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Composing with graphic scores and the influence they can have on music, education and the deaf community

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Composing with graphic scores and the influence they can have on music,  
education and the deaf community.

NATALIE DAVIES

A thesis submitted to the University of Huddersfield  
in partial fulfilment of the requirements for  
the degree of Master in Music by Research

August 2011

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### **Part Three: Composition Portfolio**

1. **Colour cubes:** for Solo harp
2. **Chinese Checkers:** for soloist or ensemble
3. **Sound. Sign. Silence:** for choir (written for the children at Music and the Deaf)
4. **Musical Layers:** a musical card game for 2-8 performers
  - with accompanying workshop footage DVD.

**Total Word count – 18, 197**

## **Part One: Composing with graphic scores**

### **1. Introduction: Undergraduate to Postgraduate**

Coming from a background of classical training, the transition from classical performance to contemporary composition led to a whole new way of thinking about music. As the first year of my undergraduate degree passed the thought of composing without the use of a key signature and without a written metric marking was a still just an idea yet to be realised. However through my composition portfolio as an undergraduate student I worked through a number of different ways of scoring my compositions as I experimented with the possibilities of instruments and with different approaches to composition. Originally I composed using a conventional notation system; however as my methods of composing changed this became a very ineffective way of scoring my work as with each piece my scoring systems changed. By the end of my second year as an undergraduate student I had designed a composition system that was better suited to my composition style. This was to take an original source, such as number patterns or games, and put them through a series of translations and permutations before being able to transcribe them and create a musical score. It was through this working process that my scores have developed into graphical notation, giving a direct correlation between the original source material and the final score. It is the nature of the original source that influences the way in which the transcription of the score develops. This development of my work saw a clear transition affected by different ways of thinking about music and the process of composition.

## **2. My scores**

### **2.1 Undergraduate Work**

Through my undergraduate work, the style of composition and indeed the method of composing went through several stages of development and ultimately lead to the format of composition that I follow fairly consistently now. My earliest works all revolved around the traditional scoring system of using conventional notation. I set out the entire piece and the performer had virtually no control over the final outcome. It was through the different methods of composition trialled during my time as an undergraduate student that I came to the decisions I did about graphic scores, the methodology of composition and even the role the performer has on the creation of the final piece. The decision to develop my composition style forced me to firstly access how and why each piece would be created and the method by which it would be created. From this point on each of my pieces has been modelled on an existing source. It is this translation process within my work that set the trajectory of my composition from conventional notation to using graphic scores.

The first of these translation compositions started with a piece in which I plotted star charts onto manuscript paper to form an orchestral piece. Due to the nature of the piece being about the layout of stars in the night sky the score allowed me to experiment with the layout of the page rather than being restricted to the confines of standard manuscript paper to best represent the offset arrangement of star constellations in the night sky. This piece was the gateway to thinking about how the positioning of a note or an object on a page relates to the audible result and the possibilities for taking this further.

The next piece saw a further development of my work moving from translating directly onto manuscript to creating a graphic score through the translation process. The original source in the next piece was the number puzzle 'Sudoku' in which I limited myself a set time to fill in as much of the puzzle as possible whilst listing in which order I filled in the grid. The score for this piece went through a number of variations before the final scoring method was reached. The nature of the piece required a more accurate note transcription than the results a graphic score would have produced, this led me to a logical strategy of realising the score; I assigned each number in the grid with a pitch and using the order in which the grid was filled in I created a note sequence that formed the basic structure of the piece. The ending result was written in a minimalist style so to maintain the feel for how the piece was created, each time there is an addition of a note the phrase is repeated a set number of times to make the audience aware of the compositional process and the slow addition of each pitch.

Once the basic structure was established each phrase was hocketed into two piano parts to create a duet of interlocking rhythms. This was done primarily to accommodate the physical limitations of each player. Like with the previous score the process of each composition worked; however, especially with the use of conventional notation, this score allowed no performer influence on the piece. It is for this reason that this was to be my last composition using conventional notation and I moved on to exploring the possibilities of graphic scores.

The final piece that developed my composition style was the first true graphic score I produced. Based around the patterns used in textile weave, the piece was written for wind quartet. Each player received the same score so the results came from each players own interpretation. I implemented some limitations such as the time scale through each system and that the vertical axis represents a grid of pitch ranging from low to high, all other elements of the performance are left to the interpretation of each performer. There are many possible routes a player could work through the piece as all instruments involved are monophonic and the patterns often offer multiple 'notes' simultaneously. It is possible that all players may choose to follow the same route however it is unlikely that they will start and continue on the same note so different harmonies will be created. I later developed this scoring system in a postgraduate composition written for solo harp (fig.1. *Colour Cubes*, pg. 8).

This development of work set out the thinking behind all future compositions, the structuring and even the layouts of the compositions.

## **2.2 Postgraduate Compositions**

The first composition idea for my postgraduate portfolio was an expansion from the textiles composition from my undergraduate portfolio. The original source for the piece, *colour cubes*, was similar to that of the textile piece in that a set grid of coloured squares would form the structure of the piece. The transcription resulted in a similar type of score; however this piece was designed for a specific solo instrument in mind rather than a group of unspecified monophonic instruments. The original source in this instance was a computer game 'colour cubes' in which the aim of the game is to eliminate all of the coloured cubes by making lines of three or more of the same colour. The game ends when either all of the blocks have been deleted or the grid is full of cubes. To create the piece I took screen shots of the completed game in which a variety of different colour cubes are used, from the screen shots the colours were separated onto individual grids of each individual colour which ultimately formed the structure of the piece. Once grids of individual colours had been



created two grids of the same colour were chosen, i.e. two grids of purple squares. In stage three of the process one of the grids is coloured in white and the other one is coloured in black.

Stage 4 sees the final stage of this initial translation process as the 2 grids are layered on top of one another. In the instances where a black and white square fall in the same place on the grid, a half square is created.

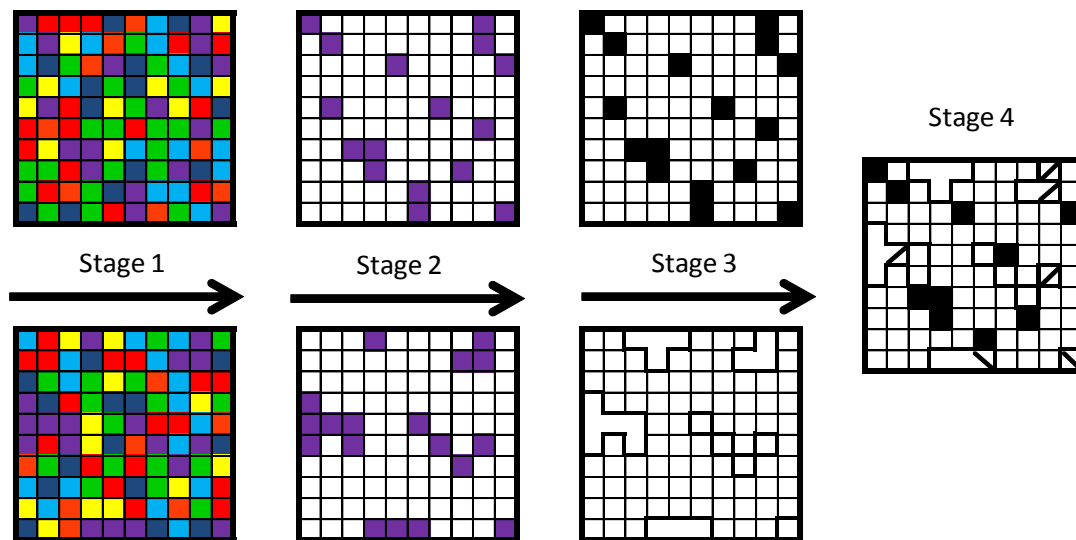


Figure 1: Natalie Davies – *Colour cubes* transcription process

Figure 1 shows the transcription process that this composition took from the completed game, to separating out the colours into individual grids and finally laying the individual colour grids from two games together to form the final score.

The piece features white squares, very quiet notes, and black squares, very loud notes; the half squares require the performer to create a sound other than a plucked pitch, this could be slapping the palm of the hand on the strings, hitting the frame of the instrument etc. The grid works similarly to the textiles piece in that the vertical axis denotes pitch ranging from low to high and the produced sound chosen for the half square must fall within a suitable range. This development of the score was designed to allow the performer more creative control of the piece. Although the pitch was neither specified in this piece or the last, in the textiles piece the performer was restricted to playing single pitches, and with *Colour cubes* the performer has the opportunity to experiment with the capabilities of the instrument as well as having free rein over the chosen pitches.

I decided to explore this style of notation in a different variation by combining the best elements of both *colour cubes* and the textiles piece with an element I had yet to explore in either piece; the element of repetition. *Chinese checkers* is based around the game of Chinese checkers which is a concept similar to that of *colour cubes*, however the structure of

the piece follows the game through from start to finish rather than just using the patterns of the completed game like in coloured cubes. The prominent changes I made in the compositional process were that the ordering of the pages is undetermined so the structure of the piece will be set by the performer. The use of repetition is most significant difference from the other two pieces. Unlike the other pieces where I restricted the performer by implementing limitations, the repetition is much the opposite in that the limitation is a minimum number of repetitions or an unnamed number of repetitions. Each page has a set of written instructions to guide the performer however the piece is very much an open form for the performer to experiment with.

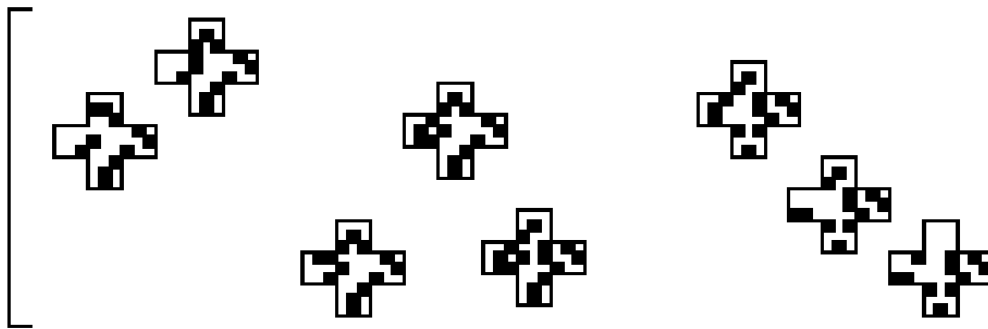


Figure 2: Natalie Davies – *Chinese Checkers* score excerpt

This variation of scoring style combines the two pieces in terms of inspiration in that I have made it more open so could either be performed by an ensemble or a solo polyphonic instrument (fig. 2).

In 2009 I became the piano tutor for the Huddersfield based charity Music And The Deaf (see page 35). After my involvement with Music and the Deaf I wanted to create a piece that would be suitable for the students and ultimately any other performer or even non-musician, a universal composition if you will. The premise of creating a universal composition would need to encompass a range of musical engagements suitable for anyone interested in musical performance. Moving away from traditional music conventions and trying to create an alternate scoring system that can be accessed by musicians and non-musicians alike. This led to the creation of *Sound. Sign. Silence*. A piece that, as the name implies consists of musical sounds such as singing, actions, and silence. The children at Music And The Deaf have varied levels of hearing impairment so the idea behind this piece was to make music accessible to everyone no matter how advanced their musical skills are or their disabilities. The reasoning behind choosing to produce the piece as a graphic score was to keep the concept as simple as possible as the whole basis for the piece is that anyone should be able to perform it. The concept of the piece works around the performers creating sounds and

actions using various parts of their body, i.e. clapping, vocal sounds and stomping. The group is divided into 4 sections and the score is laid out so the actions are pre-set out for the performers using colours and symbols (fig.3).

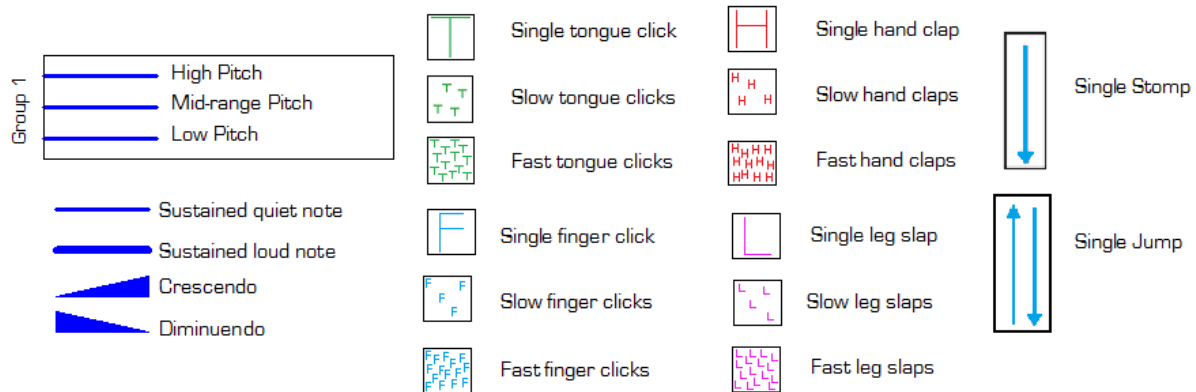


Figure 3: Natalie Davies – *Sound. Sign. Silence*. Performance instructions (pg. 1)

After producing several scores from transcribing original sources into musical concepts I decided to take the idea a stage further and reverse the process basing the composition around the workings of a simple card game. The piece consists of a series of instruction cards from which the performers will ultimately determine the outcome of the piece through their interpretation of the instructions. Another commonality between most of the pieces is the number of performers that can perform. This particular piece is suitable for 2-8 performers; this will have a large impact on the results of the piece. *Musical Layers* consists of 10 layers of cards that each have an instruction written on them with all the performers starting in the centre of the performance space with a starter card and all of the other layered cards are placed in circles around the outside of the performance space. Like all of my graphic scores the piece has a set of limitations; i.e. what is written on the card, but the choice of how this is performed is up to the individual performer. I have tried to create this piece with youngsters in mind as an almost introduction piece to contemporary music, it is meant to be fun yet educational getting the performers to think about music in a different way. The piece is very structured with a mixture of very straightforward set out tasks such as clapping 5 times, to more improvisational tasks such as moving across the performance space in different ways, to even the more complex task of trying to vocalise the movement of another performer but each layer of cards only contains one sort of action such as movements, vocal sounds or clapping so the performers are constantly interacting with one another.

### **3. Characteristics of my work**

The characteristics of my work can be divided into three categories; visual stimulation, the score and the performance. Over the last few years my composition work has undergone a number of changes however there are several characteristics that have remained the same throughout the changes.

#### **3.1 Visual stimulation**

##### **Grids**

Throughout my work the most commonly used format for my graphic scores are grids as this seems to be the most effective way to create an even balance between me having compositional control whilst giving the performer a degree of freedom to interpret the score in their own way. The way the grid works is pitch on one axis vs duration on the other axis and it is this layout that allows the performer to interpret the scale of the note range and even the intervals between the notes. The control I maintain over this comes with the decision of where to put each of the coloured squares within the grid. This initial design will of course influence the decisions of the performers as the conclusions they draw will differ each time. When I first started working with this method I specified a time scale for each system though I felt this restricted the choices to be made by the performer, so I moved to an open approach to time scale by simply stating that the events in the piece should be kept even and moments of silence should be carefully observed. This approach allowed me to have both creative control of the piece as the layout decisions remained with me, however with very few limitations attached to the element of pitch and time scale, the artist still has a degree of freedom to experiment with the performance and the sounding results.

##### **Squares/lines/Pitch Vs Duration**

The use of squares and lines are also a common sight throughout my work as one of the common visual stimulation methods to influence the performers decisions through the piece. The squares act as a representation of an action or event without having a specific definition, this meaning is revealed either in the performance notes or if the square is representative of a pitch, its meaning is left to the decision of the performer. The grids are laid out in the same way each time, pitch falls of the vertical axis against duration represented on the horizontal axis. The decision to use squares as a representation for an event was my way of trying to

influence the performers decision of how the piece is to be performed without dictating to them exactly which pitches they should play. Like the decision to use grids, this allowed the performer the freedom to experiment with not only the pitches of each of the squares but also the distance between each of the notes. From a compositional view point this decision to use grids and squares means I can try and influence the performer as mathematically grids can be divided into equal proportions by the squares suggesting an even spacing between pitches and the placement of these pitches without the need for me to dictate the specifics to the performer allowing both performer and composer to have an input into the outcome of the piece.

### **Symbols and decisions about these symbols**

The final note for the visual stimulation of my work is that additional symbols may be used as a method of differentiation between pitched notes and other sounds or actions such as extended techniques or physical requests like clapping or whistling. The style of the graphical score will affect the way in which these other symbols are presented; in choir pieces any new sound will most likely be shown as a written command, either written out in full or as an abbreviation, or the symbol may be shown in a visual way such as a colour cue. Each new symbol is described in the performance notes at the start of the piece with the visual cue for this sound as well as a description of what is required of the player. For the most part these descriptions will only contain a brief sentence so the performer is not restricted to the extent this new technique can be taken to.

The visual stimulation is the focal point of my work as all elements of the piece are affected by the decisions made at this stage of the composition process. The significance of this stage is that once the layout process has been completed the control no longer rests with the composer but with the performer to create the final sounding results.

## **3.2 The Score**

### **Original source - Why can't use any source be used?**

Each composition starts off as an original source, such as a number pattern, a game or a picture, and this source goes through a number of translation processes and permutations until a final, musically playable score has been produced. For me the act of composition is not about the final audible result, it is about the transcription process and the mechanical working of the composition itself. The choice of original source is very important for this process to work, it must contain an aspect of patterning; this could be in the source as a whole product, i.e. a picture, or it could be a logical pattern as you would find whilst completing a game or number sequence. To some extent every object/source could be a

viable tool for my compositional process, however I try and choose those sources that when they have gone through the several translation processes I use to produce the final product, the essence of the original source is still represented. I have found with several sources I have tried working with such as patterning's found when dealing cards either become too predictable or go to the other extreme and the transcription process destroys the original patterning completely. The strongest original sources I have found to use have been either number patterns or simple games as the final score has a strong correlation to the original source. The choice of original source is one of the most significant aspects of my work because just as the decisions I make through the translation process influence the score and the performer, the choice of original source influences the way in which the transcription process can occur thus affecting all elements of the compositional process.

### **Translation – Process – Re-working – Playable score**

The translation process happens in several stages. The first stage is a basic transcription into open form notation such as breaking the original source down into separate elements such as colours or individual patterns, or even extending a number pattern. From this first transcription the composition can start to take shape using a number of different methods, most notably variations and permutations of the initial transcription to create the basic structure of the piece. Depending on the original source used and the format of this original source the process of transcription used to create a playable score may differ from piece to piece in order to create a score that still resembles the original source so its integrity is not lost. For sources already formed in a grid or a picture style pattern the transcription mainly comprises of deciding how the piece should be played, including the use of any extended techniques and how they are to be represented, and the ordering in which the piece should be structured in. This transcription and structuring stage of the composition process is heavily influenced by the workings of the original source being used but the final results are always kept in the foreground of these decisions to make sure the score will influence the performer in certain elements of the score.

In contrast to this transcription process there is the work of Ferruccio Busoni. Born April 1, 1866 in Italy, Busoni worked as a virtuoso pianist, teacher, composer and most notably an arranger of the work of J.S. Bach. Busoni had a remarkable gift for completing unfinished or damaged pieces of music and spent a large amount of his working career arranging often very complex pieces of music largely for solo piano but also organ and some orchestral works as well. Busoni's approach to composition is rather unique in that he combines his

own original material with existing works through either direct quotations or transcriptions of the material resulting in “a reconstruction of an original text in another language or style”<sup>1</sup>

As well as having a successful composition career, Busoni completed an extensive repertoire of arrangements and edits to existing works. Busoni edited the complete keyboard works of Bach and had them published in eight volumes in which the pieces contained musical additions such as tempo, articulation and phrase markings and even slight alterations to the original score.

The transcription process used through Busoni’s compositions resembles that of my own work in that the method of transcription is based around the use of an original source or in the case of Busoni’s pieces, an existing work. Both processes aim to recreate the existing material by presenting it in a new form. In the pieces created by Busoni complex lines of material are used to create contrapuntal melodies and phrases. The prominent difference between our working styles, apart from the choice of original material, is how the piece is delivered to the performer. In Busoni’s work the performer is presented with a detailed notated score with all pitches, durations, dynamics and performance techniques laid out. Within my own work the intimate details of the piece are more open to performer interpretation with only the guidelines of the performance set out in the form of a graphic score.

### **Events – Sound Vs silence**

The structure of my compositions can be broken down into events that represent the actions in the piece most commonly the feature of sound vs silence. The silence in the pieces is not just something that follows or precedes sounds, but in fact it is more commonly the other way round in my work that silence is a feature in which sound events emerge from. This technique of sound emerging from the silence acts as a way of drawing the audience’s attention to the important aspects of the piece such as the subtle changes in the patterning.

### **Score Parts**

The final score produced is the same for every player. Even in multi-player works each player performs from the same score, this is so the integrity of the original score is not lost and each performer is not limited by a reduced score. In effect this means that the result of the work is several simultaneous interpretations of the score. The reasoning for this is that even if each player does choose to follow the same path through the music there is only a

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<sup>1</sup> Beaumont, Anthony, *Busoni the Composer*, (Bloomington: Indiana University Press, 1985)

very slight chance they will pick the same notes so the audio result will resemble the same kind of patterning with different notes. After the initial composition is completed workshops may be held with musicians to assess if all areas of the composition can be realised fully or if changes or improvements can be made to the piece. After the corrections have been made the completed score is the final part of the composition process that the composer has any control over as from this point onwards the performer leads the piece to the final product.

The score has great significance for both the performer and the composer as it acts as the transition item from the composer's intentions to the performer's interpretation. It is the final stage that the composer can have any input into the piece to try and influence the performer's realisation of the piece. And likewise for the performer the score acts as the stimulation from which the piece will emerge from.

### **3.3 Performance**

#### **Performer interpretation/Limitations**

Performer interpretation is really important in my compositions with the majority of my work being produced as graphic scores the amount of written information I provide will indicate how much of an influence I want to have on the performer. The more information I provide the more I will be limiting the performer on their own judgements and choices in the piece. Each graphic score is accompanied by a sheet of performance notes explaining any limitations or performance notes that should be observed though the piece. The performance notes cover a range of instructions including the setting of the dynamics, pitch ranges if they are to be specified by me, and the details of any additional symbols that may be used throughout the piece. There are very few performance elements that I restrict the performer with but the most common elements of the piece that I choose to implore limitations to are generally the dynamics and I dictate the meaning of new symbols. There will be times however where I will only give an overall description of what the symbols should be, though I will leave the specifics to the decision of the performer. I may, for example, dictate where an extended technique should be used, and even what the resulting sound should involve though the performance technique to achieve the desired effect is left to the performer to decide upon.

Many of the limitations applied, specifically when dealing with pitch, will be due to the physical limitations of the player. I have tried to account for this in pieces where this is a major problem by breaking up each system into smaller subdivisions and stating in the performance notes that each of the subdivisions or 'blocks' should be treated individually



and the pitch range in each block is free to change in order that the widest pitch range may be used while taking into consideration the density of notes in each block. This problem only occurs when a written pattern requires a performer to play a dense group of notes, only a smaller pitch range would allow the performer to complete the section.

The limitations set out, much like with the grid structure, ensures that I can have control over the piece and still let the musician have creative freedom over the performance as for the majority of the limitations the performer decides to what extent the limitations are taken to, for example the pitch range or the limits of the dynamics are two elements I set out some guidance for however the performer is left to decide upon the specifics of each of these items.

### **Direct relations**

There are two forms of direct relations within my work, the first is the direct relation between the final score and the original source. Although there is a fairly extensive translation process I try to keep as much of the integrity of the original sources as possible so a connection between the two can be made, this may either represent the original source as a whole for instance when pictures are used or it may represent the process used in the original source like when a game is being played. This is achieved primarily through the visual aspect of the piece and the performance notes provided. The second relation is between the final score and the audible results of the piece. Understandably this will differ from performance to performance as no specific note pitches are given every performance will be different. However, the audible results should produce a clear correlation to the visual patterning in the score and due to the limitations set out in the performance notes and the influences portrayed within the layout of the score there is an element of logical progression when reading the score that should ultimately lead to a certain final result.

### **Short durations**

All of my pieces work around short durations. There are few reasons for my decision to produce pieces with short durations; the main reason being I want the work to be focused and for the audience to stay connected with the piece and be able to recognise any changes that happen within the piece. The second reason for short time scales is to reflect on the nature of the original sources that were used to create the piece. Especially when using games as a starting point, the initial game is normally quite simple and relatively short to complete therefore I wanted this to be reflected in the completed work and keep that relationship between the original source and the final score. The implication of this element

is that there are no instructions in the performance notes that specify the pieces or each individual note should be kept short. However, with every trial of each piece that uses a structure of grids the performers have always opted to keep the notes relatively short and the only reason I can think for this is due to the visual representation of each note or action being a small square. Although each workshop resulted in similar interpretations this did not evoke the need to change the layout of the pieces or the size of the squares. By changing the size of the squares or the grid layout might unintentionally influence the way in which the performers interpret the piece. The even sizes of the grids leaves the piece open to interpretation though this is an area of possible development if future projects.

### **Minimalism /Repetition/Audible changes/ Permutations**

Repetition is a common technique used throughout my work. This is used to help the audience relate to the piece and to make them aware of the process the piece has undertaken. Though most of the repetition is not direct or exact repetition, the patterning through the visuals create short audible motifs that return again and again. This is only the case in some of my pieces. Due to the nature of my graphic scores the repetition comes more in the format of the type and length of event combined with the silences used. The chances for repetition and permutations within the piece are once again influenced by the initial original source and the allowances that can be made. This is another example of how the performer has control over the performance of the piece as there may be an exact repetition of a pattern. However, as there are no pitches specified the performer may interpret differently due to the events that precede or proceed the pattern, which in turn may be problematic for the audience to respond and connect to.

### **Unpredictability vs Predictability**

Unpredictability is a common occurrence with any graphic score as every performer will interpret the score differently and any variable could affect the results, i.e. instrumentation/venue/mood could all affect the resulting performance. It is unlikely that the same performer would perform the piece the same twice, and even any written repeats are unlikely to sound the same especially if not many limitations have been set. This shows the unpredictability of graphical scores though this is one of the exciting things when dealing with such scores as you never know how exactly the piece will turn out. The opposition to this within my work is the constant tempo that remains throughout the piece; the unpredictability is when the sound events or actions will occur. This element again is in the

hands of the performer as within the score all objects are the same size and the grids are evenly spaced however through the interpretation of the performer the predictable looking score becomes an unpredictable sound.

### **Flexibility**

The flexibility of each piece will depend upon how many limitations I decide to put in place. For the majority of my compositions the performer has a large amount of control over the resulting piece while the control of the influences imposed on the performer is instilled in the composition stage. In my later pieces I have started to give more creative control to the performer providing only a few specifics for how the piece should be played; in most cases this is more often than not a minimum requirement, i.e. a minimum number of repeats or a minimum time scale for each event or collection of events. In the piece *Chinese Checkers* I have given the performer freedom to repeat pages and even reorder the pages during the performance. In my final piece *Musical Layers* I have taken this concept a stage further to expand on the maximum number of possible outcomes of the piece whilst at the same time keeping the concept relatively simple. Designed around a simple card game the premise of the piece allows a varied number of performers to successfully complete the piece, and depending on the number of performers the outcome of the piece will be totally different as only a select few performance cards will be used in the performance. Also each performer will interpret the instructions on each card differently thus each performance of the piece will be unique.

The performance aspect of a composition is a reflection on the product of the composition process acting as a conclusion to how successful the process has been. The pitches played or the sounds produced for me still remain an irrelevant aspect, the mechanical process and the structure created through the performance are the key features in this final stage of the proceedings. It is unclear until this stage if the piece will work both in terms of the performer's capabilities, physical or otherwise, and in the detail provided within the performance notes and allows the composer to access if their own intentions were able to be realised through the score and performance notes provided.

Analytically the grid system of scoring has proved the most successful method of scoring as the original source can be realised without the need to imply a huge amount of restrictions on the performer. The negative response to the use of the grid scoring system is the limited repertoire of original sources I can choose to work with. This diminishing feature of the scoring system also reflects in the presentation of the work, it has few prospects for development, stylistically speaking, so each piece will heavily represent one another.

Though reflectively speaking this system provides the clearest reflection of the chosen original source which for me is one of the most important features of my work.

Throughout my work there is a requirement for the performer to have a certain degree of input into the piece. Although the notes and sometimes performance techniques are not specified to the performer I do not class my work to be improvisation. The structure of the piece is laid out to the performer with guidance to the musical contents in each area of the piece. The decisions about the structural aspect of the piece and the decisions in regards to duration/performance/musical contents, although influenced by the original source used for each piece, are ultimately controlled fully by the composer. The performer does not so much have control over the outcome of the piece but more an input into the sounding results. Like the original source has an influence on the composer as to the process adopted through the compositional process, the score has a similar influence on the musician through the performance process with the main difference being that through the composition process the original source is transformed into a musical reference that a musician can relate to.

## 4. Influences

### 4.1 Morton Feldman

For a few of my scores there is a strong relation to the basic layout and notation method of a number of Morton Feldman pieces in which he divides the layout of the score into three pitch ranges; low, middle and high, and the structure of the score consists of blocks representing notes falling into one of the pitch categories. My own approach to this style of scoring has developed thorough the transcription process I adopted in my work .This more open structured style of scoring also allows me to have more control over the sounding results.

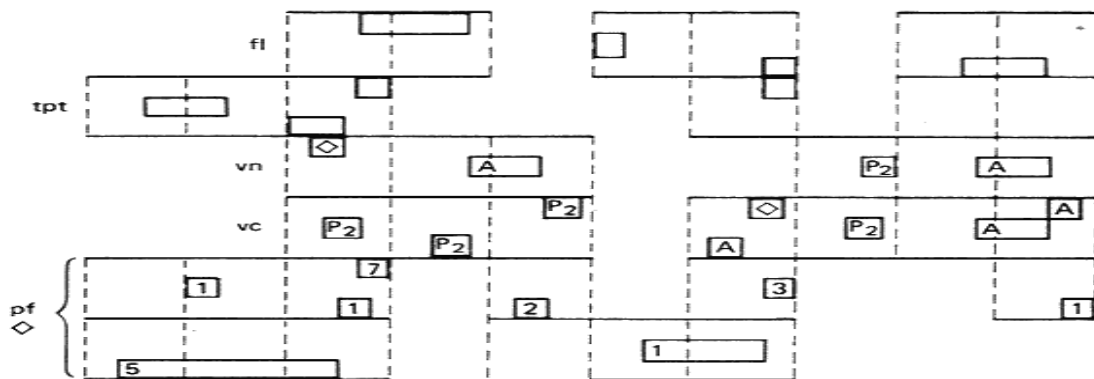


Figure 4: Morton Feldman , *Projections II* (Opening)

The primary difference between our scoring in this style is that in Feldman's work each individual square can represent any single action whereas Feldman adds a symbol into the centre of the square to indicate what should be played (fig. 4). For example a number in the centre of the indicates the number of notes that should be played simultaneously or a different playing technique may be represented by a shorthand version of the word; whereas in my work each square will only ever represent one note and a separate playing technique will be visually different to the last playing technique.

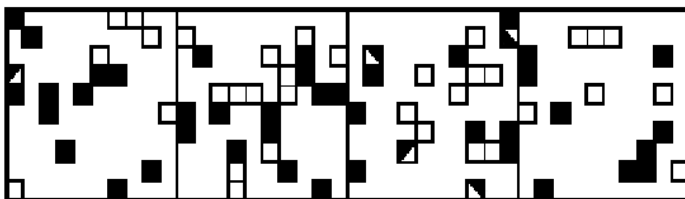


Figure 5: Natalie Davies- *Colour Cubes* excerpt (pg. 3)

Another similarity between the layouts of our scores is the organisation of pitch in grids. Feldman has divided his grid into

three pitch categories; low, middle and

high, which is communicated to the performer via the positioning of the block within the grid, similar to the representation used in my own work, the individual pitch to be played however is not specified and is left to the discretion of the performer. The primary difference between the pitch ranges between our working however is that in my work depending on the original source the piece is derived from, the size of the grid may change. It works in very much the same way as Feldman's in that the pitch range goes from low to high on the vertical axis of the grid. For the majority of pieces the pitch range may change regularly throughout the piece to compensate for the density of notes written at any one point as the performer is required to use the widest note range physically possible.

To indicate different performance techniques I changed the physical appearance of the square; i.e. Colouring the square in, half shading in the square (fig.5). Each piece is accompanied with a set of performance notes to explain the requirements of each of the different performance techniques; these range from different dynamics to using extended techniques.

## 4.2 John Cage

One of the most influential composers when working with graphic scores; and indeed when dealing with music in new ways is John Cage. Throughout his working career he had a continuous impact on the development of contemporary music with his unique thinking about the way music should be perceived; resulting in pieces such as *water music* and *4'33* (*silence*), to his work with text pieces such as *James Joyce* and graphic scores. His graphic scores and production of said scores have been a particular interest of mine due to the process his work undertakes to produce a final score. It would appear that his methodology of composition is much the same as mine..."It is better to make a piece of music than to perform one, better to perform one than to listen to one, better to listen to one than to misuse it as a means of distraction, entertainment, or acquisition of "culture".<sup>2</sup> Cage was a frequent user of chance and indeterminate methods of composition, this is interesting for me as the theoretical workings and compositional structures we use are basically the same; however the processes of getting there follow different paths. Through my composition process I make the decisions myself to regain a certain amount of control over the piece whereas Cage devised a number of methods so these choices were taken away from him. In 1951 Cage started working with chance procedures as a compositional technique in order to remove himself from the composition, and in 1952 he wrote *4'33* a prime example of his view that anything and everything can be music. Despite the fact that Cage created several

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<sup>2</sup> Cage, J. *Silence: lectures and writings*, (Wesleyan University press, 1961)

graphical scores that were not accompanied with a set of performance notes, Cage objected to performers using this as a performance technique stating; “Improvisation... is something that I want to avoid. Most people who improvise slip back into their likes and dislikes and their memory, and... they don’t arrive at any revelation that they are unaware of.”<sup>3</sup>. Cages use of chance techniques is just one of many methods of creating graphic scores with all of his compositional tools revolving around chance methods; the complete opposite of the style of composition I have adopted as Cage separates himself from the composition process by allowing the chance methods to provide the answers to compositional questions. It is these chance methods that separates the compositional process designed by Cage and adopted by myself. Whereas Cage predominantly worked with these chance methods to determine pitch, duration and performance technique. I opted to regain full control over the compositional process to create an indeterminate piece that the possibilities of which could later be explored by performers.

### 4.3 Iannis Xenakis

The compositional styling’s of myself and Xenakis have similarities in that one of the most important aspects is the origin of each piece; using original sources and transcribing them into musically playable scores. The use of visual sources is a commonly used compositional tool, though each composer uses this process in very different ways. One of the composers that has worked using this technique of transcription is Iannis Xenakis. As well as being a

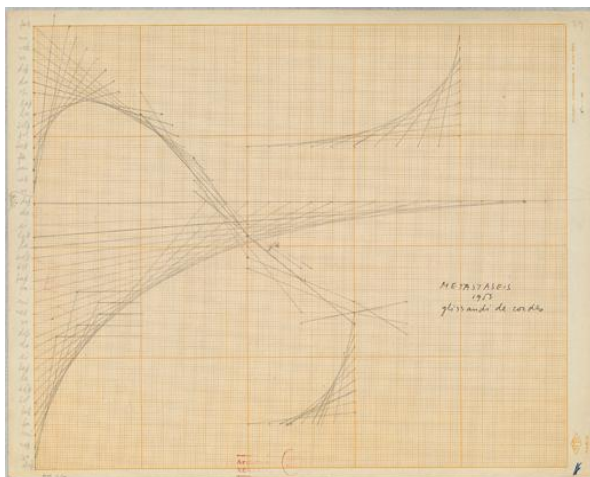


Figure 6: Iannis Xenakis – Initial sketch of *Metastasis*

composer Xenakis was also a keen architect so his love and work with buildings gave him an eye for design and patterns. Many of his compositions feature the blueprints and sketches of buildings, musically this means that the music follows lines, much like my work does. He also took this one step further looking at the patterns created by trees in the piece *Arboretum*. The score clearly shows the patterns created by the branches. All of his works are reflective of various areas

<sup>3</sup> . Turner. S, *John Cage’s Practical Utopias*, Musical Times, Web log [Online] March 1, 2002, [www.newmusicbox.org/articles/Losing-Control-Indeterminacy-and-Improvisation-in-Music-Since-1950/2](http://www.newmusicbox.org/articles/Losing-Control-Indeterminacy-and-Improvisation-in-Music-Since-1950/2) (Accessed December 2010)

which Xenakis studied, for example engineering, music and maths. For at least two of these subjects accuracy and precision is a key feature and this is why Xenakis took a much more direct approach to the translation process carefully mapping out each design firstly onto graph paper to mark out where each note should be, and then

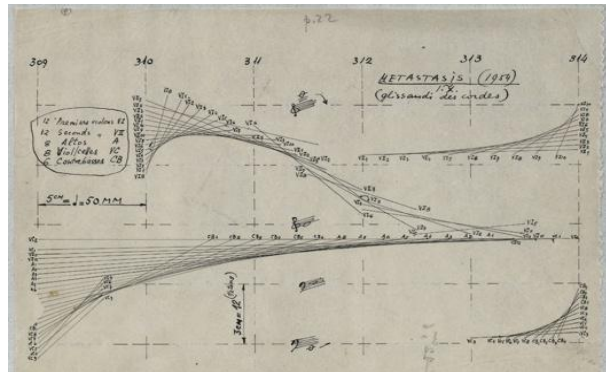


Figure 7: Iannis Xenakis – Translation to graphic scores

transferring this onto manuscript paper so each design can clearly be seen in the notes on the paper. His first major composition was *Metastasis*, a composition that used the first eight numbers of the Fibonacci sequence to determine both pitch and duration of each note. This piece is an example of the transcription process adopted by Xenakis in that for each of his pieces he first plots the pattern or mathematical working onto graph paper to precisely determine the pitch and duration of each note to be used in the piece. Figure 6 and figure 7 show the workings of the piece and the translation from a number pattern to a map on graph paper, to finally creating a musical score. This process is a similar transcription process to that of my own working having several stages of the translation process however the final results differ in the presentation of the score.

The differences between our workings rest with the translation process due to the required notational styles being different. The direct transferral of data from the original source to the manuscript paper provides a completely different audible result to that of my own pieces. This is predominantly a result of the original sources used by Xenakis, his common use of architectural drawings often resulted in the frequent use of a written glissandi and chromatic passages rather than the unpredictable audible results received from the scoring in my own work. Most notably the resulting difference between our two working process is in the notation process. The direct approach used by Xenakis results in the use of conventional notation to most clearly reflect upon the original source, on the other hand the translation process adopted for my own work is a much looser approach to transcription resulting in a graphic score. Xenakis' work clearly shows the far end of the transcription process to my own work, and shows how this process creates very precise scores using conventional notation.



#### 4.4 Steve Roden

Steve Roden is another composer that uses transcriptions from original sources to create musical scores. His process of working shows much resemblance to my own work through the transcription process his material takes. One of Roden's works, *of frozen music and liquid architecture*, is a series of 12 drawings, each translating a single page of a 12 page classical music score. In this scenario Rodden has chosen his original source to be an existing musical score and take it out of its original setting and let a performer re-create the music.

Figure 8: Steve Roden – of frozen music and liquid architecture (page 1)



Figure 9: Steve Roden – of frozen music and liquid architecture (page 4)

Figure 10: Steve Roden – of frozen music and liquid architecture (page 7)



For each drawing, I translated each of the musical notes on the top half of the page into a hand movement for an ink filled eye dropper, which was then blotted, an A would mean one linear movement, a B would mean two connected linear movements, etc. each note was also represented by a specific ink colour...the notes on the bottom half of the original score were then translated into pencil movements.<sup>4</sup>

This composition process resembles a combination of my own workings and the stylized composition process of John Cage. The use of set instructions through the composition process to make composition decisions, or in the case of Roden to create the complete score, heavily represents the process used by John Cage.

<sup>4</sup> Rodden. S, of *frozen music and liquid architecture*, [www.inbetweennoise.com/rodendrawingsmay2008.html](http://www.inbetweennoise.com/rodendrawingsmay2008.html) (Accessed May 2011)

This piece displays another different way of approaching this method of transcribing an original sources into a musical score.

The graphic scores produced by these composers show the different ways in which graphic scores can be used. The works of Xenakis and Roden resemble similar workings to my own finding ways of creating musical representations of original source's be it either in the form of graphic scores or through the use of conventional notation. This works of composers such as John Cage show the flip side to this composition method by creating set instructions for the composition process, for example, the rolling of a dice to determine pitches, or identifying blemishes on recycled paper to determine the layout of a page. Both styles of working have their own merits, both successful and unsuccessful, and even with the composition processes being so different the commonality between the works is that they all create very visually stimulating scores.

## **5. Conclusion**

Over the past few years my composition techniques have developed from conventional notation to a number of variations of graphic scores. By the influence of composers that use graphic scores such as Cardew, Roden and Xenakis, my thought process and attitude towards composition and the possibilities of music have changed to a new understanding and appreciation that musicians should be allowed a freedom to express themselves openly, and that applying too many limitations on a piece will restrict this. My experience as a private tutor has provided me with another thinking process into composition and made me concentrate on the people that will be performing the work as well as taking into consideration the audiences and thinking about how the piece will be perceived. This new way of thinking led me to the development of composition techniques including the aspect of repetition, either direct or otherwise, to ensure the piece stayed focused and the audience could follow the changes being made. The projects I have written for school students this year have been a reflection on these changes showing different approaches to composition that I had not explored before. After experimenting with the different variations of graphic scores, exploring the possibilities of using original sources and discarding various composition techniques that didn't work within the composition process, I now have a base of common characteristics that repeatedly appear through my works.

The most prominent features in my work include a grid system of scoring my work, limited restrictions to allow the performers to have the majority of the control over the piece, but finally and most importantly the transcription process from original source into a musical composition.

## **Part Two - The function of graphic scores in education**

### **1. Introduction – Progress of notation**

There have been several methods of teaching music that have developed with the technology available for notating music. The development of music notation has had a huge influence on music education and the varying teaching methods. From learning in a completely aural fashion to reading standard notation, music students are predominantly taught to read conventional notation or variations on this such as guitar tab. However even with the substantial development of contemporary music and graphic scores, this new form of notation is still uncommon within teaching practices to main school students in the UK, students up to key stage 4, and it is not used as a form of instrumental tuition.

Staff notation seems to have a curious effect on musical behaviour and it certainly has a strong influence on instrumental teaching and playing. The greatest virtue of written signs is their potential for communicating certain details of performance that would easily be lost in aural transmission, just forgotten... Yet, in instrumental teaching within the western classical tradition, notational 'literacy' is thought to be essential and thus notation is often central to instruction and is frequently the starting point.<sup>5</sup>

There are several groups of people however I would feel would benefit from using graphic scores as a means of getting involved with music. In particular those students who suffer from any form of learning disability or even those who prefer a more improvisational approach to music there is a wide variety of contemporary music that would both allow the players to have the advantage of having a pre-structured piece while at the same time allowing the player to have control over the piece. As recent as February 2011 all music students in the UK were required to sit the same written music exams with no exceptions for those with disabilities or music background. "Recent research confirms that we can teach students with learning disabilities how to learn... Teachers who were applying those kinds of intervention: broke learning into small steps... provided prompts and ... used diagrams, graphics and pictures to augment what they were saying in words"<sup>6</sup>. Graphic scores can give an access to music that cannot be obtained from conventional notation, the most obvious positive to this is that the same piece will be different every time it is performed; this gives each piece a uniqueness that is not found with conventional notation allowing students and

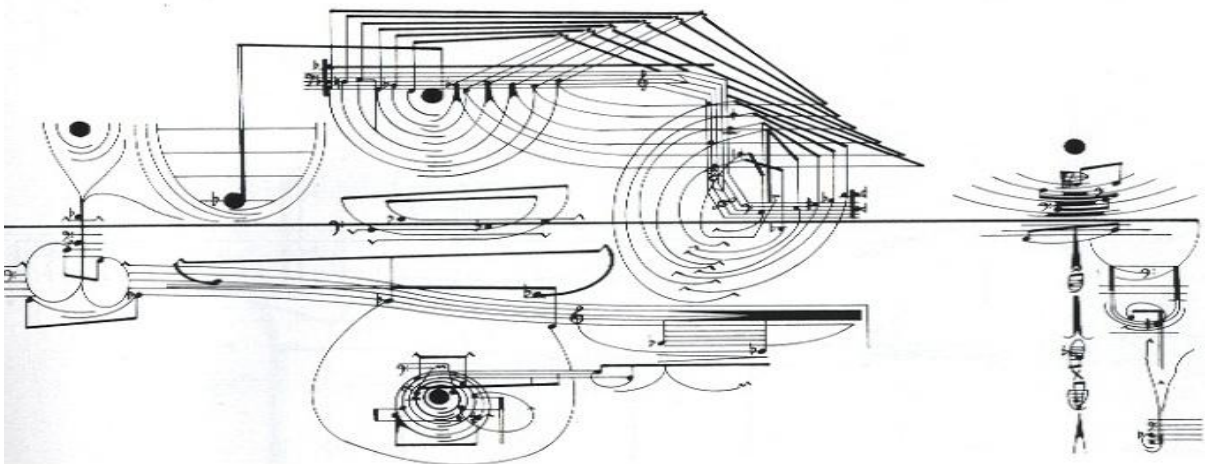
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<sup>5</sup> Spruce, Gary, *Teaching music in secondary schools: a reader*, Open University (London, 2002)

<sup>6</sup> Learning Disabilities Association of America, *Successful strategies for teaching students with learning disabilities*, Web log [Online] N.D, [www.ldanatl.org/aboutld/teachers/understanding/strategies.asp](http://www.ldanatl.org/aboutld/teachers/understanding/strategies.asp) (Accessed December 2010)

performers to experiment with the piece. It is for these reasons I believe with the expansion and development of contemporary and experimental music, education of graphic scores should become a more widely available teaching resource to both teachers and students. Graphic scores have been presented in many different forms to best represent certain pieces varying from text pieces , to pieces represented by colour and shapes a technique commonly used by John Cage, to the more direct relation pieces such as the block notation used by Morton Feldman. It is through the free thinking works of composers such as John cage who believed 'everything we do is music'<sup>7</sup>, and Cornelius Cardew who created works such as *Treatise* (fig. 1), a huge work of graphic scores made up of line, shapes and conventional musical markings used in a non-conventional way, that the different ways in which graphic scores can be used are shown.

Figure 1: Cornelius Cardew, *Treatise* (Pg. 183)



<sup>7</sup> Bossy, M-A, Brothers, T and McEnroe, J.C. *Artists, writers, and musicians: an encyclopaedia of people who changed the world*, p.33, (The Oryx Press, 2001) Bossy, M-A, Brothers, T and McEnroe, J.C. *Artists, writers, and musicians: an encyclopaedia of people who changed the world*, (The Oryx Press, 2001) p. 33

## 2. Music education in schools for deaf students

It is not uncommon for deaf or hard of hearing children to attend non-specialist schools as with the aid of hearing aids or a signer they can follow the lessons sufficiently well. Although “the average 18-19 year old deaf student is reading at a level commensurate with the average 8-9 old hearing student”<sup>8</sup> deaf students are expected to cover the same subject material as their classmates and with no extra resources. As of February 2011 written music examinations for deaf students were exactly the same as those for hearing students meaning the chances of the passing the exam was severely diminished and aural tests included in the exam could not be completed sufficiently.

Music is such an important subject for all students to learn for a number of skills including not only personal development but also social skills in communicating with other students.

...one of the most recognised benefits of music instruction is the acquisition of language. Properties of music such as rhythm, accents, tempo, and repetition organise and direct behaviour toward educational goals by supporting the structure of language. In addition, music can provide motivation for positive behaviour, serve as academic support for reading and writing, and become a means for developing positive self-image. Children can also improve body coordination through rhythmic movement, and develop social skills by interacting with hearing students during music participation.<sup>9</sup>

Despite the positive influences music has on deaf children, it is a subject teachers will shy away from due to lack of knowledge about how to teach the music to students with hearing difficulties. The founder of the charity music and the deaf Paul Whittaker, and one of his colleagues Danny Lane, have created a series of publications containing suggestions and resources appropriate to students at each key stage but aimed at teaching deaf children. For the majority of the first publication *‘Keys to Music: Making music with deaf children in early years’*<sup>10</sup> the style of teaching does not differ that much from teaching music to a hearing child. The main difference is in the choice of instrument used, most of the activities include using instruments the children can hit or they involve using physical actions. The layout of the syllabus is in very much the same style as any other school. The majority of the activities in the syllabus revolve around group activities to help build team skills in the students from a young age through learning techniques such as call and response. All lesson plans when working with deaf children involve the use of visual cues and representations of the music. This visual form of teaching shows the influence graphic scores can have on education. Even in the second publication by Lane and Whitaker (2008), *‘Keys to music with deaf*

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<sup>8</sup> Montgomery. R, *Teaching*, [www.ruthmontgomery.com](http://www.ruthmontgomery.com), (Accessed July 2010)

<sup>9</sup> Hash, P.M. *Teaching instrumental music to deaf and hard of hearing students*, Research and Issues in Music Education (Volume 1, No.1, September 2003)

<sup>10</sup> Lane. D, and Whitaker. P, *Keys to music with deaf children – early years setting edition*, (Huddersfield, 2008)

children – Key stages 1 and 2'<sup>11</sup>, the fundamentals of the syllabus are the same as the standard school syllabus covering topics such as; rhythm and pulse, pitch, dynamics, tempo, timbre and structure (composition). Like in the first publication the main difference is the actual approach to teaching the materials. The syllabus aimed at deaf children has a much more hands on approach to the music, with the primary focus of each topic being that the children should have as much involvement with the music as possible and explore the instruments and their capabilities. 'To help the students chime [handbells] together, the notes are all colour-coded...The students say they experience the music by feeling the vibration in the bell'<sup>12</sup>. Composition and experimenting is a key feature throughout the syllabus encouraging the children to feel how loud feels, how quiet feels, how high and low feel as it is vitally important for deaf children to experiment with creating these sounds themselves as for many of them they will not be able to tell the difference by just listening. The visual element as well as the physical aspect of creating music is a huge part of the musical experience for people with any form of hearing impairment, especially for children who are beginners to learning music, visual representations are hugely important for their understanding and development. This is why in the publications by Lane and Whitaker (2008) pitch is represented by pictures such as a bird flying for high notes.

Although rhythm is a prominent feature in music right from the start of a deaf child's involvement in music, pitch is still a primary focus in instrumental lessons. Especially with the development of hearing aids and cochlear implants, music is becoming even more accessible for those with hearing impairments.

Composer Steve Roden has shown how graphic scores can be used with non-musicians by creating scores that have a visual relation to the instrument that the piece is to be performed on.

Rodden's piece *Pavilion* (fig.2) shows this approach to scoring is an effective way of providing a visual representation that would be appropriate to both beginners and non-musicians

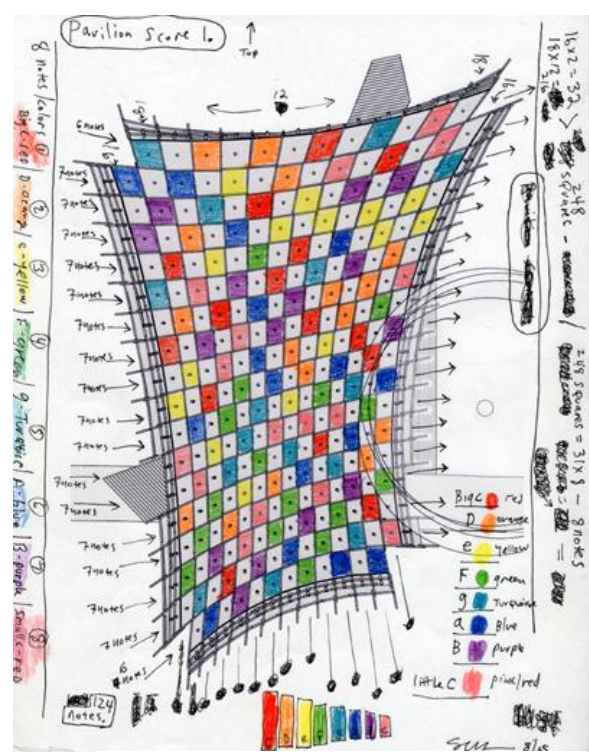


Figure 2: Steve Roden *Pavilion* (Pg.1)

<sup>11</sup> Lane, D, and Whitaker, P, *Keys to music with deaf children – key stages 1 and 2*, (Huddersfield, 2008)

<sup>12</sup> Omaha Channel, *Deaf Musicians feel what their audience hears*, February 16, 2004, [Online] [www.deaftoday.com/news/2004/02/deaf\\_musicians\\_2.html](http://www.deaftoday.com/news/2004/02/deaf_musicians_2.html)



alike. It is an extension of the technique many instrumental tutors adopt of applying coloured stickers to a child's instrument to show where each note is.

I used the architect's drawings to generate graphic scores, filling in the various rectangle units of their floor plans, elevations, etc, with colours corresponding to certain musical notes on a children's glockenspiel. These scores were given to non musicians who used them to play colour coded children's colour coded children's glockenspiel during the performance.<sup>13</sup>

The scores produced by these composers demonstrate the different ways in which graphic scores can be used to influence a performance.

It is important to note here that colour coded methods and visual representations of music are used in various music teaching practises such as the Hungarian found organisation Colourstrings. Created by Geza Szilvay, the method was based on the Kodaly method that teaches music through the natural pitch differences in speech. Understanding pitch and rhythm falls at the heart of the Colourstrings method.

A Colourstrings student will be different. When they come to play a difficult piece of a Mozart concerto, they may stop and translate it into do-re-mi to sing it before they play again. They have the tools to decode music.<sup>14</sup>

Along with the this technique to decode the music through singing patterns in the music the Colourstrings method endorses the use of a different hand sign for each note learnt through various games and dances. This method has proved very successful with students and its approach to music allows children to start training from as young as 18 months and will take them right through to the age of 18 years old.

Another method based around the theory of teaching music through movement association is the Dalcroze eurhythmics method. This method encourages students to experience music through the use of all the senses; this is to heighten a player's sensitivity to areas such as pitch differentiation, rhythm and dynamics by combining the technical aspect of playing with the physical action of moving.

Although rhythm is physical in origin, the body and brain must work together at all times. In a sense, the musical instinct and the musical intellect are developed together. Thus, all exercises are aimed at the growth of the body and the mind as well as the coordination and harmony between the two.<sup>15</sup>(Wax, 1979)

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<sup>13</sup> Rodden, S, *Pavilion scores*, <http://www.inbetweennoise.com/soundingarchitecture.html> (Accessed June 2011)

<sup>14</sup> Rumbelow, Helen, *Newspaper Article in The Times*, (January 27<sup>th</sup>, 2011)

<sup>15</sup> Wang, Dennis Ping-Cheng, *The quantifying analysis of effectiveness of music learning through the Dalcroze musical method*, US-China Education Review (Sep. 2008, Volume 5, No.9)



In 2008 a study was carried out over a period of 6 months with 1000 students in China to assess the effectiveness of the Dacroze method against that of standard teaching of singing. Before and after the experiment was carried out each student completed a musical exam to test the main areas of performance such as recognising pitch and being able to keep a steady pulse. An example of one of the tests was that whilst sat in a circle the students were played a piece of music in which they were required to pass a small percussion instrument to the person beside them on the first beat of the bar. Each of the assessments had an element of physical movement involved like rolling a ball to another student on a certain beat etc. The results of this study showed that the group receiving tuition through the Dacroze method showed a significant improvement across all areas of the tests whereas the group only receiving traditional music tuition had progressed slightly in the six months of tuition. These two methods show the positive influence both visual and physical movement can have through both the teaching and performance of music. It is really important to have a physical connection to the music and as methods such as the Dacroze method shows it helps with the understanding of the theoretical side of music.

### 3. Music and the deaf community

#### 3.1 Professional Deaf musicians

##### 3.1.1 Evelyn Glennie

Professional drummer Evelyn Glennie has performed all over the world whilst also dedicating herself to teaching drums and percussion to young deaf musicians, and more recently consulting with musicians of any speciality. As a deaf musician herself, Evelyn understands the struggle involved for a deaf child learning an instrument, therefore she has developed an array of techniques to help children learn and understand the instrument more easily.

One of her common teaching methods is to have the student place their hand on the frame of the drum or even on the wall of the room whilst she plays the drum. This is in order for the student to start associating certain pitches with the part of the body they can feel the vibration in. This is one of the techniques she picked up from when she was a student herself.

‘I would stand with my hands against the classroom wall....eventually I managed to distinguish the rough pitch of notes by associating where on my body I felt the sound. The low sounds I feel mainly in my legs and feet and high sounds might be in particular places on my face, neck and chest’<sup>16</sup>.

This technique of teaching students to feel the vibrations is a common practise used by deaf musicians. In a teacher training workshop held by Music and the Deaf founder Paul Whitaker as part of the ‘Sing Up’ workshop series, Paul describes a method used to get a group of deaf people to all sing the same note together.

One thing I was keen to do was get the children to all sing one note together, I had no idea if this was going to work at all. What we did was just gently put your hands on your neighbour’s throat....and what we did was got one person to sing a note and we passed it round by feeling the vibrations.<sup>17</sup>

Evelyn has also had a successful career as a composer working on projects such as *Deaf Blind* for the BBC, seven series of *Trial and Retribution* for ITV, three Mazda car commercials as well as composing some of the soundtrack for *Touch the Sound*, a documentary about her life and work. The progression to composition is an extension of her work as an improvisational performer and although she has performed a vast selection of scores from solo and ensemble works performing with some of the largest orchestras in the world, to

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<sup>16</sup> Glennie, E, *Hearing Essay*, [http://www.evelyn.co.uk/hearing\\_essay.aspx](http://www.evelyn.co.uk/hearing_essay.aspx) (accessed July 2010)

<sup>17</sup> Music and the Deaf, *Music and the Deaf: teacher training – Sing up*, [Online] [www.youtube.com/watch?v=2A9j4t8gY-4](http://www.youtube.com/watch?v=2A9j4t8gY-4) (Accessed June 2010)

world music such as African drumming, to the classical repertoire including Rimsky-Korsakov's *Flight of the Bumble Bee*, and even a selection of contemporary compositions including a solo rendition of Steve Reich's *Clapping Music*. Evelyn has even had a substantial amount of specially commissioned compositions written specifically for her, and throughout all these performances Evelyn has continued experimenting with improvisation and pushing the limits of the instrument in different performance spaces.

### 3.1.2 Ruth Montgomery

Ruth Montgomery is a deaf flautist who has made a successful career from giving performances and, like Evelyn Glennie, giving talks and workshops.

'I wear hearing aids in both ears, and I have trained to understand the sounds around me....The tuner is a life-saver, I use them often and train myself to hear every single note. I have been playing flute for 14 years now so I know the character of every note.'<sup>18</sup>

Like many deaf performers such as Evelyn Glennie, Paul Whitaker and Danny Lane, both from the Huddersfield based charity Music and the Deaf, Ruth struggled to find a college willing to take her on. "It took me years to get into music college...at one audition I was told quite bluntly that I should "go to an art course instead of music""<sup>19</sup>. This didn't stop Ruth however and she finally got accepted at the Royal Welsh College of Music and Drama graduating with a 2:1. Ruth's struggles to find a music college that would accept her confirm the lack of knowledge about deaf performers and unwillingness to find new ways of teaching and communicating people. This communication of music is one of the reasons graphic scores could have a positive influence and Ruth's involvement with graphic scores is making this possibility more widely known. Not only is Ruth a regular performer but she also runs educational workshops for children of all musical abilities. These workshops tie in very closely to my project as they have a strong focus on children creating graphic scores of their own to express themselves. The main focus's of the workshops is to get the children to create their own scores using shapes, colours and lines or even pictures and then as a group they explore the scores figuring out different ways they could be played. This kind of exercise is ideal for younger children as its both creative whilst still being educational.

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<sup>18</sup> Montgomery, R, *Teaching*, <http://www.ruthmontgomery.co.uk> (accessed August 2010)

<sup>19</sup> Montgomery, R, *Teaching*, <http://www.ruthmontgomery.co.uk> (accessed August 2010)

### 3.1.3 Helmut Oehring

Born in 1961 in Berlin to two deaf-mute parents, Helmut Oehring grew up in a world of original communication and thinking about sound in a different way. His experiences from growing up in this environment led to a unique composition style and focus, creating a portfolio of visually stimulating work and works that often integrate sign-language in the performance given by deaf-mute artists.

In his teens Oehring taught himself to play the guitar and picked up by ear the latest hits of his idols, Neil Young, Bob Dylan and Jimi Hendrix... In 1985 he took himself to a concert of contemporary music, and was instantly hooked... Since he didn't know any musicians who might help him, he borrowed as many different instruments as he could and experimented himself, finding out the potential of each.<sup>20</sup>

Oehring has composed in many different styles and genres including chamber music, electronic music, solo works, ensemble and orchestral works, film scores, theatre works as well as works with sign language choreography. Oehring's approach to music is very unique with the inclusion of sign language as part of the choreography of the piece and the specific request that in certain pieces the vocalists should be deaf including not only deaf musicians into the performance but also including deaf members of the audience, much like *Sound. Sign. Silence*. one of my own compositions (see page 41). The visual aspect of performance is a prominent feature throughout Oehring's work, especially within the categories of works with sign language and music, and it is all the works in these genres that it is specified that at least one deaf performer be involved. His work within the musical theatre field are broken down into individual performers parts usually including, singers, dancers, musicians and deaf performers though the role of the deaf performer could be specified in any of the categories.

The D'Amato system, a dance opera written in 15 scenes is one of the visual pieces that include sign language, singing and dance, as well as spoken text and a large ensemble consisting of bass flute, oboe, bass clarinet, horn, trumpet, trombone, 2 percussionists, piano/keyboard sampling, and electric guitar/electric bass pedal with volume, violin and cello. This style of instrumentation is common through Oehring's work, due to the sounds he was exposed to growing up with his parents being deaf-mute, the communication he had growing up consisted of low pitched sounds so naturally these are the tones that he now prefers to compose with.

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<sup>20</sup> Carlos Maria Solare, Helmut Oehring in Profile, New Series, No. 213 (Jul., 2000), pp. 2-4

The work carried out by Music And The Deaf and by professional deaf musicians demonstrates the importance of music and the influence it can have on the lives of deaf people. The compositional styling's of both Rodden and Oehring along with the teaching methods used by Evelyn Glennie have had a huge impacts on my career as a teacher as well as providing insights into composing for deaf musicians. These factors have all influenced my time working at Music And The Deaf leading me to compose a piece specifically for deaf children (see p.41 Sound. Sign. Silence).

### **3.2 Charity: Music and the Deaf**

Music and the Deaf is a charity organisation set up aimed at children with hearing impairments to help them express themselves through music. It has been a common thought through the years that 'music is something deaf people cannot do'<sup>21</sup>. This accusation is due to a lack of understanding of deafness; deaf people can produce and even enjoy music. Over the last 18 months during my time as a piano teacher at Music and the Deaf I have really started to think about music in a different way. As a teacher to young deaf students you have to find ways of explaining music to children who may not be able to hear the music. The charity Music and the Deaf is home to the only orchestra in the world comprised of only deaf musicians, this opportunity is really important for the children as it gives them an opportunity to perform with other deaf musicians and learn those all important skills for interacting with other musicians. For a lot of deaf children, communication is very hard which can leave them feeling excluded and as a result they tend to shy away from talking and meeting new people, however through Music and the Deaf the children can interact with and meet other children in the same situation and build the confidence in talking to people. In 2009, *Inside Out*, a BBC documentary programme produced a short feature on the charity in which one of the Music and the Deaf groups were followed to the Royal Albert Hall as part of the Schools Proms competition. Hi-notes, a composition group set up by Danny Lane entered the competition to try and boost the children's confidence never thinking they would make it all the way to the finals of the school proms at the Royal Albert Hall with their own composition. In the documentary several parents were interviewed about how music has helped their child, one of whom was a student I have personally taught. His father explains in the feature:

When Thomas was first diagnosed he was quite shy...he was quite remote in his outlook because he had this problem, with the music, its helped him

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<sup>21</sup> Montgomery, R, *History*, [www.ruthmontgomery.co.uk](http://www.ruthmontgomery.co.uk) (accessed August 2010)

express himself and also its given him lots of confidence...he's very outgoing now.<sup>22</sup>

The composition group works well as the students decide on a subject to base their piece, around such as a space shuttle taking off or one piece they wrote last year for the end of year concert that followed a bus journey, they created the sound effects for the bus breaking down, then explore different ways of using their instruments to best represent the songs. They effectively create their own graphic score as no notes are written down they write the story or structure of the song and the sounds they will use within each section.

They do not need to read music because what they play is "theirs" and they know exactly what is happening. They perform better when they don't read music because they watch each other and are aware of what they are doing together as a group - which is important when the players have a hearing loss.<sup>23</sup>

The school also offer a wide range of lessons including, drums, piano, strings, brass, woodwind and even conducting, meeting once a month, children from all over west Yorkshire meet to learn and make music together. Other current projects running within the school includes an African drumming workshop. This group has proved especially successful, the children can really relate to the action of hitting the drum and the physical aspect of making the sound with their hands helps them to feel the vibrations. This group was also a great way of helping the children work together as a group and learn how to listen and react to one another. Throughout the course of this group, the children have learnt to play several different rhythms and these rhythms have been layered on top of one another. The other project held was an opportunity for the children to learn how to conduct as a group; this was a very worthwhile experience for them for not only the purposes of the orchestra and understanding what the conductor is doing, but also from an exam point of view. One of the requirements of the associated board for the royal schools of music (ABRSM) exams is that students must complete an aural exam, this section of the exam works slightly different in the case of deaf children, the sight singing part or aural singing part of the exam is eliminated and in its place students must conduct to the beat that the examiner is playing at. The set up and ongoing success of this orchestra is living proof that deaf people can do music and can enjoy music. The running of the orchestra sessions support the style of music education set out on the syllabus. There is a prominent focus applied to understanding rhythms and less focus on the use of pitches. Students are

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<sup>22</sup> Music and the Deaf, [Online] [www.matd.org.uk/deaf-youth-orchestra](http://www.matd.org.uk/deaf-youth-orchestra), (Accessed December 2010)

<sup>23</sup> Davies. N, [Personal Correspondence] *An interview with Danny Lane*, (held December 2010)

encouraged to clap rhythms so they can really internalise the feeling of each rhythmic pattern.

Through the course of this year the charity have been expanding their work through the UK and have successfully formed the National youth deaf orchestra. Before 2011 the charity has been based only in Huddersfield and it is expanding by setting up centres around the UK to continue helping the deaf community and widening the musical opportunities to deaf children around the UK. The Huddersfield centre along with the new centres all came together in July 2011 for their first public performance as the National youth orchestra.

### **3.3 Technology and aids**

Different methods have been tried to assist deaf people in performance situations. At a university in America researchers held a concert at which all audience members were given a balloon to hold to enhance the vibrations of the sounds produced in the performance. The balloons act as an aid to conduct and enhance the vibrations directly to the audience's fingertips which proved a very effective method of feeling the sound. The finger tips feel pulses and rhythms which create the basis of the musical experience. 'Deaf children do generally find pitch difficult to hear and naturally focus more on the content and rhythmic flow of the songs.'<sup>24</sup>

The next stage of understanding the performance is the visual aspect, seeing the physical movements of the performer enables a person to understand the mood and general tone of a performance.

Signing is another common way of enhancing a performance for the deaf community. The most common setting for this is in theatrical performances and concerts; signers help the audience follow the storyline of the show or help them realise the meaning of a song.

Singing company 'Vee Limited' headed up by 'Music and the Deaf' founder Paul Whitaker; send out signers to such performances. Other services they offer to aid deaf people include adding a recording of a signer onto film footage, translating songs into sign and providing signers for public events such as place openings and fetes. These sorts of events are essential for deaf people to have a signer present in order to feel included in the event. In terms of progression in music, the use of graphic scores in music could aid the work of signers as it would be much easier for a signer to communicate a graphic score through sign language than it would be to translate conventional notation.

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<sup>24</sup> Lane. D, and Whitaker. P, *Keys to music with deaf children – early years setting edition*, (Huddersfield, 2008)

A prominent group within the deaf community is DefRave; a company of deaf DJ's who organise music events for the deaf community. DefRave have hosted a number of events all around the world, the most notable recent event was a gig at the Glastonbury Music festival 2011. These events can be attended by anyone but the music is specifically chosen to enhance the listening/feeling experience of the deaf audience in that the music features tracks with heavy bass lines and strong rhythmic patterns. The strong bass lines create pulses through the floor to help the deaf raver's feel the beat of the music. Currently performing around the world, DefRave are giving deaf people the opportunity to not only enjoy music with other people in the same situation but they also offer young and aspiring DJ's the opportunity to perform with them allowing them to be creative with the music.

"Deaf people sense vibration in the part of the brain that other people use for hearing."<sup>25</sup>

A study was carried out to determine how people with different levels of hearing impairment perceive sound. The findings of this research show that when a scan of the brain was taken of a deaf person listening to music there was brain activity in the area of the brain normally active by a hearing person. It was expected that the auditory cortex would remain inactive for a deaf person however it would seem that feeling the vibrations of music has the same effect on the brain as hearing sound does, however when a hearing candidate in the study was subjected to intermittent vibrations on their hands there was no such activity in the auditory cortex. "These findings may explain how deaf people can enjoy music and how some become performers."<sup>26</sup>

The primary advancement for aiding deaf people in music is through the use of hearing aids and cochlear implants. This technological advancement helps deaf musicians to increase their involvement in music without the help of others; it also helps to increase their perception of sound. Not all deaf people are able to use hearing aids due to the severity of their condition, and not all deaf people need the aid of hearing aids to perceive sounds. Although cochlear implants can vastly improve a profoundly deaf person's perception of sound and speech, the technology is still in its early stages so recognition of pitch is still poor, it does however give deaf people a higher perception of music. John Redden is a professional deaf musician whose musical experiences have been improved due to his cochlear implant.

A cochlear implant is a computer chip surgically embedded in his skull. The chip drives 16 tiny electrodes threaded into his inner ear that stimulate his auditory nerves. It gets auditory data from an external computer sitting on his

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<sup>25</sup> Science Daily, *Brains of deaf people rewire to 'hear' music*, Web log [Online] Nov. 28, 2001, [www.sciencedaily.com/releases/2001/11/011128035455.htm](http://www.sciencedaily.com/releases/2001/11/011128035455.htm) (Accessed may 2011)

<sup>26</sup> Science Daily, *Brains of deaf people rewire to 'hear' music*, Web log [Online] Nov. 28, 2001, [www.sciencedaily.com/releases/2001/11/011128035455.htm](http://www.sciencedaily.com/releases/2001/11/011128035455.htm) (Accessed may 2011)



ear that looks like a hearing aid. Instead of amplifying sound, though, it digitizes it and sends it to the implant by radio through the skin.<sup>27</sup>

### **3.4 Thinking about music in a different way – Modern Technology**

Technology has been a central point to the development of music, from the use of technology to produce musical scores to the advantages in recording and producing. This has resulted in music becoming more accessible to a wider range of people. This development has since gone a step further as we have entered into an electronic age where technology has become more important in, not only creating the music, but also the electronics being the content of the piece; this includes artists using electronic sounds such as synthesisers to vocal effects, to the more extreme use of technology in live electronic pieces.

This use of technology has now been taken a step further into the realm of music education on a very simple level. Game consoles and simple music software have contributed to the electronic production of music, these systems are based on users simply selecting loops and putting inserting them into a grid allowing anyone to create their own piece of music. With the advancement of technology, and more specifically the progress with the capabilities, this process has been taken a step further with the development of the iPod and the iPad, creating music has never been so easy. The touch screen technology used in these products are a perfect way of providing a hands on approach to creating music that was missing with the any previous music creating software. Music instrument applications have been created to look like a digital representation of the real instrument so the user feels as if they are really playing the instrument without having to go into the technical aspect of learning the instrument. This approach is a creative way of getting children and adults alike involved in music without all the technical knowledge and they can get straight in to the music making. This approach to using technology in this way to create music has been tested by an UK based company called 'Store Van Music'. Set up by university graduate Neil Johnson, Store Van Music is a diverse company creating all types of music for any purpose; however their main focus is keeping music education alive in main school classrooms. One of the projects run by Store Van Music was to take 24 iPads into a classroom situation and record a song with a group of young enthusiastic learners, using only the capabilities of the iPad itself. The prospect of producing such effective music with students that are not necessarily involved with music and to give them that opportunity to be involved with the creative side of music is a really positive step forward for music education.

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<sup>27</sup> Chorost, Michael, *Helping the Deaf hear Music*, Technology Review, (Feb, 2008)

The tenori-on (fig. 3) is a new instrument for the digital age has been released in the UK, created by Japanese media artist Toshio Iwai, the tenori-on is a simple electronic device that allows its user to make music from patterns and images on the interactive interface. The device is created by a 16 x 16 grid in which each square has been assigned a pitch. The user can set the tempo and freely add to or subtract notes from the grid as the device continuously cycles through the grid. Several online interactive interfaces have been created so people can create realistic representations from the comfort of their own home. The beauty of this device is that it is the perfect way of playing graphic scores as it would give an exact translation of the score. It is this sort of device that would be perfect for use in classrooms when looking at creating music. The device has been brought to light by comedian Bill Bailey who is a frequent user of new technology. He is renowned for his combinations of comedy, music and unusual instruments. In one musical routine from his *Dandelion mind* show, he makes use of the tenori-on claiming;

Figure 3: Yamaha Tenori-on



It allows you the expression of music and this, I think, is the antithesis of all the x-factors, X-factor is about moulding people and making them sound exactly the same, music should be about freedom of expression.<sup>28</sup>

Much like the concept adopted in many of my compositions, the device simply converts patterns into music.

### 3.5 Thinking about music in a different way – Graphic scores

#### The concept of Sound. Sign. Silence.

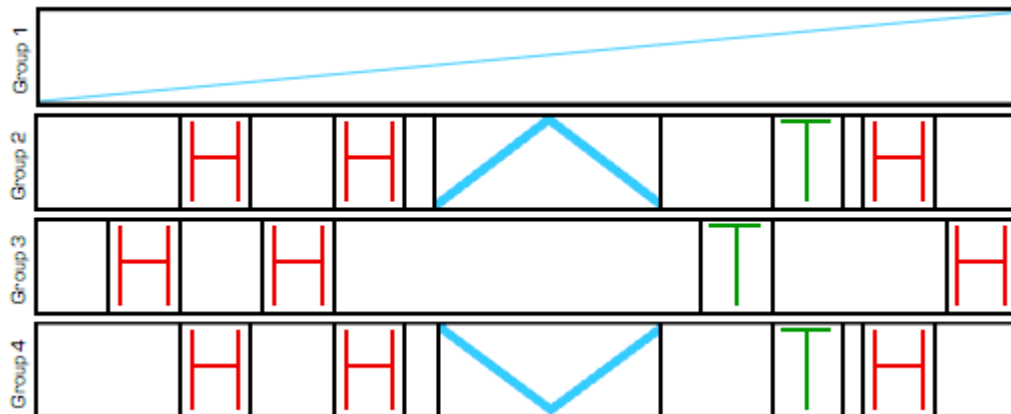
The thinking behind this composition was to allow children with a hearing impairment to express themselves through music. I tried to keep the concept of the piece fairly simple to allow children of all abilities, however new or advanced they are in terms of music, to perform the piece with a great degree of understanding and ease. This is the primary reason for presenting the piece in the form of a graphic score rather than using conventional music notation. The piece is constructed from a range of physical activities such as clapping hands, slapping thighs and jumping, as well as singing undetermined pitches in a high, middle or a low pitch range.

<sup>28</sup> Bailey. B, *Dandelion Mind*, [Online] [www.youtube.com/watch?v=qQtjDgTtTtc](http://www.youtube.com/watch?v=qQtjDgTtTtc) (Accessed July 2010)

The layout of the score is divided into four staves to denote the four groups of the choir. Each action to be performed by the children is represented by a colour coded symbol, each of which are explained in the performance notes with written reminders in the full score for the conductors use when a new symbol is added to the score.

To assist the children with the performance of the piece, I have recommended that there should be four conductors; one to lead each group.

Figure 4: *Natalie Davies, Sound. Sign. Silence* excerpt (Pg. 3)



The concept of the piece can be divided into three general categories; deaf performers, a deaf audience, and a hearing audience. I have tried to create a piece that will be enjoyable and hopefully an educational experience for all by composing with these three categories in mind.

### The hearing audience

I was very aware that the listening experience of the hearing audience would be very different from that of a deaf member of the audience and wanted to optimise that fact and try to provide them with an experience similar to that of the deaf audience. As a hearing musician I understand that when listening to or even watching a performance, the listening experience leaves nothing to the imagination. The performance could be enhanced by the visual element of seeing the performer; however the perception of the audible piece is given to us. It is for this reason that I decided to establish the piece by introducing all of the actions and then having the actions performed silently giving the hearing members of the audience to experience the piece as those members of the audience who are deaf. I created the effect through the silent action sections in the piece and then slowly reintroduced actions that were accompanied by the sound. There are even sections of the piece where both silence actions and actions with sound are happening at the same time. It is the moments of the piece

where silent actions are being produced when all audience members will be experiencing the same phenomenon, the performers are providing a visual stimulus but the brains of the audience fill in the audible results.

### **The deaf audience**

Whilst the original idea for the piece was to create a universally accessible piece I soon became aware that when specifically writing for a group of deaf children the obvious audience members would be friends and relatives of the children so there would be a percentage of the audience who would have a degree of hearing impairment. The only considerate thing to do in this situation was to make the piece as accessible to these audience members as it would be for the children. It was for this reason that the piece became so 'action' orientated. Although the audience would not be participating in the performance; i.e. they would not be creating the actions themselves, they would know how it feels to clap their hands or click their fingers therefore have a greater understanding of the piece. Hopefully the visual stimulus would trigger the sense of creating the action, thus not necessarily being able to hear the piece but being able to feel it.

'Deaf people already have an aptitude for rhythmic movement through the use of sign language...the flow of hand movements and facial expressions show the shape of ideas just as the notes of a musical score represent the shape of sounds and silences.'<sup>29</sup>

There are small portions of the piece where the deaf audience may not feel as included when the performers are singing held notes however for some of these audience members the vibrations produced from the vocal sounds will be enough for them to follow the performance. However it is for the other members that I kept the vocal sections relatively short and interspersed with actions, thus catering to all of the deaf audience.

### **Deaf performers**

This piece has been designed not for the performers to hear what they are performing but for them to feel it. For deaf performers the best way for them to feel connected to the piece is for them to have a hands on approach and I thought the best way of achieving this was to turn the body into the instrument. Not only did I feel this was the best way for the performer to

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<sup>29</sup> Montgomery. R, *Teaching*, [www.ruthmontgomery.com](http://www.ruthmontgomery.com), (Accessed July 2010)

have a close connection to the sound production, but the sounds produced are universally known by non-musicians and musicians alike.

One of the reasons for wanting to create this piece was to try and allow the performers to hear or even feel the piece before they even begin to perform it. One of my observations whilst teaching at Music and the Deaf was that the students, even those that were complete beginners, would play the piece whilst looking at the music maybe only once or twice and then would only look at their fingers and play completely from memory. However with my hearing students they would only look at their fingers right at the start of the piece to make sure they were in the right place, and then would follow the score right the way through, even when they knew the piece well. This difference in playing style was explained by Danny Lane, one of the workers at Music and the Deaf, in an interview I held with him

Although in the case of my piece there is a score, each action to be performed is to be communicated to the performers by a conductor or group leader so it is very much a group piece where communication between the performers is essential. The style of notation used in this piece is an example of the way in which graphic scores could be used in education where the focus of the work is not on the technicality of producing sound, but on the sound production itself.

Through the production of this composition I have taken the theoretical side of learning an instrument away and brought music back to basics by using the body and its musical capabilities as the sound source of the piece.

My work very much supports the process in which Evelyne Glyennie teaches but in a more basic way her teaching methods revolve around the student being able to feel the vibrations created by an instrument, which is also the main aim of my project though the music is created without the use of an instrument. The one big difference between our working is that while learning the drum, the vibrations created for the student is to feel the results of striking the skin of a drum, and it is this action that creates the feeling. However in my work the feeling is created completely with their own person, so not only is the student feeling the movement of creating the action, but also the impact that creates the vibrations.

## 4. My involvement with graphic scores

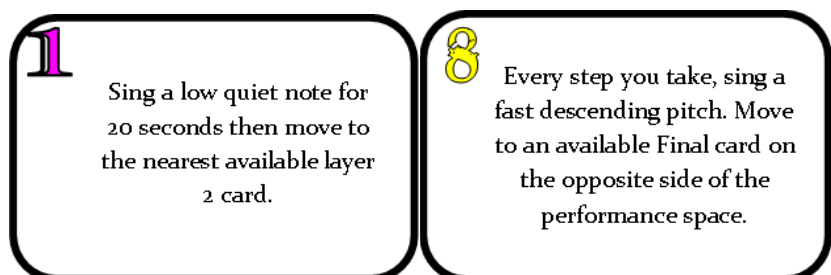
### 4.1 Graphic scores for students – *Musical Layers*

Since the development from using traditional notation I have begun exploring different ways of producing music as I wanted to move away from the focus of the composition being about the aural results; instead the compositional process became focused on the translation of an existing source into music and allowing the performer to explore the music.

Through this process the music could take one of two routes; either a transcription into conventional notation or it would transcribe to form a graphic score. The decision to explore the use of graphic scores has resulted in the transcription from an original source into a musical score can be a more literal one meaning the integrity of the original source isn't lost in the translation process. I also feel that the use of graphic scores gives the performer more freedom to interpret the score in their own way and express the music in different ways; this means that every performance of the piece will be different.

After working with music and the deaf and spending so much time thinking about how the graphic score could be used in that situation I decided to turn the tables round and create a piece that again revolved around physical movements and sound production using only the body, this time however I took the set 'page by page' structure away from the performance. The piece is modelled on a simple card game in which players follow instructions written on their card (fig.5).

Figure 5: *Natalie Davies. Musical Layers*



## **4.2 Musical Layers workshop**

I held 2 workshops with 8 students; ages ranging from 11-16 year olds, to trial the *Musical Layers* composition. I wanted the children to try and work through the instructions and the set up of the piece without my help to ensure that instructions I had written were clear. Through this introduction to the workshop the participants wrote down anything they were unsure about but tried to finish the set up process and work through the instructions together. The older members of the group took a lead in this section of the workshop as the 2 younger members of the group found the instructions much harder to follow. After they had set up how they had understood the instructions I answered any questions they had and corrected any of the set up they had got wrong, this was invaluable to me to see which bits of the instructions I had written needed to be clarified and, in some cases, simplified so they were easy to follow and understand. The next stage in the workshop was to have a first run of the piece and as we didn't have much time to complete the workshop the students didn't read through the cards first they went straight into the piece. We also simplified the piece by choosing to eliminate the additional 'wild cards' and the 'vocal, action and pitch' cards, this was in order to help the participants through the piece without stopping. During the first run through of the piece we managed to get about half way through before it became apparent that the participants were getting confused as they were moving through the layers at different rates so at this point I stopped the performers and asked them to re- start, but changed the instructions slightly so that between each layer they were to wait until each performer had the next layer card, this worked better than the first run as the performers were more aware of what the other performers were doing. As there were 8 students taking part in the workshop and the piece was written for a maximum of 8 performers it meant I had a chance to see all of the cards being performed, and only a few of the cards were hard for the students to understand on first reading.

## **4.3 The views of the participants**

At the start of the workshop I handed out feedback sheets to each participant with the following questions on: 1. Were there instructions for the piece that you didn't understand? 2. What did you enjoy/find easy about the workshop? 3. What did you dislike/find hard about the workshop? 4. If you could make some changes to the piece, what would they be? 5. If you could add any performance cards to the piece, what would they be? 6. Any other suggestions/comments...

It is important to note here that the students that took part in the workshop are primarily dancers, most of whom have private or group singing and acting classes once a week, however they have little or no experience reading sheet music and have never had any contact with contemporary music so this workshop was a completely new experience for each of them.

The common response throughout the feedback sheets was that the instructions for the layout of the piece were too confusing, the only way I felt I could overcome this problem was to include a diagram of the layout of the performance space to accompany the written instructions of the piece. I provided this diagram in the second workshop session and the students found this much easier to follow than just the written instructions alone.

The other prominent comment on the feedback sheet was that, despite taking a while to get into the swing of the piece, they really enjoyed it as they had never done anything like it before. This for me is the response I was hoping for especially as they didn't struggle with the concept of the piece despite the fact that they had never had any experience performing contemporary music before. This was also a positive step forward for me as I had designed the piece with children, students and even people with little or no experience with music in mind.

#### **4.4 My views and conclusions of the workshop**

I feel the workshop was a huge success and although I could have used adults with lots of musical experience to trial the piece to ensure it was a success, I wanted to involve people in the workshop with whom that the piece was intended for. Even though the students involved have had no prior experience with performing contemporary music, they are all confident performers and their experience with dance and singing helped immensely not only for the vocal aspects of the piece but also the movement aspects of the piece however I still remain optimistic that anyone could perform the piece though the vocal sounds, actions and movements may be kept very simple. There were only a few aspects of the piece that I felt didn't work and they were more to do with the performance instructions than the actual performance of the piece. The main issue I found was making sure that all performers were on the same layer cards at the same time. Even after stopping the first try through the piece and asking the performers to wait until everyone had got to the next layer, due to some of the instructions on the cards; such as 'wait until all other performers have finished then move', this was confusing to the players. After we had completed one full run through, the 5 older students in the group asked if they could have another go at performing the piece and I asked them to try signalling to the other players that they had the next card. They did this by



holding up their next layer card when they were ready; this ensured that all performers were on the same layer at the same time. For the majority of the performance this solution proved effective, though during this second attempt at the piece we included the wild cards into the stack of cards to see how the performers dealt with those.

#### **4.5 The performance and conclusions**

From the workshop I had learnt which parts of the composition worked well and which bits needed some alterations and improvements. The main things I changed between the workshop and the performance was the addition of a performance space layout chart and a few changes to the actual performance. The indication for performers to wait between layers is the main change I have made to the performance, the other change I have made is through the addition of another instruction due to an observation I made during the workshop, when the performers finished the instructions on the card they would suddenly stop and then try and find the next card. The instruction I added was to add continuity to the performance by instructing the players to continue the action on their card until they find the next layer card rather than rushing to the next card. The final change came from a comment made by a few of the participants that they struggled to find the next layer card, so to get around this I have changed the design on the card to hopefully make each of the layers clear to the performers. On the whole I was pleased with the results in the workshop and it certainly cleared up a few concerns I had about the performance of the piece, and especially the clarity of the written instructions. In the second workshop, the amendments seemed to help the performance so the session ran much more smoothly. The only structural concern came with the inclusion of the 'wild cards and the pitch/action and vocal cards'. The performers understood the concept of them though they found it hard to remember everything; this problem would have been solved with a few more practise runs of the piece. The biggest problem we faced in the second workshop was that due to there being fewer performers than the first workshop, not all of the cards were required so a few mistakes were made during the setting up process as certain cards must be put into play for the piece to work and they had been omitted. It is a note in the instructions I will make sure is very clear. One thing I had noticed in both the workshops and performances was that even though the performers did extremely well with the concept of the piece each event they performed was generally on the shortest time scale. All of the trials came out at around the 10 minute mark; it would be interesting to see how a different group would handle this, and how the piece would come across if each event was taken to the extreme. The workshops and performance can be viewed on the accompanying DVD.

## 5. Conclusion

From a teachers point of view graphic scores are certainly an aid to learning. They have a certain air of freedom not granted with conventional music notation that allows students to express themselves more easily and experiment with the capabilities of the piece and their instrument. From a student point of view graphic scores are accessible and can change and aid music education. From the workshops I held with the students at *Sutton school of performing arts*, the participants commented several times that they enjoyed the sessions so much as it was something they had never done before but would like to continue to experiment with. This shows that the students could relate to the score, and the successful results we achieved after only a few hours proved that the piece was accessible to students, even though the students had never had any interaction with graphic scores before. Graphic scores also provide a gateway into performing music for the majority are provided with written performance instructions, a performer does not need a great deal of technical understanding of music to be able to perform the piece. This was indeed proved during the workshop of *Musical Layers* in that the students are not musically trained however with very little prompting from me, managed to successfully complete several versions of the piece and more than that with each new attempt the experimented with different vocal sounds and movements to see how they could complete the instructions on the cards in different ways.

For a subject that is being rejected by schools due to funding the only way to keep the interest of students is to introduce new ways of teaching music. In schools and universities all around the world dry wipe boards are being replaced with smart boards or interactive white boards to encourage teaching with visual aids and yet the approach to teaching music has remained the same. Teaching graphic scores could be the first step to changing music education and thus changing the approach and even the attitude people will have towards music. This influence of visual aids in learning has led to the set up of several websites designed for teachers to gather different teaching resources, several of which have provided resources for teaching the basics of using graphic scores. Most of the resources provided are to be included in lesson plans where pitch is the main focus of the class; however, the other category this falls within is composition and sound making. Even though the teaching of graphic scores has yet to make it onto the schools syllabus for the lower key stages, the fact that teacher resources are providing teachers with the resources to use graphic scores within their lessons is a positive step to this becoming a common teaching practise. For deaf musicians finding new ways of not only teaching music but also exploring music is critical. The development of graphic scores and the exploration musicians have already

carried out shows the prospect graphic scores have for influencing music education and providing students, teachers, musicians and non-musicians alike with an access into music. Graphic scores are, to an extent, a more universal language than conventional notation as proved by the work of Steve Roden and myself in that the pieces can be performed by non-musicians and musicians alike with little or no training or explanation about the piece. This result shows that with the use of graphic scores, music becomes a more widely accessible to anyone interested in performing without the need for too much technical understanding of music. Thus the inclusion of graphic scores in education provides children with a new way of thinking about music.

## **Bibliography**

Audet, M, Music is Multisensory, *Hub logs*, Weblog [Online] N.D.

[www.maryeaudet.hubpages.com/hub/Music-Appreciation-for-Deaf-People](http://www.maryeaudet.hubpages.com/hub/Music-Appreciation-for-Deaf-People) (Accessed July 2010)

Beaumont, Anthony, *Busoni the Composer*, (Bloomington: Indiana University Press, 1985)

Bossy, M-A, Brothers, T and McEnroe, J.C. *Artists, writers, and musicians: an encyclopaedia of people who changed the world*, (The Oryx Press, 2001) p. 33

Brown, K, *Music use in Elementary and Middle school classrooms for the deaf*, The university of Tennessee (April, 1997)

Cage, J. *Silence: lectures and writings*, (Wesleyan University press, 1961)

Carlos Maria Solare, Helmut Oehring in Profile, New Series, No. 213 (Jul., 2000), pp. 2-4

Chorost, Michael, *Helping the Deaf hear Music*, Technology Review, (Feb, 2008)

Davies. N, Personal Correspondence, *An interview with Danny Lane*, (held December 2010)

Glennie, E, *Hearing Essay*, [http://www.evelyn.co.uk/hearing\\_essay.aspx](http://www.evelyn.co.uk/hearing_essay.aspx) (accessed July 2010)

Hash, P.M. *Teaching instrumental music to deaf and hard of hearing students*, Research and Issues in Music Education (Volume 1, No.1, September 2003)

Lane. D, and Whitaker. P, *Keys to music with deaf children – early years setting edition*, (Huddersfield, 2008)

Lane. D, and Whitaker. P, *Keys to music with deaf children – key stages 1 and 2*, (Huddersfield, 2008)

Learning Disabilities Association of America, *Successful strategies for teaching students with learning disabilities*, Web log [Online] N.D, [www.ldanatl.org/aboutld/teachers/understanding/strategies.asp](http://www.ldanatl.org/aboutld/teachers/understanding/strategies.asp) (Accessed December 2010)

Montgomery. R, *Teaching*, [www.ruthmontgomery.com](http://www.ruthmontgomery.com), (Accessed July 2010)

Music and the Deaf, [www.matd.org.uk](http://www.matd.org.uk) (Accessed December 2010)

Nagle, P, *Yamaha Tenori-on*, Sound on sound (Feb, 2008)

Nauck, G, *The music of Helmut Oehring*, New Journal for Music (Feb, 1998)

Omaha Channel, *Deaf Musicians feel what their audience hears*, February 16, 2004, [Online] [www.deaftoday.com/news/2004/02/deaf\\_musicians\\_2.html](http://www.deaftoday.com/news/2004/02/deaf_musicians_2.html)

Riad. M, *Experimenting with Musical Representation*, (November, 2010)

Rodden. S, *in between noise*, [www.inbetweennoise.com/indexold.html](http://www.inbetweennoise.com/indexold.html) (Accessed May 2011)

Rodden. S, of *frozen music and liquid architecture*, [www.inbetweennoise.com/rodendrawingsmay2008.html](http://www.inbetweennoise.com/rodendrawingsmay2008.html) (Accessed May 2011)

Rodden, S, *Pavilion scores*, [www.inbetweennoise.com/soundingarchitecture.html](http://www.inbetweennoise.com/soundingarchitecture.html) (Accessed June 2011)

Rumbelow, Helen, *Newspaper Article in The Times*, (January 27<sup>th</sup>, 2011)

Schalkwyk, Willem, *The assimilation of Baroque elements in Ferruccio Busoni's compositions as exemplified by the fantasia nach Bach and the Toccata*, (University of North Texas, 2009)

Schreiber, W, *Heavy metal, from the belly*, Helmut Oehring body sonorous dance opera (May, 1996)

Science Daily, *Brains of deaf people rewire to 'hear' music*, Web log [Online] Nov. 28, 2001, [www.sciencedaily.com/releases/2001/11/011128035455.htm](http://www.sciencedaily.com/releases/2001/11/011128035455.htm) (Accessed may 2011)

Spruce, Gary, *Teaching music in secondary schools: a reader*, Open University (London, 2002)

Store Van Music, <http://www.storevanmusic.com/News.html> (Accessed 2011)

The Drawing Center, *Iannis Xenakis*, April 8, 2010, [www.drawingcenter.org/exh\\_current.cfm?exh=662&do=vexh&type=l](http://www.drawingcenter.org/exh_current.cfm?exh=662&do=vexh&type=l), (Accessed 2011)

Turner. S, *John Cage's Practical Utopias*, Musical Times, Web log [Online] March 1, 2002, [www.newmusicbox.org/articles/Losing-Control-Indeterminacy-and-Improvisation-in-Music-Since-1950/2](http://www.newmusicbox.org/articles/Losing-Control-Indeterminacy-and-Improvisation-in-Music-Since-1950/2) (Accessed December 2010)

Veelimited, [www.vee.ltd.uk/](http://www.vee.ltd.uk/) (Accessed 2010)

Wang, Dennis Ping-Cheng, *The quantifying analysis of effectiveness of music learning through the Dalcroze musical method*, US-China Education Review , Sep. 2008, Volume 5, No.9 [Online]  
[www.umir.umac.mo/jspui/bitstream/123456789/14882/1/4088\\_1\\_ucedu20080904.pdf](http://www.umir.umac.mo/jspui/bitstream/123456789/14882/1/4088_1_ucedu20080904.pdf)

Wax, Edith, *Dalcroze dimientions*, (New York: Mostly Movement, 1979)

Winebrenner, S, *Teaching kids with learning difficulties in the regular classroom*, (Free spirit publishers, 2006)

Xenakis. I, <http://www.iannis-xenakis.org/xen/news/info.html> (Accessed 2011)

Yamaha, [www.tenori-on.yamaha-europe.com/uk/](http://www.tenori-on.yamaha-europe.com/uk/), (Accessed 2011)

## **Videography**

Bailey. B, *Dandelion Mind*, [Online] [www.youtube.com/watch?v=qQtjDgTtTtc](http://www.youtube.com/watch?v=qQtjDgTtTtc) (Accessed July 2010)

Music and the Deaf, *Music and the Deaf: teacher training – Sing up*, [Online] [www.youtube.com/watch?v=2A9j4t8gY-4](http://www.youtube.com/watch?v=2A9j4t8gY-4) (Accessed June 2010)

*Touch the Sound: A sound journey with Evelyne Glyennie*, Directed by Thomas Riedelsheimer, Skyline Productions [Video: DVD]

Store Van Music, *24 piece iPad Performance*, [Online] [www.storevanmusic.com/Media.html](http://www.storevanmusic.com/Media.html) (Accessed January 2011)

## **Discography**

Cage, J, (2001) *Music for prepared Piano*, [CD] Naxos American.

Cage, J, (1995) *The 25-year retrospective concert of the music of John Cage*, [CD] Vergo Germany

Cardew, C, (2009), *Treatise*, [CD] Mode

Feldman, M, (2005) *Composing by numbers – The graphic scores, 1950-67*, [CD] Mode

Feldman, M, (1993), *Piano and String Quartet*, [CD] Nonesuch

Glennie, E, (1998) *Her greatest hits*, [CD] RCA

Oehring, H, (1996) *Das D'Amato system*, [CD] Boosey and Hawkes

Xenakis, I. (2002) *Metastasis*, [CD] Chant Du Monde

## **Appendix i – Interviews**

### **Interview – Danny Lane**

**1. How old were you when you first started playing piano?**

11 years old. I also learned the cornet when I was 8.

**2. What first got you interested in music?**

My primary school teacher encouraged all her pupils to play brass instruments. She ran a brass band in the school and rehearsed every lunch time! My brother played the cornet so it was natural for me to take an interest.

**3. How/when did you first get involved with Music and the Deaf?**

I met Paul when I was 15 and studying GCSE music. He supported me at that time and invited me to go on work experience with him for a week. We lost contact for a while but since then I always wanted to work at MatD. Eight years ago, I met Paul again when I was studying PGCE music at the University of Huddersfield. At that point he invited me to do some freelance work with deaf children. I loved it so much that within a year, I began working here full time.

**4. How do you feel when you interact with music?**

Music has the ability to move me in many ways i.e it can make me feel nostalgic, happy and even sad! I find music easy to relate to and I cannot imagine life without it! Another wonderful thing about music is that it brings people together. I have met so many people through music making. I don't think I would be as confident as I am if I wasn't a musician.

**5. When you were learning to play, what was the easiest way for you to learn a new piece of music?**

Reading a score is was the first thing I did before playing a new piece of music – I would take note of the theme, key signature, tempo and dynamics etc. I would read the score like a novel and imagine what the music sounds like in my head. I've always been confident with sight reading so I would play a few bars (with both hands) then go back again and play it differently if I had to. I would then carry on with the rest of the rest of the piece in that way.

**6. As a composer and a performer, how do you feel you best relate and understand music?**

It depends on my mood. If I have a bad day I play something furious like a "Bartok" or "Shostakovich" and hammer away on my poor piano! If I'm down then I go for something delicate like Debussy, Satie or Chopin. If I'm happy then I'll play anything! My hearing loss can affect how I hear music so it does sometimes impact on what I like to play or compose. Normally I wouldn't like to compose for a flute or violin (or even listen to it) because the sound is too "thin" and shrill to the point that I cannot hear it.

**7. What is your compositional process? (Do you sit at the piano and play, or do you hear the music in your head first and then notate it?)**

I tend to have ideas in my head which I notate then try them out on the piano. If I try out ideas on the piano first then I spend too long doing this and end up being too fussy and spend too long composing. I prefer to trust my head than my hearing! Progressively



**8. Do you feel the improvised style of composition such as those you have demonstrated with hi-notes, is the most effective way of understanding music?**

Definitely yes, because the whole group is creating music that suits them i.e what they can hear and relate to. They do not need to read music because what they play is "theirs" and they know exactly what is happening. They perform better when they don't read music because they watch each other and are aware of what they are doing together as a group - which is important when the players have a hearing loss.

**9. What do you find challenging about being a deaf musician?**

There is nothing challenging about being a musician because I love music. Even if a piece of music is difficult to play then it makes me even more fascinated about it. Being a DEAF musician is a different matter, people are usually amazed, baffled, shocked or confused that deaf people can be musicians so I do find that annoying at times. There is a lack of awareness that deaf people can and do enjoy music. I had an extremely hard time applying to colleges and universities, because music teachers were not willing to take me on. They kept questioning me on how I could take aural tests and how I could perform with others so I had to educate them on how to teach me. Luckily, I did manage to find some excellent teachers. My parents were always supportive of me so that was important.

**10. How important do you feel it is for deaf children to be involved with music?**

Knowing what music can do for me, I think it is very important that all deaf young people have the opportunity. I have worked with deaf children with limited music opportunities and have seen how much they benefit from Music and the Deaf's projects. It's amazing how they can develop through music making.

**11. How has music helped you?**

It has helped me in many ways (more than I can explain!) It is a form of expression for me, it is something that I can relate to, it gives me confidence in performing with others and in front of people, it allows me to be creative, it gives me confidence in meeting people. I could go on all day making this list!

**12. From an audience point of view what would your perfect concert consist of?**

It has to be live music. I need to be near the stage so that I can see and hear as much as I can to understand it. I think I would prefer to see a piano because I know it well and I can see what the hands are doing on the keyboard and also what the player is showing emotionally. I love to hear a female voice which is much easier to hear compared to a male voice...Mozart's Queen of the Night from the Magic Flute is amazing! I love dramatic music that changes constantly i.e sudden changes of sections, dynamics, wide intervals between pitches. etc) I love Ravel's use of orchestration and any 20<sup>th</sup> Century Russian composers i.e Prokofiev and again Shostakovich. Subtitles help to make concerts accessible especially if people are talking or singing on the stage. Some theatres provide these by using a screen with subtitles typed in live. I also think it would help me if I had a music score in advance so that I have a better understanding of what is being played during performances. It would be my responsibility to prepare myself in this way but if it was new piece of music being performed then I would ask the director where I could get hold of a score.

**13. Does the use of visual aids (movement/projections) enhance a performance for you?**

Projections of pictures give me a clue on what the music is about so it does help. Movement can do just as much but I don't have much experience of this in musical

performances and therefore don't relate to movement as much. I am quite cautious of what visual aids do for me because they are created by people who have their own views of what music is like to them. I don't want to have other people's views imposed on me because everyone perceives music differently.

**14. How do you think a deaf audience would best relate to a concert or performance?**

Deaf people expect different things (because they have different access needs) I think it would be best if you ask a number of deaf people this question. I think generally it depends on their musical experiences and how much they appreciate music. Many deaf people have limited musical knowledge and therefore don't go to musical concerts which is a shame. Usually, a sign language interpreter on stage makes a big difference and deaf people more likely to go to concert if an interpreter is provided. Having deaf people sit near the stage helps them to see what is happening. I think it is important that theatres and concert organisers should develop deaf audiences by communicating with them about their needs and do what they can to meet them. Another issue is how theatres reach deaf people. A lot of deaf people don't bother to read theatre / concert programmes because of their negative experiences of accessing concerts. Perhaps an advert in a deaf club or a school where deaf people go to will make a difference. If a poster says that there will be a "Sign Language Interpreter" at the concert then it will attract more deaf people. Paul is more of an expert than I am on theatre access because he runs a pool of sign language interpreters for theatres across the UK and provides theatre access training. I'm sure he would be able to help you more on this.

## Appendix ii

### **Interview – James Holt (student at music and the deaf)**

**1. How old were you when you first started playing piano?**

*6 Years.*

**2. What first got you interested in music?**

*We had an old piano at my grandparent's house and we I went over I always used to play on it (obviously it wouldn't be anything tuneful because I was only about three) so they said we could have it at my house so I could have lessons on it. Now I have an Upright Yamaha.*

**3. How/when did you first get involved with Music and the Deaf?**

*I first got involved in MatD about 2 years ago. I think my mum heard about Danny Lane and Paul Whittaker and contacted them just about what they did. And they asked me to come down. I've been there ever since.*

**4. How do you feel when you interact with music?**

*It all depends on what I play. When I play Chopin I try and let all my emotions pour out onto the piano and play the piece like it would be my last time. My favourite quote about Chopin by Oscar Wilde goes: "After playing Chopin, I feel as if I had been weeping over sins that I had never committed, and mourning over tragedies that were not my own." I think this sums up quite nicely what I feel about music (or his music in particular).*

**5. When you were learning to play, what was the easiest way for you to learn a new piece of music?**

*Slow practice. Lots of slow practice at first whether it's a slow or a fast piece. Also, I would try and listen to as many different recordings of that piece as possible. Then you can get a grasp of how the piece goes, where the performer slows down, speeds up etc... and how you can incorporate this into your playing.*

**6. As a composer and a performer, how do you feel you best relate and understand music?**

*Music, to me, is the most abstract of all arts. It can be a whirlwind of anger and passion but also have the delicacy and simplicity to provoke the deepest of emotions. I just try and take each song/piece as a ride. Let it take me somewhere first then, once I have perfected the piece, I can perform and show people what a lovely time I've had with it.*

**7. What is your compositional process? (Do you sit at the piano and play, or do you hear the music in your head first and then notate it?)**

*There is no real method I have to composing. I do a lot of song writing, and a few lyrics could either come to me late at night or when I'm sat with my guitar just playing the chord sequence. It's quite spontaneous. I find that I'm always constantly writing parts of songs in my mind. Like maybe the main theme in one of my orchestral pieces or a riff. I think the real trick comes when I sit at Sibelius, the piano or my guitar and I have to remember the best 'motifs' I thought up earlier. I could be brushing my teeth, for example, and the tune comes to me. But I have to remember it then write it all down later. But again, there's no real method to it. It just comes.*

**8. What do you find challenging about being a deaf musician?**

*It's not really things that my deafness stops me from doing. It's more people judging me before they've heard me play, and basing their judgements on my deafness. I want to be seen for my ability rather than my disability.*

**9. How important do you feel it is for deaf people to be involved with music?**

*Very. Music has a very peculiar way of creating bonds. It helps bring whole communities together; it opens people up to new possibilities, new dreams. It shows people that they can do very unique things and helps people overcome difficulties together.*

**10. How has music helped you?**

*It's helped me in many ways. It can make me happy when I'm sad. It has made me more passionate and poetic; I feel that I've become someone I never could've been if I hadn't played music. There hasn't been a time in my life, I can remember, without playing an instrument. It's all I've ever known. I've gained friends I don't think I'll ever forget and it's made me an overall confident person.*

**11. From an audience point of view what would your perfect concert consist of?**

*I would love to see the Beatles live (this is only a fantasy). But of course, Tchaikovsky has to be up there as one of my favourite composers for orchestra. When you look at his scores, it looks so simple but the effect it creates is astonishing. I love his 'March Slave' and the 'Nutcracker Suite'. Also, Elgar's 'Nimrod' and 'Salut D'Amour'. And, of course, Chopin's 'Nocturne in Eb' and his 'Fantasie Impromptu'. One last one, 'Liebestraum' by Franz Liszt.*

**12. Does the use of visual aids (movement/projections) enhance a performance for you?**

*I was actually at a concert about a month ago at the Sounthbank centre in London. A piece was commissioned for a small ensemble (I was the Cellist) to play there as part of the 'Share Your Talent' festival. There were lots of different areas taking part and lots of different performances e.g. dancing, fashion shows, music... We were the Manchester performers and along with our piece was a big screen behind us displaying an animation to go along with the piece, which had been created by Bolton University. I think it adds something extra to music. I personally prefer movement or dance to projections. Music itself provokes movement, whether it's a classical piece (Waltzes for example) or a Rock/Pop song. So in that way it can make the music much more interesting visually.*

**13. How do you think a deaf audience would best relate to a concert or performance?**

*I think they'll relate to a concert just as much as anyone else would. If the music is good music, and the performances are good, they'll like it. As long as they can hear it clearly there shouldn't be any issues.*