CMPCP
AHRC Research Centre for Musical Performance as Creative Practice

King's College London

# Shaping music in performance: report for questionnaire participants (Revised August 2012)

Dr Helen Prior (née Daynes)
CMPCP Post-doctoral Research Fellow
Kings College London

## Overview of the report and its findings

We are really grateful to the participants in our questionnaire, and to those who passed it on to others. We have made headway with the fairly time-consuming task of analysing and making sense of the data, and we are able to report some basic findings, and to point you in the direction of some of our freely available publications, should these be of interest to you.

This brief report begins with an outline of the kinds of people who took part in the questionnaire. We had over 200 participants, with a range of ages and musical experience. Many of our participants were of professional standard as musicians. We found an incredibly positive response to the idea of shape being used in relation to music: participants reported using the term when practising, in rehearsals, and when teaching; and when playing music from a wide range of genres. We also found that the term was used in relation to several different ideas, from musical structure to musical expression, emotion, and tension; and in relation to specific musical features such as phrasing, the melodic line, and dynamics. The flexible nature of the term was also confirmed when we looked at the words participants said meant the same thing as musical shape. Overall, then, shape has been found to be highly versatile and multi-faceted, and this has prompted further studies.

The rest of this report outlines these findings in greater detail, describes a few of our future plans for the project, and gives information about where you can go if you want to discover more about our findings from the questionnaire. Thank you again for taking part in the study, and I hope you find this report enjoyable and interesting to read.

## Who completed the questionnaire?

231 (105 male; 126 female) participants completed the questionnaire. Participants' ages were widely distributed: a graph of participants' reported age groups is shown in Figure 1. The most common (or modal) age group was 25–34.

A wide range of musicians completed the questionnaire. 35 were singers. The most common instrument family reported was keyboard instruments (including piano, harpsichord and electronic keyboard). The numbers of other instrumentalists generally reflected the composition of instruments in an orchestra, with larger numbers of string players and smaller number of brass players (see Figure 2). Less common instruments reported included harp, carillon, and accordion.

**Figure 1. Graph to show participants' reported age groups**

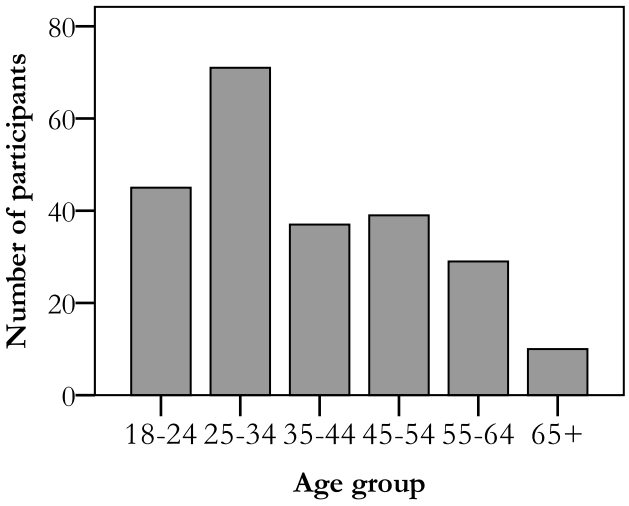
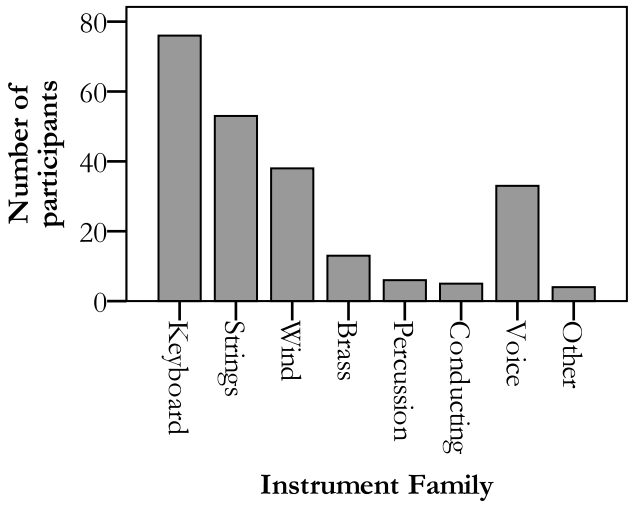



**Figure 2. Graph to show families of participants' main instruments**




Participants in the questionnaire were generally very experienced players. Only 7.8 per cent of participants had less than 10 years of experience playing their main instrument, and 58 percent of participants had more than 20 years of experience. More than 50 per cent of participants claimed to be of professional standard, and 37.2 per cent of participants described themselves as a professional performer with a substantial part of their income coming from performing activities. 32.9 per cent of participants described themselves as teachers (see Table 1).

**Table 1. Participants' musical status (participants could tick as many categories as they liked)**

| | Number of Participants | Percentage |
|---|---|---|
| Student | 48 | 20.8 |
| An amateur, intermediate-level performer (none, or a very low proportion of your income comes from performing activities; you are a capable player, but not of professional standards) | 33 | 14.3 |
| An amateur, professional-standard performer (none, or a very low proportion of your income comes from performing activities; you are a highly capable player of professional standards) | 63 | 27.3 |
| A professional performer (a substantial part of your income comes from performing activities) | 86 | 37.2 |
| An instrumental or peripatetic teacher (teaching mostly beginner or intermediate-level pupils, e.g. of up to ABRSM Grade 8 standard) | 44 | 19.0 |
| An instrumental or peripatetic teacher (teaching mostly advanced pupils, e.g. of above ABRSM Grade 8 standard) | 32 | 13.9 |

Participants reported that they played music from a very wide range of genres, including orchestral music, chamber music, opera, lieder, musicals, jazz, pop, rock, and world music, to name a few. When analysed further, these data could be divided into participants who performed only classical music, both classical and non-classical music, and only non-classical music. 85.7 per cent of respondents ticked categories associated with classical music; 37.2 per cent ticked categories associated with non-classical music; and 27.3 per cent of participants ticked boxes associated with both classical and non-classical music. 58.4 per cent of participants played classical music exclusively; 10 per cent of participants played non-classical music exclusively.

Although 53.9 per cent of questionnaire completers originated from the UK, and 76.7 per cent from English-speaking countries, the questionnaire was completed by participants who originated from 31 different countries in all parts of the world. 43.2 per cent of participants were fluent in a language other than English.

Overall, the questionnaire was completed by a diverse sample of musicians with considerable musical experience.

## In what situations did people think or talk about music and shape?

We asked you whether you think about shape when thinking about how to perform music, and whether you talk about shape when thinking about how to perform music. Nearly 90 per cent of participants claimed to think about shape when thinking about music; over 80 per cent claimed to think about shape when talking with others about how to perform music. We then asked you to describe an occasion in which this occurred, and many participants provided wonderfully full accounts of their experiences of using shape in relation to music, which we are still exploring.

First, though, we asked you to provide the date of the experience you were describing. Participants typically provided a fairly recent date (within days or weeks of completing the questionnaire), but occasionally, participants provided dates from the more distant past (in one case, 40 years!), suggesting that sometimes, the use of shape can be a highly memorable experience. Secondly, we also asked you to name the piece of music you were playing on the date you provided. Participants discussed music by a wide range of composers, including (the most frequent first) Bach, Brahms, Mozart, Chopin, Schumann, Handel and Beethoven, as well as less commonly-performed composers, including Charpentier, Schetky, Schoenberg, Clarke, Nielsen, and many living composers. In addition, jazz standards (e.g. Herbie Hancock's Chameleon) and pop and rock songs (e.g. Bohemian Rhapsody) were cited, as well as unspecified improvisations (classical and jazz). In summary, shape appeared to be used in a diverse range of genres and styles of performance, and this idea is supported by the 23 participants who volunteered that they used shape when thinking or talking about all music. Participants' descriptions showed that they used the idea of musical shape in four main situations: private practice, rehearsal, teaching, and performance. Participants discussed using the idea of shape when improvising, and when working with others, suggesting that shape-related ideas needed agreement within members of an ensemble working together. A few also reported using the idea when composing or arranging.

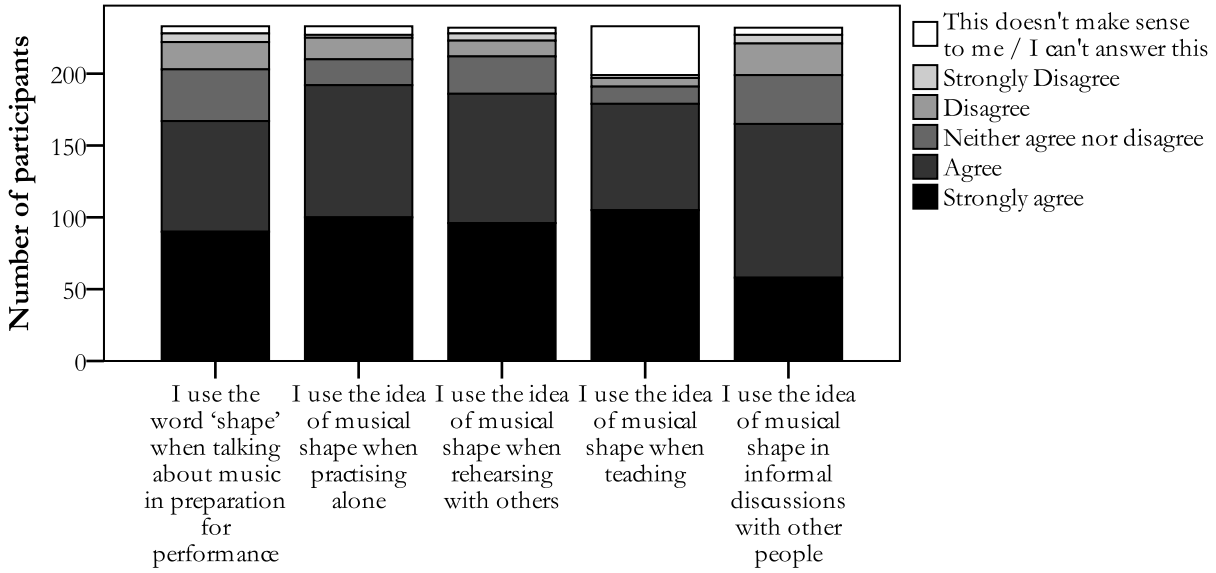
Initial analyses of participants' descriptions of the use of shape in relation to music have generated four main ideas, or themes, in the data. Some participants seemed to view musical shape as synonymous with musical structure, and discussed the shape of a whole piece of music or gig set. Other participants discussed specific expressive ideas, such as changes in dynamics, as shape-related ideas. Some participants combined these two themes and described shaping music as realizing the musical structure in an expressive way. And participants also discussed using the idea of shape as an underlying narrative involving climactic moments, direction, and energy, to help them express the music. These ideas are still being explored, together with the responses to some of the other open-ended questions we asked.

## How did people respond to the 50 agreement statements?

We asked you to rate your agreement with 50 statements about music and shape. Thank you for completing them all! We will provide a brief overview of what these have told us.

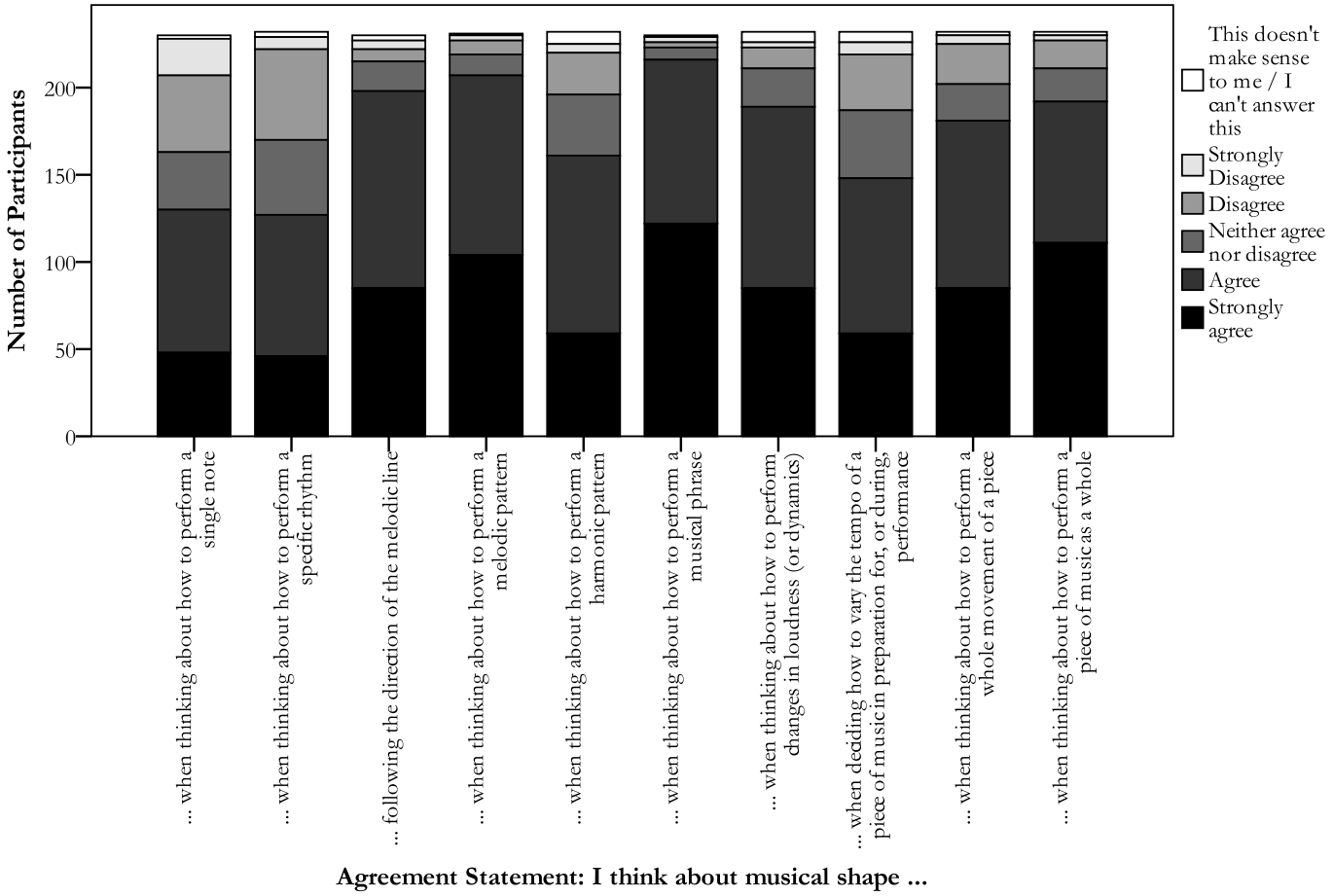
First, the majority of participants agreed or strongly agreed that they use the word 'shape' when talking about music in preparation for performance. Most participants (84.5%) agreed or strongly agreed that it felt natural or instinctive to use the idea of shape. Participants reported using the idea of shape when practising alone, when rehearsing with others, when teaching, and in informal discussions with others. Fewer participants 'strongly agreed' with the statement concerning informal discussions than the other statements, which may suggest that the term is rooted more in practice than in discussion about music. The situation-based agreement levels are shown in Figure 3.

**Figure 3. Responses to agreement statements concerning when shape is used by participants**



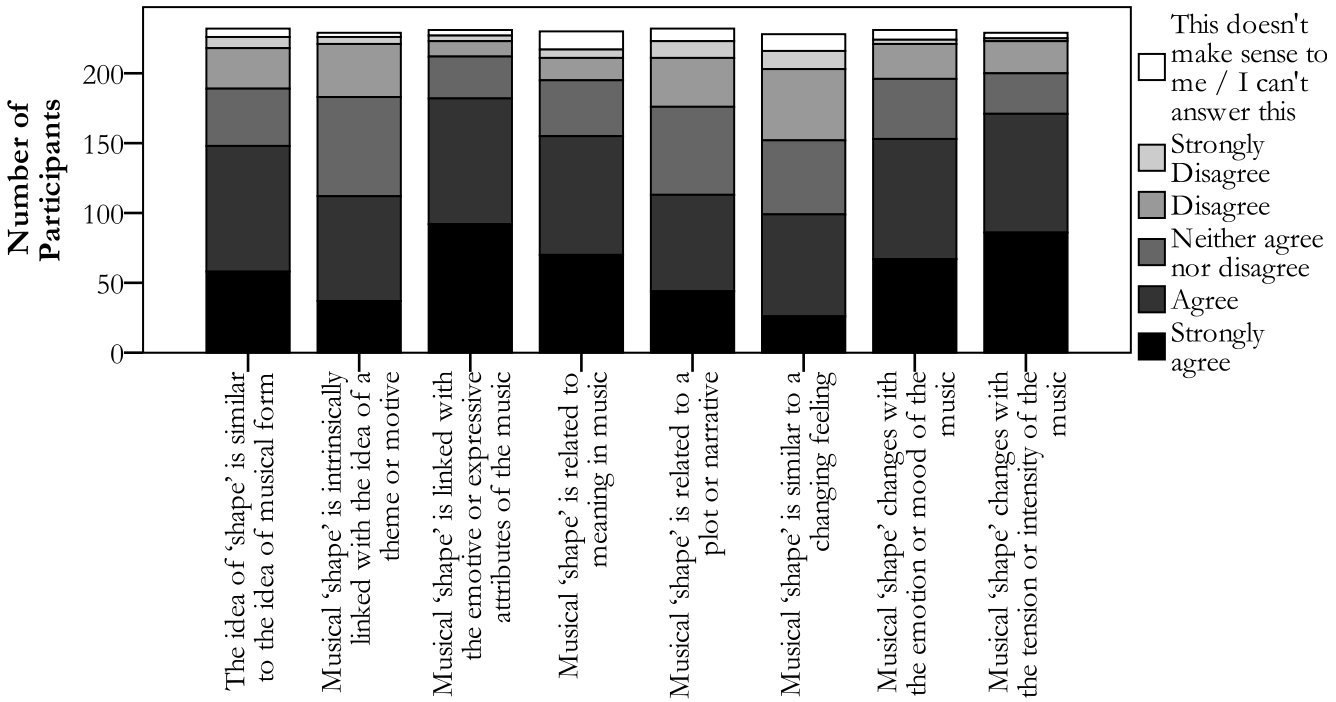

A sizeable percentage (61.8%) of participants agreed or strongly agreed that musical shape is related to the musical score, and 74.7 per cent of participants agreed or strongly agreed that the shape of a piece reflects the musical structure. We asked participants about their use of shape in relation to a range of specific musical features (see Figure 4). Statements prompting the highest levels of agreement were those suggesting the use of shape in relation to a musical phrase, a melodic pattern or the direction of the melodic line, and a piece of music as a whole. Those prompting the lowest levels of agreement were the use of shape in relation to a specific rhythm, a single note, tempo variation, and a harmonic pattern. The idea of shaping a single note was relatively uncommon in pianists and percussionists, and relatively common in string, wind, and brass players, and singers, suggesting that shaping of the music involves some kind of change over time. This corresponds with the fairly high levels of agreement with the statement suggesting that musical shape changes over the time course of a piece of music (57.5% of participants agreed or strongly agreed).

**Figure 4. For which musical features is shape used?**



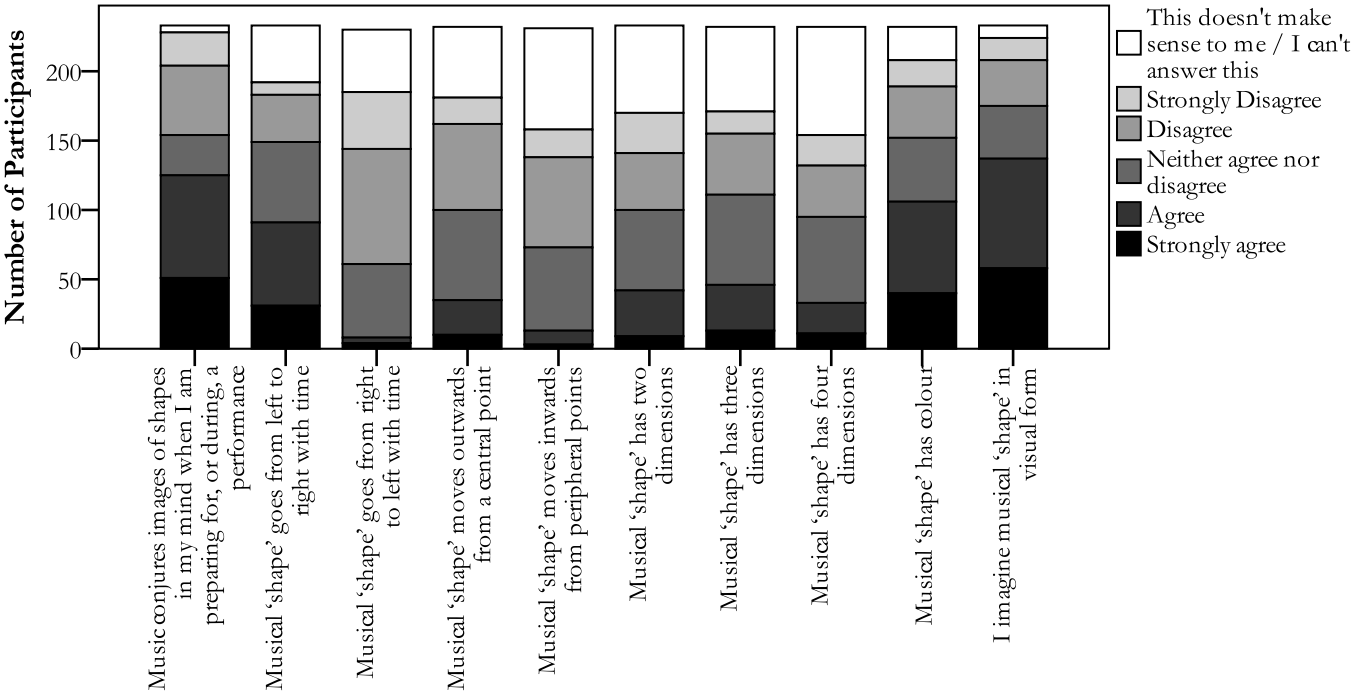

Several of the statements related musical shape to bodily movement or gesture. 57.5 per cent of participants agreed or strongly agreed with the statement suggesting that when thinking about musical shape, they had the urge to move their body, or part of their body. However, only 37.8 per cent of participants agreed or strongly agreed that musical shape reflects or relates to the movements required for the performer to make a sound, suggesting that musical shape is more than just a functional device. More important for participants were musical gestures (55.4% agreed or strongly agreed) and bodily gestures (48.9% agreed or strongly agreed). Statements concerning the nature of musical shape may help to make sense of this. Although many participants felt that shape is intrinsic in the music (54.9 % agreed or strongly agreed), a slightly larger percentage (57.9 %) agreed or strongly agreed that the musical shape is something a performer adds to the music. So what exactly is musical shape, and what does it relate to? Agreement statements relating to some potentially related features are shown in Figure 5. Some performers link the idea of musical shape to musical form; fewer link it to the idea of theme or motive. But more performers linked musical shape to the emotive or expressive attributes of the music, to the changing tension or intensity of the music, to meaning in music, and to the emotion or mood of the music. Some participants also linked it with the idea of plot or narrative, and a few to a changing feeling. Some of the differences between these statements are relatively slight, and yet some of the responses are quite different. Clearly, shape is a complicated phenomenon, and we will be exploring its meaning further.

**Figure 5. What is musical shape related to?**




Some of the more contentious statements were related to the idea of musical shape being a visual or image-based phenomenon. For over half of our participants, shape is imagined in visual form, and music conjures images of shapes in their minds. Musical shape was seen to have colour by some participants, but there was little agreement on the number of dimensions involved in musical shape. Musical shape was more commonly visualised as moving from left to right, than from right to left, with time (perhaps reflecting our reading of music or Western language); and was slightly more likely to move outwards from a central point than inwards. Responses to these agreement scales are shown in Figure 6.

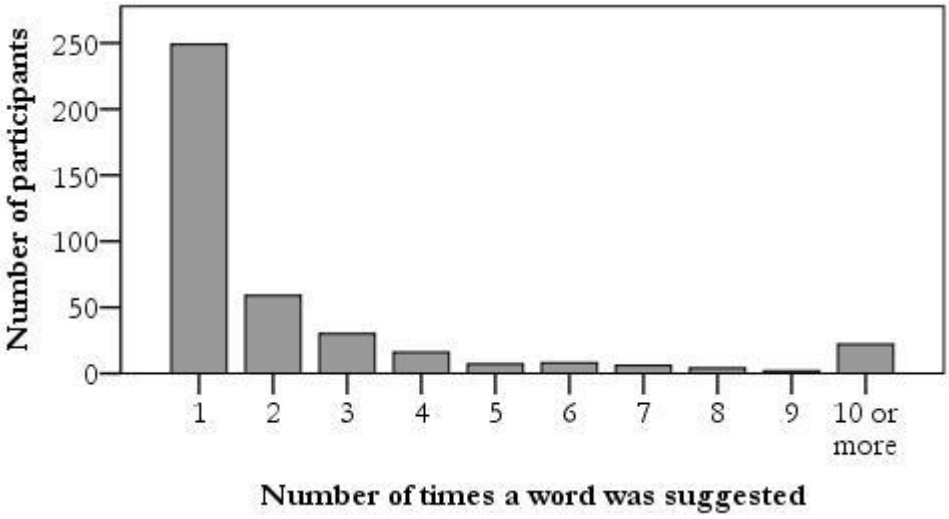
**Figure 6. Is musical shape related to visual imagery?**



## What other words mean the same thing as shape in relation to music?

We asked you to nominate words that mean the same thing as 'shape' in relation to music. 189 participants provided a total of 404 words that they thought referred to similar musical phenomena. Interestingly, 249 of the shape-equivalent terms (more than 60 per cent) were only suggested by one participant; 59 were suggested twice; and 30 three times (see Figure 7). That is, more than 80 per cent of the words provided were nominated by three or fewer participants. So 'shape' appears to be remarkably flexible in application among performers.

**Figure 7. Numbers of words suggested by number of participants**




Such flexibility is also revealed by the most commonly suggested equivalents (nominated by 10 or more participants), shown in Table 2. These vary widely, with meanings as diverse as phrasing, form, dynamics, emotion, and rhythm; and there are patterns in the nominations of words. We ran some statistical tests (Chi square tests[1]) to see whether these patterns were significant (or in other words, how likely it was that these patterns might be seen in a similar group of musicians who did not complete the questionnaire).

First, we looked at the effect of the instrument played by the musicians. 'Form' was the only term distributed differently according to instrument played: keyboard and woodwind players were significantly more likely to see 'form' as related to shape, whereas string players, brass players, percussionists, conductors, and singers, were less likely ($X^2 = 11.6$, df = 4, $p < 0.05$).

Next, we looked at whether gender and age might have an effect. Phrase or phrasing was more likely to be nominated by females ($X^2 = 5.72$, df = 1, $p < 0.05$); gesture more by males and significantly less than expected by females ($X^2 = 6.50$, df = 1, $p < 0.05$). Crude age comparisons were made by dividing the sample into those aged below 35 and 35 or more. Those under 35 nominated phrase or phrasing ($X^2 = 5.37$, df = 1, $p < 0.05$), direction ($X^2 = 5.32$, df = 1, $p < 0.05$) and colour ($X^2 = 12.6$, df = 1, $p < 0.001$) more commonly than those 35 and over; but the older age group were more likely to nominate form ($X^2 = 7.18$, df = 1, $p < 0.01$) and feeling ($X^2 = 6.40$, df = 1, $p < 0.05$) which might suggest age-related trends linked to education and practice.

[1] For those unfamiliar with the Chi squared test, a sample can be divided into two or more groups and the actual responses of those groups compared with the expected responses that would occur if each type of response was divided equally between the groups. The reported 'p' value reflects the likelihood that a similar pattern would be seen in a similar group of musicians who did not complete the questionnaire. A 'p' value of 0.05 suggests that there is a 95% chance that this pattern would occur again. The smaller the 'p' value, the better!

**Table 2. Words most commonly nominated to mean 'shape'**

| | Word nominated | Number of participants | Commonly co-listed words | |
|---|---|---|---|---|
| | | | Word | $X^2$ value (n = 189, df = 1)[2] |
| 1 | Phrase or phrasing (incl. phrase structure) | 66 | Melody or melodic | 4.21* |
| 2 | Form | 51 | Structure | 15.3*** |
| | | | Gesture | 4.46* |
| | | | Pattern | 9.01†** |
| 3 | Structure (not phrase structure – see phrase) | 47 | Form | 15.3*** |
| | | | Direction | 4.15* |
| 4 | Direction | 40 | Structure | 4.15* |
| | | | Colour | 5.34†* |
| 5 | Contour (not melodic or dynamic) | 38 | Line | 15.4*** |
| | | | Release | 4.67†* |
| 6 | Dynamics | 28 | Melody or melodic | 12.1†** |
| | | | Rhythm | 26.8†*** |
| 7 | Line | 27 | Contour | 15.4*** |
| 8 | Melody or melodic | 24 | Phrase or phrasing | 4.21* |
| | | | Dynamics | 12.1†** |
| | | | Rhythm | 21.3†*** |
| 9 | Emotion | 20 | Colour | 13.4†** |
| 10 | Gesture | 19 | Form | 4.46* |
| 11 | Intensity | 17 | Colour | 5.47†* |
| | | | Movement | 7.08†* |
| | | | Rhythm | 12.4†** |
| 12 | Tension (including tension and release, tension and relaxation) | 18 | Release | 89.8†*** |
| 13 | Expression or expressive or expressiveness | 17 | - | |
| 14 | Feeling | 16 | - | |
| 15 | Colour | 16 | Direction | 5.34†* |
| | | | Emotion | 13.4†** |
| | | | Intensity | 5.47†* |
| | | | Meaning | 5.33†* |
| 16 | Pattern | 15 | Form | 9.01†** |
| 17 | Movement (not related to form) | 14 | Intensity | 7.08†* |
| | | | Meaning | 6.72†* |
| 18 | Flow (excluding 'ebb and flow') | 14 | Gesture | 5.73†* |
| 19 | Release | 12 | Contour | 4.67†* |
| | | | Tension | 89.8†*** |
| 20 | Meaning | 11 | Movement | 6.72†* |
| 21 | Curve | 10 | - | |
| 22 | Rhythm or rhythmic | 10 | Dynamic | 26.8†*** |
| | | | Melody or melodic | 21.3†*** |
| | | | Intensity | 12.4†** |

[2] * = Significant at the 0.05 level, ** = Significant at the 0.01 level, *** = Significant at the 0.001 level. † = Expected cell counts were less than five, and therefore the more conservative 2-sided Fisher's Exact significance levels were used

When we look at Table 2, we can see that many pairs of words were associated with one another. For instance, participants listing 'phrase' or 'phrasing' were more likely to list 'melody' or 'melodic'. Conversely, no participants who nominated 'phrase' or 'phrasing' also nominated 'meaning', a result considerably lower than predicted ($X^2 = 6.41$, df = 1, $p < 0.01$ with Fisher's exact test).

We can see a tendency for more technical terms to be nominated together. For example, many participants who nominated form also nominated structure and pattern; and the words associated with 'dynamics' were also quite technically specific, including melody or melodic and rhythm. Similarly, 'melody' was frequently nominated with phrase or phrasing, dynamics and rhythm.

More intuitive concepts also seemed to be nominated together. Colour, for instance, tended to be listed with direction, emotion, intensity and meaning. Intensity and meaning were often listed with movement; and those who nominated contour were more likely than others also to nominate line.

Finally, some words seemed to span both groups. Direction, for instance, was listed with structure and colour; intensity with colour, movement and rhythm. Arguably, structure and rhythm are technicalities, whereas colour and movement are metaphors. Three terms, expression, feeling and curve, seemed to be nominated more independently, though the data do not suggest why. It's possible that these patterns might reflect underlying biases in thinking about music. Some musicians might prefer to think about form, structure, pattern, phrase, melody and rhythm, while others might prefer to think about flow, movement, meaning, intensity, or colour. In other words, some musicians might find certain conceptualisations of music more useful than others in helping them make persuasive performances.

## Summary of findings

The idea of musical shape is used by a wide range of musicians, in practical contexts. It is used in relation to a variety of musical styles and genres, and in relation to a range of musical features. Participants discussed shape as musical structure, but also in relation to expressive or emotional aspects of the music, and in relation to their realization of the musical structure in an expressive way. Certain musical features, such as phrasing, melodic features, and the piece of music as a whole, were seen as being more related to musical shape than others, such as a specific rhythm. Musical shape was related to slightly more abstract concepts such as emotion and tension in the music, too. Some participants visualize musical shape; for others, it is a more abstract phenomenon, or metaphor. Overall, then, shape is complex and multi-faceted, but these findings have enabled us to understand a little more about musicians' use of shape, and their understanding of the term.

## Potential implications of findings

The apparent near-ubiquity of musical shape among our sample of performing musicians is both interesting and potentially important for our research. One obvious future lead is to investigate whether or not other types of musicians (e.g. composers) and non-musicians link music and shape in a similar way to performing musicians. A second avenue is to consider the extent to which 'shape' acts as a metaphor for music. Previous research has shown that novel or unfamiliar metaphors are easily understood. If the link between music and shape is metaphorical, even those who have not previously thought or heard of the idea of musical shape should be able to understand music in terms of shape.

Metaphor can be understood as a verbal representation of cross-domain mapping (or connections between two apparently separate modes of understanding, and sometimes, areas of the brain). Shape, for instance, can be understood visually and kinaesthetically (through touch), and humans can identify equivalent shapes in each

mode. If shape is also a metaphor used in relation to music, then perhaps this cross-domain mapping is also extended to aural perception, and/or the production of music (using movement). The link between musical shape and movement is particularly interesting, with some researchers suggesting that when we hear music, we imagine how it feels to produce the sound we perceive, and by understanding what it feels like to make that sound we better understand what it may mean. Some members of the SMIP team are investigating listeners' representations of their understanding of the shape of the music through a drawing tablet and through gesture.

Our findings concerning musical shape as a visual phenomenon also link in with existing research. As you may know, some people experience synaesthesia, in which they perceive sounds in more than one domain. Synaesthetes may 'see' coloured letters of the alphabet as people talk to them, or if they have musical synaesthesia, they may see images in response to musical sound. Although synaesthetes' experiences are highly individual, recent research has shown some general trends, and has even suggested that non-synaesthetes prefer representations of synaesthetes' visualisations of music to those produced by non-synaesthetes. Synaesthesia is a particularly interesting example of cross-domain mapping, and we hope to explore this a little more.

Finally, it seems clear that some musicians are using the idea of shape as a tool to aid their performances. If tools such as shape are documented more fully in projects such as these, then there is the potential for younger performers to know more about the still mysterious art of musical performance.

## How have these findings helped the research project?

We have had opportunities to present some of these findings at conferences, invited talks, and study days. Participants in the questionnaire might be interested in a poster that was created for a conference on Entrainment and Meaning in Music, in December 2010, which can be found at http://www.cmpcp.ac.uk/Creating%20meaning%20in%20musical%20performance.pdf. This poster discusses the ways in which the idea of shape or shaping seems to aid the creation of meaning in music, in a fairly accessible way.

We have also looked to some extent at the distribution of certain ways of thinking about music and shape amongst different groups of musicians, and a preliminary version of this paper is available online at http://www.cmpcp.ac.uk/Prior_Links.pdf.

The questionnaire data have also influenced other aspects of the project, and we are hoping to use them in two book chapters related to musical shape. The questionnaire has also informed an interview study, which is currently being analysed.

Thank you again for participating in the questionnaire on music and shape. As you can tell, your experience is proving very valuable to us, and we remain fascinated by the things we have learned. Some of you very kindly agreed to be contacted about future studies, and we are gradually doing this and learning even more from you, as more of our studies get underway.