

Links between music and shape: style-specific; language-specific; or universal?

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Introduction

Performing musicians frequently use metaphorical words or concepts to aid their interpretation of music and to describe their interpretation for others, be they fellow performers or students (Juslin, Friberg, & Schoonderwaldt, 2004; Persson, 2001; Woody, 2002). Essentially, metaphor involves two distinct ideas, one of which is used to aid the understanding of the other (Cameron, 2010). Metaphor is complex, however: it is expressed most frequently in linguistic form, but is also embodied in gestures (Cienki, 2010; Cox, 2006); and those linguistic and embodied expressions of metaphor may reflect aspects of cognitive processing, an idea pioneered by Lakoff and Johnson (Lakoff & Johnson, 1980) but refined and developed by others (Deignan, 2010; Ritchie, 2010). One example of a metaphor used by musical performers is the use of the word or concept of ‘shape’—or, commonly, ‘shaping’—in relation to music (for a well-documented, but unquestioned, example of the use of the term, see Persson, 1994). The word is used so commonly and instinctively that some musicians may feel surprise at it being considered metaphorical; however, its primary definition as a noun refers to ‘External form or contour; that quality of a material object (or geometrical figure) which depends on constant relations of position and proportionate distance among all the points composing its outline or its external surface; a particular variety of this quality.’ (“shape, n./1,” 2010). The reference here to a ‘material object’ suggests that the application of ‘shape’ as a noun to a musical sound is indeed metaphorical, borrowed from the realm of visual or tactile domains. Other definitions refer to excellence of form, or beauty; visible form or appearance; or an orderly arrangement: again, although these terms can be used in relation to sound, their primary use is visual. The flexibility of the word shape probably stems, not only from its varied and long etymology, but also its grammatical flexibility: it can be a noun, as seen above; a verb (to create, form or fashion, see “shape, v.,” 2010); or an adjective (“shaped, adj.,” 2010). Indeed, it is used in all these ways in relation to music.

Recent searches for the use of the term or idea of shape in relation to music have uncovered a wealth of evidence from written, audio and video sources that has revealed the unprompted use of the term by musicologists, critics, choreographers, composers, and performers; so far, mostly within the twentieth and twenty-first centuries (Daynes, 2010a, 2010b). A summative qualitative content analysis (Hsieh & Shannon, 2005) of these comments showed shape being used with a remarkably wide range of meanings: to relate music to human movement or gesture; as a synonym for ‘form’ or ‘structure’ (particularly as a noun); and, as a noun, verb and adjective, in relation to musical expression. A relatively unusual example of the first theme is given by a composer describing his compositional technique, and suggesting that the

most important part of a musical shape is the physical gesture required to make the sound (Cassidy, 2004). In a typical example of shape being used as form or structure, Anthony Marwood is quoted in an interview as saying, 'I didn't have any influence over the structure or shape of the piece, but I know that he had my playing in mind when he wrote it.' (Anon., 2008, p. 15). In relation to musical expression, a relatively typical comment is 'The orchestral playing is not just good; it is really outstanding: the conductor knows how to give us flexible and shapely phrases as well as tightly rhythmic music.' (T.H., 1954, p. 59). The term is therefore used in varied and fairly complex ways, and seemingly from the comments, as a usual part of musicians' vocabularies. It is understood by old and young musicians instantly, and without difficulty.¹

Despite these varied meanings, and the apparent prevalence of the term, it has not yet been explored specifically and systematically in relation to music, or, in particular, in relation to the meaning and importance it holds for current performing musicians. The term is clearly one used by musicians, but it is unclear exactly how commonly, or why, it is used. There is, of course, a possibility that the tendency to make this link may be evident in the majority of the general population, either globally or in Western culture, or only among musicians. Or, it might be common in one particular musical style (e.g. Western classical music) and not another; or in the speakers of some languages and not others. This paper uses data from an online questionnaire study to try to establish the extent of the use of the term among performing musicians, and to investigate some of the similarities and differences between the ways in which different groups of participants use the idea of 'shape' or 'shaping' in music. This has straightforward practical implications for future research within the area: once we understand more about who uses the idea, and when they use it, we shall be in a better position to investigate their experiences in greater detail and to uncover the reasons why shape is seemingly such a useful and adaptable concept for performing musicians.

Aims

The initial aims of the questionnaire were to establish some of the meanings and contexts in which the idea of musical shape is used by musical performers. This article will focus on the prevalence of the use of the term within different groups of performing musicians, and the similarities and differences between some of the ways in which it is used in those groups.

¹ See, for example, a clip of a 13 year-old, 'Ariel', responding to comments by Jonathan Biss in a masterclass (<http://www.youtube.com/watch?v=i31dUk5f854>; 5m 50s to 6m 40s).

Method

Materials

A mixed-response questionnaire was designed and piloted in one-to-one interviews with selected performers. The question wording and order was carefully determined to minimise the effects of leading questions. Following piloting and alterations, the final questionnaire was hosted online using 'Survey Monkey'. It was launched in January 2010, and was live for about six months.

Following the collection of demographic material and information about participants' musical background, initial questions simply asked participants whether they used shape when thinking about how to perform music (yes/no) and whether they used shape when talking with others about how to perform music (yes/no). If they responded positively, they were asked to provide detailed examples of each instance. This was followed by an open-ended question, which asked participants to describe any links between music and shape. Participants were then asked to rate their agreement with a series of 50 statements devised from the documentary evidence and modified through piloting. Participants were asked for details of languages they spoke and of words that were similar to 'shape' in a musical context in those languages. Finally, participants were asked about their listening experiences; for any other relevant information; and about their willingness to participate in future studies.

Participants

Participants were recruited using a snowballing technique. Personal and professional contacts were emailed with details of the questionnaire, and asked to forward it to colleagues. Some educational institutions (mostly conservatoires) were also targeted. Once initial results had been gathered, specific instrumentalists or performers from within a particular genre were targeted, such as brass bands, organists, instrumentalists who played only non-classical music, and DJs.

370 (164 male; 186 female; 20 undisclosed gender) participants began; and 231 (105 male; 126 female) participants completed the questionnaire. Some of those participants who dropped out returned to do the questionnaire on another occasion. Bearing this, and the length of the questionnaire, in mind, a completion rate of 62.4 per cent was pleasing. There was a reasonable representation of all age groups, with the least common age-group being 65 and over, and the modal age group 25 to 34 years of age. This skew perhaps reflects some of the populations present at the targeted institutions (e.g. music colleges), but may also reflect some bias towards the use of computers or the internet in the younger age groups. It is interesting, perhaps, that a slightly larger proportion of these younger age groups dropped out of the questionnaire.

Table 1 shows the frequency distribution of participants' main instrument. With the exception of keyboard players, which were well-represented, the distribution generally reflected the composition of instrumentalists in an orchestral setting. It should be noted, however, that the category of 'Strings' also

included guitarists; and that there were players of unusual instruments, such as the carillon and the accordion.

Table 1. Frequency distribution of participant’s main instrument

Instrument Group	Questionnaire completers	
	Frequency	%
Keyboard	75	32.3
Strings	55	23.7
Wind	37	15.9
Brass	12	5.2
Percussion	6	2.6
Conducting	6	2.6
Voice	35	15.1
Other	4	1.7
Undisclosed	2	0.9

Several questions addressed participants’ musical experience: firstly, participants were asked to report on their number of years’ experience of playing their main instrument, the frequencies of which are shown in Table 2; secondly, participants were asked to provide details of their musical status, as shown in Table 3. More than fifty per cent of the sample who completed the questionnaire had more than twenty years’ experience playing their main instrument; over a fifth of participants had more than forty years’ experience. Most participants (64.5 per cent) claimed to be professional or of professional standards. Approximately one fifth of participants were students; a similar number were teachers of beginners; and nearly one seventh of participants were teachers of advanced students.

Table 2. Frequency distribution of participants' years of experience

Years of experience	Questionnaire completers	
	Frequency	%
≤ 10	18	7.8
≥ 11 ≤ 20	79	34.2
≥ 21 ≤ 30	52	22.5
≥ 31 ≤ 40	31	13.4
≥ 40	51	22.1

Table 3. Frequency distribution of participants' performing status

Performing status	Completers	
	F	%
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

Overall, these data indicate that the questionnaire was completed by a diverse sample of musicians with a reasonably balanced distribution of gender, age, and experience. The bias in participants' first instrument is at least partly reflective of the bias in the general population. Though this can also be said of the bias present between some of the categories of music played (e.g. conductors will always be less prevalent than other orchestral musicians), the emphasis towards musicians who perform classical music is evident, and needs to be considered carefully in later analyses and conclusions.

In the following section, three main pools of evidence will be addressed: firstly, the evidence to suggest that music and shape may be used by all musicians, regardless of their cultural or musical background; secondly, the evidence to suggest some style-specific attributes of music and shape; and thirdly, the evidence suggesting some language-specific attributes of music and shape.

Results

Evidence for the idea of music and shape being used by all musicians

Within this section, the results of various questions will be used to assess the extent to which all musicians report using ‘shape’ in relation to music; and the common ways in which it is used. The first main questions asked participants whether they thought about shape when thinking about how to perform music; and whether they thought about shape when talking with others about how to perform music. Table 4 shows starters’ and completers’ responses to these questions. Nearly ninety per cent of participants who completed the questionnaire claimed to think about shape when thinking about music; over eighty per cent claimed to think about shape when talking with others about how to perform music. Although one might expect those who did not think about shape to be more likely to drop out of the questionnaire, this did not seem to be borne out in the statistics: similar percentages of participants who started and completed the questionnaire responded ‘No’ to each of the statements concerning thinking or talking about shape. Many of those who dropped out of the questionnaire had already done so before this question.

Table 4. Responses to questions regarding thinking about shape

	Do you ever think about shape when thinking about how to perform music?			Do you ever think about shape when talking with others about how to perform music?		
	Yes	No	No response	Yes	No	No response
Questionnaire starters	247 (66.8%)	40 (10.8%)	83 (22.4%)	207 (55.9%)	52 (14.1%)	111 (30%)
Questionnaire completers	208 (89.7%)	23 (9.9%)	1 (0.4%)	191 (82.3%)	32 (13.8%)	9 (3.9%)

In fact, only 13 participants who completed the questionnaire responded negatively to both of these questions. When these participants’ data from other questions were examined, there were indications that 12 of these 13 participants did actually use or understand the term ‘shape’ in relation to music, be it in relation to the musical structure, or to phrasing or expressive features. The one participant who did not

was a Greek amateur drummer of professional standards, who had been playing jazz and rock metal for between 11 and 20 years and currently lived in Denmark (Danish was nominated as a second language). He had not studied music at a tertiary level. It is difficult to say why this participant was the only participant to respond negatively throughout.

Cross-tabulations and Chi square tests were performed on completers' responses to this question in relation to age, gender, instrument family, and number of years of experience, and whether they were fluent in a foreign language, with no significant results. None of these variables appears to influence the extent to which musicians use the idea of shape when thinking or talking about music. Musical status cross-tabulations were also undertaken. None of these were significant, except for those involving talking about shape and teaching. The proportion of students who said that they thought about shape when talking with others about how to perform music was disproportionately low ($\chi^2 = 7.968$, $df = 1$, $p = 0.005$).² Conversely, the number of peripatetic teachers of advanced pupils (mostly ABRSM Grade 8 or above) who said that they thought about shape when talking with others about how to perform music was disproportionately high, to an extent that approached significance ($\chi^2 = 3.857$, $df = 1$, $p = 0.05$). There is no real way of knowing whether the teachers who responded to the survey were teachers of the students of the survey; however, this curious finding might suggest a lack of awareness on the part of students of the use of the tool of shape by advanced peripatetic teachers.

One other significant result was that a greater number of exclusively non-classical players ($n = 23$) reported not thinking about shape when thinking about how to perform music ($\chi^2 = 6.806$, $df = 2$, $p = 0.033$). The small number of participants in this group means that this result should be treated with caution; the effect of the genre of music played by participants will be explored further in the following section.

In a crude numerical measure concerning musical shape, it appears that the vast majority of participants use the idea, a finding which certainly warrants further attention being given to the consideration that the tendency to do so may be highly prevalent, at least among musicians. Further interest, however, may be derived from the qualitative data provided in the more detailed, open-ended responses to the later parts of these two questions that may shed light on the similarity between different participants' uses of music and shape.

Participants were asked for details of a specific occasion when they used the idea of shape in relation to music, whether they were thinking or talking about shape. These details included the date, the piece, and the way in which shape was used. The dates provided were examined to identify any trends that might give some idea of the frequency or memorability of the use of shape in relation to music. 70.7 per cent of participants provided a date for thinking about shape in relation to music that was within 90 days of

² Throughout this article, exact significance values are reported (with the exception of those less than 0.001), as advocated by Wright (2003) for the clearer reporting of results.

completing the questionnaire; 57.8 per cent provided a date for talking about shape within the same period. Occasionally, though, 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.³ Despite the apparent disparity between the responses to the two questions, a paired samples t-test revealed no significant difference between the number of days since completing the questionnaire when thinking or talking about shape ($t = 0.855$, $df = 143$, $p = 0.394$). These findings suggest not only that shape is used by musicians, but also that it is used on a fairly frequent basis, and is memorable.

To identify whether any genres of music prompted the use of shape more commonly than others, participants were asked to name the piece of music they were playing on the date they had provided. Participants cited music by a wide range of composers, including (in order of prevalence) 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.

The open-ended, descriptive responses of participants' experiences of using shape in relation to music were explored in more depth with the use of NVivo data analysis software (QSR International Pty Ltd. Version 8, 2008). Words and phrases were coded thematically, in a data-led manner, according to conventional qualitative content analysis (Hsieh & Shannon, 2005). Four main themes emerged, the first of which was the idea of shape as musical structure. For some participants, musical shape was an exact synonym for musical structure; for others, the music *had* shape, and different pieces might be described with shape-related terms (e.g. 'spiky') or with song-related terms (e.g. 'lyrical'). The second theme involved shape being seen as a tool for expressive performance: shape was something the performer *gave to* the music to create a feeling of movement or gesture and to create meaning in the music (Prior, 2010); and participants described techniques for doing so which included phrasing, tempo deviation, dynamic variation, and articulation. Participants also combined these first two themes to create a third theme involving the expressive realisation of a musical structure. Participants were aware of the balance between the shape designated by the composer and the shape they gave to the music. They described the reflection of the contour of a melody with the dynamic variation applied; or the influence of their knowledge of the large-scale form (shape) of a piece on the way in which certain parts of the piece were played. Sometimes the idea of shape was expanded to include the fourth theme, the expressive portrayal of a narrative structure over the course of a piece of music: participants discussed peaks, troughs, suspense, and climactic moments (Agawu, 1984; Gerrig, 1993; Lavy, 2001).⁴ Additionally, it became clear that shape was

³ This is a trend also seen in reports of emotional experiences to music (e.g. Gabrielsson, 2002).

used in a range of situations, as an individual or in a group; and in realizing a score or in improvisation of various kinds. These themes were very interesting indeed, and will be discussed more fully elsewhere (Prior, in preparation). For the purposes of this article, the summary above is intended to inform the analyses of other questions that gave greater scope for musicians' opinions to be quantified.

Participants were asked to rate their agreement with fifty statements related to music and shape. Responses to some of these statements indicated high levels of agreement within all participants, whereas others prompted slightly varying responses from different groups. Responses to some statements will be examined here; responses to other statements will be considered in subsequent sections. Initially, all these statements were subjected to factor analysis; however, the data were unsuitable (the KMO level was poor), and this was abandoned in favour of more straightforward analyses. All the statements were subjected to Mann-Whitney tests based on two different classifications, which will be discussed shortly. However, responses to some statements were very consistent among all participants, and these will be explored here.

Some statements related to the situations in which the idea of musical shape was used. 82.4 per cent of participants agreed or strongly agreed that they used the idea of musical shape when practising alone; 80.2 per cent when rehearsing with others; 76.8 per cent when teaching; 71.7 per cent when talking about music in preparation for performance; and 71.7 per cent in informal discussions with other people. The idea of musical shape is clearly used in a range of musical situations.

Two statements directly addressed the idea of the use of shape being a natural one in relation to music. 84.5 per cent of participants either agreed or strongly agreed that 'Thinking about music in terms of 'shape' feels natural or instinctive when preparing for, or during, a performance'; 95.3 per cent strongly disagreed or disagreed that 'Thinking about music in terms of 'shape' feels unnatural when preparing for, or during, a performance'. The use of shape is clearly natural to many participants, but there was slightly less agreement with the statement, 'Music makes me think of shape when I am preparing for, or during, a performance (67.8%)'. This statement moved the agency of the use of shape away from the performer and towards the music. Some participants might feel that they use shape deliberately and consciously, rather than automatically, and this may be reflected in the slightly lower level of agreement here.

Statements relating various musical features to musical shape also elicited consistent results from participants, and are shown in Table 5. Firstly, more than fifty percent of participants agreed or strongly agreed that each different musical component, ranging in scale from a single note to a whole piece of music, was linked to shape, or that they thought about shape when considering how to perform each component. This finding reinforces the idea that shape is multi-scalar and multi-faceted, and that it may be a tool for expressive performance, an idea supported by the high level of agreement for the statement 'Musical shape is linked with emotive or expressive attributes of the music' (78.8%). Secondly, and more interestingly, the level of agreement varied between the different components. Those with the lowest

levels of agreement were a specific rhythm (54.7%) and a single note (56.6%), followed by changes in tempo (63.8%) and harmonic features (68.0%) and patterns (69.4%). Those with the highest level of agreement were the musical phrase (93.9%); a melodic pattern (89.6%); the direction of the melodic line (86.1%); the piece of music as a whole (82.7%) and changes in dynamics (81.4%).

Table 5. Levels of agreement with statements relating musical features to musical shape

	Strongly agree or agree
I think about shape when thinking about how to perform a single note	56.6%
I think about shape when thinking about how to perform a musical phrase	93.9%
I use the idea of musical shape following the direction of the melodic line when preparing for, or during, performance	<u>86.1%</u>
I think about shape when thinking about how to perform a melodic pattern	<u>89.6%</u>
I think about shape when thinking about how to perform a harmonic pattern	69.4%
Musical shape changes with harmonic features of the music	68.0%
I think about shape when thinking about how to perform a specific rhythm	54.7%
I think about shape when thinking about how to perform a whole movement of a piece	78.0%
I think about shape when thinking about how to perform a piece of music as a whole	<u>82.7%</u>
I think about shape when thinking about how to perform changes in loudness (or dynamics)	<u>81.4%</u>
I think about shape when deciding how to vary the tempo of a piece of music in preparation for, or during, a performance	63.8%
Musical shape is linked with emotive or expressive attributes of the music	78.8%

Musical shape is clearly multi-faceted and flexible, and appears to be used by the vast majority of participants in many musical situations and in relation to a range of musical features. From this point on, differences between the ways in which different groups of participants use this idea will be explored, firstly in relation to the musical style they perform, and secondly in relation to their cultural background.

Music and shape as style-specific?

Participants were asked about the types of music they performed, and could tick as many of the 29 categories of music as they felt appropriate. Chamber and orchestral music were ticked most frequently, but other music was also reported as being played, including non-classical music such as jazz, rock, pop, and crossover. Some of these categories were collapsed (albeit rather crudely) to form groups of ‘classical’ (orchestral, choral, chamber, and opera) and ‘non-classical’ (music theatre, jazz, popular, world, folk, and crossover) music.⁵ 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.

⁵ Although these categories will always be imperfect, as attributes of different genres of music overlap, it is sometimes helpful to gain an overall picture of the data in this way.

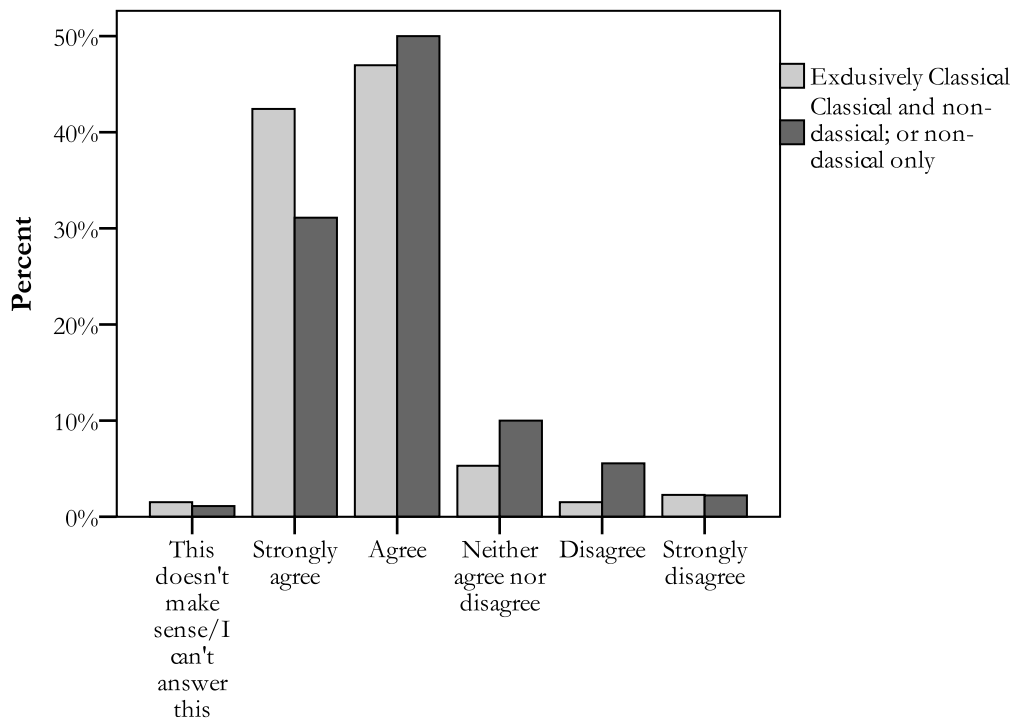
In the following comparisons of responses to the fifty agreement statements, participants were grouped into those who played classical music exclusively, and those who played non-classical music (either exclusively or as well as classical music). These categories provided groups that were relatively even in size. Mann-Whitney tests were carried out on responses, according to these categories.⁶

Firstly, the type of music played appeared to be related to the situations in which the idea of shape was used. Exclusively classical musicians were more likely than those who played non-classical music to agree or strongly agree that they used the idea of shape when rehearsing with others ($U(228) = 5006.0$, $Z = -2.009$, $p = 0.045$): 85 per cent of exclusively classical musicians agreed or strongly agreed with this statement, in comparison with 75 per cent of other musicians; and only 3 per cent of exclusively classical musicians disagreed or strongly disagreed, in comparison with 13 per cent of other musicians. Exclusively classical musicians were also more likely to agree or strongly agree that they use the idea of shape in informal discussions with other people ($U(227) = 4486.5$, $Z = -3.024$, $p = 0.002$): 80 per cent of exclusively classical musicians agreed or strongly agreed with this statement, in contrast to only 60 per cent of other musicians; and 8 per cent disagreed or strongly disagreed, in contrast to 18 per cent of other musicians.

Secondly, one musical parameter varied consistently between these groups: exclusively classical musicians tended to be more likely to strongly agree, and less likely to disagree, that they use the idea of musical shape following the direction of the melodic line when preparing for, or during performance ($U(227) = 4890.5$, $Z = -2.136$, $p = 0.033$) (see Figure 1). This is slightly surprising, especially when considering the high level of agreement with this statement reported in the previous section.

⁶ For these tests, one category of responses (I don't understand/I cannot answer this) was eliminated, as it did not fit with the ordinal scale of the other categories. However, for completeness, the graphs presented show the responses to all categories.

Figure 1. Distribution of responses to ‘I use the idea of musical shape following the direction of the melodic line when preparing for performance’ according to genre of music performed



Responses to other questions may provide insight into this pattern of responses, though these open-ended responses will be explored more fully elsewhere (Prior, in preparation). In response to the question asking participants to nominate an alternative (synonymous) word to ‘shape’, ‘pitch’ or ‘melody’ were mentioned by 35 participants; two of those were participants who played exclusively non-classical music (slightly less than the expected number, when considering the lower number of participants in this category). Responses to the open-ended question concerning the links between music and shape may provide further insight. When discussing the links between music and shape, pitch and melody were discussed by participants who played all types of music; however, these features were not mentioned exclusively in relation to music and shape. Rather, participants (non-classical players, classical players, and players of both genres) mentioned pitch or melody in conjunction with other musical parameters, including timbre, dynamics, phrasing, ‘Where a phrase is going, and why?’ (Participant 172; exclusively classical), articulation, rhythm, harmony, repetition of material, large scale structure, and ‘the intensity of a piece as it builds to a climax and then falls away’ (Participant 337; exclusively non-classical). For all these participants, melody was one of many facets of music that contributed to the links between music and shape; perhaps the significant statistical finding indicated that melodic shape plays slightly less of a role for players who play both classical and non-classical music than for players who play exclusively classical music. Alternatively, it may be that the terminology within the question predisposed some non-classical

musicians to respond less favourably than others. Had the question asked about ‘tunes’ or perhaps ‘riffs’, rather than, or as well as, ‘melodic line’, the responses may have been different.

Thirdly, exclusively classical musicians were more likely to agree that musical ‘shape’ goes from left to right with time ($U(192) = 3444.0$, $Z = -2.114$, $p = 0.034$): 31.9 per cent of exclusively classical musicians agreed with this statement, in contrast to only 18.9 per cent of other musicians; though it should be noted that the percentage of each type of musician who strongly agreed was exactly the same (13.3%). This difference might, perhaps, be partly due to the predominance of score-based performance in classical music. Some participants did mention aspects of the musical score in their responses to some of the open-ended questions.

There is therefore some evidence to suggest some differences in the ways in which the idea of shape, or shaping music, is used by classical and non-classical musicians, though both groups do use the idea in multi-faceted ways. The following section will investigate the ways in which musicians with different cultural backgrounds responded to similar questions.

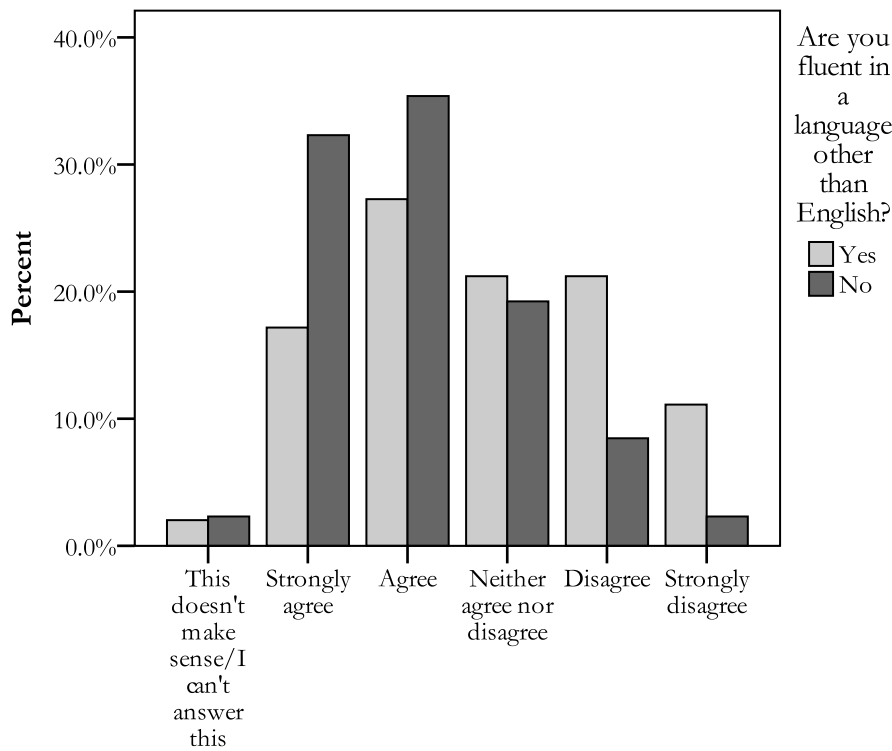
Music and shape as language- or culture- specific?

The data were amenable to two main divisions in relation to the question of language- or culture-specificity. The first of these involved the data being separated into respondents born in the UK ($n = 125$) and those born elsewhere ($n = 108$). 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. Two of these agreement scales showed significant differences between the two groups. Firstly, participants born in the UK were less likely than those born elsewhere to strongly agree with the statement ‘I think about “shape”-related metaphors, analogies or ideas when preparing for, or during a performance’ ($U(227) = 5416.0$, $Z = -2.105$, $p = 0.035$); the modal response to this statement by UK-born participants was ‘agree’; whereas the modal response for those born elsewhere was ‘strongly agree’. Additionally, UK-born participants were slightly more likely to agree that ‘Musical “shape” goes from left to right with time’ ($U(192) = 3737.5$, $Z = -2.331$, $p = 0.02$).

The second division involved dividing those who only spoke English from those who were fluent in a second language. 43.2 per cent of participants were fluent in a language other than English. Four statements were significantly different between these two groups of participants. Purely English-speakers were more likely to agree or strongly agree that shape is something a performer adds to the music ($U(227) = 4227.5$, $Z = -4.157$, $p < 0.001$): 67.7 per cent of exclusive English-speakers agreed or strongly agreed with this statement, compared to only 44.5 per cent of speakers of other languages. They were also more likely to agree or strongly agree that it is linked with the emotive or expressive attributes of the music ($U(227) = 5233.0$, $Z = -1.973$, $p = 0.049$): 83.6 per cent of exclusive English-speakers agreed or strongly agreed with this, in comparison with 72.7 per cent of other participants. More details of the ideas

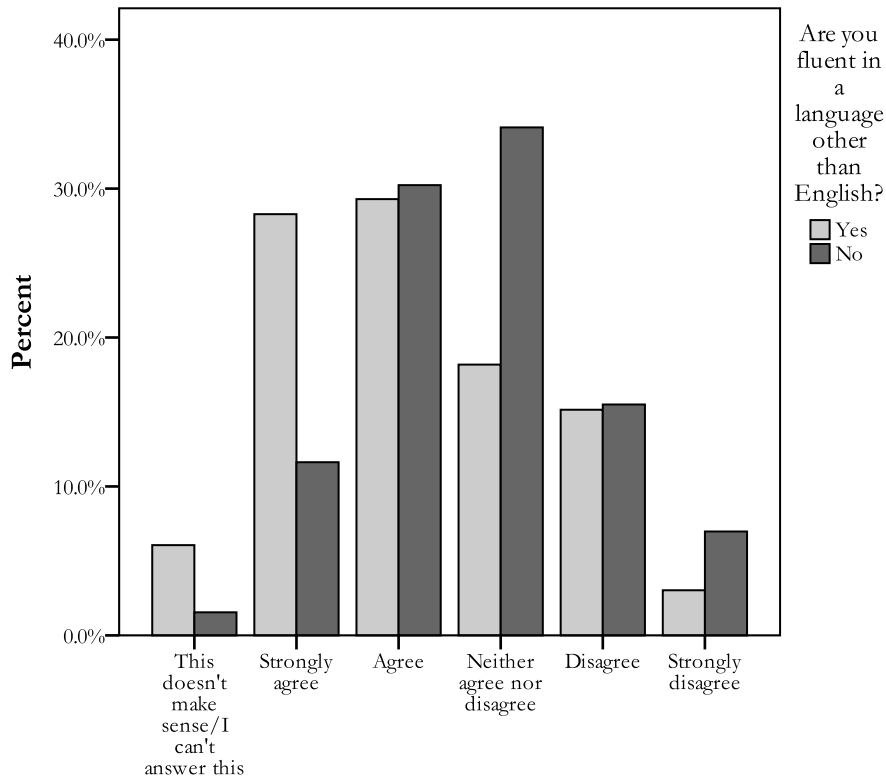
underlying these statements may be found within comments from qualitative responses to the question concerning participants' thoughts on the links between music and shape, which will be explored thoroughly elsewhere (Prior, in preparation). Briefly, participants discussed shapeless music sounding 'flat' and unemotional, and shaped music reflecting musicality and having expression; as well as shape being a means of creating a special effect for an audience. As mentioned above, participants also discussed their use of expressive devices to achieve their desired performed shape. It is interesting that speakers of different languages should vary, if only weakly, in their agreement with these ideas, and in particular, that exclusive-English speakers should agree more strongly than others with these ideas relating to performers' shaping and expression.

Figure 2. Distribution of responses to 'Musical shape is something a performer adds to the music' according to languages spoken



However, exclusive English-speakers were less likely than others to strongly agree that musical shape is related to plot or narrative ($U(223) = 4566.0, Z = -2.968, p = 0.003$) (see Figure 3). This is unexpected, considering the prevalence of narrative-related ideas discussed earlier in the qualitative findings. It may be that exclusive English-speakers do use narrative ideas less than others; that they use these ideas less consciously than others; or that the knowledge of other languages widens the perceived definition of 'plot or narrative'.

Figure 3. Distribution of responses to ‘Musical shape is related to plot or narrative’, according to languages spoken



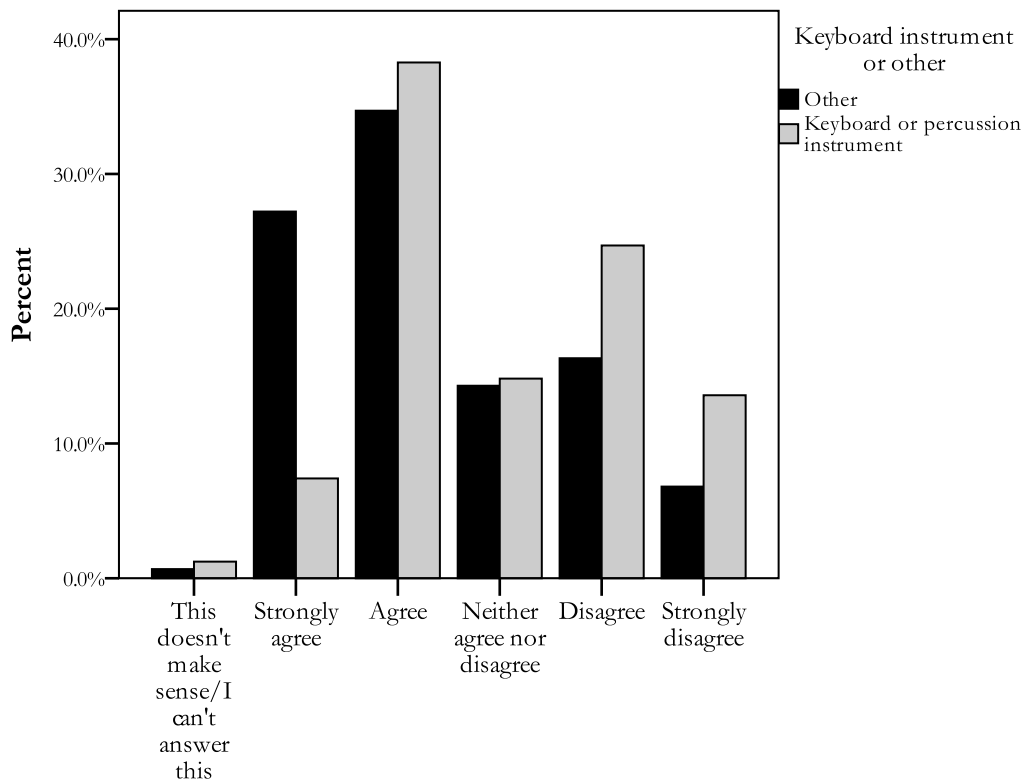
Exclusive English-speakers were also more likely to disagree with the idea that music conjures images of shapes in their mind when they are preparing for, or during, a performance ($U(228) = 5214.5$, $Z = -2.087$, $p = 0.037$): 37.6 per cent of exclusive English speakers disagreed or strongly disagreed with this statement, in comparison to 24.3 per cent of speakers of other languages. In some of the free response questions, participants discussed having ‘images in their head’; others described such images in some detail.

In summary, participants with different demographic backgrounds do seem to understand the idea of shape in slightly different ways. UK-born participants were less likely to think about shape-related metaphors, analogies or ideas when thinking about music, and were more likely to agree that musical shape moves from left to right with time. Exclusive English-speakers were more likely to view shape as something given to the music by the performer, and more likely to link musical shape with emotive or expressive attributes of the music than speakers of other languages. They were, however, less likely to agree that they used ideas concerning narrative, and that music conjured images of shapes in their mind. If nothing else, the variation in meaning applied to the term or idea of shape in these speakers of different languages is worthy of further investigation.

Discussion

The overwhelming findings of this paper are that the use of the term or idea of shape in relation to music is extremely common, possibly to an extent nearing statistical universality among trained musicians; and that it is multi-faceted. Musicians use the term in a range of musical situations, and apply it to many different aspects of music, from melody and harmony to large-scale musical structure; and from small-scale expressive devices to larger-scale emotional narratives. In particular, it is apparent that the term is used most commonly when musicians think about phrasing, melodic patterns, the direction of the melodic line, the piece of music as a whole, and changes in dynamics; and less commonly when thinking about a rhythmic pattern or a single note. What might it be about the first group of musical features that makes the metaphor of shape so appropriate? When playing a piece of music, it might be argued that all of the features where music is most commonly used involve graduated change over time. The idea of phrasing incorporates the application of appropriate and gradual deviations in tempo, dynamics, articulation, and tone, in order to create a sense of a beginning and end (or expression, in the sense relating to speech prosody) for a relatively short number of bars of notes. Melodic patterns and the direction of the melodic line play a crucial role in this process, and often give important indications to the performer about where a musical phrase should begin and end. Dynamics, as previously mentioned, are one of the tools through which phrasing and expression are achieved. Finally, thinking about the piece as a whole is crucial to the application of these tools: the location of a particular phrase within a piece will influence the expression given to that phrase by the performer. In contrast, thinking about a rhythmic pattern involves an awareness or focus on the strict adherence to a given tempo, rather than the slight expressive deviations described above. That is not to say that a rhythmic pattern cannot be played expressively; merely that a concentrated focus on a rhythmic pattern might discourage tempo flexibility. Similarly, only in some instruments can a single note be changed over its duration. In response to this idea, the data were divided by instrument (keyboard and percussion vs. other instruments), and a Mann-Whitney test was performed on the responses to the statement concerning the use of shape when performing a single note. The two groups of instrumentalists had significantly different responses ($U(228) = 4427.0$, $Z = -3.313$, $p = 0.001$), with keyboard players and percussionists being far less likely to strongly agree with the statement, and more likely to disagree (see Figure 4). This lends support to the idea that musical shape might involve change over time. This is a hypothesis that requires further investigation and testing; however, there appears to be sufficient evidence to justify doing so.

Figure 4. Bar chart to show percentages of keyboard players/percussionists' and other instrumentalists' responses to the statement 'I think about musical shape when thinking about how to perform a single note'



There do appear to be some fairly weak differences in the ways in which such ideas are used by certain groups of musicians: melodic features, for instance, appeared to play a less important role in contributing to musical shape for musicians who played both classical and non-classical music than those who played exclusively classical music, though participants did tend to mention melodic features in conjunction with other musical features when discussing links between music and shape, and the responses may have been influenced by the classically-oriented nature of the language in the question. Other differences, such as the extent to which musicians use the idea of shape in rehearsals and discussions with others, are likely to be dependent on the musical-micro-culture of the genres in which they perform. None of the questions asked participants about the amount of discussion that took place in their rehearsals (or jam sessions): if less discussion takes place in non-classical micro-cultures than in classical micro-cultures, for instance, it would not be surprising if shape was discussed less by non-classical musicians than by classical musicians. For these and other differences to be clarified, it would be desirable to conduct a follow-up study with equal numbers of classical and non-classical musicians. Though this was recognised as desirable in the current study, this was not achieved; consequently, any cross-genre comparisons are weakened by the dilution of the non-classical group with musicians who perform both classical and non-classical music.

There were also weak differences between participants with different cultural backgrounds. Those born outside the UK were more likely to strongly agree that they used shape-related metaphors, analogies and

ideas when preparing for performance, though the modal response for UK-born participants was 'agree'. This may tie in with the finding that exclusive English-speakers were less likely than speakers of a foreign language to strongly agree that musical shape is related to plot or narrative. These differences are interesting, but remain at only a weak level: the degree of agreement varies between the two groups, but the distributions in each case are certainly not antithetical. Again, to explore cross-cultural differences fully, tests would need to be devised that cross the boundaries of language to establish whether the underlying concept relating to the English word 'shape' is used or recognised as appropriate in relation to music by members of different cultures.

One agreement statement emerged with varying levels of agreement in more than one division of the data: the idea that musical shape moves from left to right with time. This prompted higher levels of agreement in purely classical musicians than in others; and in UK-born participants than others. The proportion of UK-born participants who were exclusively classical musicians (59.5%) was very similar to the proportion of those born elsewhere who were exclusively classical musicians (60.6%), suggesting that there is no confounding variable here. It is tempting to explain the difference between exclusively classical musicians and others by a possible trend towards score-based performance in this group; however the similar difference between UK-born and other participants is harder to explain. It may be that cultures of music education differ between the UK and elsewhere in a form that influences this variable. It may also be that the nuances of language used vary in such a way as to influence this variable.

Overall, the near-universality (among this sample of performing musicians) of the appropriateness of the term or idea of 'shape' or 'shaping' being used in relation to music, combined with the multi-faceted nature of its use, suggests that this is a highly useful concept that merits further investigation, both within populations of trained musicians and in non-musicians; and in Western culture and elsewhere. Needless to say, far more rigorous studies than a questionnaire are needed to truly establish the extent to which this idea might be universal; however, this initial study has provided valuable information concerning the prevalence of a highly useful but under-documented musical term. The small differences in its use by individuals and by groups also prompts further exploration into the subject with both quantitative and qualitative means, to establish greater knowledge of the detail of this complex, flexible, and multi-faceted musical term.

Musicians reading this paper may not be surprised by its findings, and this response is welcomed as a confirmation of validity. If, however, there is a concomitant feeling that the paper therefore holds nothing new, it is hoped that the formalisation of this example of the shared knowledge of musicians may be helpful for those working with musicians as (for example) conductors, teachers and coaches. Musical shape is clearly an important and useful metaphor for musicians: this paper, and the project as a whole may enable the term to be considered more explicitly and thoughtfully, and its implications and ramifications to be traced.

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