: visual color notation for musical expression. p. 215.

modes of art for many painters and sculptors including Klee, Kandinsky, Kupka, Mondrian and Paolozzi^{CXLII}. Clearly in the latter definition, musical scores are not the object, rather painting related to music. So how to define the object of this dissertation? *Visual scores* would be a possibility, but the word *visual* implies anything that is viewed, meaning that any score, whether using conventional or non-conventional musical notation could be incorporated in this term – there are visual aspects to conventional notation too (chapter 2). I can, therefore, come to only one conclusion: the term *graphic scores* is the most suitable for those that use non-conventional notation – graphic techniques, for a more suggestive interpretation by the performer. This term derived from the Greek γραφειν (graphein) = to write, puts the focus on the composer creating the score rather than the performer reading it, although of course, the aim is for it to be read and interpreted.

5.4 Categorisation

The criteria for categorising graphic representation in musical scores is more easily done using a sliding scale, where the degree of graphic notation used in scores ranges from one extreme to the other. At one end of the scale, I have placed conventional musical notation with very little or no graphic content; the other end represents a picture, figurative or story type of graphic technique with very little or no conventional notation, and often without a time/pitch axis. Between these extremes, I can plot the position of various different combinations and degrees of the conventional and the graphic. Of course, the more graphic (non-specific) the notation, the greater the interpretative role of the performer:

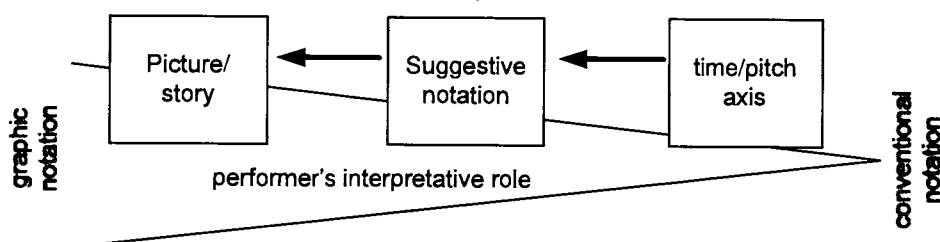


fig. 5.1

The use of words in scores, although not of a visual influence, also has its influence on the performer's psyche. Language is always used in music – even in those scores that I have regarded as containing 'conventional notation' indications such as *Andante* or *Allegro* hold their own importance.

Just as in the words I used to describe my drawings, some composers have used language alone as a form of communicating music to a performer. Stockhausen's *Aus den sieben Tagen*^{CXLIII} for example, is a score made up of fifteen text compositions entirely written in words, geared towards a more intuitive interpretation by the performer.

^{CXLII} WILKES, James – Eye music: Kandinsky, Klee and all that jazz. Exhibition review – www.studiointernational.co.uk.

^{CXLIII} STOCKHAUSEN, Karlheinz – "Aus den sieben Tagen". 1968.

Although the use of language in music is generally not considered of a graphic or visual nature, Cathy Berberian's^{CXLIV} *Stripsody*^{CXLV} is comprised of the use of graphically enhanced (graffiti-like) words in the score (next page):

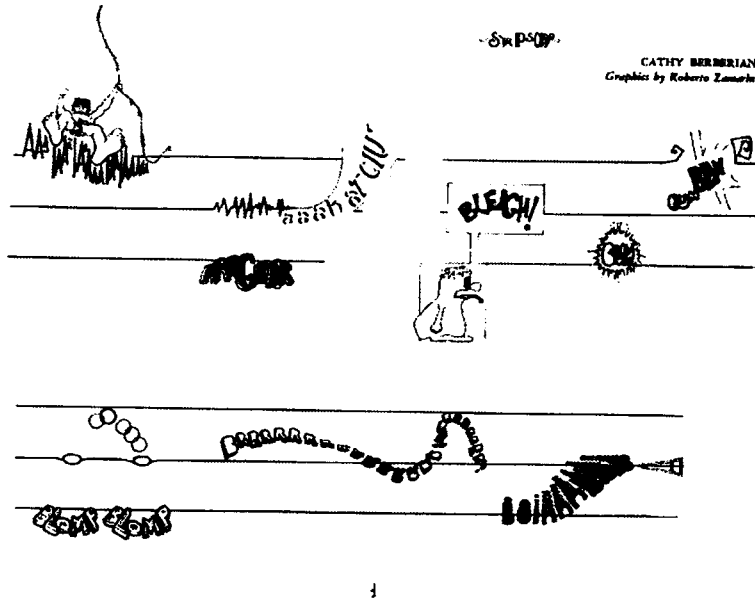
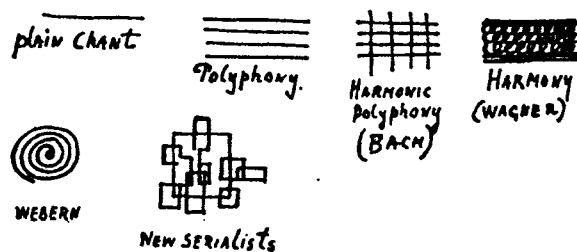


fig. 5.2

In this, probably her best known work, she used her vocal technique to produce comic strip sounds, illustrated in the score – in fact, as can be noted in the top right-hand corner of this page, the graphics themselves have been produced by someone else, showing another stepping stone in this process of creation: from singer to graphic designer, and back to singer again. The graphics clearly capture a comic-strip style, and the words are visually onomatopoeic – they look as they should sound.

Stravinsky was well aware of the problems of a parallel between the visual and music. In an interview published in 1958, he was asked the following question (R.C.= Robert Craft; I.S.= Igor Stravinsky):

R.C. Would you 'draw' your recent music? For example:



I.S. This is my music:

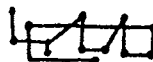


fig. 5.3

^{CXLIV} BERBERIAN, Catherine Anahid – b. 1925 – d. 1983. American composer and mezzo-soprano singer.
^{CXLV} BERBERIAN, Cathy – "Stripsody", 1966.

This is a rare example that I have found of a composer graphically describing music. It is interesting, however, to note that the graphics here are not time-based – they are not lines made in accordance with music which is happening in time. Instead, they are of a more descriptive nature, in a sense analysing the complexity of a whole style of music. The graphics used can, in a way, help in the categorisation of different styles of music. Although I have not adverted to this kind of descriptive style in any of my drawings so far, there is no reason why, after more analysis, I could not use this general idea for future work.

I believe that one of the reasons for composers nowadays to find themselves including more non-conventional graphics in their scores is an attempt to grow away from the repetitive, almost mechanical world that we are progressively creating for ourselves. As a result of technology, even the very personal hand-written musical scores have lost their individuality and become uniform, as mass production requires easily reproduced and edited material. Composers are willing to risk more in handing over more interpretative responsibility to the performer, allowing for the latter's role to become more personal.

One of the underlying problems though, is whether the visual in music can really be categorised. Throughout this dissertation, I have highlighted various visual criteria that are significant, yet it seems difficult to classify any specific 'pigeon-holes' in which they can be placed. Many criteria overlap: a time-axis may be present at the same time as figurative graphics, while in another situation it may not. Conventional musical notation can be used together with non-conventional notation, or completely separated from one another, or indeed overlapping with other visual or musical criteria. Not to mention, of course, the use of language overlapping with all or none of the other criteria.

So I believe that contemporary musical scores are still in a stage of transition, indeed as are all aspects of the other arts. They are finding their feet in light of all the available criteria, so that any concise form of categorisation at the moment is impossible. Development is further hindered by the fact that composers are increasingly writing directly onto the computer, so their graphic creativity is limited by the scope of the software programme used. I refer once again to *fig. 5.1* (p.88): I believe this kind of scale is paramount in placing different works at different stages along it – perhaps in the future a more precise form of categorisation will be possible.

5.5 My drawings

The theoretical content of this dissertation has been a great help for not only producing, but also analysing my final drawings. The different criteria that have been explored throughout, from both a musical and visual point of view, have been paramount in the decisions for the creation of drawings based on music. Although aspects like the systematisation of colour and

music are not depicted literally in my drawings (yet), aspects of temporality, figurative representation and musical notation were a strong influence in how my decisions unfolded.

In both the first analyses and the resultant descriptions involved in the production of my work, for me language has been of great importance, not in the drawings themselves, but as stepping stones from one art-form to another. The use of descriptive words taken from the music has allowed me to transmit my own feelings about a word into my drawing. I can therefore conclude that the concepts transmitted by language provide an important bridge between the two art-forms: language can be a sort of interface between the two disciplines of music and visual art (and indeed other arts).

However, language has not been the only influence: the musical uses of a time and pitch axis have also been important, particularly as a result of my knowledge of music and its notation system. I believe that if I did not possess such knowledge, my drawings would look somewhat different to those which I have produced. The very obvious movement from left to right that I have used (in all except Ligeti's *Lux Aeterna*), are of a natural and instinctive basis – just like reading and writing. The same can be said for pitch: higher sounds being placed higher on the page, while lower sounds are often placed lower on the page. The drawing for *Lux Aeterna* was an attempt to veer away from this time/pitch axis – into a drawing that would transmit the whole idea of the piece of music in one single moment, rather than in succession.

I have yet to experiment with colour. After delving into the different forms of systematisation between colour and sound, there are very definite ideas I can, in the future, extract for more work – although, as stated numerous times, this relationship will always be of a personal nature. It is definitely a way forward in my work, and one that I believe will require an even more in-depth study of the original piece of music beforehand.

As I mentioned at the end of chapter 4, the purpose of my drawings is two-fold. The intentions of the drawings are to produce a visual reference to a previously heard piece of music, and in this context, they should be seen as drawings – even together with the worded explanations. The second intention, however, is that they could also be re-interpreted back into a different sound – so they can also in a sense be termed scores. However, I have not composed a new piece of music in any of my drawings, so I would not give them the full meaning that 'musical score' implies – possibly a 'drawing score' would be more appropriate in this context.

Of all possible terms, I prefer 'music for the eyes' as a possible genre for my drawings – that which is seen does not necessarily need to be transferred into sound, but the mind of the viewer can imagine how a connection into sound could exist. My drawings could, in this context,

be viewed independently from any knowledge of the original music, and considered 'music' that, simply, is meant for the 'eyes'.

Finally, I will touch upon the 'personal' nature in my work. Of course, there is no way in which a line, dot or curve will specifically signify a melody, pitch, or note duration. Yet is that not the very nature of the arts? – to adhere to the emotions of both creator and to reach out to the emotions of the receiver, so that one may appreciate the final outcome at a more profound level? Although I would not want to underrate the importance of those more experimental or conceptual pieces in all art forms, I constantly find myself valuating works of art on whether I would like to repeat the experience, or, in the case of painting, whether I would like (hypothetically) to have that piece on the wall in my house where I could admire it day after day. I do not, therefore, expect everyone to like my work, much less think it a masterpiece. When I look at my drawings, I know where I was 'coming from' when I produced them – I was not trying to adhere to any normality, or indeed trying to be innovative – I was simply attempting to put into a visually graphic sense, that which I felt when receiving music aurally. I believe I have managed to produce pieces which can be understood as portraying something non-figurative such as music. I hope they can transmit that which contemporary music has given me – a non-conventional form of art that, while not playing to what the general public may feel as aesthetically pleasing, can nevertheless be a transmitter of emotion from the creator (me) to the receiver (you).

6. Bibliography & References

6.1 Figure References

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2.13	<i>Rotate the instrument</i> – symbols explanatory page: MADERNA, Bruno – “Konzert für oboe und kammerensemble”. [Score] Firenze: Aldo Bruzzichelli, 1962. 37pp.
2.14	<i>Play between the brisge and the tail piece</i> – symbols explanatory page: MADERNA, Bruno – “Konzert für oboe und kammerensemble”. [Score] Firenze: Aldo Bruzzichelli, 1962. 37pp.
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2.16	Excerpt of score: DAVIES, Peter Maxwell – “Eight songs for a mad king”: for male voice and instrumental ensemble. [Score] London: Boosey & Hawkes, 1969 (H.P.S. 1170). This score is a facsimile of the composer's autograph manuscript. 56pp. page 4.
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2.18	Excerpt of score: PENDERECKI, Krzysztof – “Dies irae”: For orchestra.[Score] Kraków: 1985. ISBN 83-224-2329-2. 66pp. page 40.
2.19	Excerpt of score: DAVIES, Peter Maxwell – “Eight songs for a mad king”: for male voice and instrumental ensemble. [Score] London: Boosey & Hawkes, 1969 (H.P.S. 1170). This score is a facsimile of the composer's autograph manuscript. 56pp. page 31.
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2.21	<i>Irregular glissandos</i> – symbols explanatory page: PENDERECKI, Krzysztof – “Kanon”: für Streichorchester.[Score] Germany: B. Schott's Söhne. 38pp.

2.22	Excerpt of score: PENDERECKI, Krzysztof – “Kanon”: für Streichorchester.[Score] Germany: B. Schott’s Söhne. 38pp. page 4.
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2.27	Excerpt of score: BUSSOTTI, Sylvano – “La Passion selon Sade”: mystère de chambre avec tableaux vivants [Score]. Milan: G. Ricordi & C., 1966. 41pp. page 8.
2.28	Excerpt of score: BUSSOTTI, Sylvano – “La Passion selon Sade”: mystère de chambre avec tableaux vivants [Score]. Milan: G. Ricordi & C., 1966. 41pp. page 9.
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2.30	Excerpt of score: STOCKHAUSEN, Karlheinz – “Kontakte”: für elektronische Klänge, Klavier und Schlagzeug. [Score] Universal Edition. 38pp. page 15.
2.31	Page from Paul Klee’s lecture notes while at the Bauhaus in DÜCHTING, Hajo – Paul Klee: painting music. Trans. by Penelope Crowe. London; New York: Prestel Publishing, 2004. 114p. ISBN 3-7913-3212-0. page 36.
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2.36	<i>Fisches Nachtgesang</i> from collection of poems: MORGENSTERN, Christian – <i>Galgenlieder: eine Auswahl</i> . Leipzig: Verlag Philipp Reclam, 1981. 168pp. page 21.
2.37	Excerpt from drawing: MICHAUX, Henri – <i>Narration</i> , 1927.

Chapter 3

3.1	Virgil describes the death of Laocoön in the <i>Aeneid</i> , Book II, verses 220-224 (the death of Laocoön’s sons comes before this particular verse). The English translation is taken from: RHOADES, James (trans) – <i>The poems of Virgil</i> . [3 rd ed.] London: Oxford University Press, 1920. [12] 424pp. The sculpture was discovered in 1506 and can now be found in the Vatican Museums in Rome. The suggested date attributed to the sculpture ranges from 160 to 20BC. It shows the Trojan priest Laocoön and his sons Antiphantes and Thymbraeus being strangled by sea serpents.
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3.3	Scriabin's Musico-Chromo-Logo Schema in SCRIABIN, Alexander – "Poem of ecstasy and prometheus: poem of fire" [Score]. Notes by Faubion Bowers. London: Dover Publications, 1995. (ISBN 0-486-28461-1). 198pp. Page 114.
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3.5	J. M. Hauer's colour/key relationships [originally in German, this version is translated by me], in SZMOLYAN, Walter – J.M.Hauer. Wien: Verlag Elisabeth Lafite, 1965. 80pp. Page 26.
3.6	A spiral of fifths [A espiral das tonalidades] (original in Portuguese: Dó, Ré Mi, etc... Translated into English by me: C, D, E, etc...), in BOCHMANN, Christopher – A linguagem harmonica do tonalismo. Lisboa: Juventude Musical Portuguesa, 2003. 154pp. ISBN 972816222-1. Page 133.
3.7	J. M. Hauer's colour/mood/music key circle, in SZMOLYAN, Walter – J.M.Hauer. Wien: Verlag Elisabeth Lafite, 1965. 80pp. Page 25.
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5.1	Diagram: categorization of scores, & the percentage of the performer's personal influence in interpretation.
5.2	Excerpt of score: BERBERIAN, Cathy – "Stripsody", 1966.
5.3	Excerpt of interview: STRAVINSKY, Igor – Stravinsky in conversation with Robert Craft. Page 121.

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6.3 Accompanying audio CD

This CD contains the pieces of music used for inspiration for my drawings. All are taken from the CDs referenced in the bibliography, except for *Lament* by Christopher Bochmann which is a recording by RDP-Antena 2 (State Classical Radio Station) of a concert given by Orchestrutópica in the Centro Cultural de Belém in 2005.

Order of pieces:

1- Varèse – <i>Octandre</i> – Assez lent	02:32
2- Varèse – <i>Octandre</i> – Très vif et nerveux	01:42
3- Varèse – <i>Octandre</i> – Grave	02:23
4- Bochmann – <i>Lament</i>	14:31
5- Ligeti – <i>Lux Aeterna</i>	07.56