Vocal or Instrumental? Compass, range, clefs and signature accidentals in the textless consort music of Byrd and his contemporaries

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Roger Bowers's research into the effect of the Reformation on choral music provides a good basis from which to consider the compass, part ranges and clefs in textless music from the second half of the sixteenth century.[1] He showed that by *c*.1570 the most common pre-Reformation compass of liturgical vocal music of 23 notes across all the parts had been reduced to 20 notes, and that the range of each part was reduced from 11 notes to 9 or 10.[2] (An exception to this is the music written during the reign of Mary Tudor 1553–1558.[3]) Bowers suggests that the reduction was due to the greater austerity in Reformation liturgical music and to the change from the melismatic setting of Latin to the one syllable per note of settings in English. This article will determine whether the wider compass and ranges found in pre-Reformation liturgical music persisted in textless instrumental music after 1547 and look at use of clefs and signature accidentals. It will examine whether there are any particular indicators in the compass, ranges of individual parts, clefs and signature accidentals found in the textless consort music of William Byrd (1539/40–1623) and his contemporaries that relate specifically to instrumental music, making a comparison with contemporary vocal music with sacred texts.

Any distinct differences that emerge between textless consort music and contemporary vocal music with sacred texts should help in identifying whether a piece of music is vocal or instrumental, particularly where there is some doubt as to its original function. It will also determine whether Byrd's use of compass, range, clefs and signature accidentals in his textless consort music differs from that of his contemporaries. This should also identify any specific characteristics in sixteenth-century textless English consort music and enhance our under-

[1] Bowers 2014, pp. 10–17. Like Byrd, Bowers uses the term 'compass' to describe the overall range of a piece, and 'range' applies to individual parts.

[2] Bowers 2014, p. 13.

[3] During the reign of Mary Tudor, the re-introduction of Roman Catholicism resulted in a return to pre-Reformation forms of music and worship.

standing of the way in which liturgical and domestic repertoires can be distinguished from one another.[4] The data is found in the tables linked to this article.

The research was completed as part of an investigation into the emergence of an idiomatic style in Byrd's consort music. Byrd was one of the first English composers to begin to change the status and perception of instrumental music through his compositions for viols and keyboard.[5] It is impossible to examine Byrd's and his contemporaries' textless compositions without acknowledging the impact of the Reformation on English music, musical life and education in the sixteenth century, in particular the effect it had on choirboy education including the introduction of viol playing into the curriculum and the subsequent development of instrumental consort music. A peculiarly English composition, the textless In Nomine, emerged in the mid-sixteenth century; these compositions make up a significant part of English sixteenth century textless consort music. Associated with choirboy education, the genre was based on the In Nomine section of the mass, *Gloria tibi Trinitas*, by John Taverner (*c*.1490–1545).[6] Evidence suggests In Nomines were used in teaching the reading of music, singing and viol playing.[7] The In Nomine chant provided a line for beginners while advanced musicians played or possibly sang the other parts. The pieces were also suitable for viol-playing choristers to perform at important functions. A significant number of surviving manuscripts containing textless consort music (some of it vocal music without text) are associated with cathedrals or other institutions with a choral tradition. This must have influenced how manuscripts were copied, the music they contained, and the clefs found within the music.

Bowers writes that the four ranges of voices (boy treble, falsetto alto, tenor and bass) were each 'truncated by the forfeit of up to three semitones', compressing the compass of a piece.[8] Parts continued to be notated as before, the bottom note of the bass line being notated as F, in spite of the three lowest notes being lost. Treble parts lost notes from the top of their range and tenor parts lost

[4] Most of the research for this article was completed in the summer of 2016 before the publication of Fleming and Bryan 2016, which resulted from the *Making of the Tudor Viol* project, supported by The Art and Humanities Research Council and the University of Huddersfield. In Bryan's chapter, '"Choice Consorts… (Rare Chests of Viols)": The Evidence of the Repertory' (Bryan 2016), he particularly looks at the differences between Byrd's vocal and instrumental lines in the part songs in *Psalmes, Sonets, & Songs of Sadness and Pietie (1588),* which were adapted by Byrd from consort songs. The analysis of compass and range in the *Making of the Tudor Viol* project is supports results of this study.

[5] Pieter Dirksen points out that Byrd was perhaps the first major composer north of the Alps to take instrumental composition as seriously as his vocal composition; Dirksen 1997, p. 518.

[6] MB 44, no. 25.

[7] Woodfield 1984, pp. 217–18; Flynn 1996, p. 195.

[8] Bowers 2014, p. 12.

notes from either end. Thus, to make best use of the timbre of each voice, the music was pushed up so that singers could sing in the normal comfortable range of each part. The sounding compass became approximately G/A♭ in the bass to f″ in the treble but notated from F to d″.[9]

To what extent vocal voices 'lost' notes from the top of their ranges is not clear. Both Simon Ravens and Andrew Parrott argue that Tudor performing pitch was at least a semitone above modern pitch.[10] David Wulfstan argued for a minor third.[11] The question of pitch is not within the scope of this study. What is relevant is a comparison between how voice and viol parts were notated, in particular any apparent differences in the use of clefs.

Bowers's research was specifically concerned with post-Reformation English liturgical music. It did not include Latin motets written after 1547. The research for this article includes two distinct types of vocal music with sacred texts composed after 1547, these being liturgical music written in English for the reformed church and post-Reformation Latin-texted music with sacred texts, which was destined for private performance in aristocratic homes and universities.[12] Most of the Latin motets written after 1547 were intended for domestic use.

If, as Bowers shows, after 1547 liturgical vocal music had a narrower compass, then a wider compass of 23 notes or more in textless music could be an indication that it is instrumental. Whether music was intended for both singing and playing is also a consideration – textless music is not necessarily instrumental music; it is not always clear whether some music was conceived to be performed vocally or instrumentally or had a dual purpose. Vocal music was also commonly performed on viols and other instruments. A consort of viols consisting of treble, tenor and bass instruments normally had a compass of at least 23 notes, with a possible extension to 26 or 28 notes.[13] Viols with six strings had a potential range of 19 notes from the lowest open string to the top fret of the top string.[14]

Bowers also points to a change in the clef combinations of English liturgical vocal music before and after 1547. Before the Reformation, the clef combination for four-part English choral music was G2, C2, C4 and F4. After the Reformation the norm became C1, C3, C4 and F4.[15] By 1570, the common pattern for vocal voices was five voices: meane, two altos, tenor and bass, with a predominant clef combination of C1, C3, C3, C4 and F4.[16]

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[9] Bowers 2014, p. 14.
[10] See Ravens 1998 and Ravens 2000, p. 507; Parrott 2004.
[11] Wulstan 1985, p. 202.
[12] McCarthy 2013, p. 39.
[13] See Bryan 2016, pp. 13–64.
[14] Bryan 2016, p. 60.
[15] Bowers 2014, p.13.
[16] Bowers 2014, p. 14.

As much textless consort music as possible by English composers, writing at the same time as Byrd between the 1550s and *c*.1590, was included in this study.[17] The music consisted of 72 vocal works with sacred texts (both English liturgical music and motets with Latin texts) in four to seven parts by five English composers (John Sheppard (*c.*1515–1558), Christopher Tye (1505?–1572), Thomas Tallis (1505–1585), Robert White (*c.*1538–1574) and Robert Parsons (1530–1572),[18] and 77 textless pieces in four to seven parts by 13 composers working in England (Tye, William Whytebroke (1501–1569), Henry Stonings (*fl*.*c*.1600), Tallis, Osbert Parsley (1511–1585), Thomas Preston (d.1563), Nicholas Strogers (d.1575), White, Parsons, William Mundy (*c.*1529–1591), Clement Woodcock (*c.*1540–1590), William Daman (c.1540–1591) and Alfonso Ferrabosco I (1543–1588)). It also included 86 pavans and galliards in four or five parts.[19] This corpus of music was compared with 92 of Byrd's vocal works with sacred texts (both English liturgical music and Latin motets) in four to seven parts and his 29 surviving textless consort works in four to six parts, including his pavans and galliard.[20] (The overall compass of notes is known in only 23 of Byrd's textless works in four to six-parts from surviving manuscripts or print source; six are missing a treble part.) A small amount of liturgical music with Latin texts was also included.

The sample of dance music in this study was specifically restricted to pavans and galliards, both music written for dancing and music intended for instrumental performance. This choice was made because these were the two most common forms of dance music used in textless consort music and are the only two dance forms found in Byrd's textless consort music.

A comparison was made between the compass of each piece, counting the pitches from the lowest note of a piece to the highest (counting a note name as one pitch regardless of accidentals), and the ranges of the parts, while recording the clefs and signature accidentals used. As well as looking to see whether any pattern emerged, an assessment was made to determine whether there is a link between individual ranges and particular clefs.

[17] The music may be found EECM, volumes 18, 19, 24, 32, 33, 40 and 56; MB, volumes 44, 45 and 101; BE, volumes 2, 3, 10a, 11, 12, 14 and 17; Tye 1991; Holborne 1980; publications by the Viola da Gamba Society of Great Britain and online in IMSLP.

[18] Table 1.

[19] Table 2 and Table 5; Table 2 includes 6 Fantasias by White; these survive only in lute tablature.

[20] Table 6 and Table 7.

Note compass in vocal music with sacred texts and textless consort music

In this study, works were divided into those with a compass of 21 notes or less and those with a compass of 22 notes or more. A compass of 21 notes or less was chosen as the contraction to a compass of 20 notes in vocal music only became the norm by *c*.1570.[21] Only six out of 72 vocal compositions with sacred texts in four to seven parts by the 13 English composers (excluding Byrd) were found to have a compass of 23 notes or more (8%); ten have a compass of 22 notes making a total of 16 works (14%) with a compass of 22 notes or more and 56 (78%) vocal works with sacred texts with a compass of 21 notes or less (Figure 1).[22]

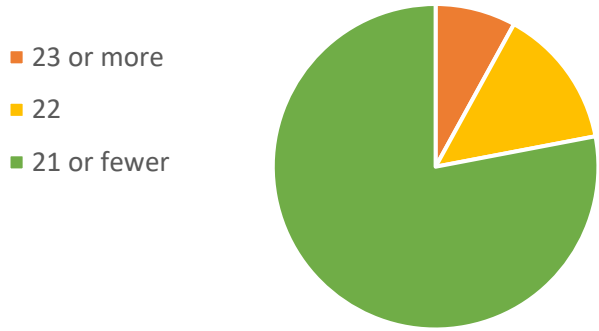

Figure 1 Compass in vocal music with sacred texts excluding Byrd (72)

Of the sample of 77 textless compositions (excluding dances and Byrd's textless music) in four to seven parts, 54 contain a compass of 23 notes or more (70%); 12 have a compass of 22 notes, making a total of 66 works with a compass of 22 or more (86%), and only 11 have 21 notes or less (Figure 2).[23]

[21] Bowers 2014, p.14.
[22] Table 1.
[23] Table 2.

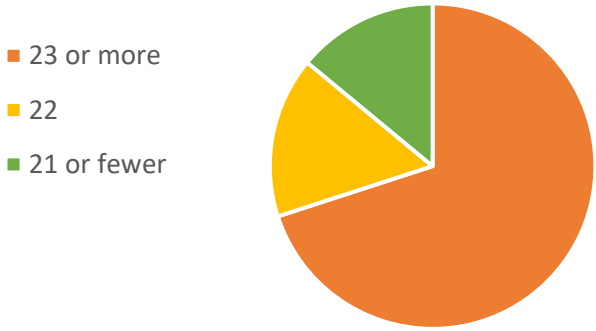

Figure 2 *Compass in textless music excluding dances and Byrd (77)*

Far fewer pieces with a compass of 23 notes or more are found in pavans and galliards compared with the other textless consort music. Out of 86 pavans and galliards in four or five parts, only seven pavans and fifteen galliards have a compass of 23 notes or more. A significant number (24) have a compass of 22 notes making a total of 46 works with a compass of 22 notes or more (54%; Figure 3).[24]

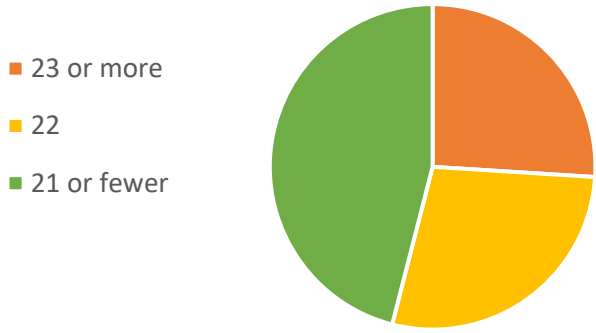

Figure 3 Compass in pavans and galliards excluding Byrd (86)

The six liturgical vocal works with a compass of 23 notes or more by Sheppard, Tye and White have been identified as having been composed at the end of Henry VIII's reign or during that of Mary Tudor. For example, Sheppard's *Missa Cantate* has a compass of 23 notes. Nicholas Sandon suggests that this was written during the reign of Mary Tudor.[25] In contrast, 14 of the 16 Latin motets or

[24] Table 5.
[25] EECM 18, p. ix; see also Summerly 2012 and EECM 32.

'Sacred Songs' intended for domestic use that Thomas Tallis contributed to the 1575 *Cantiones Sacrae* have a compass of 21 notes or less; the remaining two have a compass of 22 notes.[26] This means that most of Tallis's Latin motets published in 1575 have a narrower compass than pre-Reformation liturgical music with Latin texts.

Tye made the largest contribution to English textless consort music in the mid-sixteenth century. Only two of his 30 pieces of textless music in four to six parts have a compass of 21 notes or less; 27 works have 23 notes or more; 16 have a compass of 26 notes and one of 28 notes.[27] All of Tye's 21 In Nomines contain 23 notes or more.[28]

Looking at types of textless consort composition other than pavans and galliards, the balance between those with a compass of 22 notes and above compared with those with 21 notes or less can be related to genre. Fifty-two of the sample of 77 textless works by 12 composers (excluding Byrd) are In Nomines.[29] Forty-two of these (81%) have a compass of 23 notes or more, eight have a compass of 22 notes; only two have a smaller compass of 20 notes.[30] The remaining 25 works in the sample consist of a variety of genres. Twelve pieces with a compass of 23 notes or more consist of eight Latin-titled works, one English-titled work, a *Browning* fantasy and two fantasias.[31] Four works with a compass of 22 notes are made up of a Latin-titled work, two English-titled works and a Solfaing song. The remaining nine works contain three Latin-titled works, three English-titled works, one entitled *Ute re mi*, a *Browning* fantasy and a fantasia. Most music with a compass of 21 or 22 notes was probably written to be sung or played but at least one, a *Browning* fantasy by Woodcock, has all the hallmarks of an instrumental work. It follows that a smaller compass cannot exclude the possibility that a piece of music was instrumentally conceived.

Pavans and galliards tend to have a smaller compass than other textless music. This could be for several reasons. Dance music was likely played by a variety of instruments, including wind, necessitating a narrower compass; some notated dance music may have been intended for players of moderate ability or to provide a basis for improvisation by professional musicians. Established popular melodies were used when improvising to provide dance music.[32] In the sample examined there was still a greater number of pieces with a compass of 22 notes

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[26] EECM 56.

[27] Bernard Thomas shows Tye's 4-part *In Nomine* as having a compass of 26 notes; Tye 1991, p. iii. Paul Doe believes that Tye intended that the top line should be an octave lower, thus reducing the compass; see MB 45, p. 28.

[28] Table 3.

[29] MB 44, no. 25.

[30] Table 3.

[31] Table 4.

[32] See Harper 1995, p. 299.

or more compared with the vocal music with sacred texts. It consisted of pavans and galliards from the Lumley part-books dating from the 1540s, to which music for dancing was added later in the century (MSS Royal Appendix 74–6),[33] *Pavans, Galliards, Almains, and other short Aeirs* by Anthony Holborne (*c*.1545–1602) published in 1599, three pavans by Joseph Lupo (d.1616), Ferrabosco I, and the earliest surviving one by Peter Philips (1560/61–1628),[34] plus two pairs of pavans and galliards by Augustine Bassano (d. 1604).[35] The dances by Lupo, Ferrabosco and Bassano are found in a collection made by Francis Tregian (British Library, MS Egerton 3665).[36]

Only one galliard among the pavans and galliards from the Lumley collection has a compass of 22 notes; all the rest have a compass of 21 notes or less. Holborne's collection contains 27 pairs of pavans and galliards, plus another five galliards. Six of his pavans have a compass of 23 notes or more and eight have a compass of 22 notes. Fifteen of Holborne's 32 galliards have a compass of 23 notes or more and 13 have a compass of 22 notes. All of the Holborne dances appear to be stylised works for instrumental performance rather than written for dancing. Only four of his galliards have a compass of 21 notes or less (and 13 of his pavans). Holborne states at the beginning of his collection that it is suitable for viols, violins and wind instruments, which could account for the variety in compass. Five pavans by the remaining composers consist of one with a compass of 23 notes, and two each with a compass of 22 and 21 notes. Bassano's two galliards have a compass of 21 notes.[37] These dances are much more developed than most of the music contained in the Lumley collection.[38] If the latter are excluded, 45 out of 66 stylised pavans and galliards have a compass of 22 notes or more (68%). This leaves 21 stylised dances with a compass of less than 22 notes.

Turning to Byrd, the compass found in his vocal music with sacred texts is very similar to those of his contemporaries; there is a slightly higher incidence of works with a compass of 21 notes or less. The percentage (14%) of works with a compass of 22 notes is identical. In 92 vocal works by Byrd contained in the three volumes of Latin motets, *Cantiones Sacrae,* his English Anthems and his service music for the Anglican liturgy, 76 works (83%) have a compass of 21 notes or

[33] Harper 1995, p. 279; MB 44*,* pp. 153–7; Holman 1993, p. 90.

[34] Warwick Edwards writes that this pavan of Philips 'seemed to have been the most popular for there are numerous arrangements'; Edwards 1974, p.18. For a discussion of this piece, see Smith 1994, vol. 2, pp. 303–27.

[35] Johnson and Lupo 2004; Ferrabosco I 1990; MB 101, no. 1; Bassano 2011.

[36] Renaissance Music in Facsimile 7.

[37] Table 5.

[38] John Bryan writes that while the Lumley pavans are 'suitable music for dancing', they 'display considerable contrapuntal ingenuity, suggesting that they were also considered a vehicle for music with some artistic pretensions' and show 'a growing awareness of the purely musical possibilities presented by the genre.' Bryan 2013, p. 187.

less.[39] Only three works have a compass of 23 notes. All are found in *Cantiones Sacrae*: for example, the six-part *Tribue Domine* (EECM56, no. 29) of 1575 is a large three-section motet, in which, John Milsom writes, Byrd 'gazes back into the Tudor past'.[40] All of Byrd's English anthems and services have a compass of 21 notes or less. His Latin-texted motets contain a slightly higher incidence of works with a compass of 22 notes (25%) but still have a small percentage of works with 23 notes or more (6%) and a large percentage of those with 21 notes or less (69%; Figure 4).

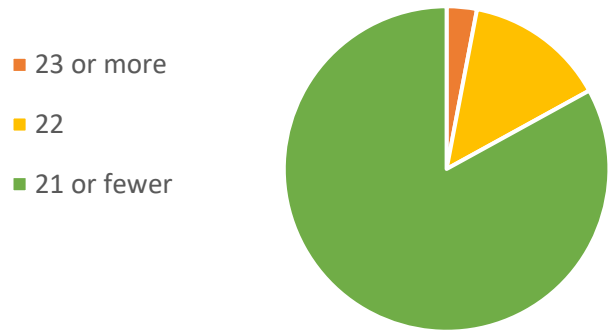

Figure 4 Compass in Byrd's vocal music with sacred texts

When comparing similar genres, the compass found in Byrd's textless consort music is very similar to that of his contemporaries. Two of his fantasias have a small compass of 20 notes as does a four-part work, *A fancy*, by Ferrabosco I.[41] In 20 textless pieces by Byrd in four to six parts (excluding dances) for which all the parts survive, seven have a compass of 23 notes or more (three In Nomines, three fantasias and the *Prelude and Ground*), five a compass of 22 notes (four In Nomines and the *Browning* fantasy) and eight a compass of 21 notes or less (five Latin-titled works, the settings of the *Misere* and two fantasias).[42] If Byrd's Latin-

[39] EECM 56; BE 2; BE 3; BE 10a; BE 11. See Table 6.

[40] John Milsom in EECM 56, p. 385.

[41] Paul Doe writes that the consort origin of this piece is suggested 'by the single-voice concordance' and 'omissions in the lower voices of the keyboard source'; MB 45, no. 127 and p. 145. John V. Cockshoot and Christopher D. S. Field describe one of Ferrabosco I's two keyboard fantasies as a short score of fantasy for four viols; Cockshoot and Field 2001.

[42] Table 7; in six of Byrd's consort works at least one part has not survived making it impossible to extract accurate information. Of 20 works in four to six parts, 18 survive complete, Fantasia 6F is missing one inner part but a sixth part has survived in *Laudate*

titled textless works are excluded, only two textless works have a compass of less than 22 notes (the two fantasias). Including the Latin-titled textless works, 12 of 20 works have a compass of 22 notes or more (60%; Figure 5). Excluding the Latin-titled textless works, Byrd's textless consort music and that of his contemporaries have the same percentage (86%) of works with a compass of 22 notes or more (Figure 6). Byrd's two pavans and one galliard have a compass of 22, 21 and 19 notes, all reflecting the compass found elsewhere.

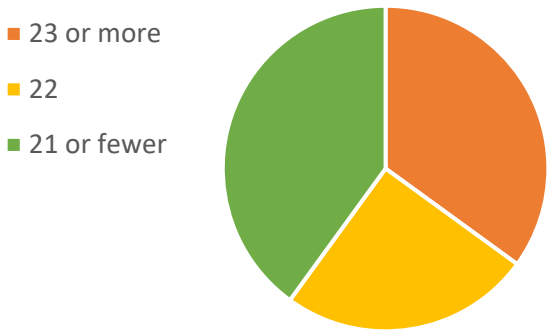

Figure 5 Compass in Byrd's textless music (20)

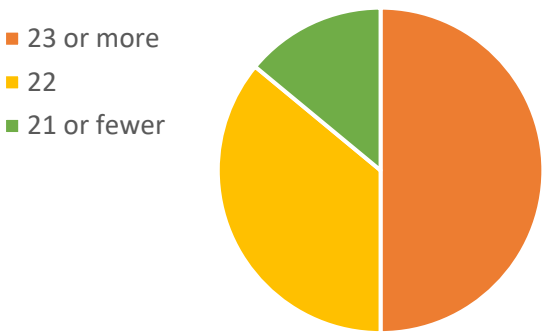

Figure 6 Compass in Byrd's textless music excluding Latin-titled works (14)

Bowers's findings suggesting a reduction in the compass in liturgical vocal music after 1547 are apparent in the music examined, both in liturgical music with English texts and Latin motets intended for domestic use. A wide compass of 23 notes or more appears to be much more common in textless music written

pueri and enough of each part from The Prelude and Ground survives in manuscripts to provide data.

after 1547 than in vocal music with sacred texts of the same period. A compass of 21 notes or less is not as common in textless music, with the exception of pavans and galliards, which can self-evidently be identified as instrumentally conceived music. Some of the textless music with a compass of 22 notes or less probably served a dual purpose for singing and playing, such as Byrd's Latin-titled works.

Voice and part ranges in vocal music with sacred texts and textless music

In the ranges of individual voices, differences emerged between Byrd's parts and those of his contemporaries. In the latter, note ranges in both treble and bass vocal parts tend to be narrower than those found in the textless music. Only 15 upper parts out of 70 from 66 vocal pieces with sacred texts by Byrd's contemporaries have a range of 11 notes or more (21%).[43] Six of the sample of 72 vocal works music with sacred texts had no treble line; of these, three of the top parts had a range of 11 or 12 notes and the remainder 9 or 10 notes suggesting a wider range is linked to adult male voices. (In some of the other works, whether an upper part is for treble or alto voice can only be discerned once performance pitch is established.)

No indication of instrumentation is given in manuscripts, but most textless consort music was clearly for viols and in referring to each part, the most likely viol used is named. In contrast to the vocal upper parts, 50 treble viol parts (40%) out of 125 from 77 textless works (excluding Byrd) have a range of 11 notes or more.[44] If 44 parts (of nine and, in three cases, ten notes) containing the In Nomine cantus firmus from Taverner's *Missa Gloria tibi Trinitas* are removed from the textless treble parts, this figure rises to 62% (50 out of 81 parts).[45] Some of the remaining 30 textless treble parts are quotations of other cantus firmi, aimed at novice players. Only five of 70 top vocal parts for treble or high male voice (7%) have a range of 12 notes whereas 22 textless treble parts out of 125 have a range of 12 notes and one of 13 (18%).

Of 79 bass parts from 72 vocal pieces with sacred texts by Byrd's contemporaries, 41 have a range of 11 notes or more (52%) compared with 46 textless bass parts (55%) from a sample of 84, so there is only a small difference between these.[46] However, only two bass vocal parts have a range of 12 notes or more (2.5%) compared with 24 textless bass parts of 12 or 13 notes (29%) indicating that a wider range is more commonly found in bass viol parts.[47]

[43] Table 10.

[44] Table 13.

[45] The In Nomine chant, *Gloria tibi Trinitas*, has a prescribed note range and is in long note values.

[46] Table 12 and Table 15.

[47] Table 15.

The ranges of inner parts were found to be much closer between vocal and textless music. In a sample of 185 inner voice parts from the 72 vocal pieces with sacred texts,[48] 92 have a range of 11 notes or more (50%) and in a sample of 167 inner parts from 77 textless pieces,[49] 90 have a range of 11 notes or more (54%).

Note ranges in all parts were found generally to be smaller in pavans and galliards. Only nine out of 101 treble parts (9%) from 86 pavans and galliards (excluding Byrd) were found to have a range of 11 notes; 30 out of 223 inner parts had ranges of 11 notes or more (13%) and 19 out of 85 bass parts (22%).[50] This probably reflects their suitability for various instruments with differing ranges.

In the music of Byrd's contemporaries, ranges of treble and bass parts can in some instances help to identify instrumental music. Six vocal works, such as Tye's *Quaesumus omnipotens*,[51] have both a compass of 23 notes and wide voice ranges but these are the exception.[52] A significant number of the vocal works with a compass of less than 22 notes have individual parts with wide ranges, resulting in a greater overlap between voices, as in Tallis's *Derelinquit impius* in *Cantiones Sacrae* of 1575.[53] The textless consort music with wide individual parts has less overlap between the parts.

Comparing the range of Byrd's parts with those of his contemporaries, the differences in range between his vocal and textless consort music are less evident. Parts with narrower note ranges are found in Byrd's English-texted sacred vocal music but are not as common in the Latin-texted works, illustrating a distinction between liturgical music and music with sacred texts for domestic use. Looking at 112 top vocal lines for treble or alto voice from 92 vocal works with sacred texts by Byrd,[54] 34 (30%) have a range of 11 notes or more as do ten of 28 (36%) textless treble parts (with the clef G2 or C1) from 21 pieces by Byrd, excluding his pavans and galliard.[55] Seventeen of Byrd's top vocal parts have 12 notes or more (15%) compared with just two treble textless lines. It is important to separate Byrd's English liturgical music from the three volumes of the Latin-texted *Cantiones Sacrae* of 1575*,* 1589 and 1591. In his English-texted liturgical music, 46 out of 51 top lines have a range of 10 notes or less (90%) whereas 29 out of 61 of the Latin-texted pieces have 11 notes or more (48%), a figure higher than is found in the small sample of textless treble viol parts. However, four of the 18 viol parts with ten notes or less contain the In Nomine chant and a further five

[48] Table 11.
[49] Table 14.
[50] Table 16, Table 17 and Table 18.
[51] EECM 33, no. 9 (London, 1987).
[52] These being works thought to have been written before 1547 or during Mary's reign.
[53] EECM 56, no. 13.
[54] Table 19.
[55] Table 22.

are other chant-based cantus firmi. If In Nomine and cantus firmus parts are removed, the number of treble textless parts reduces to 19 and the proportion of parts with a range of 11 notes or more rises to 53%. It is, nevertheless, clear that Byrd probably had higher expectations of his treble voices than of most of his treble viol players; this could be related to the limitations of his players or, as is more likely, the limitation of available viols.

As in the music of his contemporaries, the ranges of inner parts were found to be close in Byrd's vocal and textless music. There is however a noticeable difference in the percentage of wide-ranging inner parts between Byrd's Latin-texted works and his English-texted liturgical music. In total, 118 parts (72%) out of 165 Latin-texted inner voices have 11 notes or more compared with 28 parts (25%) out of the 111 parts in the English-texted works.[56] There were also 64 inner parts (39%) from the Latin-texted music with 12 notes or more. In 53 inner parts in 25 pieces of Byrd's textless music, 32 (60%), have a range 11 or more.[57] Twenty-two of these have 12 or 13 notes (41.5%).

An overlap of inner parts is found consistently in both vocal and textless sixteenth-century music. In vocal music, where there are two inner parts, the higher part normally has the clef C3 and the lower is notated in C4. In writing inner parts probably for tenor viol, composers seem to have often followed a similar principle, with one higher and one lower part. The question needs to be asked as to whether dividing the music between two tenor viols using different ranges was for purely practical reasons, and if so, what implications that has for the technical capabilities of viols at this time. In the mid-sixteenth century, Tye was apparently already using a wide range in tenor parts in his textless consort music. In the vocal music included in this study, only two combined tenor parts, going down to A, were found to have a range of 14 notes; two, containing a B♭, had a range of 12 and 13 notes. In Tye's twenty-one In Nomines, seven tenor parts contained the low B♭; three of these have combined tenor parts of 13 notes and four have combined tenor pars of 14 notes up to a′.

In Byrd's fifteen Latin motets contained in *Cantiones Sacrae* of 1575, all of the combined tenor parts (with the clefs C3 and C4) have a c or B♭ as their lowest notes. Two have a combined range of 15 notes from B♭–b♭′ and two a combined range of 14 notes from B♭/B–a′. (Some motets also contain a discantus part, with the clef C2 going up to c″.) The lowest tenor note found in Byrd's Latin-titled works and In Nomines is c. In the In Nomine 5/4 the combined tenor parts have a range of 15 notes, from c to c″. The Prelude and Ground also contains this combined tenor range and in Byrd's *Browning* fantasy, the combined tenor parts range down to B♭ and up 15 notes to b♭′. Only one other surviving textless consort

[56] Table 20.
[57] Table 23.

work by Byrd uses this low tenor note, Fantasia 4g. In these works, Byrd appears to be using tenor viols in a similar way to his versatile use of tenor voices.

The proportion of bass parts with a range of 11 notes or more was high both in Byrd's Latin motets and in his textless music. In the Latin-titled motets, 40 (74%) out of 54 bass parts have a range of 11 notes or more and 16 (30%) have a range of 12 notes or more.[58] In his textless music (excluding his dances), 23 (82%) out of 28 bass parts have a range of 11 notes or more. Although the sample is small, this is a significant proportion; four of the five textless bass parts with less than 11 notes are found in his Latin-titled works and Miserere settings.[59] More significant are the twelve (43%) bass textless parts found in Byrd's textless music that have a range of 12–13 notes. As with his contemporaries, bass parts with a wide range of notes would seem to be a feature of Byrd's textless music.

Comparing Byrd's bass viol and bass voice parts, we find that in the *Cantiones Sacrae* of 1575, five of Byrd's motets have bass parts with a range of 12 notes (six parts) and one motet has a bass part of 13 notes. Three of the motets have a bass part notated down to a low E or E♭. One of these, found in *Aspice Domine quia facta est*, has a range of just 11 notes and a low superius part. This motet may have been sung at a higher pitch than the notation would suggest, as might another motet, *Tribue Domine*. However, the bass part of the third motet, *Da mihi auxilium,* would be very high for a bass if sung at a higher pitch. Byrd obviously sometimes expects bass voices to have a wide range, but he does not notate any bass vocal part down to D. An F is the most common lowest note in his bass voice parts. From the composition of his In Nomines onwards, Byrd also commonly uses an F or sometimes a G as his lowest note for textless bass parts. The majority of his surviving bass viol parts fall in the range of F to c′. Excluding the Latin-titled consort works and the three dances, Byrd rarely writes a bass viol part of less than 11 notes. Of his remaining 18 textless consort works, where ranges are known, just Fantasias 4/g and 3/C1 have a bass part of less than 11 notes. There are a number of Latin motets that have a bass part of ten notes or less. Three of Byrd's In Nomines and all except one of his five- and six-part fantasias – including his *Browning* fantasy – have a bass part of 12 notes. One bass part in Fantasia 6/g2 has a range of 13 notes.

John Bryan remarks how rare it is to find bass viol parts in sixteenth-century consort music extending down to a low D, suggesting that this indicates that the open bottom string was regarded with little favour before soundposts were common.[60] The upper open string of the bass viol was also little used.[61] Viols with six strings had a potential individual range of 19 notes from the lowest open string

[58] Table 21.

[59] Table 24.

[60] He mentions Thomas Middleton's description in a *Mad World, My Masters* (1608) of an annoying husband as being like a 'grumbling bass viol'; Bryan 2016, pp. 60–61.

[61] Bryan 2016, p. 60.

to the top fret of the highest string.[62] Very few viol pieces from before the early 1600s utilize the extremes of the viol registers and low notes were avoided.[63] Bryan suggests two possible reasons for the avoidance of notes at the extremes of ranges. It could be related to conventions of vocal tessitura and limitations of the gamut or, as is more likely, instruments were limited in tonal quality at the extremes of ranges.

Non-standardisation of sounding pitch would seem to have been taken for granted before soundposts were added to viols; Ganassi recommended in 1542 that players should move the bridges of their instruments if it helped to achieve different pitch levels.[64] He considered this action appropriate, in order to correct badly designed viols.[65] This would have presumably meant that, if the bridge were moved downwards, then D would no longer be played on an open string. This cannot, however, explain how Tye, who died in 1572, regularly wrote D in his textless consort works. His textless bass parts commonly have a range of 12–14 notes, so moving the bridge would affect the upper register. In twenty-three of his five-part In Nomines and Latin-titled works, written in the mid-sixteenth century, Tye demanded a low D of his bass players, which raises the question as to whether some players had access to particularly advanced instruments or strings.[66] In his vocal music examined for this study, no part was wider than 11 notes and only one anthem, *I will exalt Thee O Lord*, had a bass part notated down to D, but it does not necessarily mean the bass voice was singing this pitch. It is very possible that clefs and pitch were only given for the convenience of notating the music without ledger lines and that the actual notated pitch was not relevant.

In all except two[67] of 23 of Tye's textless consort works, any bass D could be transposed up an octave if necessary. However, the bass part for *Dum transisset sabbatum II*, contains a range of 14 notes and an astonishing number of nine Ds, including in two passages with running crotchets, and finishes on an E. The bass part would cross above the tenor part if transposed up. So, although it was unusual, Tye probably had access to a bass viol with a reliable open D string, perhaps played by himself.

In the two bass parts in Fantasia 6/g1, Byrd explores a wide combined range from D to d′; the bass one part reaches the high d′ and the second bass goes down to the D, playing it four times. The bridge could have possibly been moved for both of these parts if necessary, but equally, three of the low Ds could be

[62] Viols with six strings are most commonly documented as being tuned in fourths with a third in the middle.

[63] Bryan 2016, p. 60.

[64] Bryan 2016, p. 16.

[65] Thorby 2019, p. 8.

[66] Bryan 2016, p. 47.

[67] *Dum transisset Sabbatum II*, MB 45, no. 146, *GB-Lbl* MS 31390, fol. 68v; and *Howld fast*, MB 45 no. 169, *GB-Lbl* MS 31390, fol. 73v.

transposed up an octave. If the fourth were transposed, then it would result in the two bass lines crossing, although the music would not be significantly affected. In Fantasia 6/g2 the first bass part has the conventional range of F to c′; the second bass reaches from D to b♭ and contains seven Ds. Transposing the D up an octave is feasible for all except one, found in a running crotchet passage, which also includes an E. If transposed up an octave, the part would cross above the tenor line. This bass part has a range of 13 notes. With the exception of an early, Latin-titled work, *Te lucis* a 4 (I), which survives only in lute tablature, the only textless consort work by Byrd containing a bass part with a high e′ is the six-part Galliard, probably written after 1600.

No source containing the bass parts of these two six-part fantasias survive from before 1600 so we cannot be sure that Byrd originally wrote low Ds in the bass parts or added them later. However, if they were original, then probably bass viols and strings were improving in tonal quality by the late 1580s. It seems likely that by the time he wrote these two fantasias, Byrd had access to technically improved instruments and wished to exploit a wider range of sound and the full range of the bass viol.

John Bryan suggests that Byrd's decision to publish Fantasia 6/g2 in 1611 reflects the composer's awareness that bass instruments could now be safely played across this wider range.[68] In four of the six-part works in *Psalmes, Songs and Sonnets (1611)* containing untexted parts for viols, Byrd exploited the full compass of the 23 notes available to him 'confirming that Byrd regarded instrumental lines as being suitable for wider-ranging parts'.[69] Bryan points out that in the bass parts of *Psalmes, Sonets, & Songs of sadness and pietie* published in 1588, the bass viol part in the 1588 music never goes down below F or above d′ which probably indicates that the open D string and the low E were often unsatisfactory when played and thus avoided in the middle years of the sixteenth century.[70] Bryan notes that by 1600 Weelkes considered that viols had workable ranges in excess of those of voices; the more frequent appearance of the lowest notes of the bass viol after 1600 suggests greater reliability in the low register.[71] Bass parts were regularly extended down to D and treble parts above a′′. Tenor parts also began to be extended down to b♭ and a pair of tenors used in different ranges. This is likely to be due to technological developments in instrument design, such as the addition of soundposts, changed body shape and improvement in quality in the manufacture of strings.

In comparing the parts in Byrd's textless music with those found in his vocal music with sacred texts, bass viol parts would seem to be the only individual

[68] Bryan 2016, p. 22.
[69] Bryan 2016, p. 21.
[70] Bryan 2016, p. 19.
[71] Bryan 2016, p. 23.

parts that have a greater tendency towards a wider range. As found in the music of his contemporaries, most of the vocal works with sacred texts by Byrd that have wide part ranges also have a narrower compass than is found in his textless music and greater overlap between the parts. The ranges found in all parts in his pavans and galliards were similar to those of his contemporaries. Bryan identifies Byrd's distinction between what were vocal and instrumental lines in *Psalmes, Sonets, & songs of sadness and pietie* of 1588.[72] The part songs are Byrd's adaption of earlier consort songs, for solo voice and viols. In particular, Bryan notes the difference between the treble voice parts and treble viol part. In the majority of the singing parts, the vocal range is eight or nine notes, whereas the average range for the untexted *superius* parts is wider, typically covering a tenth or eleventh.[73]

Clef combinations

A comparison of clef combinations in vocal music containing sacred text with those of textless consort music seems to support the view that in the textless music, the clef combinations have greater similarity with those found in pre-Reformation music than with those found in the vocal music with sacred texts dating from after 1547. These may not, of course, have been the clefs used by the composers at the point of composition, but reflect a convention used by the scribes copying the music, reflecting the tessitura of each part. We obviously know the clefs used by Tallis and Byrd in their published Latin motets and those Byrd used for his published Fantasias 4/g and 6/g2.

In 72 vocal works with sacred texts by Tallis, Sheppard, Tye, Parsons and White, 47 pieces are recorded as containing only C and F clefs, which Bowers believes is typical of post-Reformation vocal music. Twenty-five works contain G clefs, but most of these can be identified as having been written before 1547 or during the reign of Mary Tudor, with the temporary return of Catholicism. In 77 textless pieces (excluding dances and music by Byrd), 63 have been copied using G clefs; 14 contain only C and F clefs. In five-part music, the combination of a G clef, three C clefs and F4 is very common, particularly in In Nomines. The most frequent combination is that of G2, C1, C3, C4, F4.

In pavans and galliards from the Lumley dances, only four are recorded as having a treble part with a G clef; in Holborne's dances, only five pavans out of 59 dances do not contain a G clef. The other pavans examined divided equally between those with or without a G clef. G clefs are therefore very common in stylised dances.

Byrd's vocal music with sacred texts and textless music mainly displays the same characteristic clef combination of post-Reformation English music. In his

[72] Bryan 2016, p. 18.
[73] Bryan 2016, p. 16.

textless consort music, 12 out of 23 works with a complete record of parts, including three dances, are found in manuscripts with a clef combination containing a G clef. G clefs are also found in Byrd's Latin motets contained in the three *Cantiones Sacrae* collections of 1575, 1589 and 1591.

Although Bowers is right about post-Reformation liturgical vocal music commonly using the clef C1 in preference to G2, closer examination reveals that this is closely linked to the pitch of treble parts. In the vocal music examined for this study, a G clef is found to have been used for any treble part going up to high g″ or a″. Sheppard, Tallis and Tye also all seem to have used a G clef for any treble part up to high f″. Tye sometimes used a G clef for treble parts reaching D. White made use of a G clef for treble parts reaching g″ or a″, while he used the clef C1 for parts reaching f″. Clefs were used in a similar manner in textless instrumental music. All the composers of instrumental textless music in the sample used a G clef for any treble viol part up to g″ or a″. All except four of Tye's thirty textless consort works go up to g″ or a″. Just three reaching e″ and d″ are notated with C1.[74] Tallis, Preston and Woodcock also used a G clef for f″ in textless consort music. Parsons was not as consistent; his textless consort music includes the use of a G clef for a treble part reaching up to high e″ and C1 for two parts going up to f″.[75] In the pavans and galliards found in the Lumley partbooks, with the exception of three pieces, C1 is used for any treble part reaching f″ or below. One galliard with a G clef has a treble part going up to g″ and three with G clefs reach d″, f″ or e″. All of Holborne's pavans and galliards with treble parts reaching f″, g″ or a″ use a G clef as do some with e″, d″ and c″. Only five dances out of 59 contain the clef C1.

G clefs would seem to be less common in post-Reformation vocal music with sacred texts because the reduction in the overall compass reflected the fact that treble parts were no longer reaching g″ and a″. As the sixteenth century progressed, composers and scribes began using C1 for parts reaching f″. Treble parts reaching g″ and ″ were much more common in textless instrumental music and thus the use of a G clef is much more prevalent.

Like his contemporaries, Byrd appears to have almost always used a G clef for treble parts that reach g″ or a″ in his vocal music with sacred texts. In the *Cantiones Sacrae* of 1575 and 1591, for parts up to f″, and with one exception in each collection, the clef C1 is used. In the *Cantiones Sacrae* of 1589, Byrd used a G clef for all the six pieces with treble parts reaching f″ or g″. There is completely consistent use of G and C clefs for the highest part in Byrd's textless consort music. All of the treble parts reaching a″ or g″ are notated with a G clef; those reaching f″ are notated with the clef C1. His two published fantasias, Fantasia 4/g and

[74] A fourth has the clef G1 and is notated to c″ but was probably played an octave lower; See MB 45, no. 135, and Paul Doe's comment on p. 146.

[75] *Ut re mi* and *De la court*.

Fantasia 6/g2 and Fantasias 6/F and 6/g1 and the *Browning* fantasy therefore do not contain G clefs. Fantasia 5C contains parts in both G2 and C1 as one treble part reaches a′′, the other e′′.

The lack of a G clef it is not per se a significant indicator as to whether a piece of music is for instruments or voices since it is linked to the compass of pieces; therefore, textless consort music shows a greater use of G clefs than is found in the majority of post-Reformation music with sacred texts.

Matching clef combinations and compass

With three exceptions, all of the 47 vocal pieces with sacred texts without a G clef by Byrd's contemporaries have a compass of 21 notes or less; the three remaining works have a compass of 22 notes. This matches Bowers's conclusions. Thirteen of the 25 vocal pieces with sacred texts that include G clefs have a compass of 22 notes or more; six of these with a compass of 23 notes were written before 1547 and during the reign of Mary Tudor. All of the pieces containing a G clef have a treble voice notated up to f′′, g′′ or a′′ with the exception of one by Tye, *Unde nostris*.

Matching clefs and note compass in 65 pieces of textless music (excluding dances) by Byrd's contemporaries which use G clefs, we find that 53 have a compass of 23 notes or more, nine have a compass of 22 notes and only one has less. Only one textless composition without a G clef, Daman's *Beati omnes*, has a compass of 23 notes, the highest note in the two treble parts being e′′. A combination of a G clef and a compass of 23 notes or above is more commonly found in textless music than in the vocal music examined since this relates to the highest notated pitch in the treble parts. Two of the textless pieces, *O mater mundi* by Mundy and *Hackney* by Woodcock have a narrow compass of 19 and 20 notes and the vocal clef combination of C1, C3, C3, C4 and F4. A d′′ is the highest note in the treble part in both works; it could indicate that they were intended for singing and playing but *Hackney* is full of fast repeated notes suggesting it might have been written for wind instruments.[76] The pavans and galliards in the Lumley collection contain few G clefs and their compass is narrow. There is no consistency over the use of the treble clef; f′′ is found with both the clef G2 and C1. Of Holborne's 59 pavans and galliards, a published collection, 39 contain G clefs and a compass of 22 notes or above. He uses a G clef much more freely than is found in the other textless music. Holborne always use a G clef when there is an f′′ and any note above this in his treble parts. Treble parts reaching c′′, d′′ and e′′ can be found with either a G or C clef. Pavans by Ferrabosco I and Lupo reach g′′ and contain G clefs. Two pairs of pavans and galliards by Bassano have a treble line

[76] MB 44, nos 32 and 38. Paul Doe suggests that *Hackney* might be wind or vocal music; see MB 44, p. 188. He also suggests (p. xv) that it might be a representation of one or more London street cries. The narrow range, large number of repeated notes and fast-moving quavers does suggest wind music.

up to f″ and the clef C1. G clefs appear more frequently in the pavans and galliards that contain more challenging parts; only three dances out of 25 with no G clef have a compass greater than 21 notes.

Byrd uses G clefs in only 12 out of the sample of 92 vocal works with sacred texts, all of which are non-liturgical Latin motets and have a treble voice part reaching to f″ or g″. Only two of these, found in the *Cantiones sacrae* of 1589, have a compass of 23 notes; three have a compass of 22 notes and the remainder 21 or less. Five of the seven of Byrd's textless consort pieces with 23 notes or more are notated with G clefs. All his In Nomines contain a G clef and a compass of 22 notes or more, with a treble part reaching g″ or a″. Byrd used the clef G2 in the usual practical way; all of his treble parts reaching g″ or a″ are notated with it. His six Latin-titled textless pieces where parts have survived have a compass of 20 notes or less, treble parts reaching only c′ or d′ and therefore no G clefs. His two pavans and one galliard contain G clefs as all have treble parts reaching up to g″ or a″, although the compass of the Pavan and Galliard 6/C is 21 and 19 notes respectively. Byrd's textless consort music is similar to other contemporary textless consort music in terms of the relationship between clefs and compass with the exception of two six-part fantasias, Fantasia 6/g1 and Fantasia 6/g2 (the second of which Byrd published), which have a wide compass of 23 and 24 notes and no G clefs because the highest note in the treble parts are f″ and e♭″.

Matching clefs and part ranges

Looking at treble parts in both vocal music with sacred texts and instrumental textless music, it is obvious there is a strong link between compass and pitch and use of the G clef. Differences appear between the vocal and the textless music of Byrd's contemporaries in treble and also in bass parts when matching notated clefs with part ranges. In the vocal treble parts there is greater use of C1, as there are a small number of parts of 11 notes or more, with fewer parts reaching up to g″ or a″. The only three parts with a range greater than 11 notes have a clef of G2 and have a notated highest note of g″ or a″. There are a significant number of wide textless treble parts with 12 or 13 notes and all of these are notated with the clef G2 and, with one exception, reach g″ or a″. The clef C1 is consistently used for the part carrying the chant in the textless treble parts in In Nomines, which normally goes up to D. If these are excluded, the G clef is predominant in treble viol parts. Where the In Nomine is at higher pitch up to g″ in the treble, then it is noted using a G clef.

With instrumental music, matching the notation, pitch and range of notes to each instrument is important. Of 50 treble parts with 11 or more notes in the textless music of Byrd's contemporaries, 47 are notated with a G clef. Twenty of these parts have a" as their highest note (going down to e′ or d′ as their lowest note), 15 having a range of 12 notes. Twenty-four have g" as their top note (going down to d′ or c′), 19 having a range of 11 notes. This shows consistency in clef,

range and pitch for treble viol parts. Just six treble vocal parts (out of 70) have both a G clef and a range of 11 or 12 notes. Five of these have a range of g″ down to d′ or c′ and one, from a″ to d′.

Looking at bass vocal parts in the music of Byrd's contemporaries, five clefs are used, although F4 predominates. The two parts of more than 11 notes use F4 or C4. In the textless music, bass parts nearly all use F4. The 24 textless bass parts with a note range of 12 to 14 notes and recorded clefs use F4 except on four occasions (all F3). In both the vocal music with sacred texts and textless bass parts by Byrd's contemporaries, F was the most commonly recorded lowest note in the bass parts. There were only three vocal bass parts that had a wide range and either E or D as their lowest note; all three parts were found in two motets by Tye, *I will exalt thee, O Lord* and *Peccavimus cum patribus nostris*, both of which have a compass of 21 or 22 notes and could be sung at a higher pitch.[77] Seventeen textless bass parts had a range of 12 to 14 notes and D notated as their lowest notes. Sixteen came from works by Tye, all of which had a compass of 26 or 28 notes, making it likely they were played at close to written pitch or at the lowest pitched notes on the viol.

There is a similar use of clefs in vocal and textless parts in the inner voices. Both contain parts with wide ranges reflecting the use of highly accomplished singers in vocal music. The wider vocal parts make most use of C4 whereas in the textless inner parts, parts with wider ranges are evenly spread between C3 and C4.

The use of C clefs by Byrd in his vocal treble parts combined with a wide note range of 11 to 13 notes is more pronounced than in his contemporaries' music. Although they have the wide range, almost all reach only as high as f″. Significantly, the two Fantasias 6/g1 and 6/g2 have a wide compass of 24 and 23 notes but no G clefs. Byrd takes the bass parts down to D but the treble parts in each reach only high f″ or e♭″ meaning that he uses C1 in notating them. Where the clef C1 and a range of 11 notes is used by Byrd and his contemporaries, f", e" and d" are the highest pitch ranging down to c′, b and a, the music is therefore notated at a slightly lower pitch and range than is found in works containing G clefs. This is found in 19 of Byrd's 23 upper parts with a range of 11 or 12 notes in vocal music with sacred texts as well as three treble viol parts in Fantasias 6/g1 and 6/g2 and the *Browning* fantasy.

Almost all of the clefs found in Byrd's bass parts are F4 or F3, both in his published music and as notated in manuscripts. Only five bass parts from both his vocal and textless music do not use these two clefs. Byrd's use of clefs for bass parts is similar to that of his contemporaries. Byrd's bass parts also predominantly have F notated as their lowest note in parts with a range of 11 notes or more. In the sample of his vocal music with sacred texts, 13 out of 84 bass parts

[77] EECM 19, no. 9; EECM 33, no. 10.

had an E recorded as the lowest note and one had a D. All except one of the works containing these bass parts have a compass of 20–22 notes, suggesting that they may have been sung at a higher pitch. In the second and third of his six-part fantasias (Fantasia 6/g1 and Fantasia 6/g2), Byrd has the bass parts with a range of 11 and 13 notes going down to a D combined with a compass of 24 or 23 notes. In these and in Tye's 16 textless compositions, a fixed wide compass would seem to be related to the fact the music is instrumental and explores a wide range across each member of the viol family. As with the other music sampled, there is greater similarity in vocal and textless parts in the use of clefs and ranges in Byrd's inner parts.

Signature accidentals

All the compositions examined contained either no signature accidental or a signature of one or two flats. This matches the three scales acknowledged by English theorists, including Morley.[78] Looking at the total number of 241 works,[79] both vocal music with sacred texts and textless (including dances) in four to seven parts, by Byrd's contemporaries, one flat is the most commonly used signature accidental. One hundred and forty-eight had a signature of one flat, 71 had no signature accidental and just 22 had two flats. The incidence of one flat was higher in the textless compositions (78.3%, excluding dances) compared with the vocal music with sacred texts (54%); a signature of two flats was rare and only found in 13 out of 72 vocal works with sacred texts and six out of 83 textless works.

In Byrd's compositions there appears to be a more even spread in his use of each of the three signatures. This is only slight when comparing the entire sample of Byrd's vocal compositions with sacred texts with those of his contemporaries but becomes more pronounced if his Latin-texted works (52) are isolated. Within these, an equal number of 20 works have no accidental or one flat (38.5% each) and 12 have a signature of two flats (23%).

Unlike the textless works of his contemporaries, in the total sample (29) of Byrd's textless works (including dances) in four to six parts, 13 (45%) contain no signature accidental. If his Latin-titled works are removed from the sample, leaving 19 works, then, as with his contemporaries, one flat becomes the most common signature, being found in ten pieces. The remaining nine works divide between four with no signature accidental and five with two flats.

Conclusions

The reduction in note compass and ranges, and changes in clef combinations that Bowers found in post-Reformation English liturgical vocal music are

[78] See Owens 1998, p. 192.

[79] Including six Fantasias by White mentioned in Table 2.

reflected in much of the music composed for the liturgy by Byrd and his contemporaries. In contrast, a very high percentage of the textless consort music sampled (excluding dances) was found to have a compass of 23 notes or more. A compass of 23 notes in a piece can be one indicator that it was instrumentally conceived. Byrd's textless music contains a smaller proportion of works with a compass of 23 notes or more, but if his Latin-titled works and Miserere settings are excluded, only two of his textless works have less than 22 notes. John Bryan's work on Byrd's publications, *Psalmes, Sonets and Songs (1588)* and *Psalmes, Songs and Sonnets (1611)*, also finds a narrower compass in these two collections of secular and non-liturgical vocal works.[80] In the 1588 collection, only eight out of 35 works have a compass of 23 notes or more; 23 have a compass of 21 or less.[81] In the 1611 collection, only four out of 32 items have a compass of 23 notes, and all involve untexted parts for viols.[82] A compass of 22 notes or more is characteristic of the textless consort music of Byrd and his contemporaries.

Looking at the ranges of individual parts, if parts containing a cantus firmus with a fixed range are removed, then treble and bass parts of textless music tend to have a wider range than those found in the vocal music. (Again, this does not apply to pavan and galliards.) In Byrd's textless music the treble parts are not wider than those found in the upper parts of his Latin-texted vocal music. The treble voice parts in the Latin motets, written for domestic use, have distinctly wider ranges than found in Byrd's liturgical music. In contrast his textless bass parts are consistently wide. A significant proportion of his vocal music with sacred texts has wide bass parts but the proportion of bass parts with a range of 12 to 13 notes is particularly high in his textless consort music. A distinct overlap between parts is found in vocal and some textless music.

The use of a G clef is found to be common in textless music whereas a C clef is used in the treble lines in the majority of vocal works with sacred texts including those of Byrd, reflecting Bowers's theory of changes in clef combinations and lower treble parts. This is directly linked to the highest note in a treble part. Virtually all treble In Nomine parts have the clef C1 because they rarely go above d″. A G clef is consistently found in treble parts that have a wide range both in textless music and in a few vocal parts, all of which reach g″ or a″ and some cases f″. Use of a G clef is strongly linked to textless music post 1547 because of the use of higher notes, and to vocal music with sacred texts written before 1547 or composed in later years deliberately to re-create a pre-Reformation style, in which treble parts usually reach g″ or above. A substantial number of these have a pitch range of 11 or 12 notes. A wide range in a bass part with a low bottom

[80] Bryan 2016, pp. 19 and 21.
[81] BE 12.
[82] BE 14.

note in works which have a wide compass and combined with high treble part would seem to be an indication that a piece is instrumentally conceived.

In 17 textless works (excluding his Latin-titled works and Miserere settings) by Byrd in four to six parts, where clefs are known from surviving manuscripts or publications, twelve contain a G clef, with treble parts reaching g″ or a″. Eight of Byrd's treble viol parts with a G clef (including the Pavan and Galliard 6/C) have a wide range similar to those of his contemporaries. Byrd's decision to use the clef C1 both in treble viol parts and in his Latin-texted motets that have a range of 11 notes but only reach f″ means he made less use of the clef G2 than most of his contemporaries. It is interesting that in the *Cantiones Sacrae* of 1575, Tallis used G2 for all his treble parts that reached f″ whereas Byrd consistently used C1.

Particular genres of textless music, such as In Nomines and pavans and galliards, appear to have certain characteristics. Those apparently designed for dancing commonly have the narrowest compass, the highest note being f″, and all except four of the Lumley dances have a C clef, including those going up to the f″. The stylised dances tend to contain a G clef, including those written by Byrd as his treble parts reach g″ or a″. Holborne makes little use of C1, applying a G clef to nearly all his treble parts reaching up from c″ and above. A wide compass is not an indicator of instrumental dance music; few pavans have more than 22 notes but are none the less stylistic textless instrumental music. Where music written for dancing is concerned, this may relate to its suitability for instruments with a small range or the skills of performers, but it would seem that a compass of 22 notes or less became common for consort pavans and galliards.

The use of signature accidentals does not have any bearing on whether a work was vocally or instrumentally conceived although the use of one flat is very common in textless consort music. Byrd's greater use than his contemporaries of a signature of two flats may be indicative of his interest in pushing the boundaries of textless consort music.

The use of a G clef for notating wide-ranging treble lines in textless consort music clearly continued after the Reformation because of the continued use of higher notes than were commonly found in vocal music. The convention of using C clefs in treble vocal music is directly linked to the reduction of the upper range. Post-Reformation, as choirboys began singing music commonly notated in C1, they were beginning to play viols. In Nomines were the first known pieces to be directly written for them, with composers such as Tye writing them after 1547. The In Nomine part, commonly notated in the clef C1, with its restricted range of nine notes, usually up to d″, would have been ideal for teaching purposes. Learning to read and play in other clefs would be helped by the In Nomine tune being placed in different clefs, which occurs in some pieces. G clefs continued as the norm for notating more advanced treble parts reaching g″ and a″ (and in some cases f″), as they did for high treble parts in vocal music with sacred texts. This had become quite consistent by the latter part of the sixteenth century.

Looking at compass, individual ranges, and possibly clef use, can help to identify whether music is of instrumental or vocal origin, but factors such as texture, tonalities, phrases, rests, basic note values, interval leaps, tempo, rhythmic complexity and relationships between parts are all of equal importance. Compass and ranges can help to determine whether a piece was intended to be played or sung in conjunction with other factors.

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