The Ghost in the Machine: The role of mechanical musical instruments as primary sources for eighteenth-century performance practice in England, and an examination of the style(s) contained therein.

submitted by
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Dedication

This thesis is dedicated to my grandmother, Joyce Muriel Beckett M.B.E.
8th May 1922 - 16th November 2017
whose capacity to love, sense of adventure, and tenacious spirit will continue to inspire me, and whose organisational skills I can only strive to emulate.

‘…go and open the door.

At least
there’ll be
a draught.’

Miroslav Holub
(trans. Ian Milner)

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Abstract

This thesis aims to establish three things: the relevance of mechanical musical instruments, specifically barrel-organs and organ clocks, as sources for the performance style of music from eighteenth-century England; what stylistic information can be gleaned from the study of these instruments; and how this relates to other primary source material concerning performance style of the period. The principal focus is on two sources: Charles Clay's organ clocks, made in London in the 1730s, and the manuscript musical scores connected to them; and a barrel-organ made towards the end of the century by Henry Holland. The question of relevance is addressed, initially, through an investigation into what connections may have existed between known composers/performers and manufacturers of mechanical musical instruments, and whether these instruments merited the attention of great musical artists. This is undertaken through a comparison of the ornamentation styles found in scores for mechanical instruments, with those known to have been produced by composers, specifically Handel in this instance. The fidelity with which the barrel-pinners followed the instructions for decoration found within the arrangements is then established, by the comparison of scores with detailed transcriptions from mechanical sources.

Thereafter, comparisons are made between stylistic features of the earlier and later instruments, investigating whether there is any continuity of style over the course of the eighteenth century. The most prominent feature of the style is the ornamentation which is analysed in detail and compared to primary written sources relating to the use of embellishments. Placing and realisation of ornaments is examined, by means of detailed notated transcriptions made by ear using digital software to alter the tempo of the music. These transcriptions are compared to written verbal and notated descriptions of ornament realisation and instructions regarding how/where they are to be used.

The mechanical musical instruments in question, from both extremes of the period, display a profusion of small scale ornaments, similar to those expounded in many French treatises but not generally used as widely in English/German repertoire in the modern era. The placing of these graces carries implications for their function, and leads to questions surrounding the use of ritardando and tempo indications, as well as wider performative questions such as the use of heterophony, and the decoration of lower/middle parts. The level of detail and nuance to which the makers aspired, and which was made possible by technological developments of the period, is extremely high. However, the style is playable by human performers, and it has been possible to place similar notated styles convincingly alongside transcriptions of this material in a performance context.

Chapter 1: Introduction

> To a good method belong the appoggiaturas, the grace-notes, the trills, the alterations or elaboration of the notes, certain small, agreeable additions and variations, and many other things which are better listened to than described
>
> Scheibe *Der Critische Musikus,* Hamburg 1737 (translation R. Donington)[1]

> Ah! Who knows not that the Couperins, or the Rameaus, and an infinite number of our best composers of music would have loved to send us their excellent compositions in all their purity, by means of some tables or cylinders, if they had only had the notation.
>
> Engramelle *La Tonotechnie - Ou L'art de Noter les Cylindres,* Paris 1775 (translation E. Baines)[2]

The seeds for this project were sown over a period of about ten years beginning with my interest in a recording which has come to have a central place in it. As part of my undergraduate degree, in a class with Graham Sadler I heard a recording of an eighteenth-century barrel-organ playing Handel's Organ Concerto op. 4 no. 5 in F major which I had long known as a recorder sonata. At the time, I was merely astonished that such a record of a past practice existed and that the style seemed to be quite different to how I knew the piece, but some years later at the Museum Speelklok[3] in Utrecht I heard another performance which has also become central to my work: an organ clock by Charles Clay. A friend and I had recently completed postgraduate courses in historical performance practice at the Koninklijk Conservatorium, Den Haag, and were intrigued that there were ornaments placed at points in the music where, according to our training, there should not have been. The fact that the clock seemed to have been built in London at a time when Handel was also resident there made this more exciting. This study searches for accurate information and offers analysis regarding these two singular sources, in order to both evaluate the role they should play in informing performance practice, and distil the musical style that they illustrate with the aim of experimentally incorporating this into my own playing. It focuses on English mechanical organs and organ clocks from the period 1720-1800,[4] the outer extremes of the possible construction dates for the principal instruments for study, although the consequences of the findings may have implications for wider repertoire.

The above quotations from Engramelle and Scheibe, show, firstly, an awareness of the potential for mechanical musical instruments to conserve the abilities of great players for posterity nearly a century before the phonograph; secondly, they demonstrate the value placed on listening and learning by example in many treatises on music from the eighteenth century, which advocate that students should listen to many excellent players/singers and consult good teachers in addition to following the author's precepts. These live examples are naturally lacking in the modern study of

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[1] Quoted in: Donington, R. (1989) *The Interpretation of Early Music*. (London, Faber). p. 155

[2] Engramelle, M. D. J. (1775). *La Tonotechnie: ou l'art de noter les cylindres, et tout ce qui est susceptible de notage dans les instrumens de concerts mechaniques*, (Paris: P. M. Delaguette). p. x

[3] then called Nationaal Museum van Speelklok tot Pierement

[4] A full discussion of the background for these instruments can be found in Chapter 2.

performance practice for such a remote period, and most scholarship on the subject is reliant on surviving texts and notated musical examples. These are hugely informative, but leave many questions unanswered. Examples of ornamented movements do not indicate, for example, whether they show an ideal performance, or the full options available at any given moment; neither can they show precisely how the notated examples were expected to be realised and what extra nuances might have been applied. Likewise, it is not possible to know how widely the practices which some writers railed against were employed, and therefore how commonplace they may have been for other composers or performers.

It has been accepted among some scholars for around 40 years that mechanical musical instruments could be important in the search for historic performance practices,[5] but their study, for many reasons, has never quite permeated mainstream practices. The term 'mechanical', in this instance, refers to instruments which perform music with only minimal 'player' input. This input generally consists of winding up a clockwork mechanism, which then powers the machine, or of turning a crank throughout the performance. The crank turns a 'barrel' which is pinned to operate a musical instrument and reproduce music which is identical at every playing.[6] This system can be made to apply to many instrument types but this study focuses primarily on the organ, being the most widely mechanised instrument in England during the period in question and easier to analyse by ear than bell playing mechanisms (also popular), since the sound does not automatically sustain. Organ mechanisms can therefore play more complex and nuanced music, and therefore take on the practical uses for social and domestic music-making and listening which will be important to this study. Mechanical musical instruments which survive unaltered from their time of construction effectively provide a 'recording' of a musical style preserved from this period.

Scheibe's assertion that listening is the only true means by which an understanding of musical style may be achieved, when combined with Engramelle's belief that mechanical instruments could provide future generations with the means to do this, makes the lack of interest in audio evidence from the eighteenth-century, relative to reliance on written sources (textual or notated), all the more interesting.[7] This may, in part, be due to the frequent division between enthusiasts, enthralled by the machinery but lacking the musical expertise to truly appreciate the instruments' value as

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[5] A few works which have suggested this are:
Fuller, D. (1983). "An Introduction to Automatic Instruments." *Early Music* **11**(2) pp. 164-166.
Haynes, B. (2007). *The End of Early Music : a period performer's history of music for the twenty-first century.* (New York, Oxford University Press).
Ord-Hume, A. W. J. G. (1983). 'Ornamentation in Mechanical Music.' *Early Music* **11**(2) pp.185-193.

[6] More information on the workings of barrel-organs and organ clocks can be found in Chapter 2.

[7] Scheibe is not the only one to make such a suggestion, others include:
Quantz, J. J. (1752) *On Playing the Flute : the classic of Baroque music instruction*. tr. E. R. Reilly (2001). (London, Faber) p. 7.
Bach, C. P. E. (1756). *Essay on the True Art of playing Keyboard Instruments ... Translated and edited by William J. Mitchell* (1949) (London, Cassell & Co.). p. 39.

musicological sources, and musicians and musicologists who have dismissed the machines as mere novelties. The style and timbre heard in barrel-organs and musical clocks are not always easy to listen to, often owing to deterioration in the mechanics, but also to the musical style which is quite remote to the customary style of performance today. This problem has been described by scholars of early phonograph recordings and in this case many draw the conclusion that any aversion the modern listener may have (and many have found it very unpalatable, even discounting the audible interference) is due at least in part to a misunderstanding of how earlier performers expressed their musical ideas.[8]

A number of writers however, have cited mechanical 'recordings' as something which should be more carefully examined and there have indeed been studies on a few pieces. Scores for mechanical instruments by Mozart and Haydn survive, and English musical organ clocks and barrel-organs advertised connections with great composers such as Handel, but very little evidence has been found which identifies the specific connections of composers working in England with mechanical organ and clock makers. Likewise, no study has analysed in depth the musical performance style contained within those English instruments made in the eighteenth century. Some works have briefly examined the general performance style, mostly regarding ornaments but occasionally touching on other areas, but a deeper investigation, which attempts to truly interrogate the evidence provided by English mechanical organs/clocks of the period and the scores/treatises connected to them, has been lacking. Similarly, very few attempts have been made to compare the style found in these instruments to the many instrumental and vocal treatises from the period from which scholars and performers have gleaned the evidence to support modern 'historically informed performance', and those attempts which have been made are brief, as will be discussed in the following sections.

1.1 Review of secondary source literature relating to the history and music of mechanical musical instruments in England c.1720-1800.

The primary sources regarding the construction of mechanical organs and organ clocks are inextricably linked to the instruments' background and are therefore discussed further in Chapter 2, but there are several secondary sources which have informed the development of the methodology for this work.

1.1.1 Ord-Hume

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[8] Leech-Wilkinson, D. (2010). "Listening and Responding to the Evidence of Early Twentieth-Century Performance." *Journal of the Royal Musical Association* **135**(sup1) pp. 45-62.
Cook, N., ed. (2009). *The Cambridge Companion to Recorded Music*. (Cambridge, Cambridge University Press).

The most comprehensive modern studies of the workings of mechanical musical instruments are by Arthur W. J. G. Ord-Hume, who has produced many books and papers on various aspects of mechanical music over the last 50 years. His major work *Barrel Organ* gives a wealth of background information relevant to this study.[9] He draws on period sources, gives illuminating explanations concerning the systems by which barrel-organs are pinned and provides diagrams (both historical and modern) showing the workings of various types of mechanical organ, as well as information regarding their development, history, popularity and social function.[10] Ord-Hume's paper 'Cogs and Crotchets: A View of Mechanical Music in Early Music' also serves as a primer to what Ord-Hume terms 'the great age of mechanical music'.[11] He provides background detail about sixteenth- and seventeenth-century achievements in mechanical music and also the pedigree and lineage of important makers such as Hassler and the Bidermann and Langenbucher families in the seventeenth century. His main focus, however, is on the eighteenth and early nineteenth centuries. The paper is a general survey of extant instruments, their composers (including Mozart, Haydn, W.F. Bach) and their locations across Europe at the time of writing, and although some of this information may now be a little out of date much remains accurate. Ord-Hume's assertion that the eighteenth century was the 'great age' stems from the mechanical advancements of the period resulting in a level of musical nuance and subtlety not previously possible. It also refers to his belief that the market was still exclusive enough for makers and composers to be in close contact, as opposed to the later nineteenth century, when he postulates that the mass production of orchestrions and dance hall organs devalued them as artistic sources stating that: 'player pianos and street organ-grinders have helped to spread music, but in so doing have generated tolerant smiles or curses: music played automatically has been demeaned thus in the minds of many.'[12]

The possibility that mechanical musical instruments might be valuable as historical performance sources is then raised by Ord-Hume in another paper of the same year, 'Ornamentation in mechanical music'.[13] Here he raises some questions which will be relevant to this dissertation, but do not seem to have been followed up elsewhere, as this is one of very few articles to address the issue of ornamentation found in mechanical instruments directly. In his opening statement, Ord-Hume points out that most mechanical instruments (which are sufficiently sophisticated) from before the twentieth century contain ornaments. He comments that some may 'despair at ever hearing an air played on such an instrument without a tracery of extensive and fussy embroidery embellishing the whole in an

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[9] Ord-Hume, A. W. J. G. (1978). *Barrel Organ: the story of the mechanical organ and its repair*. (London, Allen and Unwin).
[10] ibid. pp. 407-427.
[11] Ord-Hume 'Ornamentation in Mechanical Music', p. 185.
Ord-Hume, A. W. J. G. (1983). 'Cogs and Crotchets' *Early Music* **11**(2) p. 167.
[12] ibid. p.171.
[13] Ord-Hume, 'Ornamentation in Mechanical Music', pp. 185-193.

almost architecturally baroque style', clearly having encountered the argument that the renditions are over-ornamented cameos which sound ridiculously elaborate to modern ears.[14] The quotation implies that the lack of notice taken of these sources lies in the fact that they are not to modern tastes. It also links this florid style with a baroque taste for the exuberantly ornate, evidenced in architecture as well as other art forms. Ord-Hume is clearly of the opinion that tastes have changed and it is not possible to impose modern aesthetics on these performances. In further support of this idea he refers to early recordings 'of once-revered singers, whose, often forced voices, glissandi and uncertain intonation would see them off the platform today'.[15]

Ord-Hume poses three questions arising from his consideration of the ornamentation, 'first, why is it there; second, how important is it; and third, what should be done regarding trying to interpret it today in either written score or performance?'.[16] In addressing these questions, he first postulates that these instruments represent a received style of performance. This is an important concept but one which is also vague. Historical performers across the globe operate in an increasing multiplicity of contexts, many of which encourage or demand different approaches to style and varying requirements of historical legitimacy.

Secondly, Ord-Hume draws on the fact that most notated music throughout history has been little more than a framework onto which every performer, human or mechanical, would be expected to hang his own style of interpretation encompassing ornamentation. Finally, Ord-Hume suggests that modern performers might adopt this style, but may need to compromise either by adding little of the ornamentation or using a slower tempo.[17] These papers therefore raise some salient issues surrounding the use of mechanical instruments as sources for ornamentation practice. They only provide an introductory overview however, and this thesis will aim to fully investigate claims regarding the veracity of mechanical instruments as historical performance documents.

1.1.2 Haspels, Dirksen, Fuller, Di Sandro and Cypess

In addition to Ord-Hume's work there are two other writers (Haspels and Fuller) who provide some comments on the ornamentation and importance of the music contained within mechanical instruments. Jan Jaap Haspels's book *Automatic musical instruments: their mechanics and their music 1580-1820* is the most thorough investigation of the music and workings of automated mechanical instruments of this period yet produced.[18] Haspels only investigates 'automatic' instruments however, i.e. those powered by clockwork, and does not refer to hand-cranked instruments such as the barrel-organs. However, he does provide some brief analysis of ornamentation in his Chapter 6. The

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[14] ibid. p. 185.
[15] ibid.
[16] ibid. p. 186.
[17] ibid.
[18] Haspels, J. J. (1987). *Automatic Musical Instruments: their mechanics and their music 1580-1820*. (Nirota, Koedijk, NL).

categories he uses for his analysis of ornaments are the appoggiatura, the mordent, the trill, the turn, the *slide*, and *inégalité*. Although the broad categorisation of ornaments from audio sources can be problematic (as will be discussed later), nevertheless he demonstrates an analytical approach to the study of ornamentation found in mechanical musical instruments which is seldom found elsewhere.

The book contains over forty transcriptions of music from various mechanical sources from the sixteenth to the late eighteenth centuries including twenty pieces by G. F. Handel, transcribed from two musical clocks made by Charles Clay in the 1730s, including the one noted at the outset of this chapter, which, when sold at Christie's in the 1970s, was found to contain a score of the music it plays.[19] Haspels's transcriptions, provided by Peter Dirksen (also published separately), notate the ornamentation accurately giving precise rhythms of each note in even the tiniest mordent.[20] The recording from which these transcriptions were taken, has, in part been made available for this study through the mediation of the Museum Speelklok.[21] This makes the pieces found in the Clay clocks excellent material for analysis since it is possible to observe the exact number of oscillations and speed of every ornament and also to check some of the transcriptions. Most have been found to be accurate, though some interpretations may be open to dispute: these will be addressed in Chapter 6.

Further to this, a set of transcriptions has been published by Massimo Di Sandro, since this project began, which have been made by analysing the barrels of a further clock by Charles Clay, now housed in the Royal Collection in Naples.[22] The style of ornamentation is very similar to those transcribed by Dirksen and they provide interesting material: including opera arias etc. (like the two clocks discussed by Haspels), but also some seemingly original material.

In addition to Dirksen's transcriptions, as used by Haspels, others which have proved useful as models are those provided by David Fuller in his *Two Ornamented Organ Concertos; as played by an early barrel-organ*.[23] Fuller has also provided some analysis of performance style in his writings on mechanical instruments. Three publications by him have contributed to this study, written over ten years ending in 1983. The first, *Mechanical Musical Instruments as a Source for Notes Inégales*,[24] attempts to show ways in which mechanical instruments may be used as sources for historical performance outside the realms of ornamentation. In addition to *notes inégales* he also refers to tempo fluctuations, another area in which mechanised performances could be revealing. The paper is presented with audio examples (in the form of a 7" vinyl record) in which Fuller gives examples of

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[19] The score is not in the hand of Handel, or any of his scribes. It is discussed further in Chapter 6.
[20] Dirksen, P. (1987). *George Frideric Handel, Twenty Pieces for a Musical Clock: (ca.1738)*. (Houten, NL, The Diapason Press).
[21] I am grateful to Marieke Lefeber at the Museum Speelklok for her help in obtaining permission to use this.
[22] Di Sandro, M. (2012*). Macchine Musicali al Tempo di Händel : Un Orologio di Charles Clay nel Palazzo Reale di Napoli* (Florence, Leo S. Olschki).
[23] Handel, G. F. and D. Fuller (1980). *Two Ornamented Organ Concertos (opus 4, nos.2 and 5) as played by an early barrel-organ.* (Hackensack NJ, Jerona Music Corporation).
[24] I would like to express my thanks to Peter Holman for providing me with this article.
Fuller, D. (1974, reprinted 1979). 'Mechanical Musical Instruments as a source for Notes Inégales' *The Bulletin of the Musical Box Society International* (Summer 1974).

sources both at their original tempi and slowed down for the reader/listener to compare. He draws support from period sources relating to mechanical instruments and gives a clear picture of how the mechanism of a barrel works, therefore highlighting, for example, the impact which a slightly bent pin may have, and the technical difficulties of measuring the distance between consecutive 'notes' on a barrel which, though they may be only a millimetre further round the barrel circumference, may be horizontally far apart.[25] He quotes Engramelle's claim that, only eleven years after the death of Rameau, the great master would be appalled by the transformation in the way his pieces are performed, commenting that this style must have changed so much by our own time as to be unrecognisable.[26]

Many of his conclusions on the performance of *notes inégales* may be correct but they are unfortunately undermined by faulty mechanics in the principal barrel-organ examined (the Holland organ in the Colt Collection) owing to 300 years of wear and tear. His conclusions about Handel's *Organ Concerto in Bb* are therefore likewise flawed.[27] The organ is hand-cranked, so the turning speed of the operator affects the tempo of the music (which is not discussed), and it has also become clear that with some repairs to the mechanism, much evidence of *inegalité* was expunged.[28] Fuller acknowledges this in his preface to *Two Ornamented Organ Concertos*, and retracts his earlier belief in the use of inequality for this particular piece.

Fuller's final paper on the subject, and the last of his work in the area of mechanical instruments is his 'Introduction to Automatic Instruments'.[29] This introduction, serves, curiously, as a conclusion to Fuller's first two publications. He reaffirms his belief that mechanical sources must be seen as documents and that they are essential to the study of historical performance practice although, as with all historical sources, they raise as many questions as they answer. For example, he writes:

> There is no reason in principle why a barrel mechanism no more elaborate or refined than those made in the 18th century cannot reproduce every nuance of which a harpsichordist's or organist's fingers are capable. There are, after all no other significant variables than speed and timing of attack and release, and perhaps depth of stroke. All these can be controlled by the size and contours of the pins and the 'keys' they accentuate. Yet in the very few instruments that I have examined, both attacks and releases are everywhere uniform.....were they [the makers] too dense to see how these variations might be produced by shaping their pins? Or was good playing measured by a uniformity of touch?[30]

The elements of musical style which were technologically possible, but omitted, will be relevant to this study, particularly in the later chapters' discussion of ritardando and cadenzas: ornamentation is, Fuller claims, the easiest area of style to study through mechanical instruments. He

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[25] including Engramelle and Dom Bedos who will be further discussed in Chapter 2.
[26] Fuller, D. 'Mechanical Musical Instruments as a source for Notes Inégales' p. 7.
[27] as performed by the Holland Organ c1790 in the Colt Collection, (Bethersden, Kent), the same instrument from which he later transcribed his *Two Ornamented Organ Concertos*.
[28] Information provided by Arthur W. J. G. Ord-Hume in personal correspondence.
[29] Fuller, D. (1983). 'An Introduction to Automatic Instruments.' *Early Music* **11**(2) pp. 164-166.
[30] ibid. p. 166.

also states, however, that mechanical musical instruments are essentially 'keyboard' instruments, and are therefore of 'only second-hand relevance to other media'. This view runs counter to eighteenth-century authors, who frequently state that instrumentalists can and should learn from information directed at other players and singers, as seen for example in Quantz's 'Introduction':

> I have [...] ventured rather extensively into the precepts of good taste in practical music. And although I have applied them specifically to the transverse flute, they can be useful to all those who make a profession of singing or of the practice of other instruments.[31]

Similarly, it does not agree with the volume of ornamentation evidence, often very similar in its detail, which survives for widely different instruments.

An interesting recent addition to the literature concerning the validity of mechanical musical instruments as sources for performance practice has been published whilst this thesis was in its final stages. Rebecca Cypess's article "It Would Be without Error': Automated Technology and the Pursuit of Correct Performance in the French Enlightenment' examines the methods of *notage* expounded in Marie-Dominique-Joseph Engramelle's treatise *La Tonotechnie*.[32] Contextualising Engramelle's work with that of other pioneers of automata manufacture (much of which can be found in Chapter 2), Cypess examines what might be learned from the extreme detail of Engramelle's notation for pinning cylinders and whether this may, as he claims, be a way in which we can understand more fully the *bon gôut* required by Couperin, Rameau and others and lamented as sadly lacking in many players by Engramelle himself. Cypess also addresses the modern reconstructions of instruments capable of realising Engramelle's scores, which he produced in collaboration with the composer and organist Balbastre, finding that, although there is a great deal of detail provided by Balbastre, Engramelle does not always stick to this, possibly prioritising his own theorising over the musical effects desired by the composer. This slightly undervalues the effect of the reconstruction, but does not diminish the detail of the scores, nor the level of understanding as regards what was possible in terms of nuance and performative expression.

1.1.3 Cumming, Malloch and Jerrold

A Sketch of the Properties of the Machine Organ, invented, constructed, and made by Mr Cumming, for the Earl of Bute: and a catalogue of the music on the various barrels, etc. (1812) is an account of Alexander Cumming's dealings with the Earl of Bute.[33] The Earl employed him initially to advise on improvements to a barrel-organ built in the early 1760s and later to build a new organ on which the Earl could play the barrels from the first organ as well as six newly-constructed barrels.

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[31] Quantz, J. J. *On Playing the Flute,* p. 7.
[32] Cypess, R (2017) "It Would Be without Error': Automated Technology and the Pursuit of Correct Performance in the French Enlightenment' *Journal of the Royal Musical Association* **142**(1) pp. 1-29.
[33] Cumming, A., F.R.S. (1812). *A Sketch of the Properties of the Machine Organ, invented, constructed, and made by Mr Cumming, for the Earl of Bute: and a catalogue of the music on the various barrels, etc*. (London, E. & H. Hodson) p. 5.

There is much detail about how the second organ improved upon the design of the first: for example, a more efficient bellows mechanism and ease of changing the barrel, avoiding the need to admit servants into gatherings for this purpose. The final section of the book details all the pieces pinned into each of the (over sixty) barrels for the organ and it is this section which has fuelled debate. Most pieces are by Handel, but there are also works by Corelli, Vivaldi, and others as well as what Cumming terms 'holiday music'.[34] This term seems to denote the folk tunes, dances and songs which feature in many barrel-organs.

Cumming gives precise timings for all pieces, and these were used by William Malloch as the basis for his paper 'The Earl of Bute's Machine Organ: A Touchstone of Taste', included in the same issue of *Early Music* as papers by Ord-Hume and Fuller.[35] Malloch attempts to use these timings (the organs are no longer extant) to extrapolate the tempi of the pieces. The descriptions, titles, and timings given by Cumming are very detailed, though he admits it is the product of memory and 50-year-old notes; he was around 80 years old when the book came to print, so it is likely that there are some errors. Malloch acknowledges this but nevertheless draws many conclusions from the information. He places particular emphasis on the fact that one collaborator on the first organ, employed to arrange the musical repertoire, was John Christopher Smith the younger (1712-1795), Handel's amanuensis for a large portion of his working life in London and a well-known composer in his own right.[36] This, in Malloch's view, imbues these conclusions with even greater authority, although Cumming does not mention Smith directly in his book, a fact pointed out by Beverley Jerold in 'A re-examination of the tempos assigned to the Earl of Bute's machine organ', published in a later volume of *Early Music*.[37]

Malloch's method is to locate modern recordings of the listed pieces, to record them onto tape and then, using sound equipment with varying speed control, to either stretch or accelerate them to fit Cumming's timings establishing metronome markings. With this pre-computer software equipment, pitch is affected by speed manipulation, and Malloch claims his results show generally a raising of pitch (i.e. a faster tempo) compared to the 'modern' performances. This seems a somewhat convoluted procedure; simply counting bars in a score and dividing the timings by this number, followed by the number of beats in a bar would give the same results. The primary conclusion, however, is that, as a rule, metronome markings were much faster than those used in 1983 (with some notable exceptions).

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[34] ibid., p. 38.
[35] Malloch, W. (1983). 'The Earl of Bute's Machine Organ: A Touchstone of Taste.' *Early Music* **11**(2) pp. 172-183.
[36] Coxe, W. (2009). *Anecdotes of George Frederick Handel and John Christopher Smith (1799).* (Richmond, Surrey, UK, Tiger of the Stripe). This source is discussed further in Chapter 2.
[37] Jerold, B. (2002). 'A Re-Examination of Tempos Assigned to the Earl of Bute's Machine Organ.' *Early Music,* **30**(4) pp. 584-591.

In theory this could provide interesting information but there are flaws in the methodology, as Jerold points out in her article disputing Malloch's findings.[38] Many of the titles for the pieces of music are unclear in Cumming's account and Malloch has used some interesting methods to attempt to identify the works from which some of the movements are taken. For example, on a barrel otherwise devoted to Corelli, an unattributed piece identified only as 'Sarabande Largo' is timed at 0'30" He assumes this is 'Sarabanda: Largo' in 3/4 from Concerto Op. 6 No. 11 and calculates the tempo to be crotchet = 120, but with no way of checking this is even the correct piece, this conclusion must remain suspect.[39] As Jerold points out, Malloch is not precise in giving the information on which scores or recordings he used; neither does he state which editions he refers to in his calculations.[40] Handel regularly revised and edited his own work, and adapting scores to fit different musical situations was standard practice in the eighteenth century. A cut, repeat, or *da capo* added or omitted would radically alter any tempo extrapolated from a timing alone. Malloch's methodology may in some cases have produced accurate results, which would be an extremely valuable body of information. However, this is unverifiable and, unfortunately, undermines the rules which underpin his conclusions.

David Fuller's metronome markings for Handel's organ concerto in F major measured from the Holland organ in the Colt Collection are very different for to those arrived at by Malloch. Jerold points out that in certain pieces the speeds required by Malloch's calculations might render any singer incapable of enunciating the text, which must surely be of concern. Malloch does compare his tempi to those recommended by William Crotch in his *Specimens of various styles of music*, but where he finds disparities between his own and Crotch's tempi, he puts this down to conservatism on Crotch's part, stating that he was clearly 'looking for "the sublime" at every turn' and that his choices demonstrate a 'growing solemnization of Handel's entire output'.[41] However, there are some tempi he finds which agree with Crotch's, so this 'growing solemnization' cannot have applied to Handel's 'entire output'.[42] As Jerold states, they may be each referring to different scores or even, in some cases, different pieces, since many titles are ambiguous.

From the barrel listings, Malloch also claims that Smith[43] in his arrangements created 'suites' of pieces from the repertoire (whether 'serious' or 'holiday' music).[44] He also claims that these timings enable him to identify mistakes in the measurements or titles of pieces and even to establish 'rules' by which Smith programmed these automated 'concerts'. These are, firstly 'that there should be no cuts

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[38] ibid.
[39] Malloch, W. 'The Earl of Bute's Machine Organ', p. 182.
[40] Jerold, B. 'A Re-Examination of Tempos Assigned to the Earl of Bute's Machine Organ' p. 586.
[41] Crotch, W. (1808-1815*). Specimens of Various Styles of Music*. (London, Royal Harmonic Inst.). Quoted in Malloch 'The Earl of Bute's Machine Organ', p. 178.
[42] ibid.
[43] Malloch states with conviction throughout the paper that it was Smith who masterminded the musical arrangements and decided in which order pieces should appear on the barrels. Smith was involved in the arrangements for the first organ and the second was designed to play the earlier barrels, but his level of involvement is not verifiable.
[44] This refers to the lighter music included, but Malloch does not attempt to define it further.

in through-composed pieces' (though he states that sometimes only the A section of *da capo* aria is used), and secondly, that 'there should be no transpositions'.[45] To this he adds that the key transitions between pieces are carefully chosen and though they may sometimes move up or down by a tone, there are no tritones. His evidence for this is the fact that the pieces found together on a barrel, in their original state, are in related (or at least not jarringly disparate) keys. However, most barrel-organ music is transposed into keys closely related to C major, thereby limiting the number of flats and sharps needed and keeping the number of pipes to be fitted in to a limited space to a minimum, so although this may be pertinent, it may be entirely fortuitous. Malloch concludes, however, that to play all of these pieces un-transposed, the organ would have to be fully chromatic with a wide range. This is possible, but it is a tenuous path leading to a conclusion with little supporting evidence. A wide and chromatic range could be inferred from Cumming's list of stops but is not explicitly stated. If the keys were changed, as is generally the case with pieces on barrel-organs, any original relationship would be irrelevant since they would of necessity be transposed into related keys.

Malloch's final rule is 'that while each composition should have its own appropriate tempo, there should nevertheless be rhythmic continuity from piece to piece'.[46] He claims that his results show a discernible ‘tactus’, linking pieces or movements. This could have far-reaching consequences for the performance of much eighteenth-century music if, and only if, the scores to which Malloch refers when calculating his tempi can be reliably proven to be those used by Smith, Cumming or their associates responsible for the arrangement and pinning of the pieces. However, as Jerold points out, this is not the case, and for this reason his findings are suspect. Had Malloch perhaps drawn fewer conclusions from a smaller number of examples for which accurate scores were traceable, his findings could have been more widely accepted. However, as he attempts to draw ever further-reaching conclusions, each step takes Malloch further away from verifiable proof.

1.1.4 Munrow, Schwannberger, Egarr, Lasocki

The possible transfer of the performance style found on eighteenth-century mechanical instruments into ‘live’ performance is one which has only rarely been addressed by performers, providing little opportunity for meaningful discussion of the results. A number of organists have recorded some or all of Handel’s music for Clay’s musical clocks but these reflect the notated scores

[45] Malloch ‘The Earl of Bute's Machine Organ’, p. 174.
[46] ibid.

only,[47] which generally do not contain anything like the level of ornamentation found in the mechanical performances, and give no instruction as to the realisation of those ornaments which are indicated. It is therefore not necessary to study them for this project. However, a few performers have practically investigated using the style of ornamentation which is found in mechanical instruments.

David Munrow, in his 1974 recording *The Amorous Flute* uses the Holland organ from the Colt Collection as the basis of his performance of Handel's recorder sonata in F major Op 1 No. 11. This is logical, since the piece performed by the organ, Handel's *Organ Concerto in F*, Op. 4 No. 5 (HWV 293), is almost identical and, as Munrow points out in his sleeve notes, 'The majority of the ornaments fit the recorder admirably'.[48] They do indeed fit well, as will be seen in Chapter 9 and the practical element to this thesis, but David Lasocki, in what appears to have been an influential article, does not consider this to be a legitimate performance style or research method.

Lasocki, in his 'A New Look at Handel's Recorder Sonatas: 1. Ornamentation in the first movement of the F major Sonata', strongly dislikes Munrow's ornamentation.[49] He gives a transcription of it, but also describes it as 'excruciatingly and appallingly bad'. He maintains that Munrow's belief that Handel 'would have expected and enjoyed such ornamentation' is 'dangerous nonsense'.[50] He quotes Charles Rosen in an uncited passage as stating that many, if not most eighteenth-century transcriptions of ornaments should be disregarded because they are the work of 'inferior eighteenth-century musicians and [examples of] the worst eighteenth-century taste'.[51] Lasocki cites Quantz to reinforce his opinions, with the quotation 'The graces should be introduced only where the simple air renders them necessary'.[52] However, this quote from Quantz does not specify how often this might be. Lasocki's principal argument against the use of this ornamentation seems to centre around subjective distaste. This is perhaps to be expected given that tastes in musical performance have changed hugely over the last 300 years; it is certainly not possible to subscribe to views such as that described by Neumann that:

> we have good reason to assume that no fundamental change has occurred in the aesthetics of performance [...] We are therefore on fairly firm ground in assuming the basic identity of an informed cultivated taste of today corresponds with the one Mozart expected to encounter in his audiences.[53]

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[47] Handel, G. F. ed F. Spiegl (1955). *Pieces for a Musical Clock. Edited and transcribed for piano or organ by Fritz Spiegl* (London, Schott & Co.).
[48] Munrow, D. (1974). *The Amorous Flute.* CD, (Decca). notes p. 7.
[49] Lasocki, D. (1978). 'A New Look at Handel's Recorder Sonatas: 1. Ornamentation in the First Movement of the F major Sonata.' *Recorder and Music* **6**, pp. 2-9.
The sentiments carried by Lasocki are reiterated in similar articles for *Recorder Education Journal* (2001), and *The American Recorder* (1989).
[50] Lasocki, D. (1978). 'A New Look at Handel's Recorder Sonatas: 1', p. 6.
[51] ibid.
[52] ibid. p. 5
[53] Neumann, F. (1986). *Ornamentation and Improvisation in Mozart* (Guildford: Princeton University Press) quoted in Taruskin, R. (1995) *Text and act: essays on music and performance* (New York, Oxford University Press) p. 277.

Lasocki's alternative models for ornamentation, found in this and later articles[54] published in collaboration with Eva Legêne, are the work of William Babell, Handel's own variations in his keyboard works and also the *Three Ornamented Arias* (ed. W. Dean), which provide a rare source for actual Handelian ornamentation instruction. These are outwardly quite different in ornamentation style to that found in mechanical organs, though they have not been directly compared before this study. As will be seen in Chapter 3, there is a great deal to be gained from this comparison as regards the connection between mechanical performances and Handel.

In fairness to Lasocki, Munrow's translation of the organ's stylistic practice on to the recorder is of limited success, the realisation of the decorations carrying a sense of their unfamiliarity. A little too much articulation within them leads to the ornaments sounding somewhat imposed on the music, rather than being an integral part of it.

A somewhat more successful rendition of the same ornamentation is found on Il Vero Modo's recording *Händel: A Flauto e Cembalo*, on which Sven Schwannberger and Thomas Leininger perform the same F major recorder sonata alongside the composers other recorder sonatas. In Schwannberger's notes he contests Lasocki's view, suggesting a link between the Holland organ and earlier baroque recorder treatises similar to those which will be followed up in Chapter 7,[55] mentioning instructions in *The Compleat Flute Master* for the placing of 'essential *graces*' on particular musical phrases whenever they occur (e.g. conjunct ascending and descending notes, repeated notes etc.).[56] Schwannberger suggests that this stylistic practice, is supported by the evidence of mechanical instruments even late into the eighteenth century. His transfer of the ornamentation style into the other recorder sonatas on the disc is very interesting, as is Leininger's use of Babell's work as a model for the harpsichord part.[57]

Richard Egarr in both his sleeve notes to *Handel Organ Concertos Op. 4* and a video about the making of this album for Dutch Radio station AVRO, refers to the extravagant ornamentation and admits that he has 'indulged [in ornaments] half as much compared to my 'mechanical colleague'.[58] Indeed, even with this reduction in embellishment he admits his listener may make accusations of 'gilding the lily', valuable evidence that a change in musical tastes is perhaps the main reason why mechanical instruments have been treated with such suspicion as historical sources. Egarr questions the live performability of the 'superhuman ornamental delivery', which it is hoped will be refuted by the performance at the conclusion of this study.

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[54] Lasocki, D. E. L. (1989). 'Learning to Ornament Handel's Sonatas Through the Composer's Ears. Part III: Conclusions.' *The American Recorder* (Nov 1989) pp. 37-141. See also section 1.2.
[55] Schwannberger, S. and L. Thomas (2007). *Georg Friedrich Händel - A Flauto e Cembalo* [CD] Il Vero Modo, CTH 2540 (Thorofon).
[56] Anon (1695). *The Compleat Flute Master.* (London, J. Hare, J. Walsh).
[57] Babell, W. (c.1715) *Suits of Harpsicord and Spinnet, Lessons, Collected from the most Celebrated masters works. To which is added a Great Variety of Passages.* (London, R. Meares).
[58] Egarr, R. (2008). *Handel, Organ Concertos Op. 4.* [CD] . Academy of Ancient Music HMU 807446 (Arles, Harmonia Mundi)
Egarr, R. *Richard Egarr over de orgelconcerten Handel* (AVROTROS Klassiek).

Both Schwannberger's and Egarr's notes name John Christopher Smith the younger as a collaborator on the arrangements for the Holland organ.[59] If this were the case it would indeed give the organ an authoritative pedigree. The lack of concrete evidence to support this, other than its continual use anecdotally in twentieth century sources, will be discussed in Chapter 2.

Most other articles about mechanical musical instruments of the eighteenth century are broadly historical and more concerned with the history of the makers than with the specifics of the music contained within them, and it is not relevant to review them all here. One exception is William Barclay Squire's article, 'Handel's Clock Music' which provides a transcription of the clock music contained within the British Library's Aylesford collection.[60] There is no commentary on the music itself or its performance style, though there is useful background to the manuscript. The music of some mechanical instruments has been released on CDs, such as the Erato recording mentioned earlier made by Olivier Roux, and *The Cuckoo and the Nightingale***,** a collection of 'cylinder organs 1750-1830' released on the Canal Grande label by the Museum Speelklok. These are valuable resources, but they provide documentation rather than analysis of the performance style.

1.2 Literature relating to current ornamentation and historical performance styles

Over the course of this thesis, it will occasionally be necessary to make references to current practices (my own and others') within the broad remit of historically informed (or 'inspired' to adopt Bruce Haynes's preferred term) performance.[61] There are, of course, almost as many attitudes to historical performance style as there are performers or scholars, and it is difficult, not to mention controversial, to make generalisations regarding current practices and philosophies. Therefore, I have decided to frame this section as an illustration of publications which have been and continue to be important or influential in the HIP world in which I, as a performer and scholar, have been educated. This will, it is hoped, illustrate my personal background, from which I approached this project, and demonstrate how this fits into the continuum of the HIP movement.

From my perspective, three questions help to establish the broad categories into which HIP literature falls and to elucidate the progression followed by myself and others educated within the field. These are: How was music performed? Why do we attempt to emulate this? Where do we go from here? The first group of these texts (the 'hows') includes standard historical texts detailing what is known about the past. In the case of HIP, this category of texts often focuses on primary reference

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[59] As do Malloch and Ord-Hume, as discussed earlier. This refers to the claim of Olivier Roux on the notes to his LP *Hændel - Un Enregistrement d'un Epoch* (Erato, 1985), Lasocki states in the endnotes to his article in *American Recorder* that Roux promised to write up his research on this matter and publish, but never did.

[60] Barclay Squire, W. (1919). "Handel's Clock Music." *Musical Quarterly* **5**(4) pp. 538-552. This collection is further discussed in Chapter 3.

[61] Hereafter this will be referred to as HIP.
Haynes, B. (2007). *The End of Early Music: A Period Performer's History of Music for the Twenty-First Century*. (Oxford; New York, Oxford University Press).

material, annotated and categorised with the aim of informing the performing community. The second group (the 'whys') attempt to crystallise the philosophies and attitudes regarding how this historical knowledge can, or should, impact on modern performance. The third group seeks to synthesise these various, often opposing philosophies with both the letter and the spirit of the historical sources, in order to postulate ways of forging a way forward.

The first category is the simplest to deal with, and it is not necessary to venture too far into the thousands of articles, books and other publications which place the music of the baroque period, my focus in this thesis, within its historical and musicological context. However, a few far-reaching texts which epitomise broader genres of work should be mentioned, some of which have retained their relevance over many years, as well as more recent titles which have broadened the scope of this type of work. A great deal of primary source material regarding performance styles in earlier periods is now available, either in facsimile or edited/translated publications, and these are generally viewed as the foundation of modern HIP pedagogy, although, as will be discussed, they are open to much interpretation. The following volumes, however, along with others, provide an excellent point of departure, since they contain huge numbers of references or extracts from treatises and other primary sources, organised by category, including many lesser-known and certainly less widely available texts.

Donington's *The Interpretation of Early Music,* published in various editions between 1963 and 1989, sets the standard for this type of work, providing a huge volume of quotations, translated and organised clearly to provide reference material on most areas of the performative process.[62] Neumann's *Ornamentation in Baroque and Post Baroque Music* offers more detail, specifically regarding the interpretation of small-scale graces, of particular relevance here, with special reference to the work of J.S. Bach, but encompassing a vast number of sources from many nationalities. These texts are not merely encyclopedic, however, and are also not in their original language so, it follows that wherever there is translation and/or commentary, there must also be interpretation, which has often proved highly influential. Donington's advocacy of the 'prepared' trill, for example, in which the opening upper appoggiatura is lengthened, has certainly permeated general HIP practice.[63] Neumann's attitude to this ornament is more circumspect, giving multiple illustrations where there is no indication of extension to the opening upper note of a trill.[64] Examples of 'free' ornamentation, the addition of melismatic, or melodic additions to a more or less skeletal notated line, are presented alongside their original lines, or editorially imagined skeleton forms, in Lasocki and Mather's 1976 publication *Free Ornamentation in Woodwind Music*. This also contains an introduction in which 'rules' are established, with reference to various primary authors. The tone is cautious, generally

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[62] Donington, *Interpretation*
[63] Donington *Interpretation,* p. 241.
[64] Neumann F. (1978). *Ornamentation in Baroque and Post Baroque Music: With Special Emphasis in J.S.Bach* (Princeton; Guildford, Princeton University Press). Pp. 49-199.

advocating under- rather than over-use (though many of the examples are very elaborate), an attitude which certainly permeates into many present-day performances. It is interesting to note that authors frequently quote the prose advice of primary sources against the over-use of decorations, and then interpret their notated examples as being purely a didactic tool to show all possible points where ornaments *could* be placed, rather than as a means of understanding that, what may seem over-use to modern ears, may not have been so in earlier times. This is exemplified in attitudes to sources such as Telemann's *Methodiche Sonaten*, as well as other writer's illustrations of ornamentation, for example Lasocki and Mather state: 'Adagios normally are not as filled with ornaments as Quantz's given example'.[65] Reasoning for this may be centred on the fact that these publications are intended as didactic material for instrumentalists who may be beginning the development of their own historical style. Lasocki and Mather also published instruction books based on primary source material, on subjects including cadenzas and 'preluding'; Mather also produced another relating to the performance of French music in the eighteenth century. A more recent work in a similar vein, which, although aimed at string players, can be used by any musician wishing to develop their skills and knowledge base, is Judy Tarling's *Baroque String Playing for Ingenious Learners*. [66] This is a comprehensive and useful reference, again based on extracts from primary source material, organised categorically and annotated, covering subjects such as rhetorical delivery (including ornamentation), instrumental technique, features of national style etc.

Tarling's earlier publication *The Weapons of Rhetoric* is another influential example of this type of reference text, giving descriptions of the rhetorical forms and processes as found in sources through various ages from ancient times, through to the eighteenth-century.[67] These are coupled with primary source material relating to music, illustrating how rhetorical thinking influenced both the composition and interpretation of music, including the use of ornamentation.

These presentations of primary source material, as multi-faceted and often ambiguous as they are, belie the even greater ontological complexities of the HIP movement, where there are multiple philosophical and practical threads interacting with each other in a huge variety of ways. Every individual has their own epistemological approach to reconciling the various questions which must always accompany any performative or scholarly undertaking within the field. The second 'whys?', and third 'what next?' categories, described above, are both, in fact parts of the same process, investigating the constant tension between the theory and practice of the HIP movement which has intensified over the past 30 years. There are a great many works, particularly from the 1980s and 1990s, which lay out the various academic standpoints involved in the 'The Early Music Debate' as it is termed by Kerman et al in 'The Early Music Debate: Ancients, Moderns, Postmoderns', which

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[65] Lasocki, D. and Mather, B.B. (1976) *Free Ornamentation in Woodwind Music 1700-1775: An Anthology with Introduction* (New York, McGinnis & Marx) pp. 14-15.
[66] Tarling, J. (2013) *Baroque String Playing: for ingenious learners* 3rd edition. (St Albans, Herts, Corda Music).
[67] Tarling, J. (2004). *The Weapons of Rhetoric: A Guide for Musicians and Audiences*. (St Albans, Herts, Corda Music).

details the opening statements of various panellists, from the academic, performing, and music criticism fields, at a symposium held at the University of California, Berkeley.[68] *Authenticity and Early Music*, edited by Nicholas Kenyon,[69] shows the development of the philosophical discourse around which tensions have arisen, particularly between the historicist approach, which rejects the notion of historical 'progress' and seeks to resurrect historical sound-worlds, often out of deference to the composers' 'intentions'; and the various permutations of its modernist counterpart, which accepts the impossibility of re-creating something from the past, and embraces the fact that the whole movement is a peculiarly modern construction. This has been in discussion since the 1980s, as Daniel Leech-Wilkinson shows in his article 'What we are doing with early music is genuinely authentic to such a small degree that the word loses most of its intended meaning'[70] and has continued through varying degrees of polemic, most vehemently in the work of Richard Taruskin, whose *Text and Act* covers much of his influential 'modernist' writings of the preceding two decades.[71]

Neal Zazlaw, in his tribute to John Mansfield Thomson, founder of the journal *Early Music*, acknowledges that by the time of his writing 'it is by no means obvious what it means for a performer to take on board the findings of historical research', as he summarises the HIP movement's status quo at the time of publication (2001).[72] The quotation is certainly apt regarding the developments in HIP publications from the late 1990s onwards in which the term 'authenticity' is generally surrounded by scare-quotes, as a result of the discussion referred to above. Many of these seek to deal with the ways in which members of the performing community have sought to reconcile their artistic instincts with the philosophical and historical evidence. Bernard Sherman's *Inside Early Music* gives views of individual practitioners in the field who all deal very differently with the problem, summed-up by Susan Hellauer in her statement that 'you can't sing a footnote'.[73]

This may account for the findings of Eitan Ornoy in his search for the results of academic research in the work of performers. 'Between Theory and Practice: Comparative Study of Early Music Performances' and 'In Search of Ruling Conventions among Early Music Performers' both investigate the impact of musicological scholarship on HIP practitioners.[74] Ornoy, through various questionnaires and studies of recordings, found that the prevailing approach amongst performers was still largely positivist (i.e. based on ‘empirical’ historical evidence) and many performers felt that examining

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[68] Kerman, J., et al. (1992). ‘The Early Music Debate: Ancients, Moderns, Postmoderns (Symposium).’ *The Journal of Musicology* **10**(4) pp. 113-130

[69] Kenyon, N., ed. (1988) *Authenticity and Early Music: A Symposium* (Oxford, Oxford University Press)

[70] Leech-Wilkinson, D. (1984). 'What We Are Doing with Early Music Is Genuinely Authentic to Such a Small Degree That the Word Loses Most of Its Intended Meaning' *Early Music* **12**(1) pp. 13-16.

[71] Taruskin, R. (1995). *Text and Act: Essays on Music and Performance*. (New York; Oxford, Oxford University Press).

[72] Zazlaw, N. (2001). 'Reflections on 50 Year of Early Music'. *Early Music* **29**(1) pp. 5-12.

[73] Sherman, B. D. (1997). *Inside Early Music: Conversations with Performers*. (New York; Oxford, Oxford University Press). p. 50.

[74] Ornoy, E. (2006) ‘Between Theory and Practice: Comparative Study of Early Music Performances’ *Early Music* **(34)**2 pp. 233-247.
Ornoy, Eitan. (2008). ‘In Search of Ideologies and Ruling Conventions among Early Music Performers’. (Min-Ad: Israel Studies in Musicology Online). **6** 1-19.

original musical texts was more valuable that engaging with other musicological material relating to their performance area.

Other studies from the same period have also taken an examination of the HIP community as their start point, but these have taken a more ethnomusicological approach. Kay Kaufmann Shelemay's 'Toward an Ethnomusicology of the Early Music Movement: Thoughts on Bridging Disciplines and Musical Worlds' studied various factors surrounding HIP practice in Boston, and found many connections between the groups studied and various non-western music traditions.[75] This has many roots in 1960s counterculture, but has been quite far reaching and was an acknowledged part of the historical practices of David Munrow,[76] for example, and other chamber ensembles in later years, and is articulated in Jonathan Shull's 'Locating the Past in the Present: Living Traditions and the Performance of Early Music'.[77] These observations largely relate to the performance of earlier repertoire than is featured in this thesis but they are important because their subjects have in recent years encroached upon later repertoire

Three important contributions by performer-scholars have sought to find a way to achieve a synthesis for the Hegelian dialectical thesis and antithesis standpoints of the 'Ancients' and 'Moderns' as articulated by Kerman, Taruskin, Kenyon, Leech-Wilkinson and others. John Butt's *Playing With History* and Bruce Haynes's *The End of Early Music* are both written by scholars who are also high-profile performers (in Haynes's case retired). Therefore, these contributions are able to draw on the direct experience of many years working both with scholars and also with performers, many of them of the sort interviewed by Ornoy for his research. They are both, importantly, highly readable and generally positive in tone, clearly aimed at breaking out of the academic mould and engaging (and influencing) both audiences and performers. 'HIP serves to ground us in the present through renewed engagement with the past ...[involving]...a loosening of traditional categories and meanings and an accessibility to history and historical thought that is quite unparalleled in the past', states Butt in his closing paragraph, suggesting a more flexible, inclusive route by which HIP might negotiate the disagreements of the past.[78] Haynes seems to agree, generally, declaring that 'real historical performing is not our concern...Our ultimate concern is *trying* to approach historical performing. We can never know how close we get. But we can know if we have tried.'. Both writers acknowledge that there are many different approaches to historical playing, all of them valid, and all aiming, not at a musical museum piece but to '[change]... the familiar world around us, and generate[...] something new, beautiful, and interesting'.

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[75] Shellemay, K.K. (2001) 'Towards an Ethnomusicology of the Early Music Movement: Thoughts on Bridging Disciplines and Musical Worlds' *Ethnomusicology* **45**(1) pp. 1-29.
[76] Breen, E. (2014) *The Performance Practice of David Munrow and the Early Music Consort of London Medieval Music in the 1960s and 1970s* (PhD thesis, Kings College London).
[77] Shull, J. (2006) 'Locating the Past in the Present: Living Traditions and the Performance of Early Music' *Ethnomusicology Forum* **15**(1). pp.87-111.
[78] Butt, J. (2002). *Playing with History: The Historical Approach to Musical Performance*. (Cambridge, Cambridge University Press). p.267.

The most recent addition to this section, and one which gives the most up-to-date view of current thinking and practice regarding HIP is *The Pathetick Musician*, a manuscript left unfinished by Haynes when he died in 2011, which was completed by Geoffrey Burgess and published in 2016. This text addresses the tools of expressive playing/singing with reference to rhetorical theory, primary and secondary source material relating to HIP, but with a special emphasis on achieving true expressivity and engaging and moving audiences. Haynes is particularly interesting as background to this present study, since he advocates in *The End of Early Music* a study of mechanical musical instruments, quoting David Fuller when he states that 'when and if all the data come in that are hidden away in mechanical instruments, the performance books are going to have to be rewritten'.[79] Haynes also draws on early recordings, a useful parallel with mechanical musical instruments in that they often contain a style which is uncomfortable to the modern listener (whether historically informed or not), and are therefore often underrated, or ignored as examples of historical practices.

Daniel Leech-Wilkinson, in his paper 'Listening and Responding to the Evidence of Early Twentieth-Century Performers' quotes Nikolaus Harnoncourt's description of a modern audience's hysterical reaction to a 1906 recording of Mozart's 'Queen of the Night' aria. Leech-Wilkinson's questions: 'Why did people sing and play the notes on the page in ways that seem so strange to us?; and 'How can these pieces we know so well ever have made sense to people sung like this? And yet they did.', have resonated frequently during this study, since the same could be said of much of the mechanical music contained within it.[80]

The impact of the recording industry has long been recognised by observers of the HIP output. Leech-Wilkinson, in his earlier paper discussed above, provides the tongue-in-cheek but nevertheless pertinent maxim: 'performers shall not provide too individual an interpretation lest it prove tiresome upon repeated hearing'.[81] This runs counter to the aims of initial recordings; to literally 'record' (i.e. document for posterity) the individual performances of great artists. Haynes cites the work of Robert Philip, who analysed early recordings and the development (and often homogenisation) of styles as recording and play-back equipment became more widespread.[82] The 'playing it safe' attitude cited by Leech-Wilkinson, and reflected in the earlier advice against the over-use of ornaments, is certainly a pervasive one. In my own performing experience, there is more freedom in chamber music performances (the majority of my work), and here I have had the great privilege to have been allowed scope for experimentation. However, in orchestral work and on recordings, where a great number of people are involved and time pressure is higher, the scope for additions of any kind is limited. In French music of the eighteenth-century, small graces, seen as vital

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[79] Haynes *The End of Early Music,* p. 147.
[80] Leech-Wilkinson, D. (2010). 'Listening and Responding to the Evidence of Early Twentieth-Century Performance.' *Journal of the Royal Musical Association* **135** (sup.1) pp. 45-62.
[81] Leech-Wilkinson, 'What We Are Doing with Early Music...', p. 15.
[82] Philip, R. (2004). *Performing Music in the Age of Recording*. (New Haven, Conn.; London, Yale University Press). pp.22-23.

to the expression of the piece, are often added, but these are carefully decided upon and, once confirmed, there is no deviation from this. The 'early music police', a phenomenon described by Shull, and more often to be found in audience and critic communities rather than among performers, is still a spectre which haunts many recording studios.[83] The fear of doing something 'wrong' on the spur of the moment which will then be immortalised for all time, is one which few performers are brave enough to challenge. This is not to say that there are not hugely expressive performers recording today, nor that they do not attempt to find new ways of expression, but any steps away from the recognisable are generally small, for fear of reactions like that of Lasocki to Munrow's mechanically-inspired rendition of Handel's F major sonata, described in section 1.1.4.

1.3 Research questions arising from the literature

From the literature included in the previous section, which spans nearly 50 years with large periods of time elapsing between any spikes of interest in the subject of mechanical performance, several areas clearly require more interrogation of the evidence, both to clarify the facts, and to evaluate the usefulness of mechanical musical instruments as primary sources for eighteenth-century performance practice. The first, and most important gap in the investigations above, is that they focus only on a very small number of pieces compared to the large variety which is found within the mechanical music oeuvre of the period, even focussing only on English instruments. The organ concertos of Handel found within the Holland organ feature prominently, but this instrument has sixteen barrels, containing 64 pieces of music, most of which have never been transcribed or discussed anywhere in print. Most of the barrels in the Holland organ are filled with the music of Handel, but there is no other keyboard music apart from the two organ concertos; mostly it is orchestral movements, and opera and oratorio arias. A significant amount of barrel space, in fact, is devoted to opera/oratorio arias (by Handel and others), alongside shorter songs, dances and hymns, to which little or no attention has been paid by performers or musicologists. Almost all other barrel-organs and organ clocks of the eighteenth century contain similar small-scale repertoire; yet it is only the two organ concertos which have been mined for any evidence of performance style. The first requirement of this thesis, therefore is that it must address the performance style found in more of the types of music found in the barrels. Was this a style which would have been recognised by composers and audiences of the period? Would this have been an acceptable style to all, or one railed against by connoisseurs? It is interesting to note where styles acceptable to public taste might differ to those set up as examples by well-known writers on music. Modern performers set great store by the writings of the teachers of the age but it is clear that the style actually heard day-to-day may often have differed wildly from that which these teachers advocate.

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[83] Shull, *Locating the Past in the Present,* p. 90.

Generalised claims of the stylistic differences between the mechanical sources and modern understanding of historical practices have often been made; but there has been little close analysis or description of the performance style itself in detail, particularly regarding the realisation of the ornaments. A systematic investigation to discover exactly what evidence can be gleaned regarding the mechanical instruments in question, what may be inferred from this evidence, and what its limitations are, would provide a more concrete foundation from which to assess the validity of mechanical musical instruments as sources for the performance practice of their location and period. With this in mind, the following fundamental research questions have been constructed:

- Whose style is it?
  Is it possible to ascertain how involved composers were in the production of the arrangements for mechanical instruments? Do they bear any hallmarks of their otherwise known ornamentation style?
  What level of influence did the pinner have on the interpretation of arrangements provided by the composer/arranger?

- What style is it?
  What type of ornaments are used precisely? How frequent are they? How are they realised? Are there other areas of performance style aside from ornamentation for which these instruments can provide information (e.g. tempi, *inégalité*, use of ritardando)? How reliable is this?

- Are there features of the mechanical musical instruments themselves which necessitate or facilitate a particular performance style?

- Does this style have precedent elsewhere?
  If yes, does this have implications for the interpretation or possibly re-interpretation of the relevant primary written sources?

- Does the style change?
  - Over time?
  - To serve different functions?
  - In music from earlier periods?
  - What do these similarities/differences mean in terms of the instruments' use as historical sources?

- Is it performable on conventional instruments of the period?

By whom?

The forthcoming chapters use specific questions from this list to build a clearer picture of the position mechanical musical instruments held in the minds of their creators and their audience. These chapters will be structured initially as specific case studies which serve to illustrate essential connections, and will then move into broader discussions. Although the principal focus will be the Holland organ and organ clocks by Charles Clay there will be other instruments and materials which will also be used as supporting material to provide context. These will include similar organ playing mechanisms and written materials relating to them from similar locations and time periods, namely machines produced or discussed in England from the period 1700-1820. This time range incorporates around 30 years either side of the earliest possible time for the Clay clocks' construction and the probable latest date for the Holland organ, establishing context in order to demonstrate whether these instruments are typical for their type and location.

1.4 Methods for recording and transcription

This project is primarily focussed on the music as it is heard, and therefore initial research involved making or identifying recordings of the principal instruments for study (Holland organ and Clay clocks). Thereafter recordings of other mechanical organs/organ clocks from a similar period and location have been sought, or made, to provide context. Written source material relating to performance practice which was either produced or readily available in England during the same period also provides further context and important points for comparison. The makers of instruments which are referred to in this study, or are otherwise relevant, are listed in Appendix A. For a complete list of tunes included in barrel-organs during the period, a comprehensive source is Langwill and Boston's *Church and Chamber Barrel-Organs*.[84] The book is now out of date in some respects (e.g. locations of organs in private collections etc.) but the list of tunes is still useful, since many organs contain similar repertoire.

Although the extant Clay clocks have been inaccessible or not in sufficiently good repair to record for the duration of this project, it has been possible to gain access to a previously made recording of one through the Museum Speelklok in Utrecht.[85] This clock is often referred to as the 'Braamcamp' clock after the Dutch shipping tycoon Gerrit Braamcamp in whose collection it was housed for some years.[86] Where recordings have not been available, published transcriptions have

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[84] Langwill, L. G. and J. N. T. Boston (1970). *Church and Chamber Barrel-Organs: their origin, makers, music and location. 2nd ed., revised and enlarged.* (Edinburgh, L. G. Langwill). pp. 21-41.
[85] The museum has recently been successful in acquiring the Braamcamp clock from a private collector.
[86] Jan Haspels in his Introduction to Dirksen, P. (1987) *Twenty Pieces for a Musical Clock,* p. 5.

been used as the principal sources for study in this project, with recordings of the few pieces available serving to assess the veracity of the transcriptions, which are generally accurate.

The two Handel organ concertos, found in the Holland organ, were transcribed and published by David Fuller in the early 1980s.[87] These have proved invaluable, not only for the information they contain, but also as models for further transcriptions. The Holland organ however, was only partially recorded prior to this present study but permission was kindly granted by the Colt Collection Trust and its custodian, Mr W. E. Spiers, to record the barrels of this instrument in full (included as Appendix D). To gain as much comparable information from the recordings as possible the organ has been recorded using a constant cranking speed.[88] The range of cranking speeds to which the organ responds satisfactorily is somewhat narrow anyway, since if the speed is too slow air flow from the bellows is not constant and the levers are lifted too slowly allowing too little air to flow to the pipes. This results in wild pitch fluctuations and some notes failing to speak at all. Conversely, if the speed is too fast much of the music becomes incomprehensible to the ear: it is also physically very difficult for the 'player' to maintain. The cranking speed of 77 revolutions per minute was found to be both physically sustainable and musically satisfactory for all the pieces. It is of course possible for operators to choose to crank faster or slower, so measurements of absolute tempo are not possible but a constant cranking speed, whatever speed is chosen, makes it possible to compare the relative tempi of spirally pinned pieces, or movements, which is essential for the purposes of this study (see Chapter 8).

Once the recordings had been made or acquired it was necessary to transcribe them, both for study and for performance. As the study progressed it was determined that the detail required for close study and analysis, is quite different from that which is useful in a performing edition. For analysis, it is necessary to transcribe each note as accurately as possible from the audio evidence presented. This is aided by digital technology, unavailable when some of the initial transcriptions were made, which allows the audio track to be slowed down to hear more clearly each note even in the fastest ornaments. Fuller's transcriptions provide a useful model for the presentation of exact transcriptions of ornaments. It has not been possible, or indeed deemed necessary to follow his full methodology for making these transcriptions in the 1970s. Fuller used both tape recordings and careful measurements taken from the barrels of the Holland organ to make his transcriptions. His discussion of the margin for error in the preface to his *Two Organ Concertos [..] as played by an early barrel-organ* is very useful, particularly with regard to occasional tiny delays in notes speaking and whether conclusions can be drawn from this.[89] This work provides enough information to apply to the current recordings without the need to replicate it. This is a problematic area, as there are many

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[87] Handel/Fuller (1980) *Two Ornamented Organ Concertos*.
[88] Using a metronome to ensure consistency.
[89] Handel/Fuller (1980) *Two Ornamented Organ Concertos*.

points in the mechanism process which could fractionally delay a note, so occasionally perceived inequality cannot always be inferred. This study has only done this at points where a pattern is clear.

Identifying precise rhythms within fast moving notes (e.g. trills) is often difficult, even when the audio tracks have been slowed down. In fact, it becomes even more difficult in some cases, as the organ has a relatively slow articulation speed which means that as the melody is slowed down, so too the attack at the opening of each note is elongated, making the beginnings of notes harder to time. For this reason, it is only useful to slow down the recordings by up to 40%. This gives enough definition to the sound whilst still enabling notes which are almost imperceptible by ear at normal playing speed to be identified. Every effort at rhythmic accuracy has been attempted; however, within trills a certain amount of quantization has been necessary. For example, unless a clearly distinct note is perceptibly longer within a trill it has been assumed that all the notes are the same length and notated as such. For example, in an ornament which contains fifteen notes, one of which is audibly twice the length of those around it, the note on which the trill is placed is divided into sixteen with two divisions then tied together. This gives the most accurate view of the presumed intentions of the pinner. No other writers about mechanical instruments have described their methods or priorities when transcribing from audio, so this quantization model has been arrived at independently. However, the transcriptions seem similar to those of Dirksen and Fuller, so it must be assumed they approached this with a similar technique

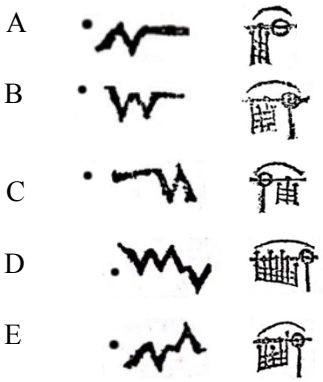
Dirksen and Fuller's transcriptions do not include an unadorned melody which can be compared to the ornamented version. They clearly feel that additional lines of music would confuse the performer's eye (as well as making page turns unwieldy); the transcriptions herein however are intended for comparison and analysis, so this has been necessary. Where possible the un-ornamented line has been taken from a period copy, manuscript or published, though with the caveat that it is rarely possible to know which version of a piece of music the arranger had in mind when notating the music to be pinned. A small amount of variance between the basic melodies heard and those published is therefore to be expected. Generally, these will be slight rhythmic changes rather than large structural alterations, but they may affect what conclusions can be drawn.

The level of notational detail in Fuller's transcriptions often obscures the musical line, making them problematic as performing scores. Reading from plain musical lines with ornament symbols above the staves allows the player to visually analyse the melodic line and its harmonic implications as well as the ornaments to be added. Players can then anticipate the level of weight and the direction of the notes they play, thereby realising the ornament symbols with sensitivity to the musical phrases, and when performing need only enough information to remind them of rehearsed actions. When analysing the realisation of ornaments, however, and attempting to re-create a performance style, it is essential to have a precise transcription of what the performer is to play. There are therefore two types of transcription needed for different parts of the study process. The analysis, the primary focus for this thesis, requires every note to be shown as exactly as possible, allowing accurate comparison with the

plainer melodic line. For performance, a system of ornament symbols must be employed so that the player may understand the music at sight, with ornament symbols acting as an aide-memoire for an internalised performance style.

Some of the ornaments found in the music studied herein do not conform to standard models and within ornaments (particularly trills) there are many possible variations. When constructing performing editions which aim to replicate as closely as possible the ornaments found in the barrel-organ and clock sources, it is therefore necessary to develop a system of ornament symbols which conveys sufficient information (e.g. how many oscillations occur, where notes are lengthened at the beginning, middle or end of the ornament, and whether to begin on an auxiliary note, etc.). This is an area where eighteenth-century sources often leave a great deal of room for ambiguity. One source which does give the level of detail required, however, is the system of notation employed by Engramelle himself and further detailed in Chapter 2 and Appendix C.[90] This has proved successful in performance with some modifications. It is essentially a form of graphic notation showing movements between the written note and its auxiliaries. The dots to indicate silence have not been used here but rather a single dot has been added at the beginning to indicate where the written note is compared to the note on which the ornament begins (see Fig. 1.1).[91] This system of notation allows all ornaments to be shown in a similar way, leaving little room for confusion or ambiguity regarding how long the ornament is to last in relation to the note on which it is placed, which note on which to begin and end etc.

Figure 1.1 - Ornaments with their realisations from Engramelle's Tonotechnie (with added dots to indicate where the written note occurs for clarification purposes).[92]



These scores, together with the audio tracks and the analysis, will form the materials from which an imitative performance style will be constructed. The first aim for the recital element of this thesis, is to imitate the pieces found in the organs; being a recorder player the ranges of the organs are

[90] Engramelle, *Tonotechnie,* pp. 43-50.
[91] See Chapter 2, section 2.3
[92] Engramelle, *Tonotechnie,* pp. 43-50

well-fitted to reproduction on my instrument. The aim of this imitation will be to internalise the stylistic features of the barrel-organs, within the framework of an expressive recorder performance. As exact an imitation as possible will be attempted within the idiomatic possibilities of the instrument. Further to this, it will be important to perform pieces which are comparable in style from other written sources. Finally, these elements and the analysis of the defining characteristics of the style will enable these to be transplanted into other pieces from a similar location and period.

1.5 Terminology

To aid clarity it is necessary to define some terms. There are many words used for additions to a musical line; the terms ‘ornamentation’ and ‘embellishment’ are often used interchangeably, and it is difficult to use them without ambiguity. Either may refer to trills, turns, mordents, etc., and at other times to larger alterations to the melody, or even the re-composition of the original melodic line. Decoration may also take the form of rhythmic or harmonic alteration of the notated melody. Sometimes writers make a distinction between what they are referring to with the words 'ornament' and 'embellishment', but this is also inconsistent, often arising from the interpretation necessary when translating works.

Donington in *The Interpretation of Early Music* defines 'embellishment' as being 'everything in the music which can be changed without affecting the basic progressions'.[93] The term 'ornament', however, he uses only to denote a “short melodic formula” which is added to a single note or used to connect two notes.[94] Thus 'embellishment' appears to refer to the melodic addition or re-composition type of decoration, and 'ornament' to the ‘French'- style small-scale decorations. However in Mitchell’s translation of C.P.E. Bach’s *Essay on the True Art of Playing Keyboard Instruments* the term 'embellishments' is used for the discussion of precisely these short ornaments. To add further ambiguity, the end of his chapter on 'embellishments' consists of a section on elaborating 'fermate' (i.e. constructing a cadenza) using melodic figures as well as short ornaments.[95]

Quantz is quite specific in his terminology when he discusses ornamentation in his *On*

Playing the Flute. He uses the term '*manieren*' which clearly denotes ornaments which remain attached to the melodic notes. This term is translated as 'graces' by Reilly, and in Quantz’s opinion these are indispensable additions to a piece of music. In describing those he considers truly essential, he uses the term *'wesentliche manieren*' (translated as 'essential graces'). These he describes as being related to the '*Vorschlag*', which translates as 'appoggiatura' but which does not carry with it the same

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[93] Donington, *Interpretation*, p. 152.
[94] ibid. p. 189.
[95] Bach, C. P. E. (1756) *Essay on the True Art of Playing Keyboard Instruments.... .Translated and Edited by William J. Mitchell*. (1949) (London, Cassell & Co.). pp. 79-146.

implication of 'leaning' and merely refers to an additional note which occurs at the beginning of the written note to which it is attached. This he sees as being the foundation from which all other graces are developed. These always remain attached to their main notes and involve, for the most part, only movements of either a tone or semitone in any direction, depending on the key. His other specific category, '*Veränderungen*', translates as 'variations' or 'alterations' and these denote passages in which the musical line has additional melodic notes added or in which the melodic line is altered in some way.[96]

Geminiani, in his *A Treatise of Good Taste in the Art of Musick* adopts the term 'ornaments of expression' to denote ornaments which remain close to the note, stating that these are to be used as tools through which to properly express the character of a piece of music and are essential to its effective execution. He also refers to 'passages or graces' meaning elaborate melismatic additions, which he feels should be used sparingly: a confusing alternative meaning for the word graces.[97]

The above references illustrate the need to define these terms in order to efficiently express the differences between the types of addition to a melody. The term 'ornament' hereafter will be used as an overarching term to denote any alteration or addition to a melodic phrase for decorative purposes, whilst the term 'graces' will refer specifically to the small additions related, as Quantz states, to the appoggiatura, involving only movements of a tone or semi-tone attached to a main melody note.[98] The word 'grace' is used in many eighteenth-century English-language tutors on performance as the closest translation of the French *agrémens* which indicates the kind of small ornaments which remain close to the main melodic notes. Therefore, it connects the English way of utilising these ornaments with the French style where they are more widely recognised as essential to a stylish performance. The term 'grace' also implies, not a decorative addition, to make a melody more elaborate, but the means by which to express the true meaning and grace of a melodic line. Graces, therefore, are not an optional extra, but the fundamental basis of an expressive and tasteful performance style. The term 'melodic alteration' will be used to denote the melodic or melismatic additions to, or variation of, a written line of music which cannot be categorised by any of the terms used for graces, such as trill/*shake*, *coulé*, mordent/*beat* etc.

Some standardisation of terms will also be necessary for the graces themselves. Monteclair in his *Principes de Musique* of 1739 writes, 'As music is the same for both the voice and the instruments we should use the same names and agree unanimously on the best symbols to represent the ornamentation of a melody'.[99] However, this was an aspiration unfortunately not fulfilled during the eighteenth century and there are few treatises from the period which agree totally on the nomenclature

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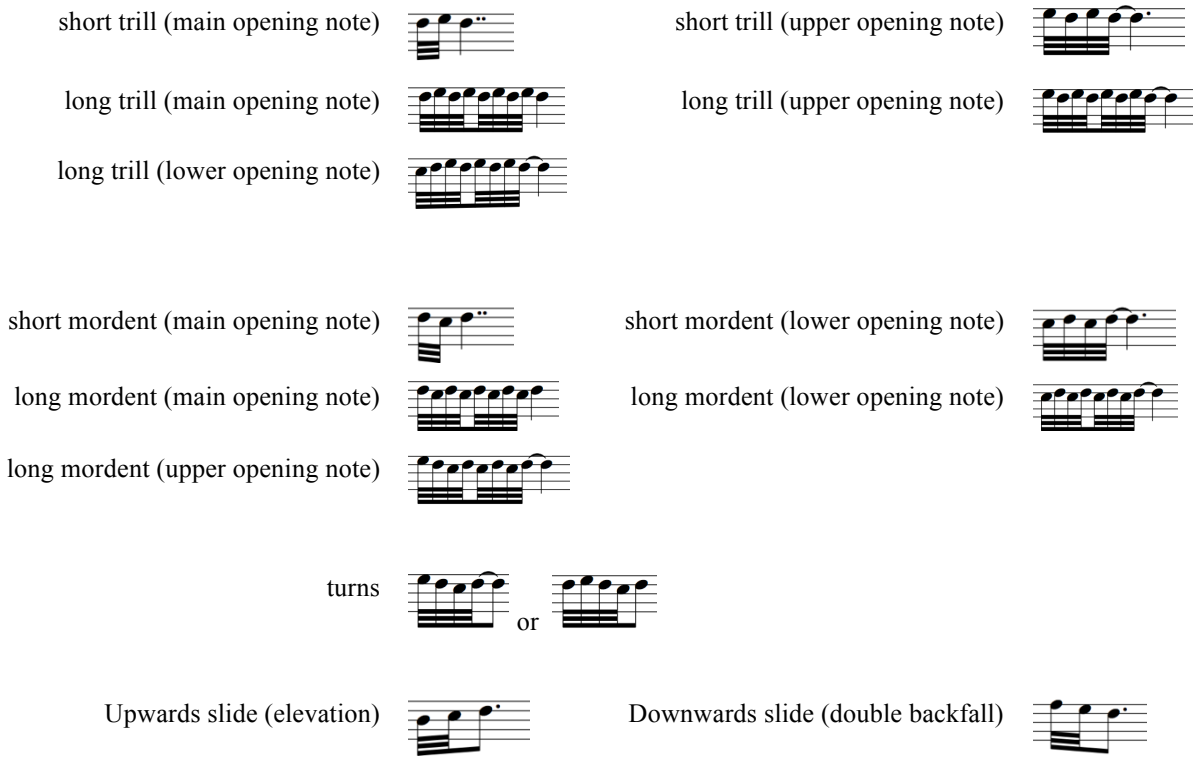
[96] Quantz, *On Playing the Flute*, p. 91.
[97] Geminiani, F. (1749*). A Treatise of Good Taste in the Art of Musick,* (London). p. 2.
[98] Quantz, *On Playing the Flute,* p. 91.
[99]Quoted in: Monteclair, M. P., ed. Robinson, A. (2008) *Les Agréments- French Baroque Ornamentation* (Hebden Bridge, Peacock Press).

for decorations, leading to much ambiguity. This will provide fuel for some of the discussions later in this thesis, but some fundamental definitions must be stated at the outset to avoid confusion in the ensuing analysis.

Primary source material on ornamentation will form the majority of the documentation used for comparison with the audio evidence from mechanical musical instruments, and treatises from across Europe have been consulted. The English terms for ornaments will be adopted as far as possible, reflecting those in use at the time and manufacture location of the mechanical musical instruments in question. The first exception to this will be the Italian term 'appoggiatura' since this was widely used in England in the eighteenth century. The other exception will be the anglicised German terms 'trill' and 'mordent'. English treatises generally term these ornaments 'shake' and 'beat' but since there will necessarily be discussion of whether ornaments occur on or before the beat, to have an ornament termed a 'beat' would confuse matters. The term 'trill' or 'trillo' is sometimes used, particularly by Italians writing in England, or in English translation, so it would have been a recognisable term to an eighteenth-century English reader.[100] Both 'trill' and 'mordent' are also commonly used in modern times and are therefore useful for comparison with other secondary discussions of baroque musical practice.

Figure 1.2 - Notation of fundamental ornaments



[100] The term 'trillo' should not be confused with the alternative ornament associated with it, that of a repetition of the written tone, rather than an oscillation. This ornament does not occur in eighteenth-century mechanical sources.

Fig. 1.2 shows the basic notational representation of the most common graces used. Compound graces and subtler alterations, such as points where notes may be lengthened within ornaments, will be discussed as they arise. Appoggiaturas and other one-note additions are not included, since these too, with their variations, such as the *coulé* (which occurs between beats) and other one-note additions, since these too will be addressed as they arise. From the above example, it will be seen that the trill and mordent are taken as exact counterparts, both oscillating graces of various lengths, one to the note above the written pitch, the other to the note below. This reflects typical seventeenth- and eighteenth-century classification, in which both trill and mordent fall into the '*tremulus*' category of oscillating ornaments differentiated in early sources by the epithets *ascendens* or *descendens*.[101] This runs counter to some modern usages of these terms, in which the mordent is a single oscillation and the trill a repeating one. Even in eighteenth-century writings the short and long versions of each are differentiated and described as having very different musical effects. For example, Geminiani says of the mordent (or 'beat') ‘if it be perform'd with Strength [*sic*] and continued long, it expresses Fury, Anger, Resolution, &c. If it be play'd less strong and shorter, it expresses Mirth, Satisfaction, &c.’.[102] However, the names do not reflect this difference, and therefore require a little extra specificity, the 'short' and 'long' prefixes, for the purposes of this project. In this way, it is hoped to clarify the precise application of a practice which was, to quote Scheiber in his *Critische Musicus* 'better listened to than described'.[103]

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[101] Neumann, F. (1978). *Ornamentation in Baroque and Post-Baroque Music: With Special Emphasis on J.S. Bach*. (Princeton; Guildford, Princeton University Press). p. 296.
[102] Geminiani, F. (1751). *The Art of Playing on the Violin, Containing All the Rules Necessary to Attain a Perfection on That Instrument, with Great Variety of Compositions ... Opera ix*, (reprint, n.d.) (Huntingdon, Early Music Company). p. [7-8].
[103] Quoted in Donington, *The Interpretation of Early Music,* p. 155.

Chapter 2: Background Information

This chapter will provide a brief historical context for the instruments which are to be studied as well as information regarding their workings. It will report on the position and development of the musical clock and barrel-organ in eighteenth-century England, summarising established knowledge regarding the principal makers and intended consumers. It will then look more closely at the makers of the instruments which are to be the focus for the analysis sections. The construction of the instruments and their pinning styles will then be examined in sufficient detail to demonstrate the level of accuracy which can be assumed when analysing the instruments' performance.

2.1 The barrel-organ and organ-clock in eighteenth-century England

The organ, as a musical instrument has existed since at least the time of the Roman Empire. Its construction has always involved complex engineering so it is perhaps unsurprising that, alongside the carillon, it is the instrument most closely associated with automated or mechanically powered performance. By the end of the sixteenth century, both organ and clockwork technology had developed to the point where it became possible to construct more compact means of mechanical music reproduction. Musical clocks[104] were commissioned as highly prized gifts by Queen Elizabeth and there arose across Europe a vogue for mechanical objects which attempted replication of living beings.[105]

During the sixteenth and seventeenth centuries, the town of Augsburg in Bavaria was an important centre for clock-making, but began to decline as a result of the 'Thirty Years War' (1618-48). In the late seventeenth century, the craft began to expand in England, in part due to the 'Grand Alliance' which England joined in 1689 in an attempt to limit the expansionist intentions of Louis XIV. Towards the beginning of the eighteenth century, prominent makers began to arise in England, centred around London, who began to further develop the principles and materials involved in the manufacture of the musical clock, striving for ever more elaborate mechanisms and structures.[106]

Appendix A shows a list of prominent manufacturers of organ-clocks and barrel-organs who feature in the discussions contained herein, along with their dates, notable works, connections or discoveries.[107] These were not of course the only artisans who would have worked on the instruments which bear their name. Many fine and often famous artists were employed to create the scenery and

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[104] The term 'clock' does not necessarily indicate that a timepiece was included in the artefact. Although those referred to in this thesis generally do include timepieces, the term could also refer to a musical instrument which was operated by clockwork.
[105] Ord-Hume, A. W. J. G. (1978). *Barrel Organ: the story of the mechanical organ and its repair.* (London, Allen and Unwin). ch.1-2.
[106] ibid ch.5.
[107] N.B. this is not a comprehensive list of makers and it contains only those with a direct link to the study in hand, either directly or by influence.

often automaton figures which adorned these elaborate clocks, and many musicians were involved in the arrangement of the music they played. Composers associated with English organ clocks and barrel-organs include Corelli, Handel, Geminiani, J. C. Smith, and Muzio Clementi, one-time partner of John Longman's firm, making barrel-organs at the end of the eighteenth century.

The manufacture of musical clocks, with their intricate mechanisms and ornate decoration was an extremely expensive enterprise. Rather than selling them outright therefore, makers often showed them for a fee. Henry Bridges' 'Microcosm', constructed in 1718 (see Fig. 2.1), was an astronomical clock of great complexity whose works were reputedly checked by the astronomer and mathematician Sir Isaac Newton.[108] It showed, at the top, three alternating scenes showing gods and muses playing instruments to moving beasts and flying birds. Underneath this was the clock face, positioned under a 'grand arch' which was accompanied by the 'Celestial Phenomena'. These showed both the Ptolemaic system of geocentric cosmology and the Copernican movements of the earth and planets with elliptical orbits around the sun. It even seems to have depicted the path of a comet, probably Halley's Comet which appeared in 1758.[109] Underneath this were earthly scenes; with ships sailing on the sea, coaches and carts driving on the land (with their wheels turning), and rivers inhabited by moving swans 'bending their necks backwards to feather themselves as if actually alive'.[110] The lowest section showed carpenters working at their trade, and all of this was accompanied by eight different tunes, listed as:

1. 'Allegro' - John James
2. 'Bagpipe Air from *Porus*' - Handel
3. 'Allegro'
4. 'French Horn Piece'
5. 'Favourite Air from *Radamistus*'- Handel
6. 'Adagio'
7. 'A Jog' - Corelli
8. 'Double Fugue' - John James

This was not the only clock of its type, though it may have been one of the largest and in addition, the piece included a chamber organ on which members of the public were permitted to play if they so

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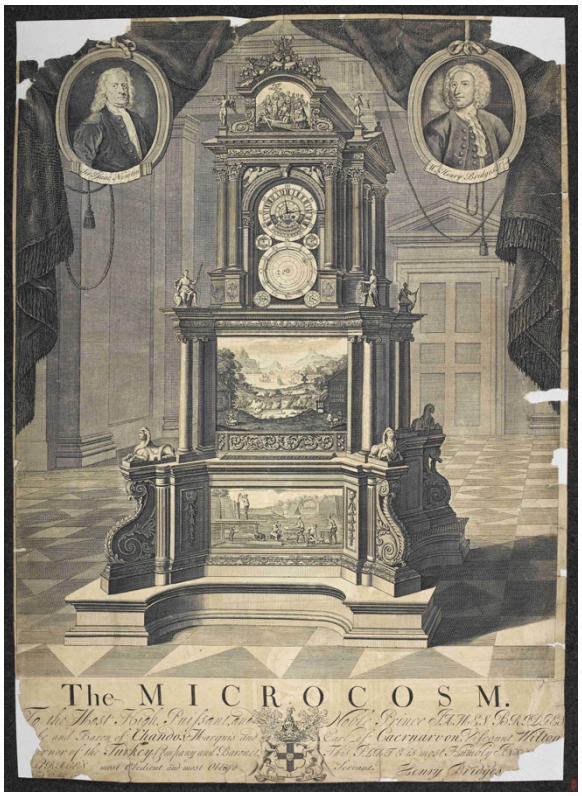
[108] See Fig. 2.1 and separate advertisement for the exhibit, by Ord-Hume in *Barrel Organ,* p. 213.
[109] Ord-Hume, *Barrel Organ,* p. 213.
Ord-Hume (pp. 211 & 232) refers to contemporary accounts which erroneously give this date as 1759, but 1758 is the year in which the comet appeared. It could be another spectacular comet, which appeared in 1769 but this is probably too late for the clock's workings to have been updated as the Microcosm was sold to a new exhibitor following Bridges' death in 1764, so it is unlikely to have been altered after this date.
[110] quoted by Ord-Hume in *Barrel Orga,n* p. 213.

wished. The Microcosm could be seen at the Kings Theatre, Haymarket 'from Ten in the morning till Nine at Night, at 2s 6d each [*sic*]' according to the poster quoted above.[111]

Figure 2.1 - Poster c1750 advertising 'The Microcosm' (British Library Online Digital Archive). At the top are depicted the images of Sir Isaac Newton (Left) and Henry Bridges (Right).[112]



Other clocks were sold either outright, after a period of exhibition (clearly highly popular as the number of advertisements attests), or by raffle, an easier way to raise sufficient funds to cover the huge costs incurred by the makers. One advertisement in the British Library's Bagford Collection[113] gives a price of 700 guineas for a direct sale with the alternative that the clock might be 'raffled for a five guineas per ticket.' This roughly equates to a value today of £1,200,000 based on a comparison of average wage earnings, and it is perhaps understandable therefore that even royalty would rather have purchased raffle tickets than commit to such a huge expense.[114]

The public across Europe was fascinated by machines seeking to replicate living subjects, and a good income was clearly possible from displaying them. Makers of automata sought to reproduce not just the sound of musicians playing but also the movement of a living body. Vaucanson, one of

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[111] ibid.
[112] http://www.bl.uk/catalogues/evanion/Record.aspx?EvanID=024-000005474&ImageIndex=0 accessed 18/2/17.
[113] Bagford, J. (1650-1715). The Bagford Title-pages. *Bagford Collection*, British Library. MS.Harl.5892-5998.
[114] comparative value established using https://www.measuringworth.com/ukcompare/

the greatest mechanical designers of the century, exhibited in Paris a mechanical flute player who, rather than 'miming' to a mechanical organ, actually played the flute. Its fingers were gloved in skin and covered the holes of the instrument. An intricate system of movements in the mouth also allowed it to form an 'embouchure' to control the air flow and articulate its notes just as a live flautist would. A keen student of anatomy, Vaucanson also exhibited a duck which seemed to digest (and excrete) food and also a tambourine player (see Fig. 2.2). These fascinated audiences and remained on display for over a hundred years, though they are unfortunately no longer extant.[115]

Figure 2.2 - Engraving by Hubert-François Gravelot on the frontispiece to Le Mechanisme du Fluteur Automate, the original pamphlet in which Vaucanson detailed the workings of his automata (British Library).[116]


LE
MÉCANISME
DU FLUTEUR
AUTOMATE,
Presenté à Messieurs de l'Académie Royale des Sciences.
Par M. VAUCANSON, Auteur de cette Machine.
Avec
La description d'un Canard Artificiel, mangeant, beuvant, digerant & se vuidant, épluchant ses ailes & ses plumes, imitant en diverses manières un Canard vivant. Inventé par le même.
Et aussi
Celle d'une autre figure, également merveilleuse, jouant du Tambourin & de la Flute, suivant la rélation, qu'il en a donnée depuis son Mémoire écrit.
A PARIS,
Chez JACQUES GUERIN, Imprimeur-Libraire, Quai des Augustins.
ET SE VEND
Dans la Salle de dites figures Automates.
M. DCC. XXXVIII.
AVEC PERMISSION DU ROI.

The wide-spread appreciation of automata and the performances of barrel-organs provides useful information regarding the use of these instruments as historical sources. Equal value can be placed on negative reactions to these automata when discussing the extent of their verisimilitude. Gaby Wood, in *Living Dolls*, recalls an anecdote regarding Descartes on his voyage to Sweden, when an automaton in the form of a young girl, who he called Francine was found amongst his possessions.

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[115] Wood, G. (2002*) Living Dolls: A magical history of the quest for mechanical life* (London, Faber). pp. 29-37.
[116] Vaucanson, J. d. (1738). *Le Mecanisme du Fluteur Automate ... Par M. V. auteur de cette machine. Avec la description d'un canard artificiel ... et ... celle d'une autre figure ... jouant du tambourin et de la flute, etc,* (Paris).

When the life-like machine was discovered, the captain, convinced that it must be imbued with dark magic, decided it must be responsible for the dreadful weather conditions the ship had been experiencing. 'Francine' was thrown overboard by the God-fearing sailors and with her Descartes' efforts at producing life-like automata ended.[117] This is a story told many times according to Wood, but she admits it is unverifiable and perhaps somewhat too good to be true as a fable of religious zealots hampering the advancement of science. However, it is not without companion tales from the period. Vaucanson himself entered the order of the Minimes in Lyon as a novice, thinking an abbey an excellent place to continue his studies. However, after he reproduced life-like automata to entertain an honoured guest, the guest denounced his work as 'profane' and his figures were destroyed, resulting in his departure from Lyon.[118]

This did not deter Vaucanson, or prevent others from attempting to replicate live performance ever more accurately. In 1752 a German mathematician Johann Friedrich Unger (1714-1781) submitted a design to the Berlin Academy of Sciences for a machine which would notate exactly which keys were played, in real time, by a player at a keyboard. A few weeks later, Johann Hohlfeld, a Berlin mechanic, produced a device which improved on Unger's design but was destroyed by a fire at the Academy some weeks later.[119]

It is clear from the continuing efforts of makers, and the polarised reactions to their verisimilitude, that there was genuine feeling during the eighteenth century that these machines were truly able to reproduce accurate depictions of real life. If these machines were considered to be accurate, then there must have been enough musical (or anatomical) detail in their performance to merit this response. The huge expense incurred in manufacturing or acquiring these machines, whether clocks, human automata, or barrel-organs also attests to their appreciation as life-imitating artefacts at their time of production and therefore their relevance as historical sources.

The usage of barrel-organs in churches, which spread quickly as the eighteenth century progressed, is also useful from a musicological standpoint. This was a peculiarly English phenomenon, possibly fuelled by the depletion of work for organists during the Commonwealth period followed by the sudden re-ignition of demand following the Restoration. The growing fashion throughout the eighteenth century for hymn singing both in church and as a domestic pursuit, as well as a continuing vogue for other domestic music-making, meant that small barrel-organs found many uses both in church and outside. Indeed, there are cases of portable barrel-organs, purchased by a parish, being transported in and out of the church for use at other social gatherings. They were widely lauded, leading many, including diarist and engraver George Vertue, Charles Burney and even the precentor of York Minster, to claim that barrel-organs were 'capable of producing an effect equal to

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[117] Wood, *Living Dolls,* pp. 3-5.
[118] ibid. p. 17.
[119] Günther Schmitt (1967) 'Johann Friedrich Unger (1714–1781)' *Agrarwirtschaft* vol 16 pp. 201-206 quoted online in https://de.wikipedia.org/wiki/Johann_Friedrich_Unger_(Arithmetiker).

the fingers of the first-rate performer'.[120] In continental Europe there was, as we have seen, an equal vogue for mechanical music reproduction; but this remained most commonly for chamber rather than church use.

There is anecdotal evidence of barrel-organs being purchased for use in church from as early as 1700.[121] This is not verifiable but it is certain that there were makers manufacturing instruments for church use quite soon after this date.[122] George Vertue writes in his diary of 1722 that they might be a welcome addition particularly to country parish churches, with the caveat 'whether this thought will ever come to be used, God knows.' Evidently, they were not very widely in use by that time. [123]

By the second half of the century, however, barrel-organs were becoming more common. Many organ builders also made barrel-organs; in fact in the early nineteenth century when the *Encyclopaedia Londinensis* was compiled, it stated 'barrels are very generally added to chamber organs, operating on the same pipes as the finger keys, [...]so that either barrel or finger keys may be used independently of each other.'[124] The fitting of barrel mechanisms was so common that the term 'finger-organ' was employed for instruments which did *not* contain one.

2.2 The Holland organ and Clay clocks as the focus for this study

The principal focus for this study will be two musical clocks by Charles Clay and an extraordinary barrel-organ by Henry Holland. These instruments' importance centres around the care which has been taken over their repair and maintenance, the careful documentation of their contents, and for their close connections to Handel and possibly other composers. Other instruments from contemporary makers in England will also be used as supplementary corroborative and background evidence

Clay clocks, manufactured in the 1730s, are among the finest examples of workmanship encountered in eighteenth-century mechanical musical instrument manufacture, making them an ideal starting point for this study. The principal ones examined are those transcribed by Peter Dirksen; the most interesting is often referred to as the 'Braamcamp Clock', now in a private collection.[125] A recording made by the transcriber has kindly been made available by permission of the owner through the Museum Speelklok, Utrecht.[126] The other is in the Royal Collection at Windsor Castle and although the clock case does not survive, the inner workings are still somewhat operational. Not all of its pieces are available to hear and the quality of the airflow makes the recording difficult to analyse

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[120] Wilkes, J. (1810). *Encyclopædia Londinensis, or Universal Dictionary of Arts, Sciences and Literature ... Embellished by ... engravings. Compiled ... by John Wilkes.* [vol. 1-22, edited by J. Jones, vol. 23, 24 by G. Jones.], (London).
[121] Ord-Hume, *Barrel Organ,* p. 33.
[122] ibid. Ord-Hume is unable to provide references.
[123] ibid p34.
[124] Wilkes, *Encyclopædia Londinensis*.
[125] Haspels, *Automatic Musical Instruments*.
[126] I am extremely grateful to Maria Lefeber for her help in this matter.

closely, but Dirksen's transcription, made by ear when the instrument was in better playing condition, seems accurate. A further Clay clock survives in the Royal Collection in Naples. It does not play, but has recently been transcribed by analysis of the barrel pinning.[127]

Charles Clay was probably born in the town of Flockton near Huddersfield and was still living there in 1716 when he applied for a patent for a musical watch. This was initially considered favourably by the Attorney General but the decision was overturned in 1717 following an appeal by the Clockmaker's Company, claiming that a similar device had been invented by Mr Daniel Quare, one of their members. Nevertheless, by 1720 Clay had established himself as a clock and watchmaker in London just south of St Mary-le-Strand, and in 1723 he was appointed Clockmaker to His Majesty's Board of Works, a position which he held until his death in 1740. Clay's largest-scale work in this capacity was the construction (commissioned in 1731) of the clock over the gatehouse at St James's Palace which remained in place until 1831, when it was dismantled and moved to Hampton Court.[128] In 1736 he was summoned to an audience at court where he was able to demonstrate a 'surprising musical clock, which gave uncommon satisfaction to all the Royal Family present, at which time Her Majesty, to encourage so great an artist, was pleased to order fifty guineas to be expended for numbers in the intended raffle, by which we hear Mr Clay intends to dispose of the said beautiful and complicated piece of machinery'.[129] This quotation is taken from an article in the *London Weekly Advertiser* on 8th May 1736 announcing the sale of tickets for the said raffle, seemingly the most efficient way in which Clay could recoup his outgoings.[130] The lucky winner is unknown, but their prize was clearly an artefact that even royalty could not buy outright.

By the time this complex and expensive work was exhibited Clay was collaborating with many of the finest artisans of his day. The decorations on his works were provided by sculptors such as Louis François Roubiliac, who designed Handel's memorial in Westminster Abbey, and John Michael Rysbrack, responsible for the monument to Sir Isaac Newton, also in Westminster Abbey. The paintings included works by Jacopo Amigoni, who was resident in London from 1730-39 and renowned across Europe, and who eventually settled as court painter to Ferdinand VI of Spain and director of the Royal Academy of Saint Fernando.[131] The music included in the clocks, performed on an organ mechanism[132] seems to have been provided by various composers and Clay's advertised lists include Handel and Geminiani with other references to Corelli.[133] Corelli never visited London and was dead by the time Clay arrived, but his music was widely venerated and Geminiani, a pupil of

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[127] Di Sandro, *Macchine Musicali al Tempo di Händel*.
[128] Croft-Murray, E. (1948) 'The Ingenious Mr Clay' *Country Life,* **31** pp. 1378-1380.
[129] Barclay Squire, 'Handel's Clock Music', pp. 528-42.
[130] ibid.
[131] http://www.getty.edu/vow/ULANFullDisplay?find=&role=&nation=&subjectid=500016473 accessed 18/2/17.
[132] Most of the surviving examples of Clay's work use a mechanical organ mechanism, though his last and most ambitious project, exhibited after his death by his widow, seems to have included several instruments, possibly harpsichord, bells or other percussion.
[133] Croft-Murray, 'The Ingenious Mr Clay', pp. 1378-1380.

Corelli's, may well have included Corelli's music alongside his own contributions, although no scores for Clay's clocks by Geminiani survive.

When Clay died in 1740 one of his executors was John Pyke, also a clockmaker who seems to have taken up Clay's mantle after his death, and Pyke may have completed some of Clay's unfinished works.[134] His son, George Pyke, also a clockmaker, eventually became 'Organ-Builder to his Majesty, and esteemed the first Mechanic in that Branch to any in the Kingdom'.[135] Indeed, it was probably through George Pyke that Clay's clock known as 'The Temple and Oracle of Apollo', now housed in the Royal Collection at Windsor Castle, was acquired by Princess Augusta in 1759. George Pyke clearly had an interest in mechanical organ building as well as clock-making and, having continued in his father's premises in Bedford Row, took on five apprentices, four of whom are known although not all of their indentures were registered with the Clockmakers Company.[136] The two who were officially registered, identified by Dawe in his article 'The Mysterious Pyke, Organ Builder', were David Hicks and Samuel Green, the second of whom became a prominent organ-builder. There are two more who were not registered but are identified elsewhere; Joseph Bellamy, apprenticed in 1767 for the sum of £315,[137] and Henry Holland, named in the announcement of the auction held after Pyke's death.[138] Here it is stated that Holland was to carry on the business of the deceased, alongside Pyke's widow.

It seems likely then, on first consideration, that this Henry Holland was the maker of the Holland organ chosen as the other principal focus for this study, from the latter end of the eighteenth century. This instrument is shrouded in some mystery however. The booklet which lists the contents of the organ, quoted by Langwill[139] gives the title "Holland Organ / Builder Sutton upon / Trent near Newark / Notts" in a handwriting which differs from that used to list the barrel contents (see Fig. 2.3). Langwill identifies this Holland as being 'almost certainly a travelling showman' but does not state reasons or references for this assertion.

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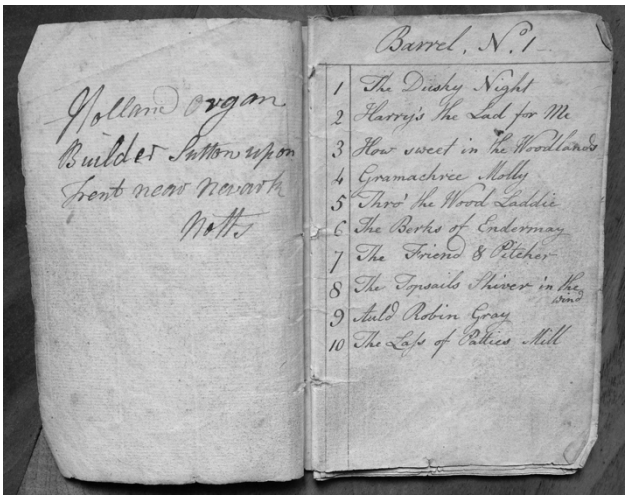
[134] Ord-Hume, *Barrel Organ* p. 227.
[135] Dawe, D. (1974) 'The Mysterious Pyke, Organ Builder' *The Musical Times* **115**. pp. 68-70.
[136] ibid.
[137] ibid.
[138] Dawe, 'The Mysterious Pyke'.
[139] Langwill, L. G. and J. N. T. Boston (1970). *Church and Chamber Barrel-Organs: their origin, makers, music and location.* 2nd ed., revised and enlarged. (Edinburgh, L. G. Langwill).

Figure 2.3 - Opening pages to the booklet held by the Colt Clavier Collection, relating to the Holland organ (with kind permission of the trustees and Mr W. E. H. Spiers, custodian of the collection).



There is no other Holland connected with barrel-organ making either in Langwill's book or in other lists of organ builders from the late eighteenth century, so it is possible the name Holland had not yet been connected to a known barrel-organ builder by 1970, the date of Langwill's printing (the advertisement for the auction following George Pyke's death came to light slightly later). Furthermore, there are no other Holland organ builders listed as being active in the period close to when this organ was produced other than one John Holland who was active in the Bath area from c1800-1831.[140] The location, 'Sutton on Trent […] Notts.' is somewhat inconvenient to the theory that it was Pyke's Henry Holland who built this organ. In his entry on Henry Holland, William Sumner claims he 'did some minor work in various parts of the country' which may possibly allow for a link between the London and Nottinghamshire associations,[141] but again this is tenuous. The date of the organ[142] is also not known for certain, though the music contained within it suggests a date sometime after 1786, the first publication date of the latest pieces of music contained within it.[143]

The organ's appearance is outwardly similar to many other barrel-organs produced in the late eighteenth century. However, it does not look especially like other barrel-organs attributed to Henry Holland, so its appearance gives us few clues as to its origin. Despite its relatively undistinguished exterior, the contents are remarkable for several reasons, including the large volume of music it contains and the care and craftsmanship with which it has been pinned. This is indicative of a master

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[140] Boeringer, J. (1983). *Organa Britannica: organs in Great Britain 1660-1860: a complete edition of the Sperling notebooks and drawings in the library of the Royal College of Organists.* (Lewisburg, Bucknell U P; London and Toronto: Associated University Press).
[141] Sumner, W. L. (1973). *The organ, its evolution, principles of construction and use.* (London, MacDonald).
[142] Fuller suggests 1790 based on the publication date of 'Ma Chere Amie', but this was in fact first published in 1786, along with at least one other piece, 'Favourite Song in The Heiress'.
Handel, G. F. and D. Fuller (1980*). Two Ornamented Organ Concertos (opus 4, nos.2 and 5), as played by an early barrel-organ.* (Hackensack NJ, Jerona Music). pp. x-xi.
[143] Kassler, M., et al. (2004). *Music Entries at Stationers' Hall, 1710-1818*. (Aldershot, Ashgate).

craftsman, whatever his origins. The extensive amount of music by Handel is also remarkable. Most surviving organs of the period contain short popular tunes by various composers, usually songs, dance tunes, or hymns. The first three barrels in the Holland organ follow this pattern but barrels 4-16 contain longer pieces; arias, incidental music from operas/oratorios (almost exclusively by Handel) and two complete organ concertos. These often include repeated or *da capo* sections providing copious material for analysis. The full repertoire lists for surviving Clay clocks and the Holland organ can be found in Appendix B.

There is a further layer to this organ's mystery in addition to that surrounding Holland's identity. In 1986, the Erato label released an LP entitled 'Haendel/Un Enregistrement D'Époque' made by Olivier Roux and containing selected pieces from the Holland organ, the only ones recorded prior to the current recording.[144] In the notes for this record, Roux claims, as stated above, that Holland was a travelling showman and organ builder from Sutton, near Newark, Nottinghamshire, and that he has 'established beyond a doubt that the instrument's sixteen barrels […] were all notated by German born John Christopher SMITH [sic] the Younger'.[145] If indeed these barrels were arranged by Smith, a great friend of Handel, who served as his amanuensis in his later years, this would imbue them with huge authority as Handelian sources. There is evidence that Smith was involved in the production of arrangements for barrel-organs; William Coxe, Smith's stepson, writes in his *Anecdotes of George Frederick Handel and John Christopher Smith* that 'Pinchbeck, being employed by the Earl of Bute to construct a barrel-organ of extraordinary size, requested Smith to superintend the work'.[146] Smith collaborated with Langshaw, the barrel technician, and produced (in Coxe's opinion) an organ 'with so much delicacy and taste, as to convey a warm idea of the impression which the hand gives on the instrument'.[147] The Earl of Bute seems to have been so satisfied with the work that he offered Smith more money, but Smith asked only that the Earl encourage the King to attend Smith's oratorio performances. The King duly attended and thereafter Smith's relationship with the royal household developed.[148] There are other references to Smith's work on this famous instrument, one being the small book by Alexander Cumming (1733 - 1814), detailed in chapter 1.[149]

The Earl of Bute's 'machine organ' contained a huge number of works by Handel, filling 36 of the 64 barrels (32 barrels of vocal works and four of instrumental music). This is perhaps why there may at times have been some confusion with the Holland organ which also strongly favours works by Handel. However, the first Bute organ was destroyed in a fire in 1843 and the second was sold off with its barrels at auction when Cumming died (it had been returned to him following the Earl's

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[144] The full recording made for this study is included on CD as Appendix D.
[145] Roux, O. (1985). *Haendel, Un Enregistrement d'Epoch*. LP. (France, Erato).
[146] Coxe, W. (2009*). Anecdotes of George Frederick Handel and John Christopher Smith (1799).* (Richmond, Surrey, UK, Tiger of the Stripe). p. 60.
[147] ibid.
[148] ibid. pp. 61-65.
[149] Cumming, A., F.R.S. (1812*). A Sketch of the Properties of the Machine Organ, invented, constructed, and made by Mr. Cumming, for the Earl of Bute: and a catalogue of the music on the various barrels, etc.* (London, E. & H. Hodson).

death).[150] It was also somewhat larger than the Holland organ, with barrels 122cm in length, rather than Holland's 73cm. The name Holland is never seen in the extant records concerning the Earl of Bute's organ.

It is also very unlikely that J. C. Smith, closely linked to the King and in retirement by the time of the Holland organ's construction, would have arranged music for a travelling showman in Nottinghamshire. Therefore at least one of the assertions surrounding the Holland organ must be false. It cannot have ornamentation and arrangements by Smith and be made by a Nottinghamshire showman. If it were made by Henry Holland of London (or Bath, since Smith retired there) the two men could be linked by a royal connection: Holland was connected to the King through his inheritance of Pyke's business.

Whatever the truth behind these mysterious and conflicting stories, the Holland organ contains larger-scale, longer works than can be found on any other surviving barrel-organ of the period, and in phenomenally good condition. This is in part due to the expert conservation work undertaken by Rémy Royer and Arthur Ord-Hume at the request of the organ's owner, the late Mr C. F. Colt. The unique inclusion of longer works and the prevalence of Handel's music alone are reason to value this instrument as a historical musicological source. This is compounded, by the happy coincidence of similar pieces appearing in recordings of both the Clay clock and the Holland organ, enabling a stylistic comparison between the instruments, even if the true identity of the makers or arrangers remains conjectural. The Holland organ has not been previously recorded in its entirety and therefore it is uniquely documented here (see Appendices B and D). Included in other appendices are further recordings of organs and clocks roughly contemporaneous to the period spanning the manufacture of the Clay clocks and the Holland organ. These provide contextual material, demonstrating that the style heard in the principal instruments is not unique among sources of a similar type and period.

2.3 Evidence concerning construction

Many details of the finer techniques used by clockmakers seem to have been closely guarded, but the mode of performance is similar to that of the barrel-organ with the exception that the musical mechanism was generally operated by a dropping weight incorporated into the clockwork, rather than cranked by hand.[151] When force is applied the barrel turns and at the same time the bellows are operated. These are connected to an air reservoir (often incorporated within the bellows themselves) which remains full, topped up as the bellows blow, like the bag on a bagpipe, allowing air to flow evenly to the organ pipes. As the barrel turns, the pins and bridges on the barrel lift levers which

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[150] Ord-Hume, *Barrel Organ,* pp. 90-94
[151] There were also larger barrel-organs operated in this way, particularly in other areas of Europe

release air to flow to the correct pipes for the required duration. For reasons of space there are often limited sharps and flats included in most mechanical musical instruments of this period, so most pieces are transposed into keys closely related to C major. This limits the need for accidentals and eliminates problems of temperament which may arise from modulations to more remote keys.

Two illuminating treatises on the construction and arrangement of music for barrel-organ survive from the period of this study (1730-c1800). The first (on which much of the second is based) was published in 1775 by Père Marie-Dominique-Joseph Engramelle (1727-1805), an Augustinian monk with a passion for mechanical music. He believed that his system for pinning barrels combined with the accuracy and nuance which he achieved mechanically, could reproduce, and effectively immortalise, the greatest players of the day. His book, *La tonotechnie, ou L'art de noter les cylindres* has a rambling style and there is a great deal of interesting but trivial autobiographical detail included which may account for the unfortunate lack of any complete translation.[152] However, the pinning technique Engramelle describes is clearly laid out in diagrams. The technique involves the use of a disc, or dial placed behind the crank of the organ. This is divided into equal sections, more or fewer depending on the complexity of the music to be pinned. It is determined by means of calculations, included as charts, showing the required distance on the barrel surface between each note value and therefore how much the crank is required to turn to rotate the barrel. The system of gears means the barrel will turn much more slowly than the crank; for example, two consecutive crotchets might appear on the barrel on horizontal axes 5mm apart and for the barrel to be turned this exact amount the crank must be turned through (for example) 190º. This will be shown using the disc behind the crank. This dial is then divided into smaller degrees depending on the smallest beat division required. The system can give extraordinarily accurate measurements on the barrel surface enabling the barrel-pinner to notate highly complex rhythms and textures. The length of each note is also measurable by this disc system, allowing the pinner to use thinner and thicker pins, and ‘bridges’ of varying lengths to produce notes of every conceivable length. This information (see Fig. 2.4) confirms how accurate barrel-organ notation could be, including what rhythmic inequality, note weighting and ornamentation was possible.

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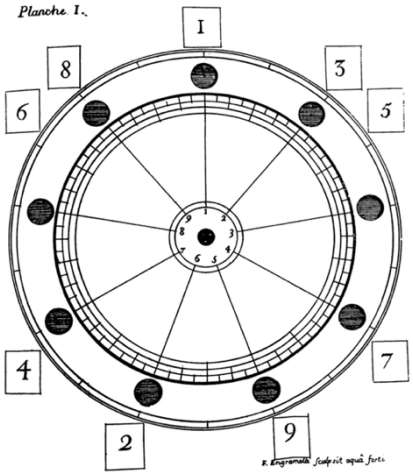
[152] Engramelle, M. D. J. (1775). *La Tonotechnie ou L'art de noter les cylindres, et tout ce qui est susceptible de notage dans les instrumens de concerts mechaniques*, (Paris, P.M. Delaguette).
'Tonotechnie' refers to the techniques of mechanically producing ‘tones’ or ‘pitches’. The remainder of the title translates as 'or the art of notating [pinning] the cylinders and everything else connected with the notation [pinning] of mechanical concert instruments’

Figure 2.4 - Examples of Engramelle's disc and tables for determining positions for barrel pinning (Tonotechnie p.140v. & 133).



DES CYLINDRES. 133

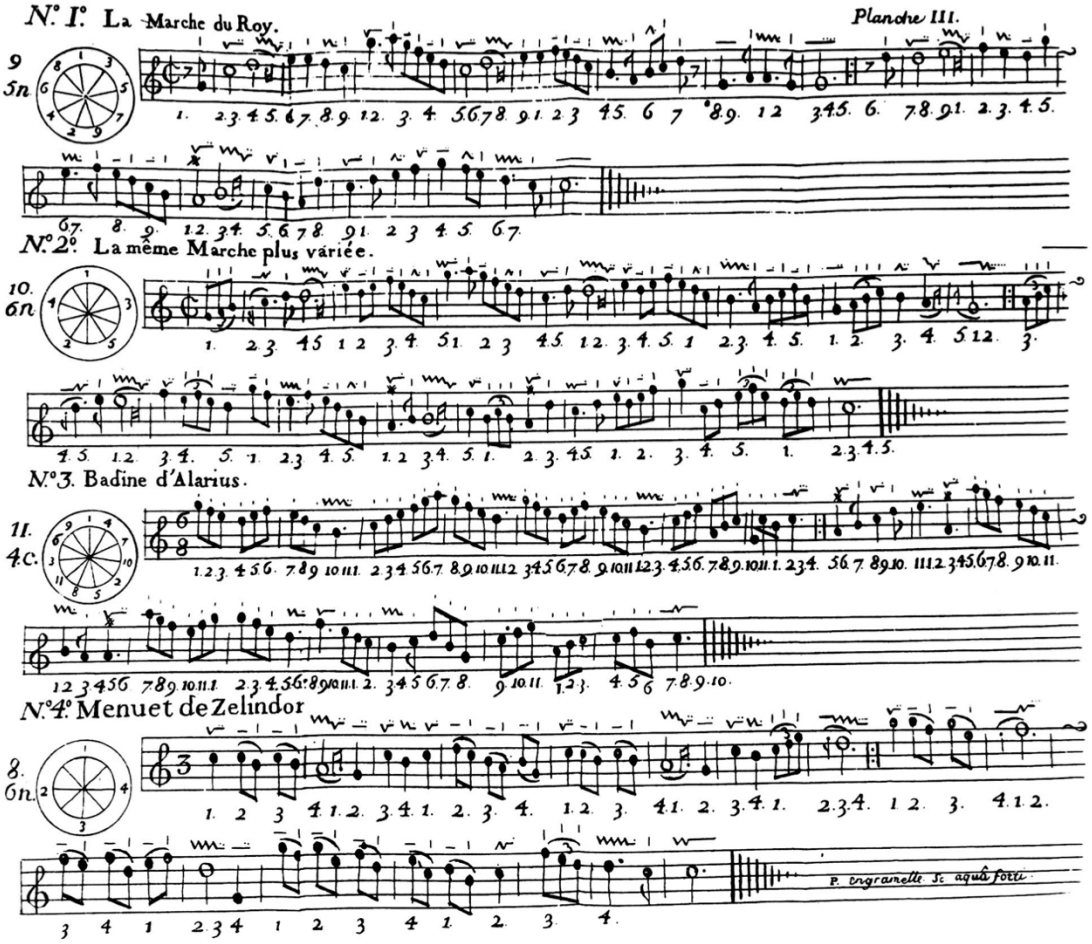
Noires.	multipliées par	produisent, premier produit.	tours de la manivelle.	multipliées par les Carrans de	produisent, leux produits.	à déduire le premier produit du second, reste de silence à la fin.
72	4	288	40	8	320	32-8es
72	5	360	40	9	360	o égal
72	6	432	40	10	400	ne se peut.
72	6	432	40	11	440	8-11es
72	7	504	40	12	480	ne se peut.
72	7	504	40	13	520	16-13es
72	8	576	40	14	560	ne se peut.
72	8	576	40	15	600	24-15es
72	9	648	40	16	640	ne se peut.
72	9	648	40	17	680	32-17es
72	10	720	40	18	720	o égal
72	11	792	40	19	760	ne se peut.
72	11	792	40	20	800	8-20es
72	12	864	40	21	840	ne se peut.
72	12	864	40	22	880	16-22es
72	13	936	40	23	920	ne se peut.
72	13	936	40	24	960	24-24es

Left: Engramelle's disc, positioned behind the crank for pinning. Each turn to the consecutive number turns the barrel to the next whole beat with the degrees marked between facilitating the beat divisions. Right: his tables of calculations for determining the number of divisions required on a disc and the amount of silence which will be remaining at the end of the piece

The tables in Fig. 2.4 show the number of smaller divisions into which the beats of a bar could be divided using the disc system. Using these measurements, the maker would be able to pin incredibly accurately and achieve a high level of flexibility on note length, placing, and speed. Enough length could be added to notes to make them sound more weighted without altering the rhythm; a trill could sound at varying speeds, with one note slightly lengthened in the middle to add weight, and the amount of silence after each note could be varied to give different degrees of articulation.

Engramelle also includes example pieces in which he gives not only the number of divisions required on the disc for that piece, but where the divisions fall in the music, which ornaments should be included and how much silence should follow each melody note. This measuring of the silence between melody notes provides an insight into his attitude to articulation, since it is the infinitesimal silences, or lack of them, preceding each note which gives variety to the articulation. Indeed, Engramelle's system of symbols inextricably combines ornamentation and articulation, which is important, since it implies the two are integrated and are equally essential modes of expression.

Figure 2.5 - Example pieces from Engramelle's Tonotechnie showing placing of ornaments, articulation marks and how the disc is to be utilised.



Large sections of Engramelle's book, appear in the second important treatise concerning barrel-organs from the same period, *L'Art du Facteur des Orgues* by a Benedictine monk named Lamathe François Bedos de Celles de Salelles, generally referred to as Dom Bedos (1709-1779). This is a huge four-volume work published between 1766 and 1778, some of which was translated into English. The first three volumes contain instructions for building a variety of pipe-organs, but the fourth includes a discussion of barrel-organs. Much of this is credited to Engramelle: the two men clearly had contact. Dom Bedos's work was highly influential and remains an important text for organ and barrel-organ makers and restorers in the modern era.[153]

The information in Engramelle's and Dom Bedos's books is an invaluable starting point from which to begin the analysis of barrel-organs which will be undertaken in the following chapters. The level of detail which was expected both of the arranger and the barrel-pinner is clear, as well as the means by which that detail might be conveyed. It is possible, with this information, to anticipate potential pitfalls. A slightly bent pin, or wobbly lever, for example, might mean the two do not

[153] Bedos De Celles, D. (1766-78). *L'Art du Facteur D'Orgues*. (4 volumes, facs. 1963) (Kassel, Barenreiter).

connect as precisely as they should as the barrel turns, causing a note to fail to sound, or to sound out of time. This is helpful when constructing a methodology for studying the organ's performance and when making performing editions of the pieces clarifying how literally mechanical performances can be taken, and the margins of error to take into account when forming judgements based on them.[154]

Figure 2.6 - Left: Outer case of Holland organ showing purely ornamental pipework detail. Right: Holland organ with front removed to display inner workings.

Fig. 2.6 shows the Holland organ with its Sheraton-like design featuring tapered legs and veneer inlays added to the mahogany case. In its construction it is similar to most other English barrel-organs made in the late eighteenth and early nineteenth centuries, with the crank on the front. The stops are on the right-hand side of the case (not seen in Fig. 2.6) which would make it impossible to alter the registration during a performance, if there were only one operator. Many other organs from the period place the stops on the front of the case, which would allow for registration changes within pieces, but this is likely to be simply a variance of design between different makers.

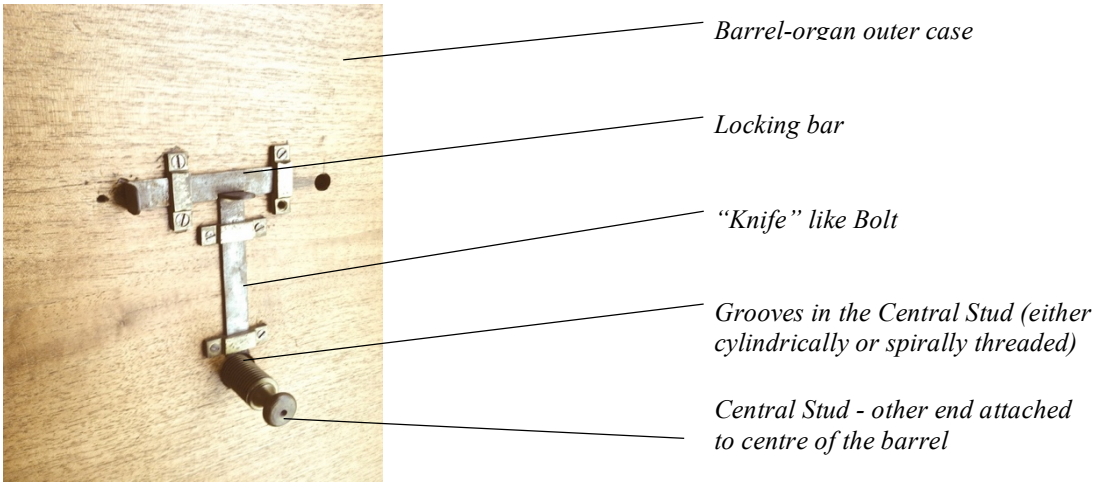
2.4 Pinning styles

There are two types of pinning evident in the Holland organ barrels, which may have different implications for the function of the music therein contained (see chapter 7). Barrels 1-4 are pinned cylindrically which means that it takes exactly one rotation of the barrel to complete the tune which then repeats. This is the most common pinning style for barrel-organs from this period; it is also the

[154] See also Chapter 1.

style used in most organ clocks since it allows for the individual selection of tunes. There is no more than a fleeting gap between iterations of the melody, assuming the handle is consistently turned allowing multiple verses of songs or repetitions of dances without interruption. The tunes (between nine and twelve on each barrel, each lasting roughly one minute) are changed by lifting the 'knife-bolt' out of the groove on the central stud which protrudes from the right-hand end of the barrel (see Figs. 2.6 and 2.7), thus raising and releasing the levers from the pins and then manually sliding the barrel fractionally to the right or left. The barrel is then anchored in place by replacing the knife-bolt in the correct groove and securing the locking bar above it. Depending on which groove the bolt is locked into, the levers connect to a different set of pins.

Figure 2.7 - Mechanism to lock barrel in place (Holland organ).



Barrels 5-16 are pinned spirally, meaning that the central stud attached to the barrel centre is spirally threaded, so once the knife-bolt is locked in place the turning handle automatically shifts the barrel to the right as it turns. Therefore rather than repeating one piece therefore, longer pieces (up to ten minutes) can be pinned and played without interruption. As a result, pieces pinned spirally may contain more musical development, as the time allows. However, whereas the cylindrically pinned pieces may be selected and played alone as desired, those which are spirally pinned must be listened to in order, as it is not possible to select individual pieces, only to fully 're-wind' to the beginning of the barrel and begin again. This could be a useful indicator of the circumstances in which the organ was used because in order to efficiently use the space on the barrel the tunes are pinned to be performed with a consistent crank turning speed.[155] The relative tempi of the pieces pinned spirally can therefore be compared in a way that the speeds of cylindrically pinned pieces cannot, as the latter

[155] This is discussed in Chapters 7 and 9.

are spatially pinned in such a way as to fit exactly on the barrel circumference. Fractionally longer pieces will be pinned 'faster' than shorter ones (i.e. with the pinning spaced to fill the barrel circumference precisely to allow for repetitions to continue in tempo).

There is no documentary evidence that all the barrels for the Holland organ were pinned at the same time. However, they do all fit perfectly into two cases, clearly made to house the exact number of barrels (Fig. 2.8). They also have precisely the same handwriting on all the labels, the same hand found in the book which details their contents.[156]

Figure 2.8 - Cases containing spaces to fit 16 barrels for the Holland organ. The barrels have slightly different diameters which allow for a fractionally longer or shorter playing barrel.

2.5 Musical context

A full history of musical life in eighteenth-century Britain would range beyond the scope of this investigation, but it is necessary to locate the barrel-organs and organ-clocks in a musical context. The period from the Restoration of the monarchy until the beginning of the nineteenth century saw massive changes in both the circumstances and artistic nature of music-making, and nowhere more so than in London. Charles Burney, in his account of the Handel commemoration performances in 1784, sums up some of the long-running features of English musical and intellectual life which are particularly relevant to both the instruments and their background:

[156] The name of the maker at the beginning of this little book is written in a different hand, as mentioned earlier. This may or may not be significant, given the doubt over the identity of the maker.

> Notwithstanding the frequent complaints that are made of the corruption of Music, of public caprice, and private innovation, there is, perhaps, no country in Europe, where the productions of old matters are more effectually preserved from oblivion, than in England: for, amidst the love of novelty and rapid revolutions of fashion, in common with other countries, our cathedrals continue to perform the services and full anthems of the 16th and 17th centuries, by Tye, Tallis, Bird, Morley, Gibbons, Humphrey, Blow, and Purcell; . as well as those produced at the beginning of the present century, by Wise, Clarke, Crofts, and others, whose grave and learned competitions have contributed to keep harmony, and the ancient choral style, from corruption and decay. The Crown and Anchor Concert, established in 1710, for the preservation of old masters of every country, has long endeavoured to check innovation; and the annual performances at St. Paul's, for the benefit of the Sons of the Clergy; the Madrigal Society, as well as the Catch-Club, and Concert of Ancient Music, are all more peculiarly favourable to the works of the illustrious dead, than those of living candidates for fame.[157]

It is clear from this passage that there was a fundamental tension in eighteenth-century English musical life between the innovative and the conservative. Burney and his colleagues seem at pains to keep innovation in check, ensuring that the wider fascination for the new does not eclipse more traditional compositional techniques. So, despite the huge advancements in technology and compositional aesthetics which would have taken place there was always older musical material making its presence felt. This dichotomy is encapsulated in the Holland organ, built around the time Burney wrote the above quotation, in that it embodies the latest technology and much up-to-date music. But it is clearly representative of an average English taste, since alongside these recent popular songs/dances it includes a large body of works by Handel (whose music had attained cult status by this point) and other songs which had evidently remained in the cultural memory for 100-200 years.

The conservatism exemplified above is an interesting juxtaposition with the high number of immigrant musicians who flocked to London (and other areas of Britain) over the course of the eighteenth century and found a welcome for their work. Composers such as Draghi introduced English composers to new modes of composition, and instrumentalists such as Paisible, Dieupart, Geminiani, and Sammartini fulfilled a desire for new or foreign fashions in music making.[158] Their work often became the object of the same conservatism, remaining in the repertoire of local music societies. Corelli's music, for example, remained popular throughout the eighteenth century, although it was adapted or re-decorated by later performers, some of whom, like Geminiani, were associates of the clockmakers and organ builders at the centre of this study.

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[157] Burney, C. (1785) *An account of the musical performances in Westminster Abbey and the Pantheon, May 26th, 27th, 29th; and June the 3d and 5th, 1784. In commemoration of Handel.* (London, Printed for the benefit of the Musical Fund and sold by T. Payne). pp. v-vi.

[158] Holman, P. (1996) 'Eighteenth-Century English Music: Past, Present, Future'. In Wyn Jones, D. *Music in Eighteenth-Century Britain* (Oxford, Ashgate). pp. 1-13.

Chapter 3: Comparing Arrangements of Handel's 'Alla Fama': Establishing Connections Between Composer, Clockmaker and Wider Performance Practice

3.1 Introduction and sources

The Bodleian Library's MS Don.c.69 contains two autograph Handel cantatas for solo voice and continuo and, bound between them, six arias in the hand of one of his copyists, J. C. Smith the elder, five from *Ottone* and one from *Floridante*. Four of the *Ottone* arias contain annotated ornaments in Handel's own hand,[159] three of which were published by OUP in 1976.[160] These are 'Affanni del pensier', 'Alla fama' and 'Benchè mi sia crudele'; all transposed down from their original keys, as they are in the Bodleian MS.[161] Winton Dean dates the manuscript, using the paper and handwriting both of Smith and Handel, to the 1720s and his hypothesis is that Handel added these ornaments to aid a mezzo-soprano who was to replace an indisposed soprano (possibly Cuzzoni or Faustina, in Dean's view). This seems plausible, though it is not verifiable and it is possible they were written for a different, unknown reason. This manuscript is also included by Helmuth Wolff in his *Original Improvisations from the Sixteenth to the Eighteenth Centuries.* Wolff's interpretation of the source material differs to Dean's, attributing the ornaments to the castrato Gaetano Guadagni and their notation to 'an admirer'.[162] This attribution seems unlikely, given Dean's dating of the manuscript (Guadagni was born in 1728) and the identification of the handwriting as that of Smith and Handel.

The Bodleian version of 'Alla Fama'[163] will be compared to a version contained in the Aylesford Collection, housed in the British Library.[164] This collection was originally the property of Charles Jennens (1700-1773), librettist for many of Handel's works including the *Messiah*.[165] Jennens had a passion for the music of Handel alongside a tendency towards completionism, and his collection contained many complete scores of operas and oratorios alongside other music.[166] He acquired a great deal of this during his close association with Handel and much of the music is in the hand of J.C.

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[159] See fig 3.2.
[160] Handel, G. F., Bodleian Library. MS.Don.c.69.
Handel, G. F., ed. Dean, W. B. (1976). *Three ornamented Arias*: 1. Affanni del pensier. 2. Alla fama. 3. Benche mi sia crudele. (London, Oxford University Press).
[161] 'Falsa imagine' contains only one ornamented figure and is not included in the publication. ibid. pp.i-iii.
[162] Wolff, H. C. (ed) trans Howie, A. C. (1972) *Original Improvisations from the Sixteenth to the Eighteenth Centuries* Anthology of Music Series (Cologne). pp. 101-32.
[163] Hereafter referred to as 'Bodleian MS'.
[164] Handel, G. F. *Aylesford Collection,* British Library. R.M.19.a.1. f160v.-171r.
See Fig. 3.3, Hereafter referred to as 'Aylesford'. The collection contains a huge body of music, much by Handel but including the work of up to 40 other composers. It was sold in 1918 by Lord Aylesford and bought by various institutions including The Fitzwilliam Museum in Cambridge, The British Museum and the Manchester Public Library. The music had passed to an earlier Lord Aylesford as a bequest from Jennens, his second cousin.
[165] Barclay Squire, 'Handel's Clock Music.', pp. 538-552.
[166] Smith, R. *Charles Jennens : the man behind Handel's Messiah*. (London, Handel House Trust, The Gerald Coke Foundation).

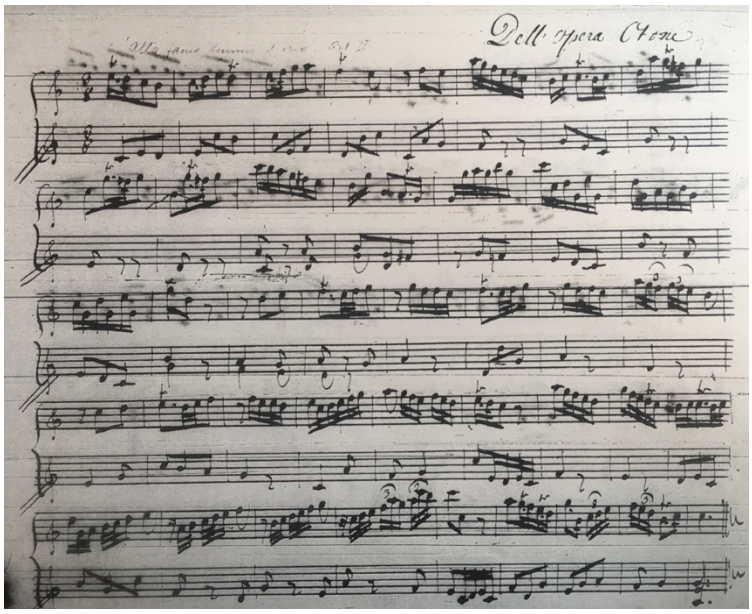
Smith the elder and other scribes of the Handel household.[167] The volume in which this version of 'Alla Fama' is found[168] comprises an eclectic mix of pieces by Handel, identified by J. H. Roberts as being in the hand of a scribe he identifies as S2, an assistant to Smith from the late 1720s onwards.[169] Further information on the dating of the Aylesford arrangements comes from the pieces themselves. The arias are taken from *Ottone: re di Germania*, *Arianna in Creta*, and *Sosarme*. *Arianna*, the latest, was first performed in 1734, so the arrangements, if they were constructed as a complete set, must have been written after this date.

Figure 3.1 - Contents of Aylesford manuscript (BL R.M.19.a.1, f.160v.-171r).

Number	Title/indication	Original source/other Clay sources	Key	Time Sig.	Staves
1		(also in Windsor Castle Clay Clock)	F	C	Treble Bass
2	[Voluntary or a Flight of Angels]	(also in R.M.18.b.8)	C	C	Treble Bass
3		(also in Windsor Castle Clay Clock)	C	C	Treble Bass
4	[Vola l'augello]	*Sosarme*	C	3/8	Treble Treble
5	Allegro		F	3/4	Treble
6	[Alla fama dimmi il vero]	*Ottone*	C	3/8	Treble Treble
7	[Deh lascia un bel desio]	*Arianna*	C	C	Treble Treble
8	[..from overture]	[*Scipione*]	G	3/4	Treble
9	[Dell' onda ai fieri moti]	*Ottone* (also in Windsor Castle Clay Clock)	C	C	Treble Treble
10	[In mille dolci modi]	*Sosarme*	C	3/4	Treble
11	[In mar tempestoso]	[*Arianna*] (also in Windsor Castle Clay Clock)	C	C	Treble Treble

[167] Roberts J. H. ed. Best, T (1993) 'The Aylesford Collection' in *Handel Collections and their Histories* (Oxford, Clarendon Press).
[168] Shelf Mark R.M.19.a.1 (HWV 587-597).
[169] Roberts. ed. Best, 'The Aylesford Collection'.

Figure 3.2 - 'Alla Fama' as found in the British Library's Aylesford Collection: R.M.19.a.1 (f.166v).



Number nineteen in the contents list is an entry labelled 'Ten Tunes for Clay's Musical Clock'.[170] The pieces included in the manuscript are not given titles but many can be identified as arias or other known pieces, usually from operas; others may have been composed specifically for this purpose (see Fig. 3.1). From the manuscript alone it is impossible to tell what input Handel had on the Aylesford arrangements, but in addition to this manuscript there is another in the Aylesford Collection (R.M.18.b.8.) and also an autograph sonata (HWV 578) written specifically for a musical clock, confirming Handel's interest in mechanised musical performance.[171] Handel is known to have had an interest in unusual instruments as can be seen from this letter from Jennens to Lord Guernsey, quoted by Donald Burrows:

> Mr. Handel's head is more full of Maggots than ever: I found yesterday in his room a very queer Instrument which He calls Carillon (Anglice a bell) & says some call it a Tubalcain […] 'Tis played upon with Keys like a Harpsichord [...] His second Maggot is an Organ of 500£ price which (because he is overstock'd with Money) he has bespoke of one Moss of Barnet: this Organ, he says, is so contriv'd, that as he sits at it, he has better command of his Performers [since] instead of beating time at his Oratorio's [*sic*], he is to sit at the Organ all the time with his back to the Audience.[172]

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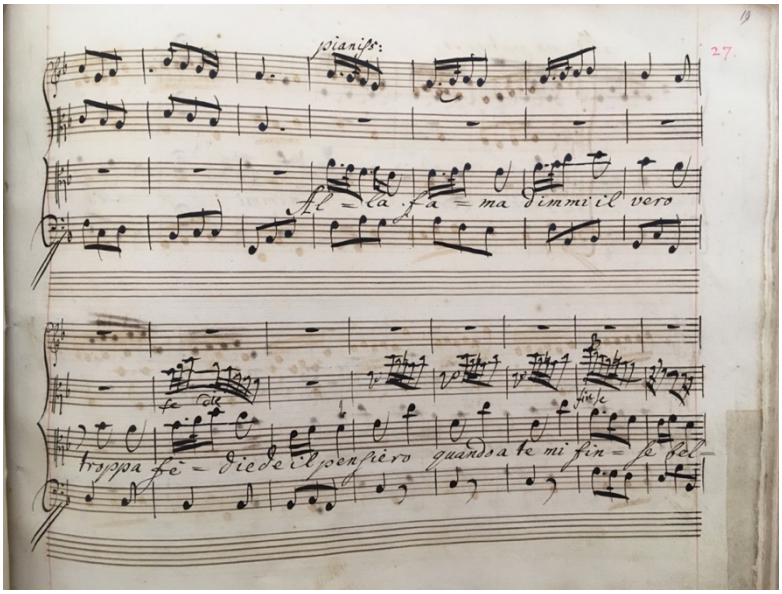
[170] N.B. There are actually eleven pieces at this place in the volume. The first three pieces are notated using treble and bass clefs, meaning that the notated ranges are larger (by about an octave) than for any other known arrangements for Clay's clocks. It could be that this is merely a scribal error, since this would generally be the format for keyboard music. In the following pieces this is rectified and they are notated either on single or doubled treble staves, in accordance with the customary ranges.
[171] Handel, G. F. *Sonata I by Mr Handel. the original & His own Handwriting*, British Library. R.M.20.g.13: f.40r-41v.
[172] Burrows, D. (2012) *Handel* (New York, OUP). p. 266.

Figure 3.3 - Second page of 'Alla Fama' as found in Bodleian MS.Don.c.69. (f.27r.). The vocal stave is the third down, with ornaments written in Handel's hand appearing in the empty second violin stave.



This study will compare how the two arrangements of the aria divert from the original melody as found in the earliest published version.[173] The Bodleian MS has an established link to the composer; the Aylesford version claims a link to Handel's household but appears to lack a direct connection to the composer himself. By examining an arrangement known to have been made by Handel and comparing this to the version for organ-clock it should be possible to establish the level of involvement Handel may have had in the arrangement, and the extent to which these sources can be assumed to demonstrate a Handelian performance practice. The examination of both sources will also open a discourse regarding the definition of the ornamentation style found within mechanical musical instruments, and where its inspiration comes from. Is the instrument imitating a vocal idiom? Or is the vocal line being 'instrumentalised'? Vocal music forms the majority of the repertoire pinned into mechanical organs, but this does not necessarily prove that the ornamentation style is applicable to vocal performance. By comparing a mechanical version of 'Alla Fama' to one which Handel specifically intended to be sung, it could be possible to gauge how 'vocal' he may have considered the ornaments found in mechanical arrangements of opera arias to be.

3.2 Comparison

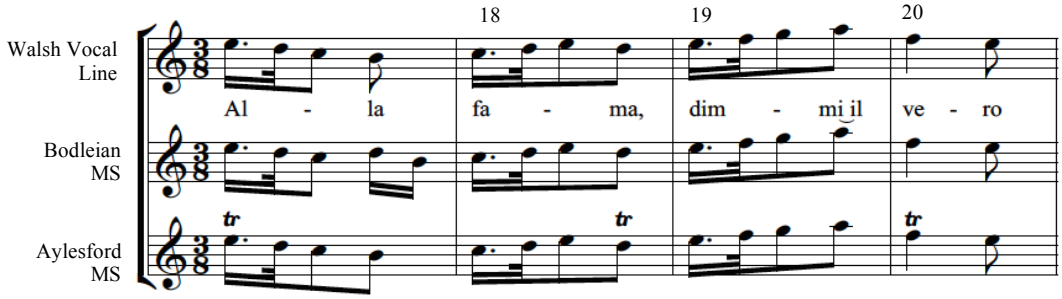
Figure 3.1 shows the eleven tunes included in the Aylesford manuscript to which this study refers, together with information regarding their sources and/or occurrence elsewhere in evidence

[173] The 'original' is taken to be the first publication of the opera in 1723 *Otho, an Opera, as it was Perform'd at the King's Theatre for the Royal Accademy ... Publish'd by the Author* (London, J. Walsh and Jno & Joseph Hare).

relating to Clay's musical clocks. Most of the tunes are necessarily truncated, as organ clock barrels usually play for roughly one minute and Clay's instruments are no exception. Instrumental introductions and ritornelli are often omitted, and melodic lines shortened or altered, in the interests of achieving a coherent arrangement which fits the available barrel space. The Aylesford arrangement of 'Alla Fama'[174] contains bars 17-60 of the original aria[175] (the first 41 bars of the vocal part's A section), omitting bars 34, 41 and 56. The Bodleian MS ornaments are attached to the vocal line with nothing added to the instrumental parts, stopping after bar 46, roughly two-thirds of the way through the vocal part of the A section. The additions may be incomplete, since two of the other two arias contain many ornaments throughout both their A and B sections. Both sources therefore address the vocal melody alone, and it is not possible to infer much from them about the performance of orchestral parts.

The Aylesford arrangement is not a Handel autograph, but there are strong similarities between the ways in which it departs from the original melody and Handel's autograph additions to the Bodleian MS, which can help to establish the strength of any link between the Aylesford arrangement and the composer himself. The Bodleian MS contains ornamental additions in 12/29 bars of the vocal line (after which the ornaments cease). Of these twelve bars, eight and a half are almost identical to their corresponding bars in Aylesford. A comparison score containing the vocal lines from all three sources - the Walsh published edition; the Bodleian MS, and the Aylesford MS (each in their original keys) - is provided in Ex. 3.6 at the end of this chapter, but it seems most efficient to analyse each phrase in turn with all the arrangements transposed into the same key, for ease of comparison.

Example 3.1 - Bars 17-20 of 'Alla Fama': original key is Bb and the Bodleian MS version is in F but all have been transposed into C to correspond with Aylesford for ease of comparison.



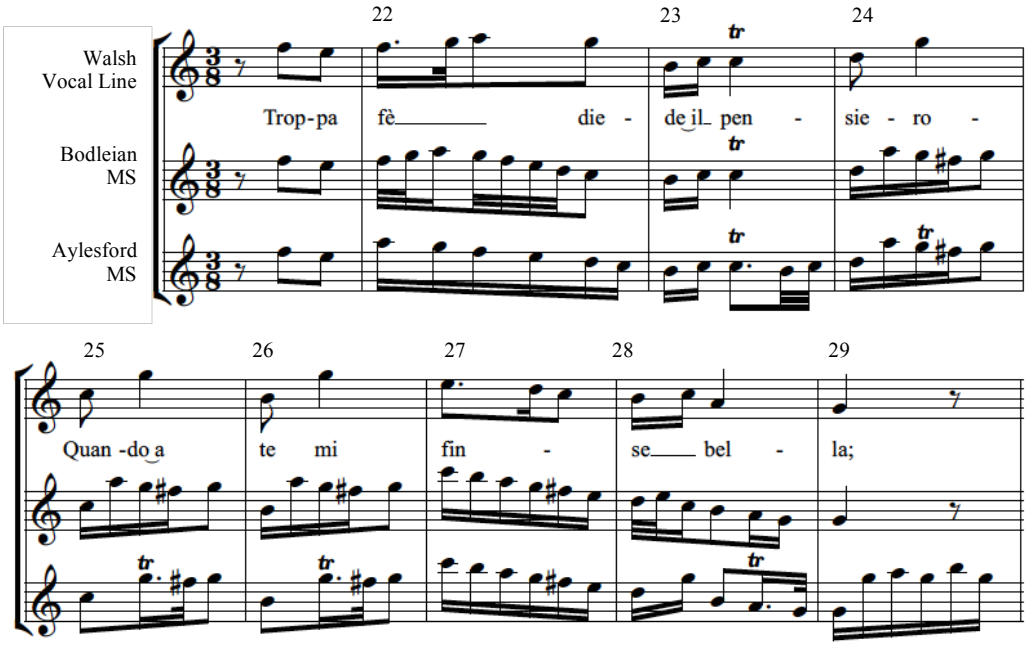
As seen in Ex. 3.1, Aylesford is the only version to add anything to this first vocal phrase, in the form of three marked trills.[176] The trill placed on the opening note contravenes advice from some writers, including Pier Francesco Tosi (1653-1732), a useful figure for comparison since he spent a large portion of his career in London from the 1690s onwards, and his *Observations on the Florid*

[174] Handel, *Aylesford Collection* (f.166v.) (HWV 592).
[175] Handel ed. Dean *Three Ornamented Arias* corresponds with this version .
[176] For a full transcription including bass see the end of this chapter.

Song, or Sentiments on the Ancient and Modern Singers was first published in Italy in1723, making it roughly contemporary with the Bodleian and Aylesford manuscripts. Regarding trills/shakes, he writes: '[… it is] very bad to begin with them, which is too frequently done".[177] This opening trill however, is marked clearly by Walsh on the opening note of the aria in the violin introduction; it is also entirely in keeping with additions to vocal lines found elsewhere in the mechanical evidence. There is nothing inherently unidiomatic about it; in fact, as Tosi admits, many singers were clearly in the habit of placing trills on opening notes. This is an instance, frequently encountered, of a writer providing information on popular practices through criticism of them. It raises the question of whether current research and historical performance practice should reflect what a few writers considered to be best practice, even though it may not have been widely taken up, or whether there is also a case for reflecting popular practice which may have disagreed with treatise writers.

The two ornaments in bar 22 (Ex. 3.2) are clearly related. The Bodleian MS's ornament initially follows the line of the given melodic material, merely altering the rhythm, but it then departs from the original to fill in the larger interval at the end of the bar with faster notes. The alternative version in Aylesford varies the line using a descending scale not unlike that in the Bodleian MS, with a regularised rhythm and omitting the initial ascending figure which opens the bar in the original. This ornamental material is also found in both versions of bar 27; with the use of the same figure (an identical descending scale in bar 27 landing in bar 28, which begins a sixth above the original melody and lands a third above it) providing a unifying motif linking the beginning and the end of the phrase.

Example 3.2 - Bars 21-29 of 'Alla Fama' (all three melodic lines are here transposed into the same key to match Aylesford for ease of comparison).



[177]Tosi, P. F (1743) *Observations on the Florid Song* (2nd English edition, trans. Galliard, London). p. 47.

Further moments of correspondence in this phrase between the two arrangements strengthen the possibility that they are linked. Bars 23-27 are nearly identical, differing only in a turn at the end of the trill in Aylesford's bar 23 (not marked in the Bodleian MS score) and the auxiliary As which appear in bars 25 and 26 in the Bodleian MS but not in Aylesford. Terminating turns are a common addition to trills however, and may frequently have been assumed rather than notated. Tosi describes this ornament as the '*Trillo-Mordente* or *Shake* with a *Beat*', saying it is 'a pleasing Grace in Singing' and adding that 'He, who understands his Profession, rarely fails to use it after the *Appoggiatura;* and he that despises it, is guilty of more than Ignorance [*sic*]'.[178] Its specific notation in Aylesford, therefore, perhaps indicates extra care by the arranger to emphasise that terminations should be included, rather than leaving this to the discretion of the barrel-pinner. If Dean's hypothesis concerning the background to Handel's ornaments is correct then the composer would have expected to use the Bodleian manuscript in rehearsal with the singer so there would have been no need to notate every nuance. Bars 24-26 differ only in the slight rhythmic variance, the addition of trills and the omission of the auxiliary upper notes in Aylesford. If the trills began on the upper note, however, the melodic pattern would be fundamentally the same as the Bodleian MS version, leaving the only difference as the dotted rhythm within the turned figure. Bar 27, as observed earlier shows a marked departure from the original melody line, and it would indeed be a great coincidence if two arrangers were to independently invent such an ornament for precisely the same point in the music.

It is possible (and this will be further emphasised in other chapters) that small graces such as trills were used so frequently that they were not considered ornaments, but as tools for expressive articulation. A composer or copyist, therefore, would find little need to notate every one, except at points where they were considered essential or may have been unexpected. The correct placing and use of the many varieties of oscillating ornaments is a matter for the taste of the singer, as Tosi describes and as such they had little place in the main musical text.[179] Although there is little doubt that the barrel-pinners used by Clay had some musical training, this perhaps reveals something about the degree to which Handel (or his scribe) trusted these craftsmen, who, although skilled, may not have been expected to display the same taste as a great master.

In bars 22-28, the Aylesford arrangement's deviation from the original melody is not needed either to accommodate the limited pitch span or time constraints of the organ-clock. It must therefore be taken as an artistic decision on the part of the arranger to alter the melody in this way. The variance which occurs in bar 29 in Aylesford, however, is due to the requisite self-sufficient nature of the arrangement. Some string ritornelli are included to link vocal phrases together and in bars 29-31 the original violin part (unornamented) continues in the Aylesford arrangement for three bars.

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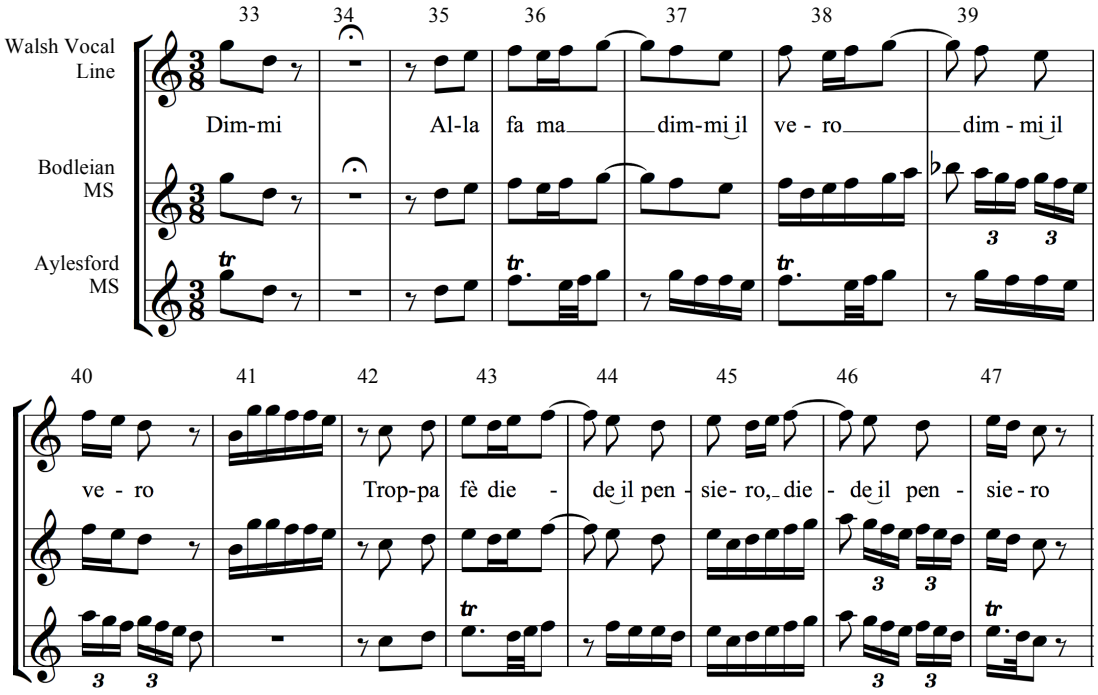
[178] ibid.
[179] ibid. pp. 41-50.

More striking points of similarity occur in the final three bars (bars 45 and 46) shown in Ex. 3.3 (the last phrase to be ornamented in the Bodleian MS). The identical figurations are not predictable ornaments, or ones which merely follow the original line. They depart significantly from the original in a way which suggests the same hand at work in both arrangements. The material used here has clear links with other ornaments in both versions as well, although at different points. The rising semiquaver scale pattern beginning with a descending third found in bar 45, is also found earlier, in bar 38 of the Bodleian MS. This figure is found in the original vocal line later in this section (e.g. bar 54, see Ex. 3.6), demonstrating a use of thematic material from the original melody in the ornaments. The Bodleian MS arrangement follows this in bar 39 with the triplet semiquaver motif similar to bar 45, which is perhaps unsurprising since the two phrases found in Ex. 3.3 form a sequence. This triplet pattern is also used in Aylesford in bar 40 as another unifying feature. In bars 35-37 and 42-44 the Bodleian MS follows the original vocal line exactly, whilst Aylesford follows the melodic shape but with some rhythmic changes, expressive trills and accented appoggiaturas.

*Example 3.3 - Bars 33-47 of 'Alla Fama'. *NB b34 and b41 are omitted in Aylesford.*

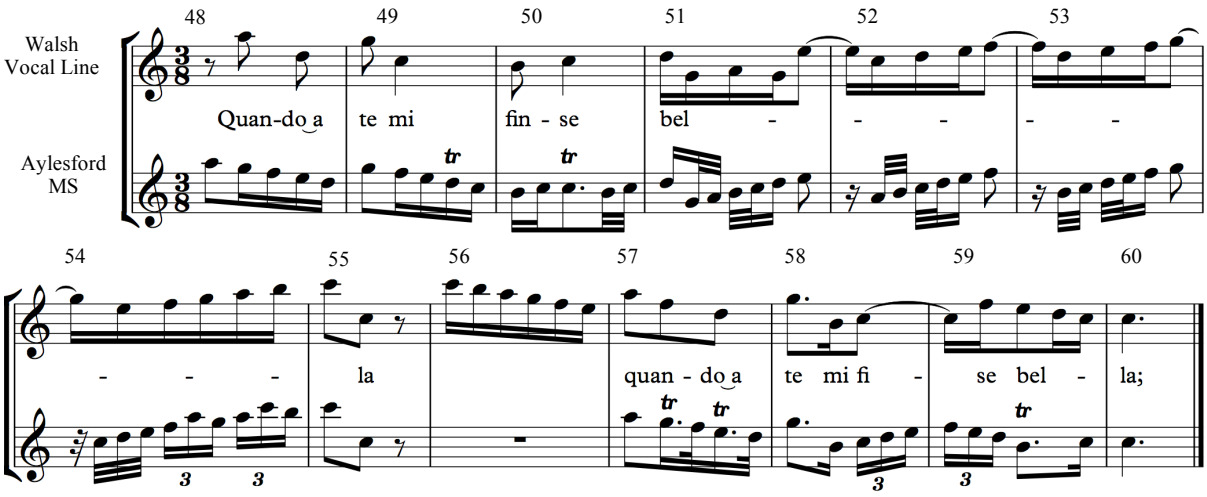


The accented appoggiatura figures found in Aylesford bars 37, 39 and 44 seem to be ornaments which would be well suited to a vocal performance, since they provide moments in the melodic line where a singer could take breath. This may imply further connections between the Aylesford arrangement and vocal practice, though this can only be conjectural. Other changes, found in bars 36, 38 and 43 in Aylesford, are slight but attractive, with the first notes of each bar slightly extended in Aylesford, and the semiquavers originally on the second quaver of the bars contracted to form a termination of the trills on the first beat. These would be performable by any instrumentalist or

singer. Notably, at the end of these bars, the organ mechanism would have no difficulty sustaining the notes which are tied over the bar-lines in the original and Bodleian MS; nevertheless, the arranger has chosen not to sustain but to reiterate them. The changes found in the Aylesford arrangement, therefore, are clearly not born out of mechanical necessity, but deliberate artistic choices. It is interesting to note again (as at the start of the vocal line) a trill on the first note of bar 33 at the start of the new phrase on a disjunct note. These trills are clearly used as articulation; they do not link two notes together, as with others in the piece, but they each colour one note alone.

The ornaments cease at this point in the Bodleian MS so further comparison is of little use. The Aylesford arrangement continues for a further 12 bars (see Ex. 3.4) with the ornaments including descending and ascending scale figures (bars 48-49 and 51-54 respectively) spanning, and sometimes extending the pitch range of the bars. Also featured are some triplet extension of scalic passages and accented passing notes over which trills are sometimes indicated. Trills placed within semiquaver passage-work might be considered un-idiomatic for a singer, but in fact one of the only trills added by Handel to the Bodleian MS is in the middle of a long semiquaver passage.[180] Handel then, must have considered these appropriate for inclusion in a vocal line making all of the Aylesford decorations applicable for vocal performance, particularly the figurations with rests which appear in bars 52-54, which would allow space for breathing.

Example 3.4 - Bars 48-60 of the Walsh score vocal line and the final 12 bars of the Aylesford arrangement. NB - Aylesford omits bar 56.



The inclusion of trills is the principal difference between the Bodleian MS and Aylesford arrangement. The Aylesford arrangement contains seventeen trills added to the vocal line over the 41 bars of the arrangement, compared to only one which is included in the Bodleian MS version (at bar 23). There are no trills added when the Aylesford arrangement takes up the violin part, but this is only

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[180] 'Benchè mi sia crudele', b. 104:1
Handel, ed. Dean, *Three Ornamented Arias,* p. 21.

for four bars which are entirely filled with semiquavers, so it is not possible to draw conclusions from this. It is possible, as mentioned earlier, that the Aylesford arrangement contains extra ornamentation information to convey a performance style which could have been discussed in with a singer in rehearsal, but which may not have been self-evident to a barrel-pinner. It is also possible that the trills were added to the organ clock version because this was an instrumental style rather than a vocal one but with only the evidence of only one piece it is not possible to confirm this. However, ornaments in both arrangements are quite prevalent; of the phrases included in this chapter from the Bodleian MS, 11 bars out of 31 are altered, and in the Aylesford arrangement 33 bars out of 41 contain some form of ornamentation whether melodic alteration or trills (or frequently both).

3.3 Conclusions

The level of similarity and frequency of identical melodic variation between these two sources seems too great to be pure coincidence. The primary conclusion for this study must therefore be that these two arrangements were made either by Handel himself or by Handel and another person extremely well acquainted with the ornaments used by the composer and his performers. The Bodleian MS is probably the earlier (as discussed in the introduction to this chapter) so it is likely that the Bodleian MS embellishments were a source for the Aylesford arrangement. This, considering their very different purposes should strengthen the Aylesford arrangement's link to the composer, or at the very least attest to his input. The Aylesford arrangements are therefore imbued with an importance hitherto not widely granted to them, as serious sources for Handelian embellishment.

With this in mind, it is relevant to make some initial observations regarding the melodic alterations and the placing of trills in the Aylesford and Bodleian versions of this piece, though of course it is not possible to make far-reaching claims regarding their repercussions in wider repertoire from the examination of so small a sample of material.

- Ornamentation of one sort or another occurs very frequently, particularly in Aylesford which places ornaments in 80% of bars.
- Contrary to Tosi's advice, it seems to be acceptable to add trills to opening notes of phrases.
- Trills are frequently followed by terminations, whether part of the original musical line or as an addition. Trills within musical lines (i.e. not cadential trills) which resolve either to the same note or move to the one above, often have a termination either added or written into the original musical line. Wherever a musical line moves from a note to its lower auxiliary and back as part of a rising melody (eg Ex.3.3 bars 36, 38 and 43) there is always a trill added in the Aylesford arrangement.
- Trills/other ornaments do not always connect two melodic notes but can occur on individual notes in disjunct melodic passages as articulation.

- Sequential phrases have ornamentation throughout (or even the same ornaments repeated). They do not begin plain.
- Similar melodic embellishment was clearly considered suitable for both an instrumental and vocal performance. Whether this may also be true of trill placing and type remains a question.

There are, of course, further questions which are not answered by the study of these two sources alone. When were the ornaments in the Bodleian MS expected to be applied; in the opening A section or only on the Da Capo? How were the trills found in Aylesford expected to be executed? From the upper note? With a long appoggiatura? Was the barrel-pinner expected to add any more to the score? Was the performer required to add their own trills and other graces to the melodic embellishments provided by Handel? The Bodleian MS does not add any extra trills to those already required in the Walsh publication, and in fact, adds only one over the course of the entire three published arias.[181] This one added trill is an interesting comparison point as mentioned above since it occurs in the middle of a passage of semiquavers, at a moment where technically it might be unexpected for a singer to insert a trill. Handel clearly expected a high degree of virtuosity from his singers and if he included trills in a passage requiring such clarity and technique, then he must have had singers capable of performing this. This would render the opening trills (and indeed most of the ornaments included in mechanical sources) entirely plausible as inclusions in a vocal performance.

With regard to the questions of the trill execution and whether any more would have been added by the barrel-pinner, these will be addressed in the following chapters. Chapter 4 will compare the notated arrangements (now assumed to be at the very least sanctioned if not actually set down by Handel) to the final versions of the same pieces found in Clay's clocks, and also begin the analysis of ornament execution in mechanical repertoire.

'Alla Fama', even in its original form, is fairly florid, but nevertheless it seems Handel perceived some decoration as essential. Tosi, as others do, makes recommendations that the opening sections of *Da Capo* arias require little in the way of embellishment:

> In the first they require nothing but the simplest Ornaments of a good Taste and few, that the Composition may remain simple, plain and pure; in the second they expect that to this Purity some artful Graces be added, by which the Judicious may hear, that the ability of the Singer is greater; and in repeating the Air, he that does not vary it for the better is no great Master.[182]

However, in a footnote, Tosi specifies that he is referring in this section to 'the general dividing of Airs to which the Author often refers'; i.e. to divisions, or the melodic embellishment or variation of the melody using smaller note values. The phrase 'simplest Ornaments of a good Taste' seems to refer to the smaller additions such as trills, mordents, ports de voix etc. so clearly these should be included.

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[181] ibid. (Dean adds two additional editorial trills but only Handel's additions are relevant here).
[182] Tosi, *Observations,* pp. 93-94.

Perhaps what we see in the Aylesford manuscript is the final repeat of the A section in a *Da Capo* aria, used alone for reasons of time limitation. In the other Bodleian MS arias, however, there is a large amount of melodic embellishment in the B sections, which would only ever occur once, so it cannot always have been required to hear a melody completely unadorned before embellishments are added.

Tosi suggests that 'the using so often *Beats, Shakes,* and *Prepares*, is owing to Lessons on the Lute, Harpsichord, and other Instruments whose sounds discontinue, and therefore have need of this Help [*sic*]'.[183] He does not specify how much is over-use, however, and the Aylesford manuscript, designed for performance by a set of organ pipes, does not have any need for help in sustaining the sound. Many mechanical renditions use long sustained notes with no decoration, so there can be no question that this was simply a keyboard style based upon instruments with no sustaining power, unless this had been adopted as a desirable aesthetic for other instruments/voices. With regards to the Aylesford arrangement's applicability as a source for vocal ornamentation, many writers recommend that instrumentalists should learn from a good singer and vice versa, and that the ornaments of expression are the same for all. The similarity of the melodic alteration in these two sources, confirming, as it does, the link between Handel's own style and that found in this arrangement for Clay's clocks, gives the whole collection of clock arrangements huge importance as sources of inspiration for the ornamentation in Handel's music.

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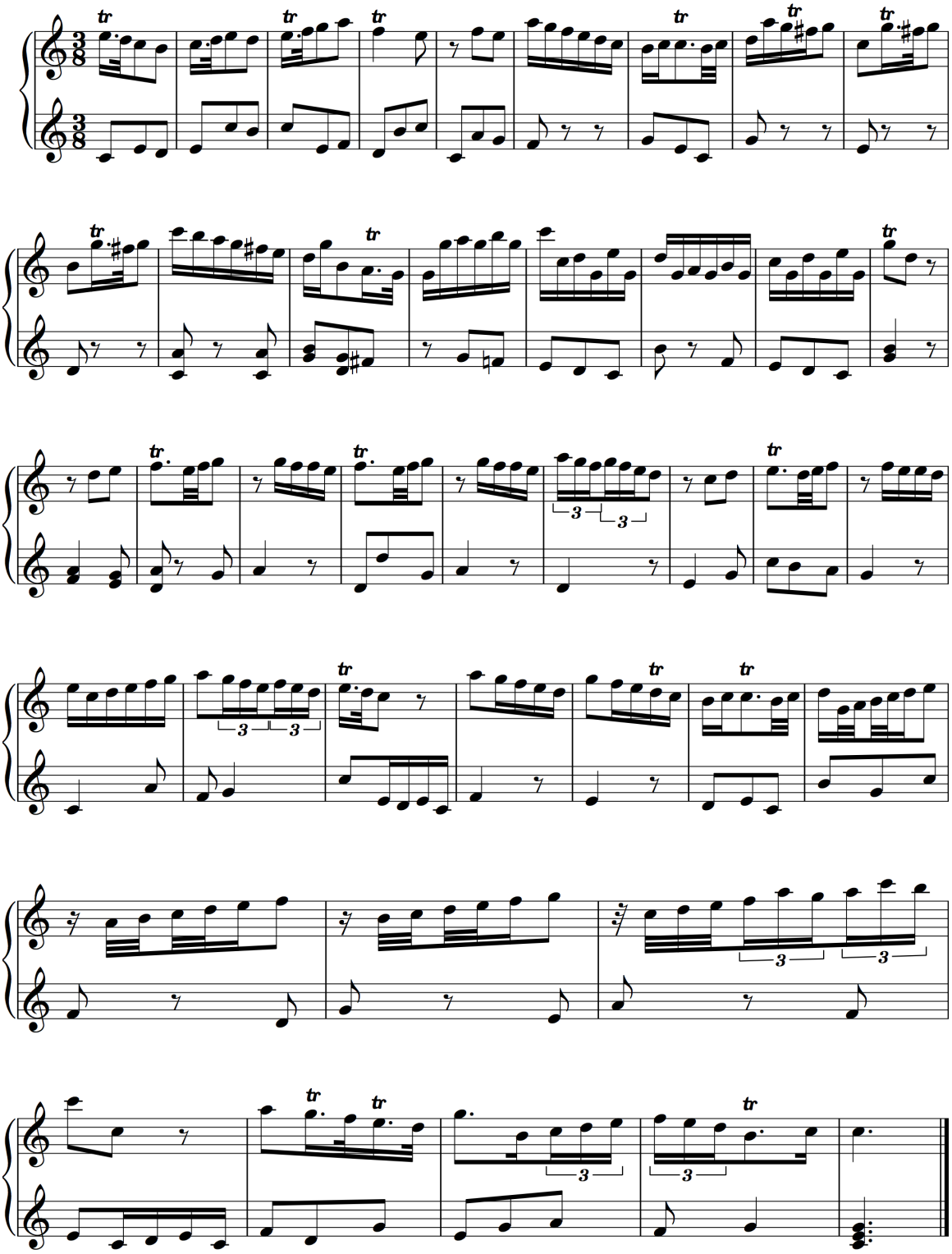
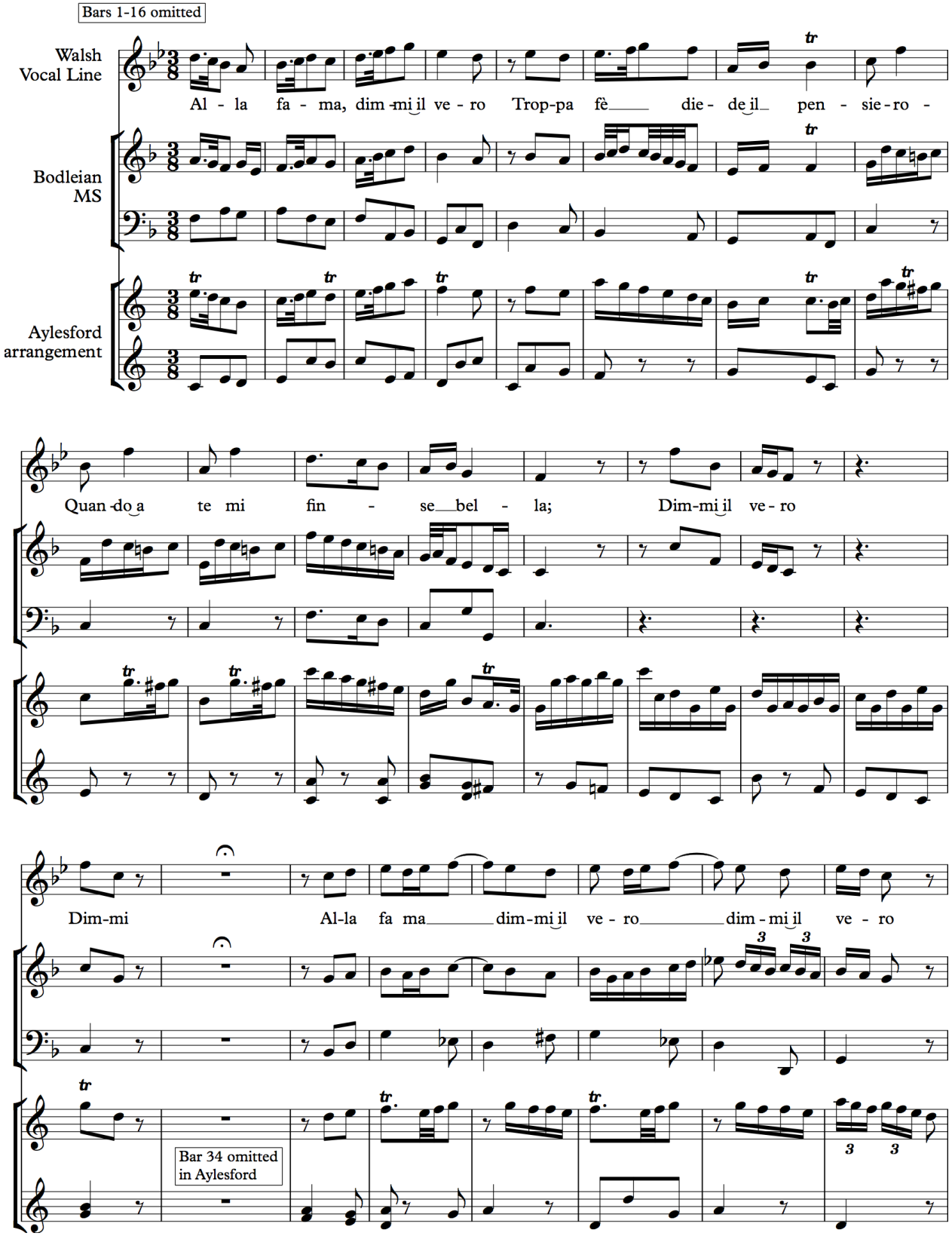
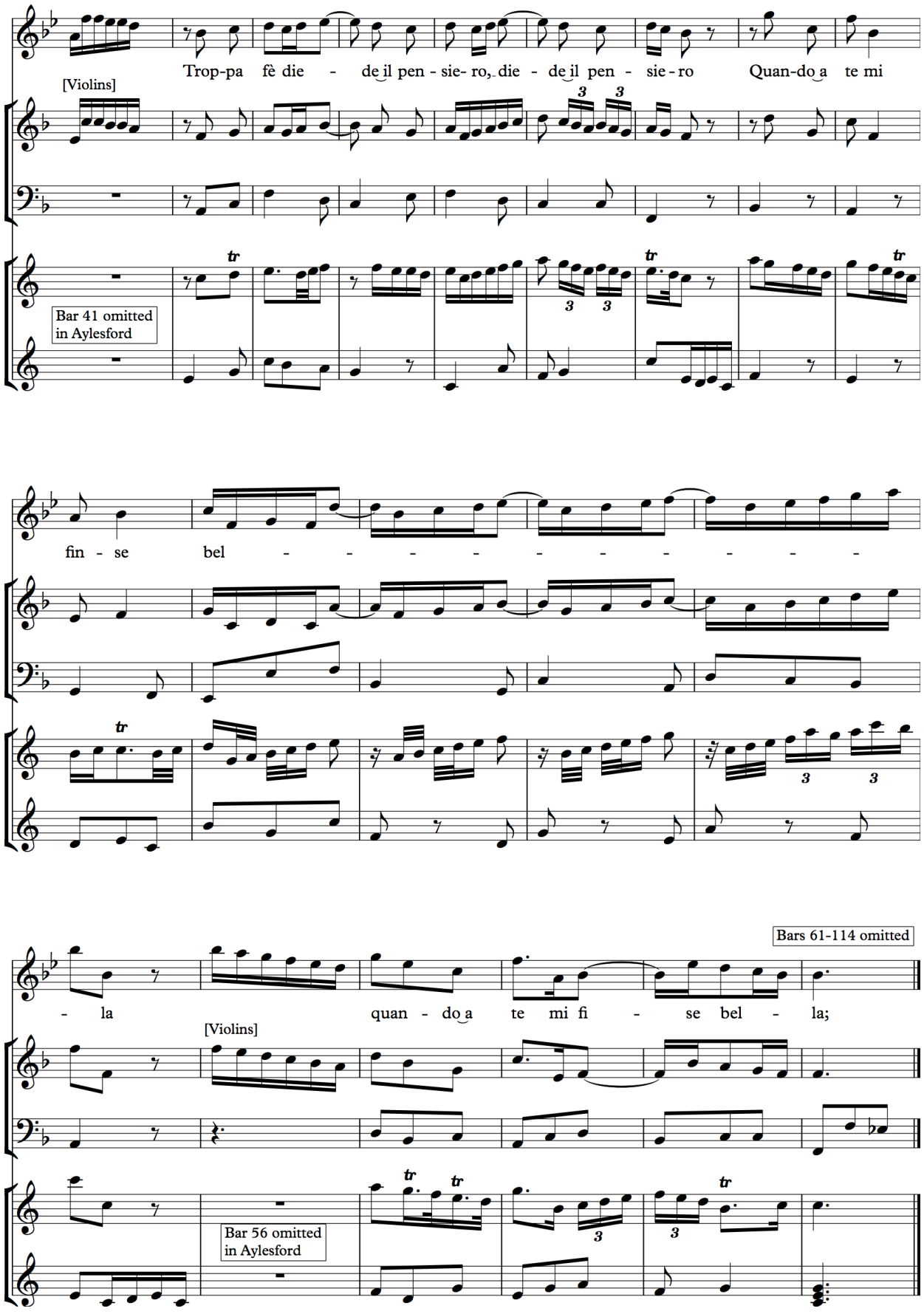
[183] Tosi, *Observations,* p. 49.

Example 3.5 - Full transcription of the Aylesford Collection (B.L., R.M.19.a.1) version of 'Alla Fama'.



Example 3.6 - Score showing vocal lines of Walsh's original publication and Bodleian MS version of 'Alla Fama' with the corresponding Aylesford upper lines (all in their original keys).




Trop-pa fè die - de il pen - sie- ro, die - de il pen - sie - ro Quan-do a te mi
[Violins]
Bar 41 omitted in Aylesford
fin - se bel - - - - - - - - - -
Bars 61-114 omitted
- la quan - do a te mi fi - se bel - la;
[Violins]
Bar 56 omitted in Aylesford

Chapter 4: Comparison of corresponding pieces from Aylesford Manuscript and Windsor Castle Clay clock

4.1 Introduction and sources

Chapter 3 established that the arrangements in the Aylesford manuscript are the work either of Handel himself or of someone closely connected with him, and it must now be determined how faithfully Clay and his craftsmen realised the arrangements provided to them. By comparing corresponding pieces found in the Aylesford manuscript housed in the British Library with an organ clock by Charles Clay housed at Windsor Castle, it is possible to discover to what extent the scores were prescriptive, and how much was left to the pinners' discretion.[184] Were they, for example, at liberty to add further ornaments, as a live performer would? Or, in his care to facilitate a veritable reproduction of a live musician, did Handel resort to more prescriptive notation than usual? A comparison of scores and their audio realisation will demonstrate how notated ornaments were realised by the barrel-pinners, with potentially far-reaching implications for the study of performance practice in eighteenth-century England.

The Windsor Castle clock has recently been re-recorded, though the bellows mechanism is no longer in perfect condition and it is not easy to hear every note clearly.[185] Furthermore, the pieces relevant to this chapter are not included in the recording and it has unfortunately not been possible to hear them by other means. However, a transcription was made by Peter Dirksen in the 1980s which is accurate and this has been used as the source for this clock.[186] Where possible both the Aylesford score and Windsor Castle transcription will also be compared to 'originals', published versions issued as early as possible after the date of first performance, to ascertain where arrangement has taken place and where ornaments and melodic embellishments have been added. The arrangements found in the Windsor Castle clock are generally similar to those in the Aylesford manuscript, leaving no doubt that arrangements like those found in Aylesford were used by Clay. The Windsor Castle clock does not contain the same collection of pieces found in Aylesford, however, so the arrangements may have been used more than once.

There are four corresponding pieces found in the Aylesford manuscript and the Windsor Castle clock. Two are untitled but the other two are opera arias: 'Dell'onde i fieri moti' from *Ottone: re di Germania*, and 'In mar tempestoso' from *Arianna in Creta*. The untitled pieces may have been

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[184] Handel, *Aylesford Collection,* f160v.-171r; for background to this volume see chapter 3.
For details of the Windsor Castle organ clock, see Chapter 2.
[185] Chocolate Films Workshops *Clay Organ Clock v6*
https://www.youtube.com/watch?v=et0m3MhO4Ds&index=14&list=PLDxodXByJZLMjx__BfbiztqShkfYzdl-d&t=2s (accessed 21/12/16).
[186] Dirksen, *Twenty Pieces* - The recording of the Braamcamp Clay clock, discussed in Chapter 5 is testament to the accuracy of Dirksen's transcriptions.

composed specifically for the purpose since they do not correspond to other known music by Handel or any other composer.[187] Like 'Alla Fama' in Chapter 3, the arias are truncated and include only the opening A sections of each piece. They generally follow the vocal line, with occasional sections of the first violin part, either to link vocal passages together, or to facilitate octave transposition where necessary, in order to remain within the limited range of the organ clock. The lower lines either follow the general character and harmony of the bass line, or occasionally, take other parts when these are important to the character of the piece (e.g. the second violin part in 'In mar tempestoso'). Each arrangement appears in comparison score at the end of this chapter (Ex. 4.28-4.31) with points for comparison highlighted and colour coded.

There are only two ornament symbols used throughout the Aylesford manuscript: ***tr*** and 𝆔, generally associated with the trill and mordent, but unspecific regarding their realisation. These are realised in a variety of ways, as will be seen. Ornamental melodic alterations are also frequent, though it is sometimes difficult to distinguish purely decorative alteration from necessary arrangement in order to remain within the compass of the instrument. Clay's organ clocks had a range of only two octaves, middle C being the lowest note, so it is sometimes necessary to divert the melody to remain within this whilst keeping the upper (vocal) line separate from the 'bass'.

4.2 'Dell'onda i fieri moti'

Since the Aylesford and Windsor Castle Clock versions of this piece generally diverge from the original line in similar ways, the differences between them will be discussed first. The principal discrepancy occurs just prior to the final cadence. Ex. 4.1 shows the Walsh vocal line alongside the corresponding upper lines of the Aylesford arrangement and the Windsor Castle Clay clock. The places at which the two clock versions divert in similar ways from the original are shown in yellow and those at which entirely new material is inserted into the clock versions are shown in green. The divergence from the original line here is principally to facilitate the phrase forming the end of the arrangements, rather than for the purposes of decoration.[188]

The green highlighted passage shows the Aylesford arrangement continuing the rising sequence-like pattern of semiquavers for an extra four beats, compared to the Windsor Castle version which adds only two. The extra material extends the sequential pattern, so that the final note is approached from above rather than below, as in the original. The insertion of differing lengths of material has an impact on the beat of the bar on which the piece ends, but this does not appear to

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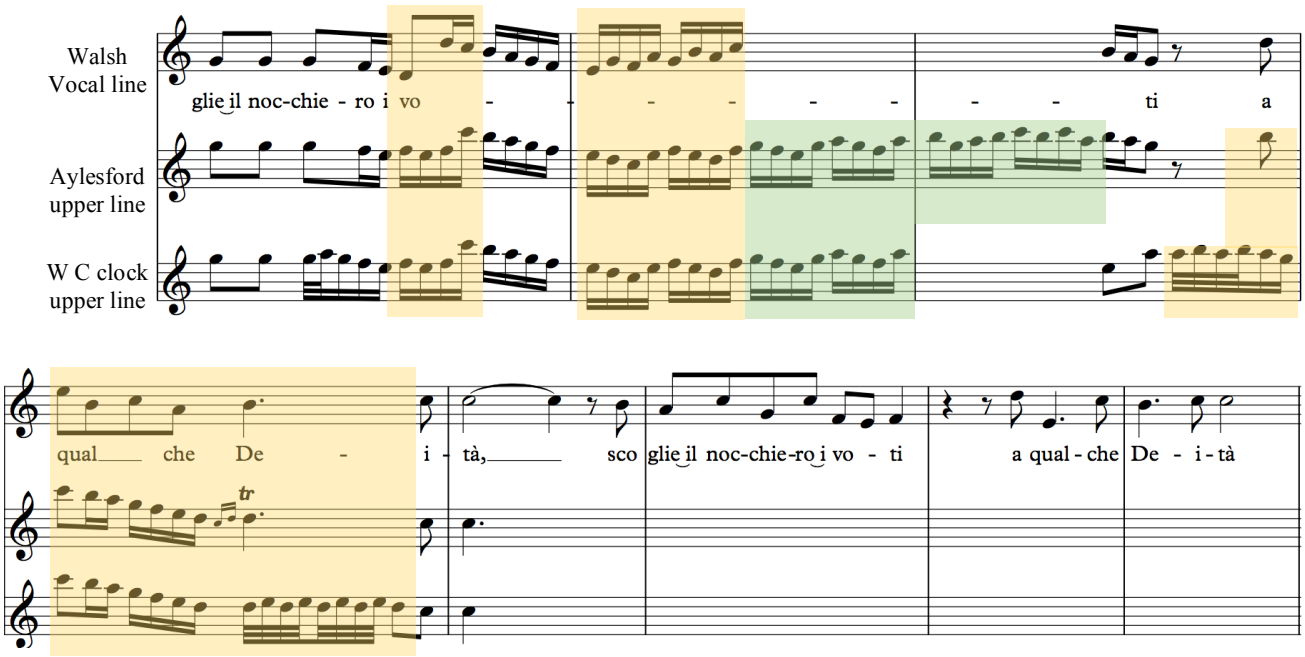
[187] 'Dell'onde i fieri moti' is HWV 595 and 'In mar tempestoso' is HWV 597. The two untitled pieces are HWV 587 and 589.

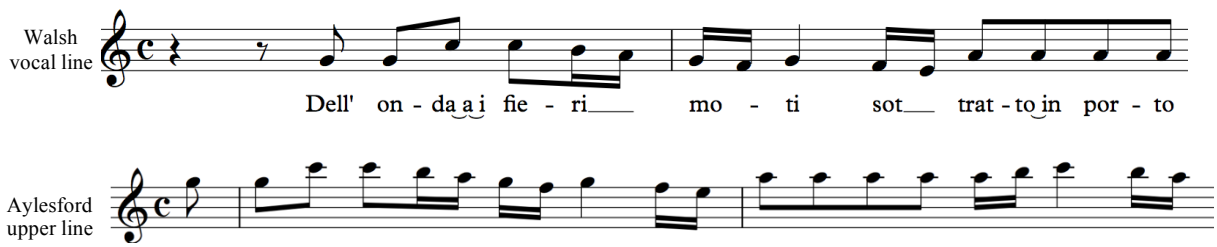
[188] The 'original' used here is:
Handel, G. F. (1723). *Otho, an Opera, as it was Perform'd at the King's Theatre for the Royal Accademy ... Publish'd by the Author.* (London, J. Walsh and Jno & Joseph Hare). pp. 43-45.

concern the arranger. The comparison score at Ex. 4.28 follows the Walsh original in its barring, but it would appear that to Handel, in his scoring of the Aylesford arrangement, there was no significant difference between beginning just before beat 3, or just before beat 1 (see Ex. 4.2).[189] The extension of the phrase at the end of the arrangement could be a cadenza-like development of the approach to the final cadence, though it is not possible to state categorically that this is how it was intended as it occurs within a measured phrase rather than at an *adagio* moment. The clock versions do not include the final phrase of the original, which would traditionally be where singers might add more ornaments or a cadenza, prior to the final cadence. This final decorated phrase would inevitably lead into the closing ritornello, which is also not included.

Example 4.1 - Final phrase of 'Dell'onda a i fieri moti' as found in Walsh's original vocal line, Aylesford MS and Windsor Castle clock.



Example 4.2 - Opening phrase of 'Dell'onda a i fieri moti' as found in Walsh's original vocal line and the Aylesford MS.



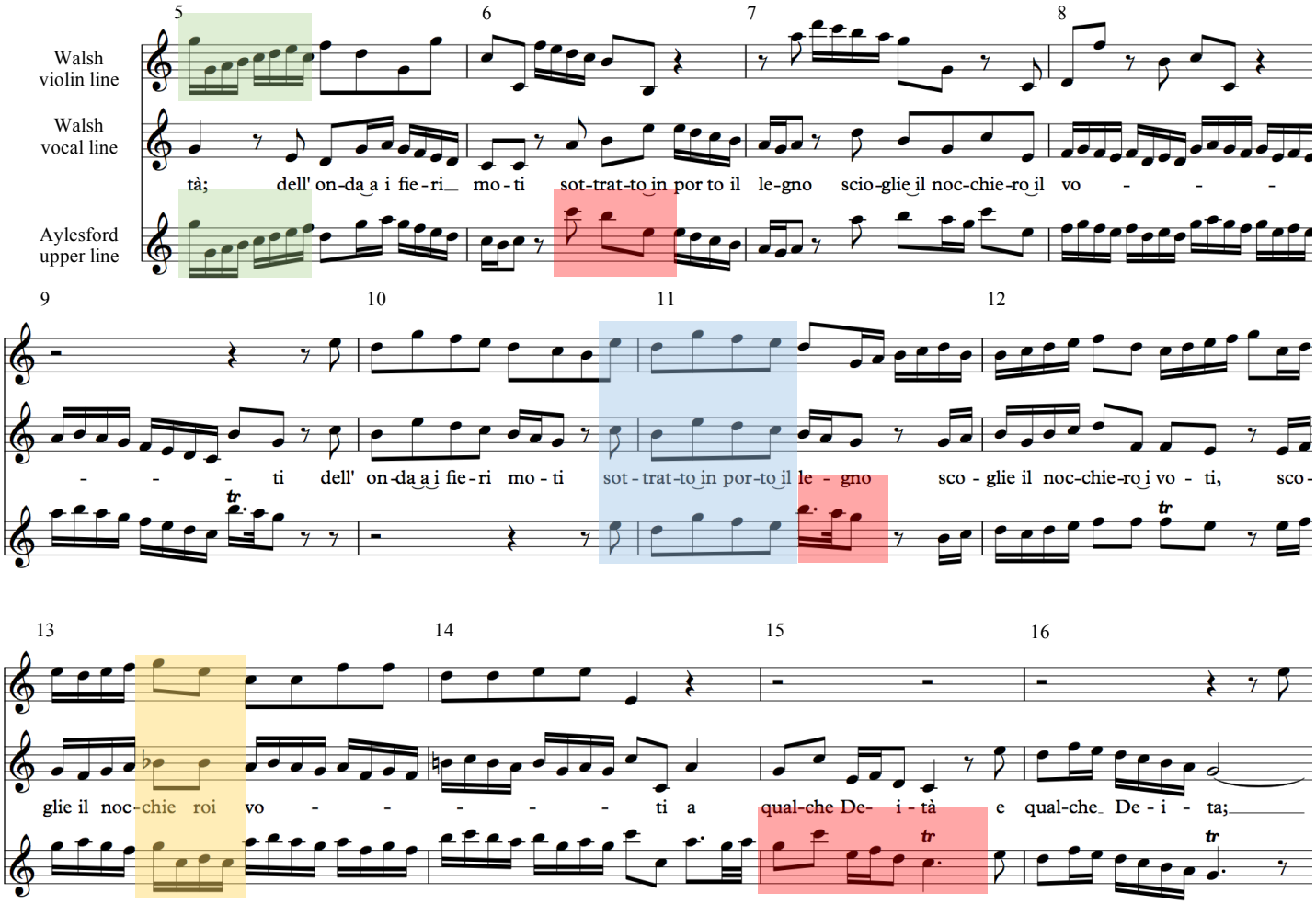
[189] The comparison scores found at the end of this chapter (as is the case throughout this thesis) have all the lines in their original keys. For ease of comparison all musical examples within the chapters will be transposed so that they are in the same key.

The similarity between the two clock arrangements is too great for them not to share a source, so the difference in the final phrase between the Aylesford and Windsor Castle versions is unexpected. The Windsor Castle realisation is somewhat less musically satisfying than the Aylesford version; perhaps the pinner found himself short of space and was forced to make a further truncation to fit the final cadence on to the barrel. Alternatively, it is possible that the Aylesford manuscript shows a later, re-worked version of the arrangement for a different clock.

Both arrangements follow the melody of the original vocal line wherever possible: usually an octave higher but sometimes at pitch.[190] Octave transitions become necessary when the upper line is in danger of exceeding the upper limit of the clock or descending below the lower line and being obscured. Examples of this can be seen in Ex. 4.3 in bars 6, 11 and 15-16 (red) and also in bar 24.[191] The violin part is sometimes used in the arrangements to facilitate these transitions (e.g. bar 11, blue), to fill in a gap in the melody (e.g. bar 5, in green, and also bars 17-18, in Ex. 4.28), or to otherwise disguise a point at which the Clay clock lacks sufficient notes to play the vocal melody exactly, e.g. in bar 21:1 where the lack of a high D is covered by use of the violin F (see Ex. 4.28).

[190] The Clay clock was not fully chromatic so all pieces are transposed to fit within its compass. In this case the piece has been transposed from Bb major to C.
[191] All bar numbers refer to the full comparison score found at the end of this chapter which contains the full Walsh version beginning where the voice enters and ending where the vocal line finishes the A section material.

Example 4.3 - - Bars 5-16 of 'Dell'onda a i fieri moti'.



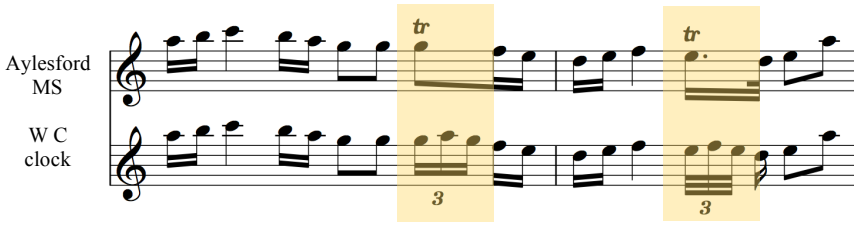
There is only one instance in the arrangement of the violin part being included as well as the vocal line: in bar 11 (in blue above). At this point the lower line (not shown in Ex. 4.3) plays the vocal part and the upper line takes the violin part so the two are heard in thirds.[192] Later the violin line is used for decorative reasons rather than necessity (Ex. 4.3: yellow). Clay's clock does contain a high Bb but the passing modulation in bar 13 is still avoided using the violin G and some additional alterations in the direction of the semiquaver patterns.

There are no mordent symbols in the Aylesford version of this piece, but there are ten ***tr*** indications. There are no indications of ornaments in either the violin or vocal parts of the Walsh edition so these could indicate that Handel added more specific indications in the arrangement than in the published version. The tempo marking is 'Allegro', so it is perhaps not surprising that most of these are realised as short trills, usually consisting of only three notes. Six of the ten indications (60%)

[192] Ex. 4.28 shows the full comparison score including the lower lines.

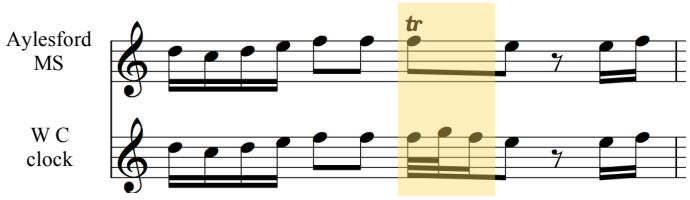
are realised in this way, as a single oscillation from the main note to the one above and back as seen in Ex. 4.4.

Example 4.4 - Bars 3-4: Aylesford trill indications and Windsor Castle/Clay clock realisation.



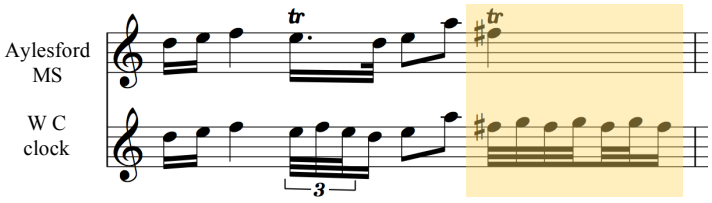
These short trills generally consist of either three equal notes (as seen in Ex. 4.4) but occasionally the final note of the three is slightly longer (Ex. 4.5)

Example 4.5 - Bar 12: Aylesford trill indication and Windsor Castle/Clay clock realisation.



The other four trills indicated occur on longer notes and include more oscillations as highlighted in Ex. 4.6.

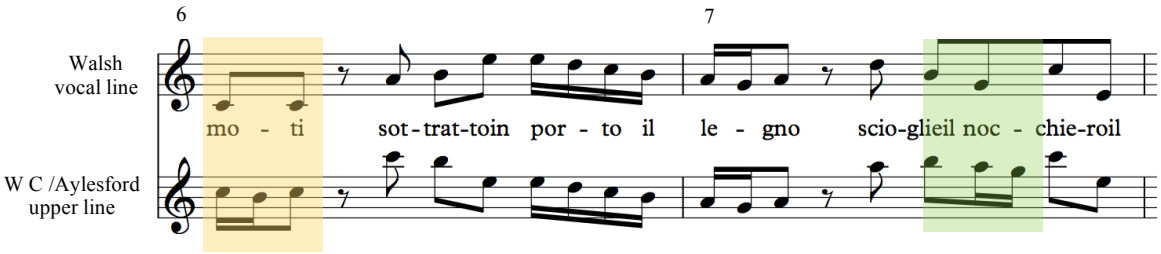
Example 4.6 - Bar 4: Aylesford trill indication and Windsor Castle/Clay clock realisation.



These longer trills have a slightly elongated ‘main’ note on which they land before the phrase moves on to cadence. Notably, all the trills in the Windsor Castle realisation of this piece begin on the main note; there are no upper-note trills.

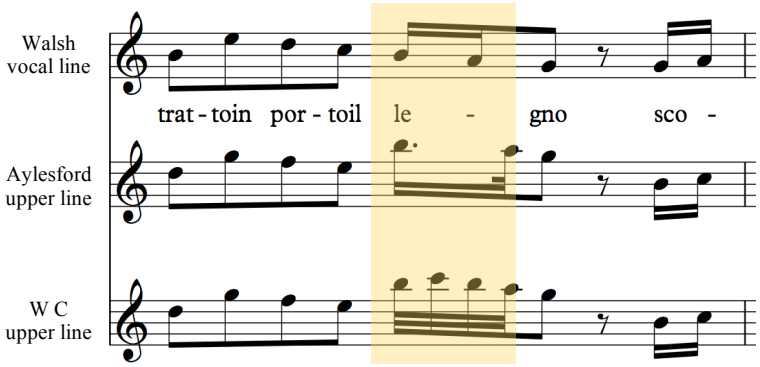
In addition to the ornament symbols specified in Aylesford, there are two moments where the manuscript makes alterations to the original vocal line even though there is no octave arrangement necessary. Both involve the addition of only one note, and occur in bars 6 and 7 (see Ex. 4.7).

Example 4.7 - Bars 6 and 7 of original Walsh vocal line and clock arrangement.



In bar six (yellow) an unaccented lower auxiliary note is added between the two repeated Cs, which could be similar in manner to what Geminiani terms a 'separation'.[193] In bar seven (green) an accented passing note (or upper appoggiatura) is added between the B and G on the first beat of the bar. Further to these notated ornaments, there are four places at which the pinner of the Windsor Castle clock has added ornaments which are not indicated in the Aylesford score. Ex. 4.8 shows the original vocal line, Aylesford version and Windsor Castle realisation of bar 11, with the ornament added on the third beat.

Example 4.8 - Bar 11 of Walsh vocal line with version from Aylesford MS and Windsor Castle clock.



Like most of the ornaments in the piece, this is a three-note short trill, and it is added to an altered third beat of the bar. This is a rhythmic modification made to the original melody in the Aylesford arrangement which has then been further ornamented in the realised Windsor Castle version. Another example of this is found in bar 14 (Ex. 4.9) where a small decoration is notated in Aylesford at the transition from the fourth beat to the next bar. This is further ornamented in the Windsor Castle clock by the addition of a trill lasting the whole of the fourth beat incorporating the Aylesford decoration as a turn at the end. Both instances of rhythmic alteration in Aylesford create moments at which an ornament might be assumed; the note on which they are placed has been lengthened by the arranger and there is a written-out turned termination for the ornament leading on to the succeeding note.

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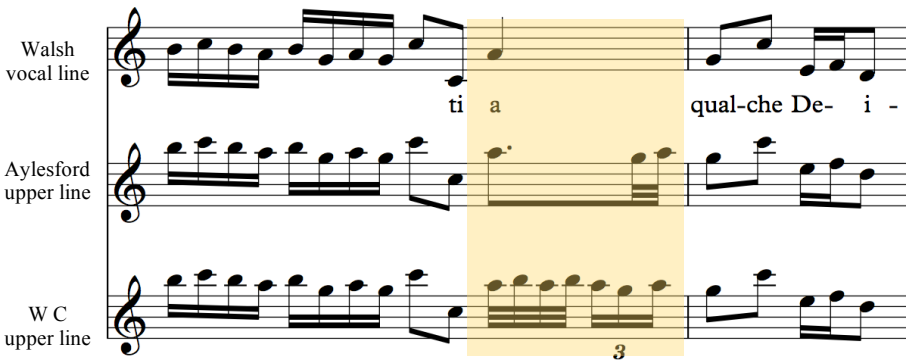
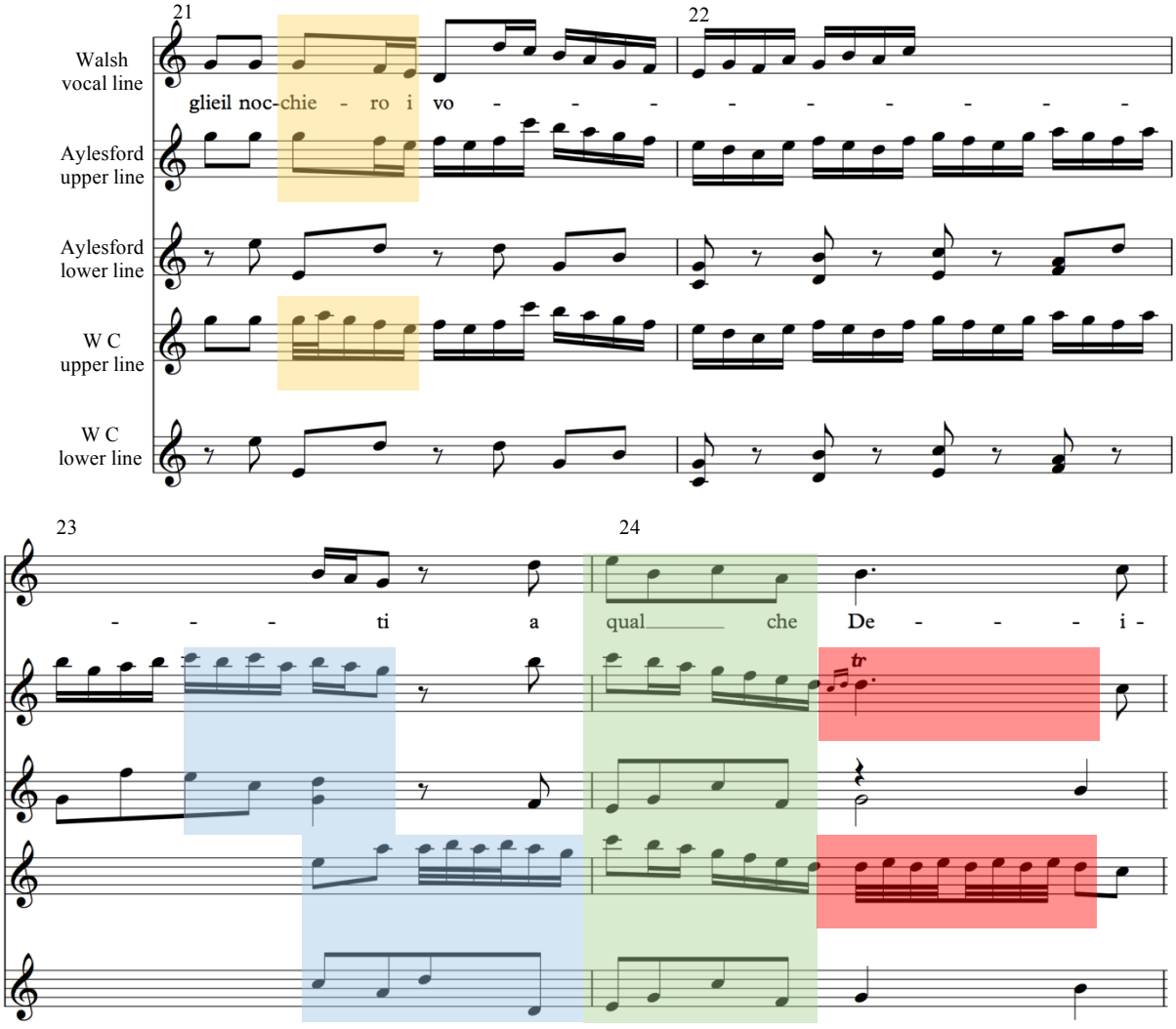
[193] Geminiani, *The Art of Playing on the Violin,* p. [7] and 26.

Example 4.9 -Bar 14-15: Walsh vocal line, Aylesford MS, and Windsor Castle clock.



Example 4.10 - Bars 21-24: Walsh vocal line, Aylesford MS and Windsor Castle clock.



There are only two points at which ornaments are added in the Windsor Castle clock with no alteration of the original in the Aylesford arrangement. The first is the addition of a short trill in bar 21 (Ex. 4.10 - yellow). The second occurs at the opening to the final phrase of the Windsor Castle clock version (Ex. 4.10 - blue) where a mordent is added to a descending third B-G. This ornament

could either correspond with the third or fourth beat of the Aylesford upper line, though the third beat is more likely since this already includes the G with which the Windsor Castle clock ends the ornament. The ornament, a short mordent on B with a lower opening note (A), is the only instance of the decoration to the lower-note in this piece; it is incorporated as an upbeat to the final descending scale.

Following this, the arrangements diverge from the original in order to end the piece within the time-limit of the barrel so the melodic line is necessarily altered. The notes of the original melody, however, are alluded to in the lower parts of both the Aylesford and Windsor Castle versions (shown in green), suggesting that the vocal phrase was used as the basis and the descending scale is a cadenza-like figure, placed above the vocal part in these bars, adding drama to the final cadence of the arrangement. Bar 24 also contains an alteration (red) where the trill indicated in Aylesford is realised in the Windsor Castle clock version, beginning on the main note, but the two grace notes clearly marked in the Aylesford arrangement (amounting to a lower appoggiatura as an opening to the trill) are not included. Again this could mean that the Aylesford arrangement is a later draft by the arranger, but equally it could be an example of the pinner's autonomy.

4.3 'In Mar Tempestoso'

In this piece, the basic arrangement in Aylesford is identical to the Windsor Castle/Clay clock realisation, making comparison between the two arranged versions more straightforward. These arrangements add much more to the original published aria, both in terms of ornament symbols and melodic alteration for decorative effect.[194] This is easily distinguished from pragmatic melodic alteration in this piece, making it an important one to study in detail. The arrangement makes cuts from bars 7:4-12:3, bars 16:1-19:4 and bars 29:3-41:2, all of which can be seen in the comparison score in Ex. 4.29. The upper line of the Aylesford/Windsor Castle arrangement largely follows the vocal line again; but the lower line, rather than simply providing harmony, frequently uses material from the second violin part. This means, in effect, that there are semiquavers running throughout most of the piece in either one or both lines. The lower line does not play the second violin line throughout, however, the line of running semiquavers being modified to maintain the florid momentum whilst also providing harmonic support.[195]

Every one of the arrangement's 21 bars contains at least one or more alterations to the original vocal line, whether trills, mordents or melodic alteration. Occasionally (as in 'Dell'onde i fieri moti') melodic alteration is used in moments where the vocal melody would exceed the range of Clay's

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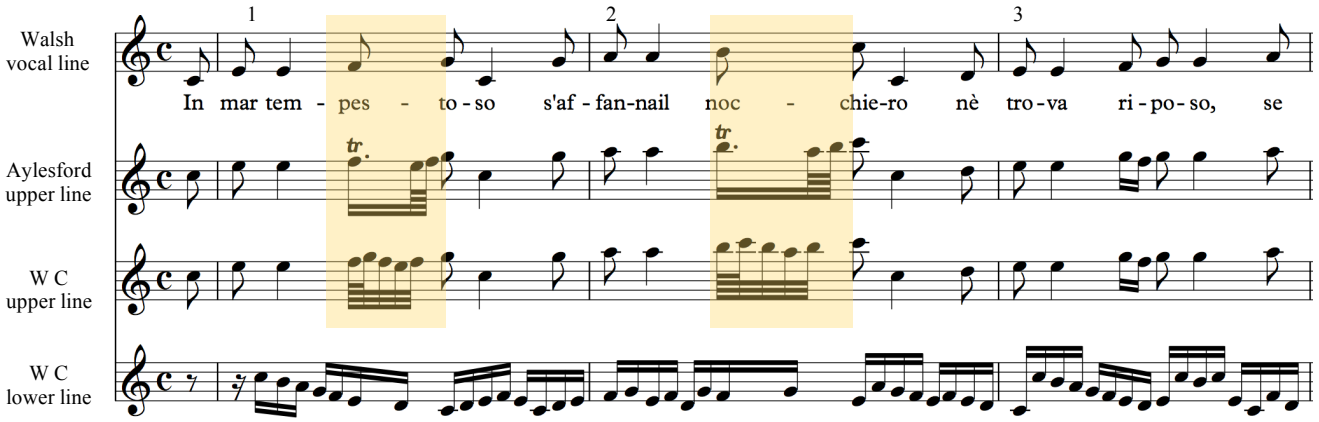
[194] Handel, G. F. (1737). *Ariadne, an Opera as it is Perform'd at the Theatre Royal in Covent Garden.* (London, Printed for J. Walsh).
[195] NB the lower lines of the Aylesford MS and Windsor Castle clock are identical throughout so in the comparison score at Fig. 29 the Aylesford lower line has been omitted.

clock, but in this piece there are few moments where this is necessary, meaning that the alteration is generally for decorative reasons.

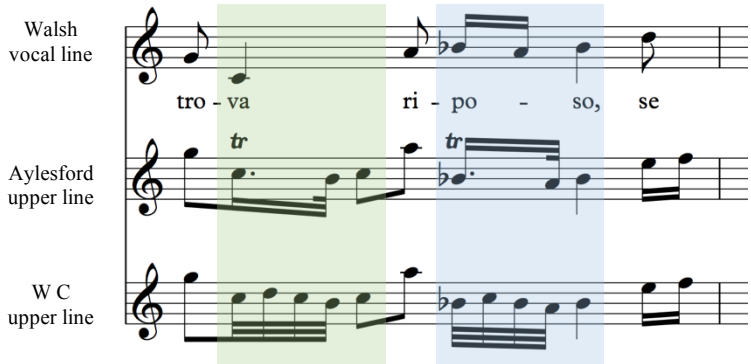
There are fourteen places in the Aylesford arrangement at which ***tr*** symbols are used; two of which, bars 14 and 42, are doubled (i.e. there is a trill on the upper and lower line). Of the fourteen trills, nine (64%), occur on short notes and are realised as short trills, beginning on the main note and including only one iteration of the upper auxiliary note as seen in Ex. 4.11.

Example 4.11 - Opening bars of 'In mar tempestoso'.



Several of these short trills contain moments where they linger on the main note for varying lengths of time. One in bar 22:1-2, (see Ex. 4.12 - green) lingers for half the note value. Interestingly, this elongation occurs after the termination of the trill and thus the turned trill effectively decorates only the beginning of the note rather than joining it to the next note. The following ornament (blue) does not contain elongation, but resolves onto the following note, linking the two together. These two ornaments therefore demonstrate both functions which the turn or trill with turned termination, may adopt, as demonstrated by Neumann's study, either 'intensifying' or 'connective'.[196]

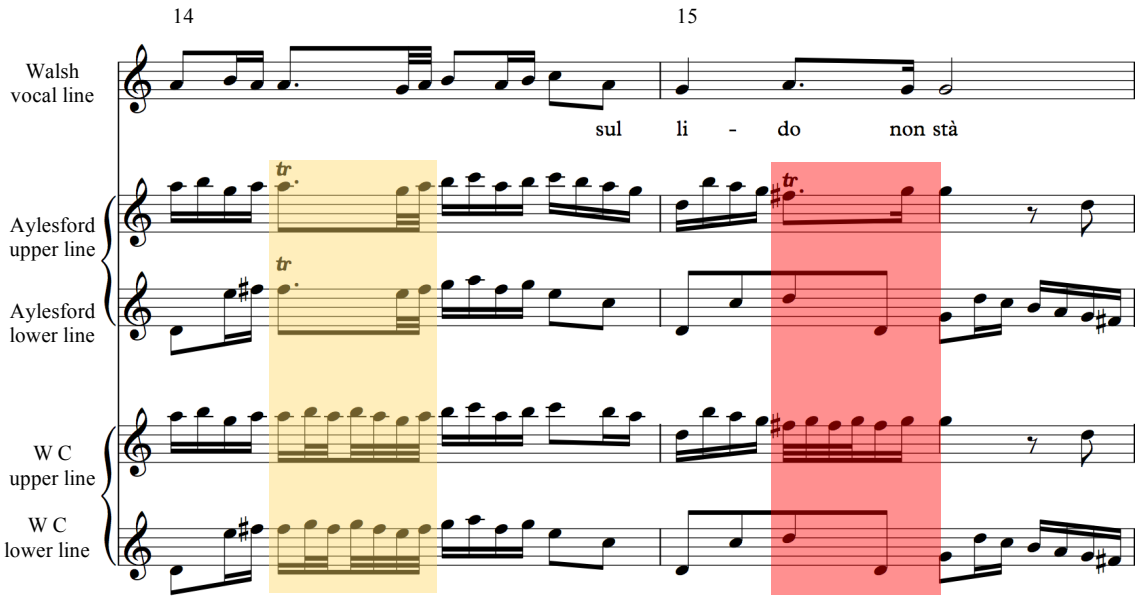
Example 4.12 - Bar 22 of 'In mar tempestoso'.



[196] Neumann, *Ornamentation* p. 465.

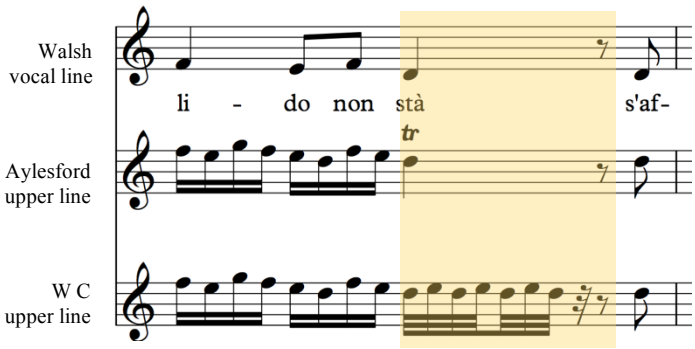
Five of the fourteen marked trills occur on notes with the length of a dotted quaver or more, of which four begin on the main note; two with slightly elongated opening main notes (e.g. Ex. 4.13 - yellow) and two with short opening notes (e.g. Ex. 4.13 - red). The trill highlighted in red does contain a slightly elongated main note, but it is at the end of the trill.

Example 4.13 - Bars 14-15 of 'In mar tempestoso'.



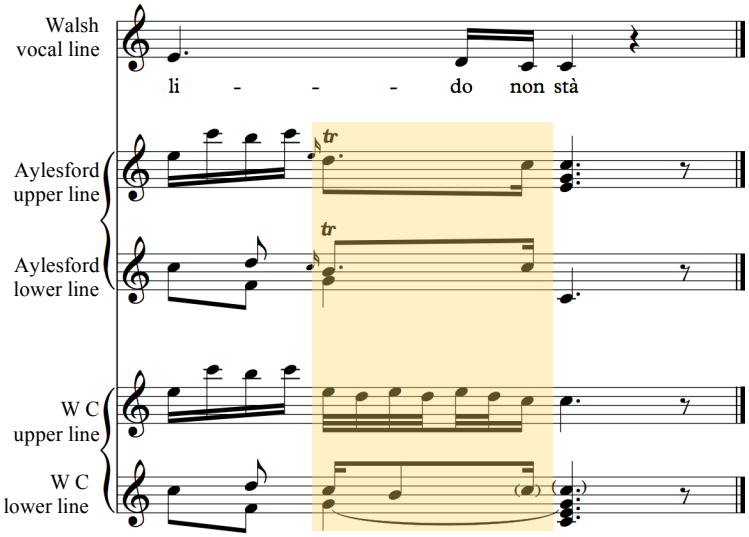
The fifth of the longer trills (Ex. 4.14) does not contain any lengthening of notes and in fact continues all the way through the note length up to a rest.

Example 4.14 - Bar 24 of 'In mar tempestoso'.



Only one trill begins on the upper note, at the final cadence, and this is specifically indicated in the Aylesford score (Ex. 4.15). Even this final trill, however, does not rest at any point on the main trilled note. Rather it begins with a short upper note and rests only on the anticipation of the final note of the piece. The lower part of the Windsor Castle realisation differs slightly from Aylesford here; the indicated appoggiatura is included, but the trill is not (unlike bar 14 above).

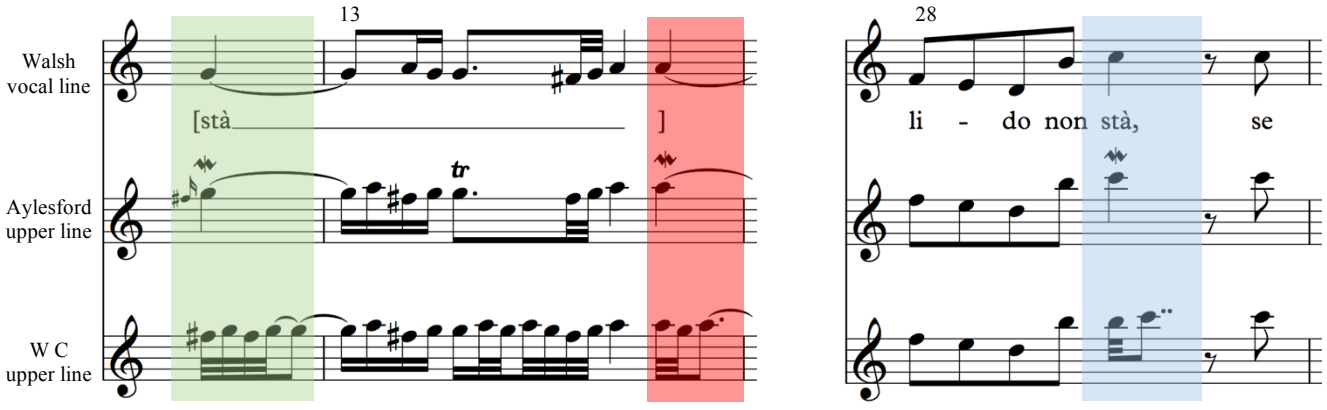
Example 4.15 - Final bar of 'In mar tempestoso'.



Of the trills indicated in the Aylesford score, eight out of fourteen (57%) have turns indicated after them, or at least a lower auxiliary note. As can be seen in the preceding examples, these are carefully indicated in the Aylesford score, and adhered to by the pinner.

Similarly, the indications of mordents in the Aylesford score are observed, though not always in the same way. There are five points where the mordent symbol is used. Again, each ornament generally begins on the main note (Ex. 4.16 - red) unless a lower opening note is indicated (Ex. 4.16 - green). Both the long and the short mordents occur twice leaving one anomalous realisation (Ex. 4.16 - blue) in which the symbol is interpreted only as a short lower appoggiatura.

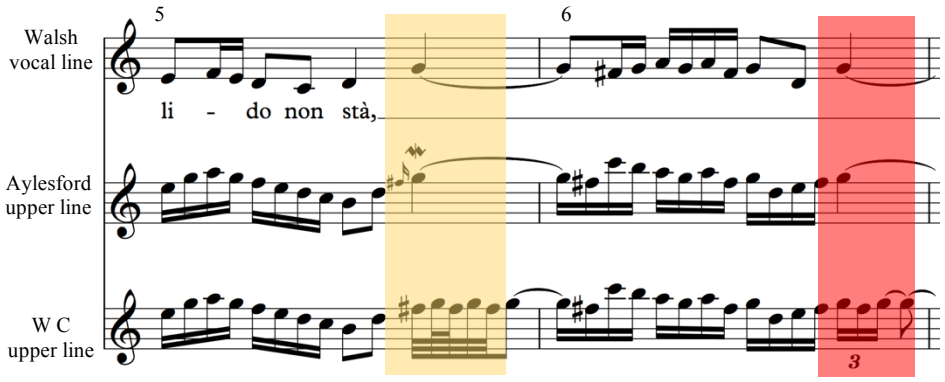
Example 4.16 - Bars 12/4-13 and bar 28 of 'In mar tempestoso' showing different realisations of mordent symbol.



This realisation occurs nowhere else in this piece nor in the others addressed in this chapter; it could be a transcription error or evidence of damaged machinery. However, it could equally be an intentional interpretation, especially since there are no other anomalies in the notes immediately surrounding this point in the music.

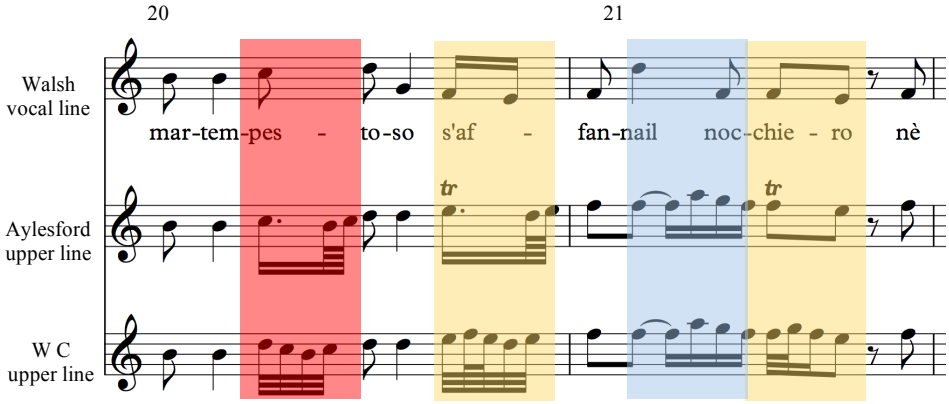
There are three points at which short ornaments like those discussed hitherto are added to the Windsor Castle clock without inclusion in the Aylesford arrangement, and one small melodic alteration which differs from the Aylesford version. The first additional ornament, at bar 6:4 is a short mordent (Ex. 4.17 - red) which seems to be a logical inclusion since it echoes not only the longer mordent in the bar before (yellow) but is also reflected in the following two bars of the Aylesford arrangement.[197]

Example 4.17 - Bars 5-6 of 'In mar tempestoso'



The other additions are similarly logical. Bar 20:2 (Ex. 4.18 - red) contains the only occurrence in the piece of an un-indicated upper note beginning an ornament. It is not replicated in the following ornamented sequence (yellow), though the addition of some decoration at this point at the sequence fits within the context of the pattern.

Example 4.18 - Bars 20-21 of 'In mar tempestoso'.



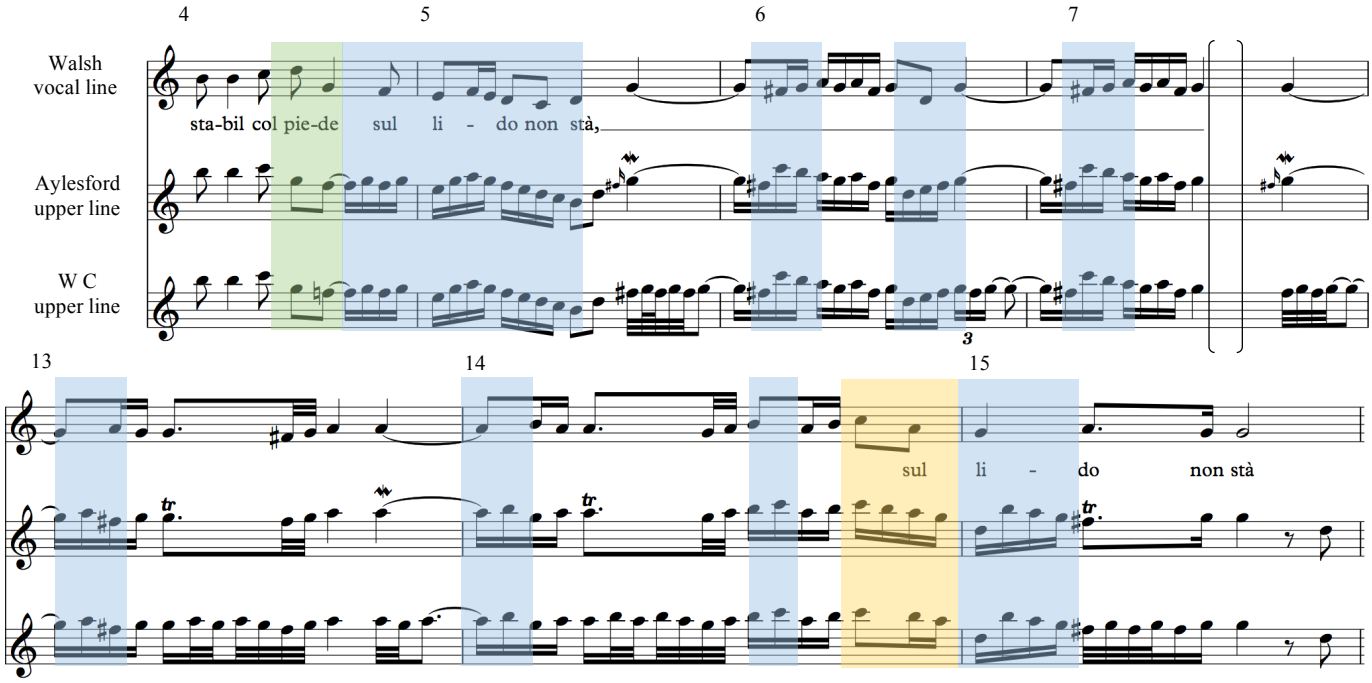
The ornaments in Ex. 4.18 are not formulaic, but they do follow a logical progression, beginning with a very short addition of just one note, then two, and finally a small melodic addition before the final ornament of the sequence (blue). In this instance, they are used at the same rhythmic point in the melody, although this is not always the case. It may be that it is only at these obvious points that the

[197] Aylesford cuts at the end of bar 7 to Walsh's bar 12 beat 4 (see full comparison score at Fig. 29)

pinner really feels justified in displaying initiative. This idea is supported in bar 27:4, by the final small addition which again follows a precise sequence with the two preceding bars (see Ex. 4.29).

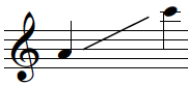
There is only one further deviation from the Aylesford arrangement by the pinner and this is a small melodic alteration found in bar 14 (Ex. 4.19 - yellow). Aylesford already has an altered version of the last beat of the vocal line; from quaver C-A in the original to semiquaver C-B-A-G. This is a common alteration, filling in a descending figure with passing notes. The Windsor Castle clock, however has an alternative figure: quaver C followed by semiquaver B-A, using an accented passing note to fill in the third.

Example 4.19 - Bars 4-7:3 and 12:4-15 of Walsh's vocal melody with Aylesford/Windsor Castle clock arrangements (brackets indicate where there is a 4 bar cut in the arrangements).



Example 4.19 shows the first phrase of the Aylesford and Windsor Castle arrangements to include melodic alteration (the first three bars contain only trills and one upper appoggiatura). The initial instance (green) can be put down to the restricted range of the clock which does not contain the high D, necessary to play exactly beat 3 of the vocal bar up the octave. Equally the whole phrase could not be played at pitch, as the middle G and F would then lie below the bass and would not be audible. The Aylesford upper melody remains within the range of A - C' (Ex. 4.20) to allow space for the lower part and keep the upper line audible; since both parts play in virtually the same pitch range with no difference in timbre to distinguish them

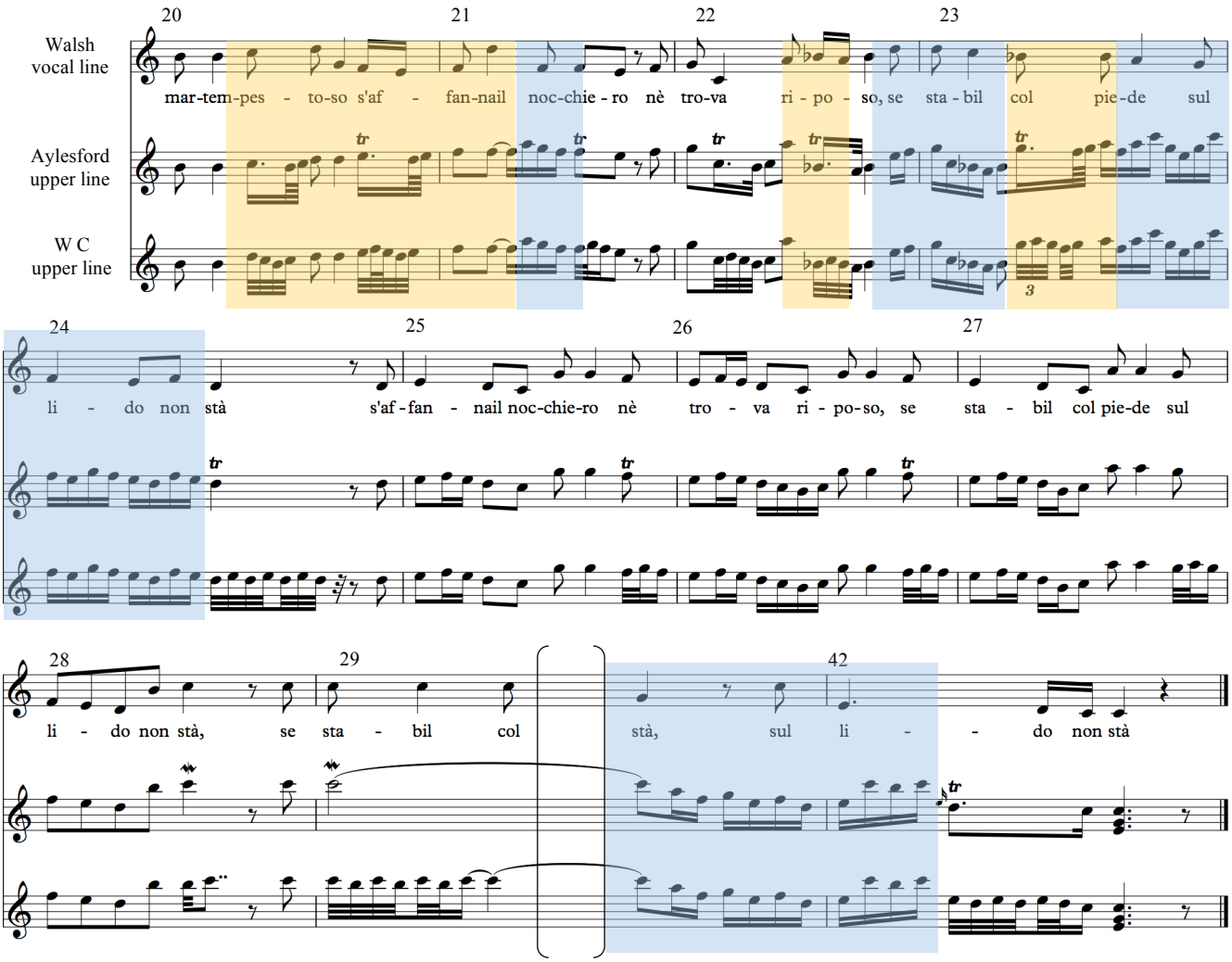
Example 4.20 - Range of the upper line of 'In mar tempestoso' in Aylesford/Windsor Castle arrangements.



However, from bar 4:4 onwards the melody of the vocal line is altered in every bar of the piece (Ex. 4.19 - blue) and as a rule these changes are not necessitated by range. The ornaments often use notes from the vocal line, or first/second violin parts, as a framework with intervals sometimes filled in with semiquavers, or auxiliary/passing notes added. At bar 5:1 the vocal line is taken up momentarily by the lower part in Aylesford, whilst the upper part plays the second violin part up an octave. This is only fleeting however, and generally the upper line relates closely to the vocal melody demonstrating a florid but recognisable embellished line. Leaps are added occasionally and the melody thus diverted to other notes of the harmony (often taken from the violin parts) before rejoining the original melodic shape using semiquaver passing notes. An example of this can be seen at bars 6:1 and 7:1, with the addition of the C-B to the melodic line (Ex. 4.19).

This frequent melodic alteration continues for the remainder of the Aylesford arrangement (as seen in Ex. 4.21). In this example, yellow highlights indicate points at which the alteration facilitates an octave transposition as the melody crosses the point where this becomes necessary, though these alterations would be viable in their own right as melodic embellishments. Blue highlights, however indicate that the alteration is not necessary to fit the range and is therefore purely a case of artistic embellishment by Handel.

Example 4.21 - Bars 20 - 29:2 and 41:3 - 42 of 'In mar tempestoso' (brackets indicate a cut from bars 29:2 - 41:3 in the arrangements).



4.4 Untitled pieces

These two pieces will be examined together since they appear to have been composed for the specific purpose of inclusion in Clay's clocks and as such there is no 'original' with which they can be compared. There are also similarities in the way they are notated and the style of ornamentation used, so they can usefully be examined as one (full comparison scores can be found in Exs. 4.30 and 4.31).

Setting these pieces apart from the others in Aylesford (along with one other piece not included in the Windsor Castle clock)[198] is their scoring, which uses two staves, the upper in treble clef and the lower in bass clef. All of the other eight pieces are written using either two treble staves or a single treble stave with two parts combined. The range of the Clay clocks would not accommodate that used in these arrangements and, indeed, in the Windsor Castle realisation the lower

[198] The other piece scored in this way ('Untitled (2)') also appears in R.M.18.b.8 entitled 'A Voluntary or a Flight of Angels, but since it does not appear in the Windsor Castle or other surviving Clay clock it is not discussed here.

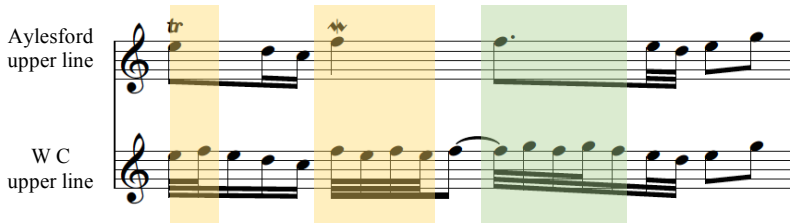
part is transposed up an octave. The use of a bass clef for the lower line could suggest that these pieces were conceived as keyboard pieces, perhaps with the octave transposition of the bass expected from the outset since, even when transposed, it remains neatly below the upper part. The choice of clef is therefore not indicative of the octave to be pinned.

In both pieces, the realisation in the Windsor Castle clock follows precisely the Aylesford versions and since there are no other 'originals' it is impossible to tell if there is any melodic alteration included in this. There is certainly no melodic deviation in either piece from that prescribed in Aylesford, either in the upper or lower voice.

In Untitled 1 there are five ornament symbols spread over 22 bars (four trills and one mordent) and eight in Untitled 3 (six trills and two mordents), again over 22 bars. The pieces have no tempo indications but the material is not suggestive of a slow speed, so if they were intended to be played quickly this might account for the relatively small number of additional ornaments. There is also one additional ornament in Untitled 1 and three small alterations, added by the pinner. Again, every ornament begins on the main note.

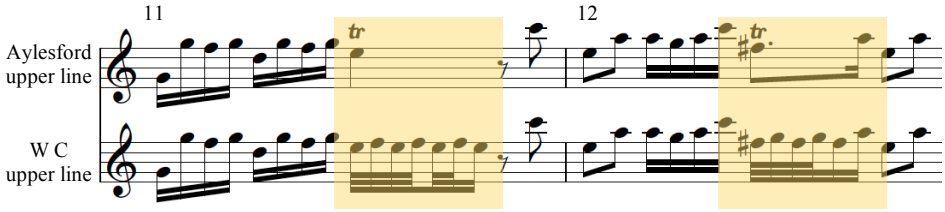
The ornaments contained within Untitled 1 are clustered together, which is unsurprising since there are only a few points at which the florid melody allows space for them. Ex. 4.22 shows the first three ornaments, each of which begins on the main note and contains a slight elongation of the main note at the latter end of the ornament. Interestingly, the trill on beat 3 is not indicated in the Aylesford score and it creates a tie with beat two, effectively producing one long F with two separate ornaments on it: a long mordent at the start, and a long trill at the beginning of the second half of the note which then joins with another ornamental figure, the E and D demisemiquavers, forming a turn at the end.

Example 4.22 - Bar 5 of Untitled (1) showing trill and mordent realisations (additional trill in green).



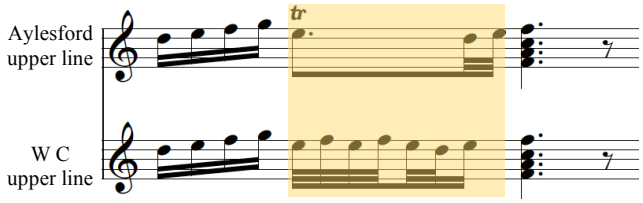
Ex. 4.23 contains two long main note trills, the first on the final note of a phrase. Both have points where the main note is elongated at the end of the ornament. These trills are notable for the fact that like many ornaments in 'In mar tempestoso', they occur whilst there is continuous semiquaver movement in the accompanying part.

Example 4.23 - Bars 11-12 of Untitled (1) showing trill realisations.



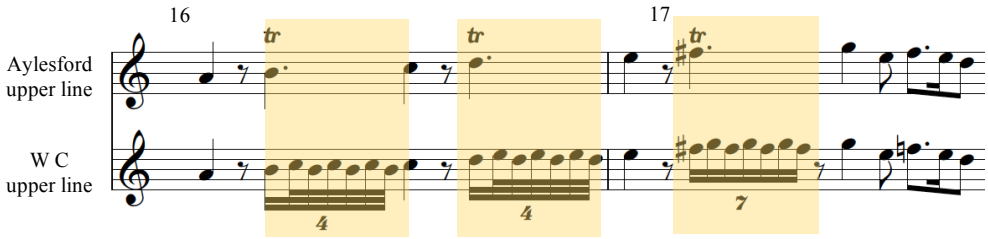
The trill at the final cadence point (Ex. 4.24) is similar, except that in the realisation the elongation comes at the end of the notated termination, not after the trill and before the termination, unlike what has usually been the case up to this point. This could be an error on the part of the transcription, as the turns in these pieces usually occur at the transition from one note to the next (as is written). However, in other mechanical sources turns are used to ornament the middles, or even openings of notes, so this is not unprecedented.

Example 4.24 - Final bar (22) of Untitled (1).



In Untitled 3 the ornaments are generally more spread out, though three of the eight marked ornament symbols occur in one rising sequence (Ex. 4.25).

Example 4.25 - Bars 16-17 of Untitled (3) showing trill realisations.

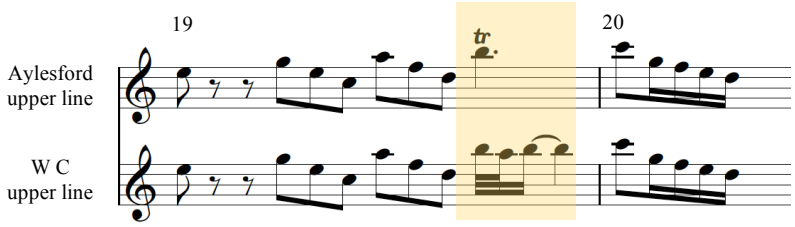


Fundamentally, this is simply an ascending scale, but the rests and ornament placing transform the rhythm of the scale from a straightforward passage to a more interesting iambic figure. The trills serve to link each ornamented note to its successor, emphasised by the rests inserted before the trills begin. By adding both weight and forward motion to the second and fourth beats, this further intensifies what would already have been an intensifying passage, leading the piece towards its final phrase.

The remainder of the ornaments in Untitled 3 function largely to emphasise articulation, occurring mainly on the opening of notes. It is worth noting that there are no ornaments on 'strong' beats of the bar, though this may have more to do with the generally florid nature of the melody. There is no discernible pattern to the way they are applied; some trills stand alone, they are often short and there are few turns (which can serve to link one note to the subsequent one). Nevertheless, there are occasional trills (like those in Ex. 4.25) which continue throughout the note on which they are placed leading in this iambic manner onto the ensuing note. There is only one mordent symbol, which is realised (as in Untitled 1) as a long mordent, beginning on the main note and oscillating twice.

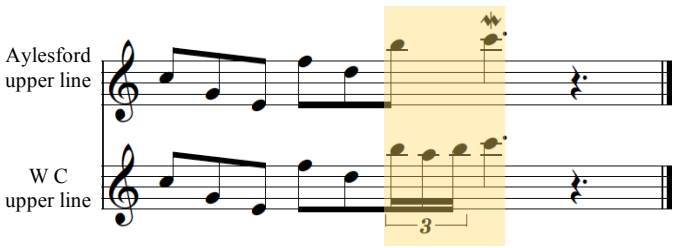
Regarding discrepancies between the Aylesford manuscript and the Windsor Castle realisation, there are two short trills which are included in the Windsor Castle realisation but not in Aylesford. These occur at bar 2:4, on a short, isolated quaver and on a dotted quaver at bar 13:2 which is a repetition of the immediately preceding note (see Ex. 4.31 in purple). There are also two ornaments indicated in Aylesford which are realised differently. Bar 19:4 (Ex. 4.26) has a ***tr*** marked in Aylesford but the Windsor Castle clock realises this as a short mordent (one of the only moments where a short mordent is included, this symbol generally being realised as a long mordent).

Example 4.26 - Bars 19-20:1 of Untitled (3).



This is a point at which it might have been suitable to include a long trill, in the manner of those in Ex. 4.25, however the ornament chosen by the pinner is frequently used in other sources and so represents a valid musical choice providing interest in the articulation, rather than a link between two notes.

Example 4.27 - Final bar (22) of Untitled (3).



The final difference is possibly one where there has been a misinterpretation of the score by the pinner (or a mis-transcription of the clock) and occurs on the final cadence point (Ex. 4.27). Aylesford includes three lower-mordent symbols on final notes and there are many instances of mordents, both long and short, occurring on final notes of pieces in Clay's clocks, so the Aylesford upper line in Ex. 4.27 is a logical ending. However, the mordent is moved to the preceding note in the Windsor Castle realisation. It is exceedingly rare to find mordents in this cadential position; the final note would generally either be preceded by a long trill, or at least short trill and/or turn. There are frequent examples of ornaments being placed on both notes of a final cadential figure, but no others found with this ornamentation. It is impossible to know for certain however, whether this placing was deliberate; this could be a valid, if less musically satisfying piece of initiative on the part of the pinner.

4.5 Conclusions

The primary conclusion of this study must be that the Aylesford scores were indeed followed closely by Clay's craftsmen. Handel, or his scribe, seems to have been meticulous in the application of ornament symbols, and the melodic embellishment included in the main musical text. This specificity of the ornament notation is common in solo keyboard music, but rarely seen in other works, vocal or instrumental. There do seem to have been occasions where the barrel-pinner allowed himself some initiative, although the Aylesford manuscript may be a fair copy, kept for records, rather than the actual score used by Clay. There may therefore be omissions by the copyist which were indicated to the barrel-pinner in an earlier version. However, it may also be that the pinner, as modern performers do, felt that if an ornament was being used consistently in a particular figuration, or as part of a sequence, he could infer its continuation despite the omission of a symbol.

The notation, prescriptive as it is, gives little information as to the realisation of the trill symbols. Therefore this must be assumed to have been commonly understood by both arranger and pinner, either by agreement, or a common musical environment. The only exception seems to be the addition of turns, but these are generally notated rather than assumed. There are many treatises from the late seventeenth and early eighteenth centuries which refer to the types of ornamentation used here and which advise as to usage, so it seems likely that this style would have become ingrained in a common understanding.

Drawing together all the evidence from these pieces it is possible to make some observations about the performance of the ornamentation notated in these pieces and the functionality of the ornaments therein. Firstly, there are no ornaments in the lower lines of either the Aylesford arrangements or their realisations in the Windsor Castle clay clock, except where there is a doubled trill.

The trills and mordents seem to serve both rhythmic and intensifying functions. Short ornaments add weight and a spritely character to the articulation of notes, whether in quick passages, on repeated notes or longer notes at the ends of phrases. This is achieved through the fact that the initial quick opening note (on the beat) sounds heavier to the ear than might a plain longer note, but the following quick notes serve to immediately weaken the sound, providing a perceived accent followed by a diminuendo. They are not applied at any regular intervals or in any formulaic manner (except that cadential points always have some ornamentation) and are used on various beats of the bar.

Longer ornaments, particularly those which continue throughout a note serve to intensify the melodic movement from one note to the next. These often include some kind of termination and can either support the fundamental rhythmic structure of a phrase or to subvert it (as seen in the rising scale in Fig. 4.25)

What is especially relevant to practitioners of HIP is the fact that there are very few trills which begin on the upper note and those that there are, are indicated specifically in the score. This implies that main note trills are the 'norm' and upper opening notes the exception, contrary to the common modern understanding of the style of this period. Both trills and mordents often have longer notes towards the end, providing a point of orientation and firmly re-establishing the main note. If there is a turn at the end of a trill, then any elongated note generally occurs just before this, though there are exceptions. Elongated opening notes are also found, generally on long main note trills and it is not unusual to find an elongated opening note and a later 'orientation' note in the same ornament. Where auxiliary opening notes do occur, they are generally short and specifically indicated in the score; we never see trills beginning with the elongated upper note opening in these pieces. This bears out the evidence presented in the previous chapter and, in fact, much of the evidence from ornamentation tables from the late seventeenth and first half of the eighteenth century where trills and mordents are generally depicted with a short opening note, whether the auxiliary or main note.

Key to colour highlighting in comparison scores Ex. 4.28-4.31

WC clock ornament corresponds to written ornament symbol in

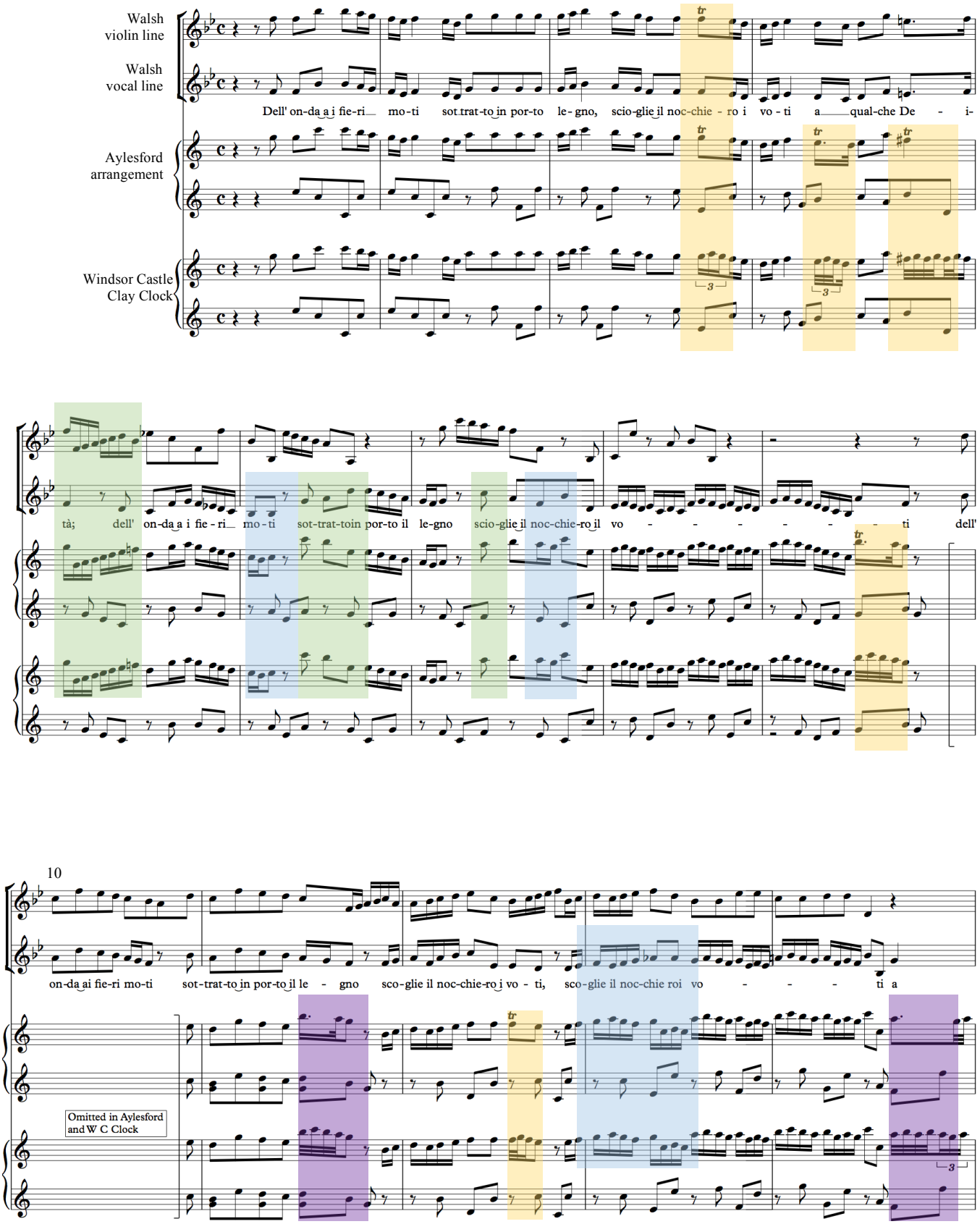
WC clock ornament not indicated in Aylesford

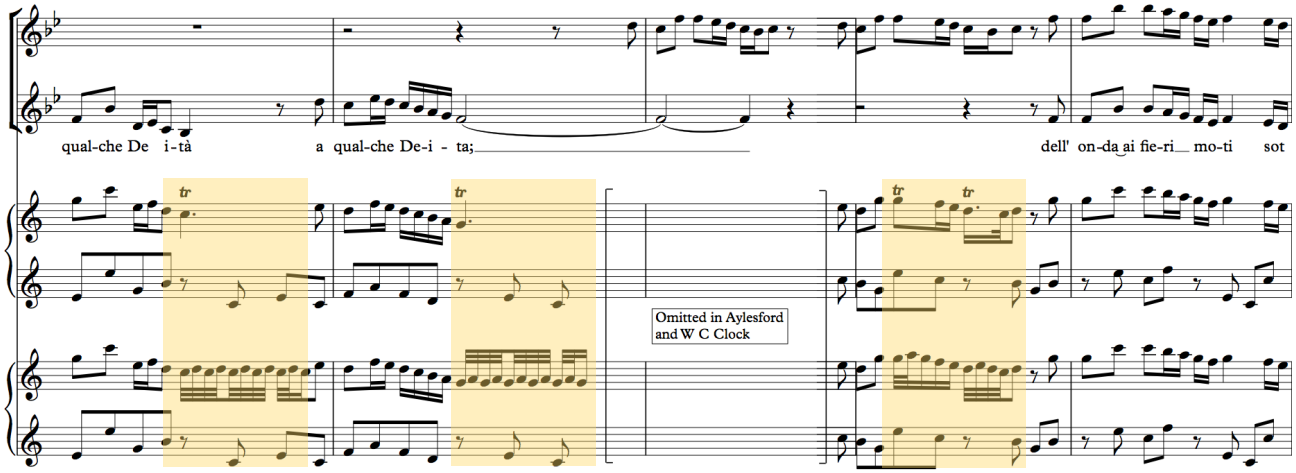
WC clock ornament different to written ornament symbol/melodic

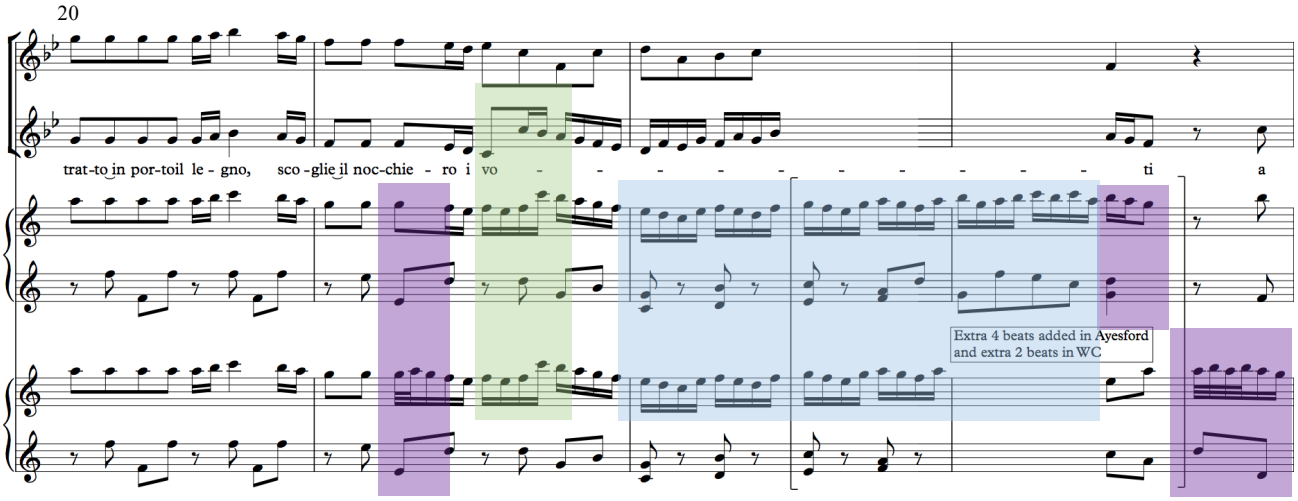
Melodic alteration necessary to remain within Clay

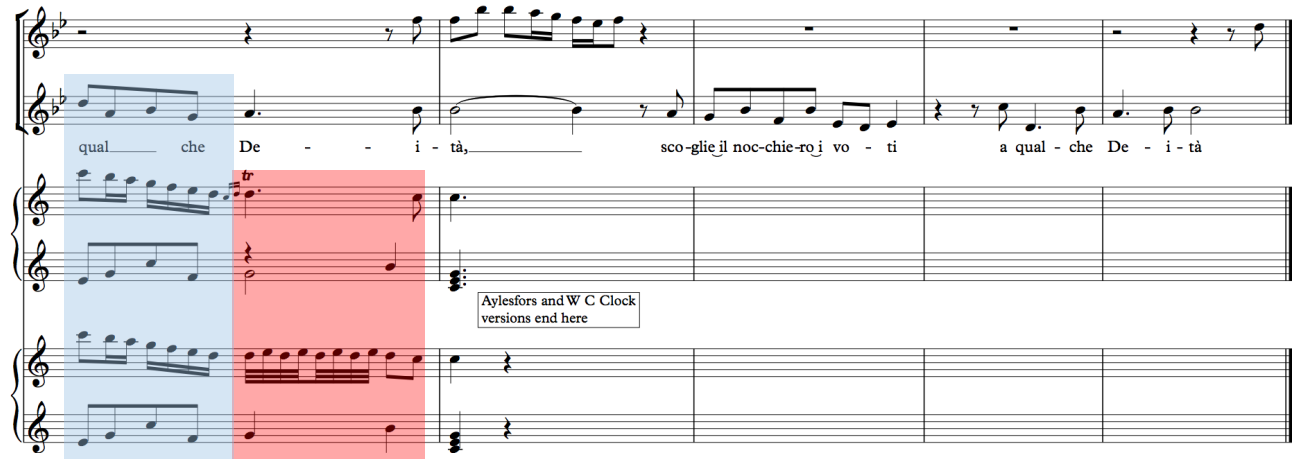
Melodic alteration not necessitated by Clay clock

Example 4.28 – 'Dell'onda i fieri moti' - Comparison Score.

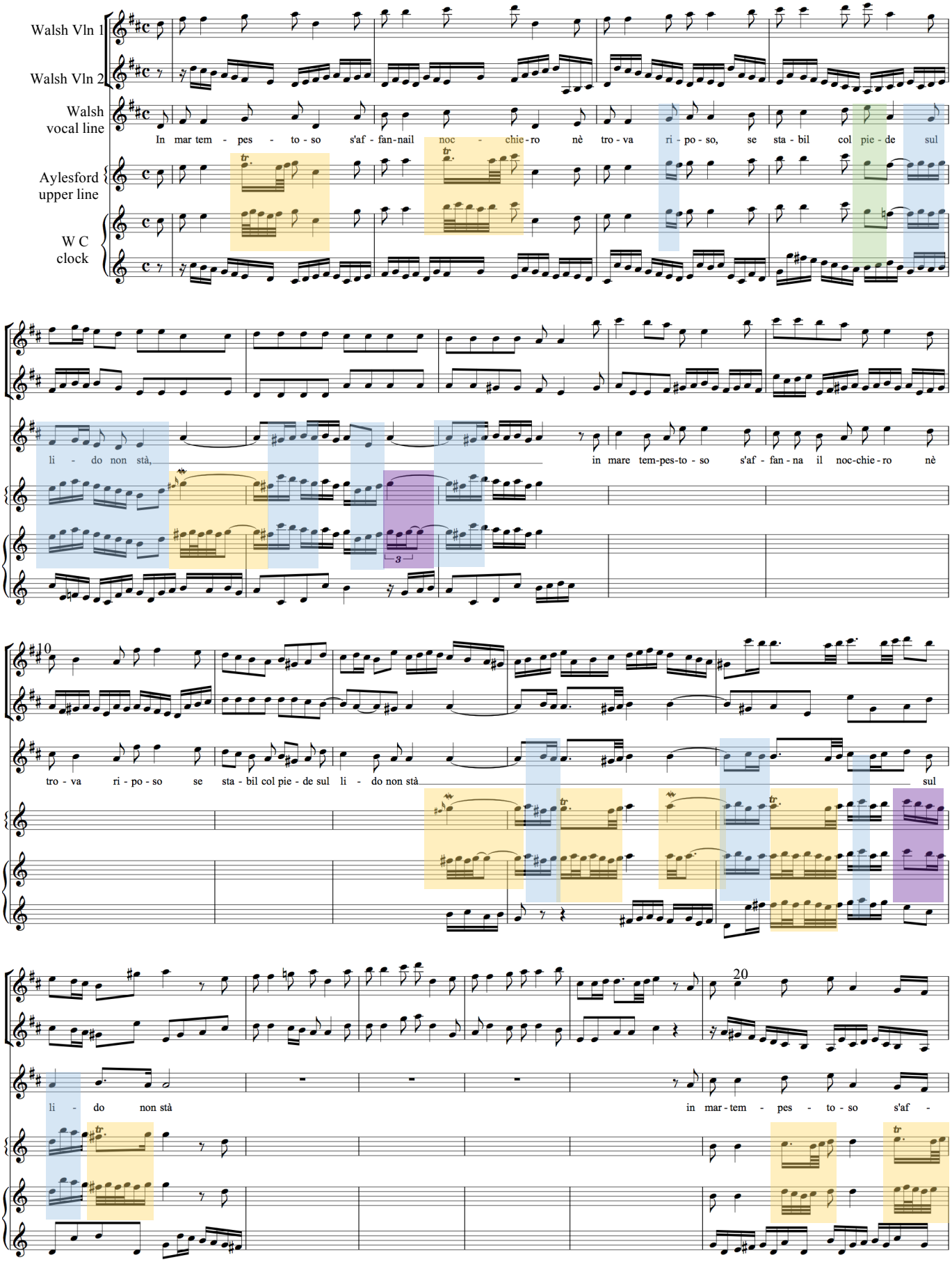


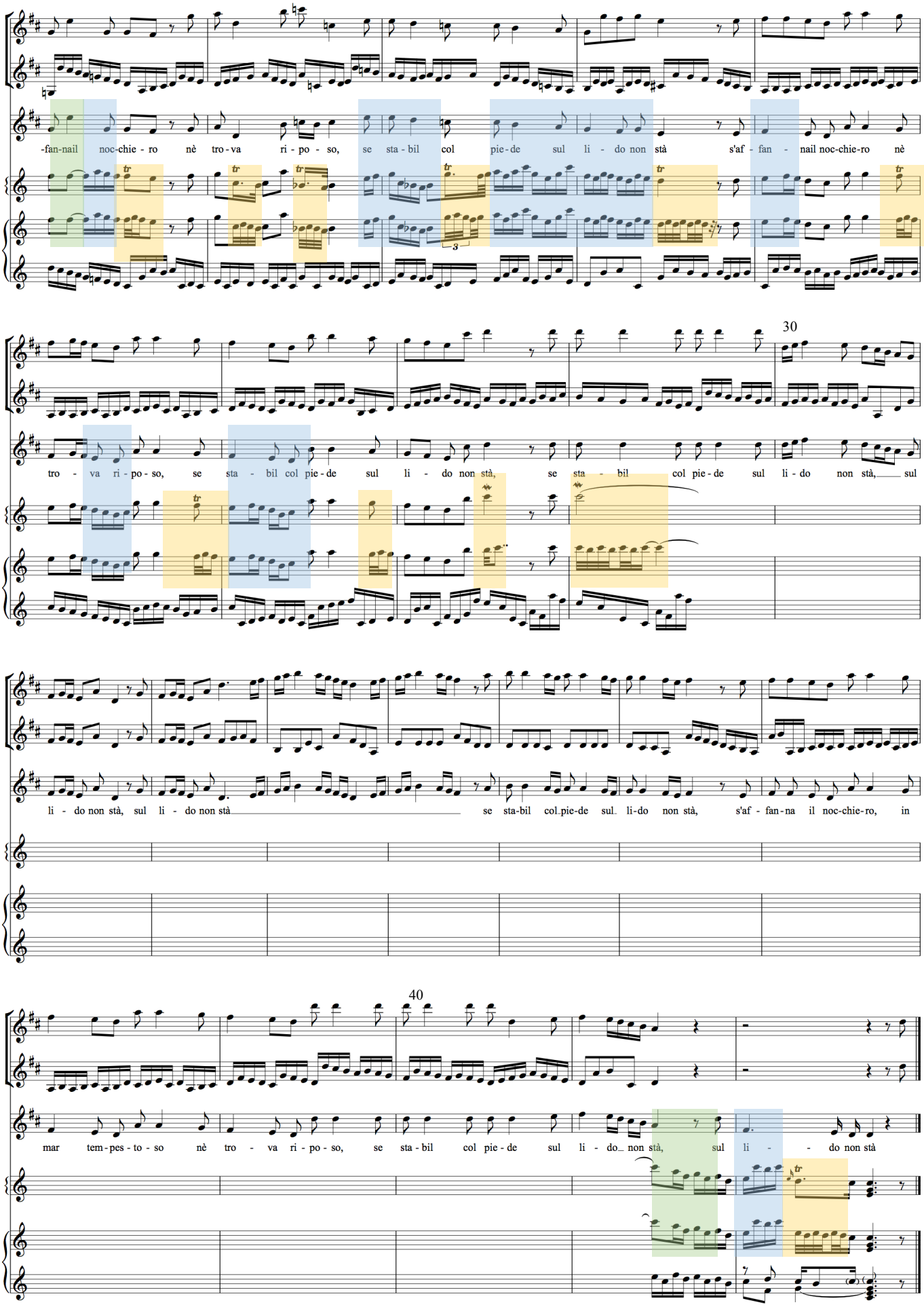

qual-che De i-tà
a qual-che De-i - ta;
dell' on-da ai fie-ri mo-ti sot
Omitted in Aylesford and W C Clock


20
trat-to in por-toil le - gno,
sco - glie il noc-chie - ro i vo - - - - - - - - - - ti a
Extra 4 beats added in Ayesford and extra 2 beats in WC

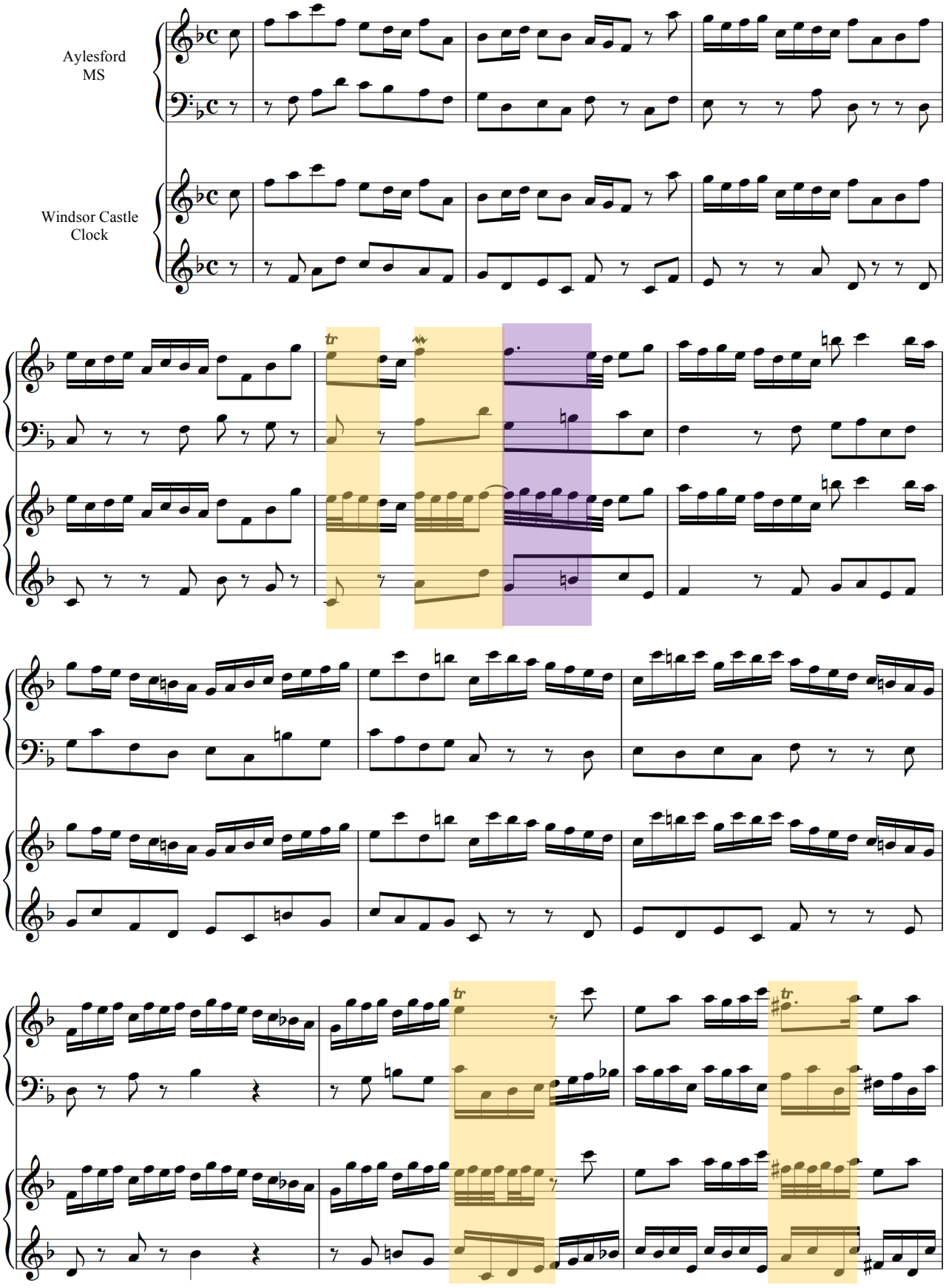

qual che De - - i - tà,
sco-glie il noc-chie-ro i vo - ti
a qual - che De - i - tà
Aylesfors and W C Clock versions end here

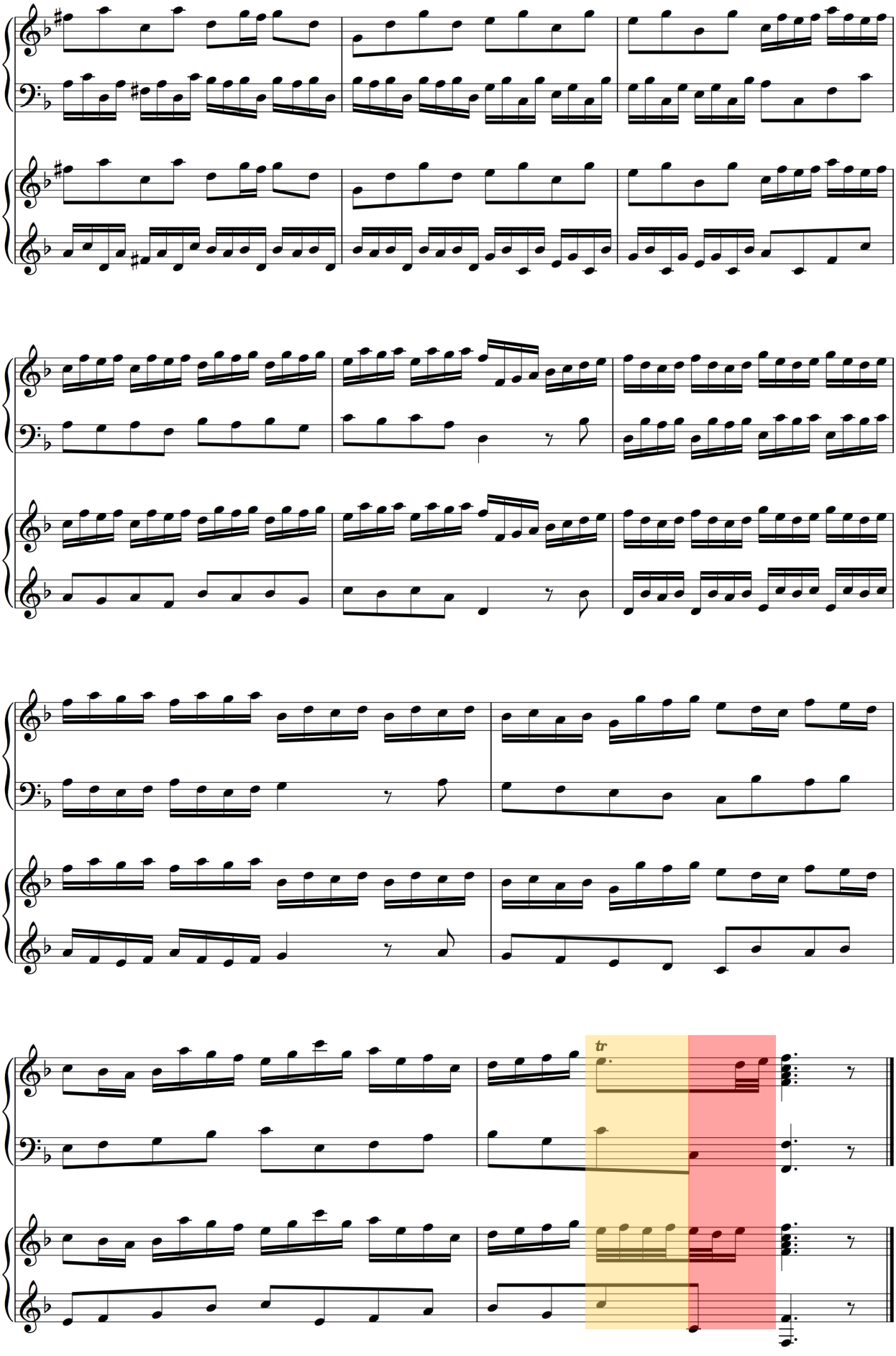
Example 4.29 – 'In mar tempestoso' - Comparison Score.



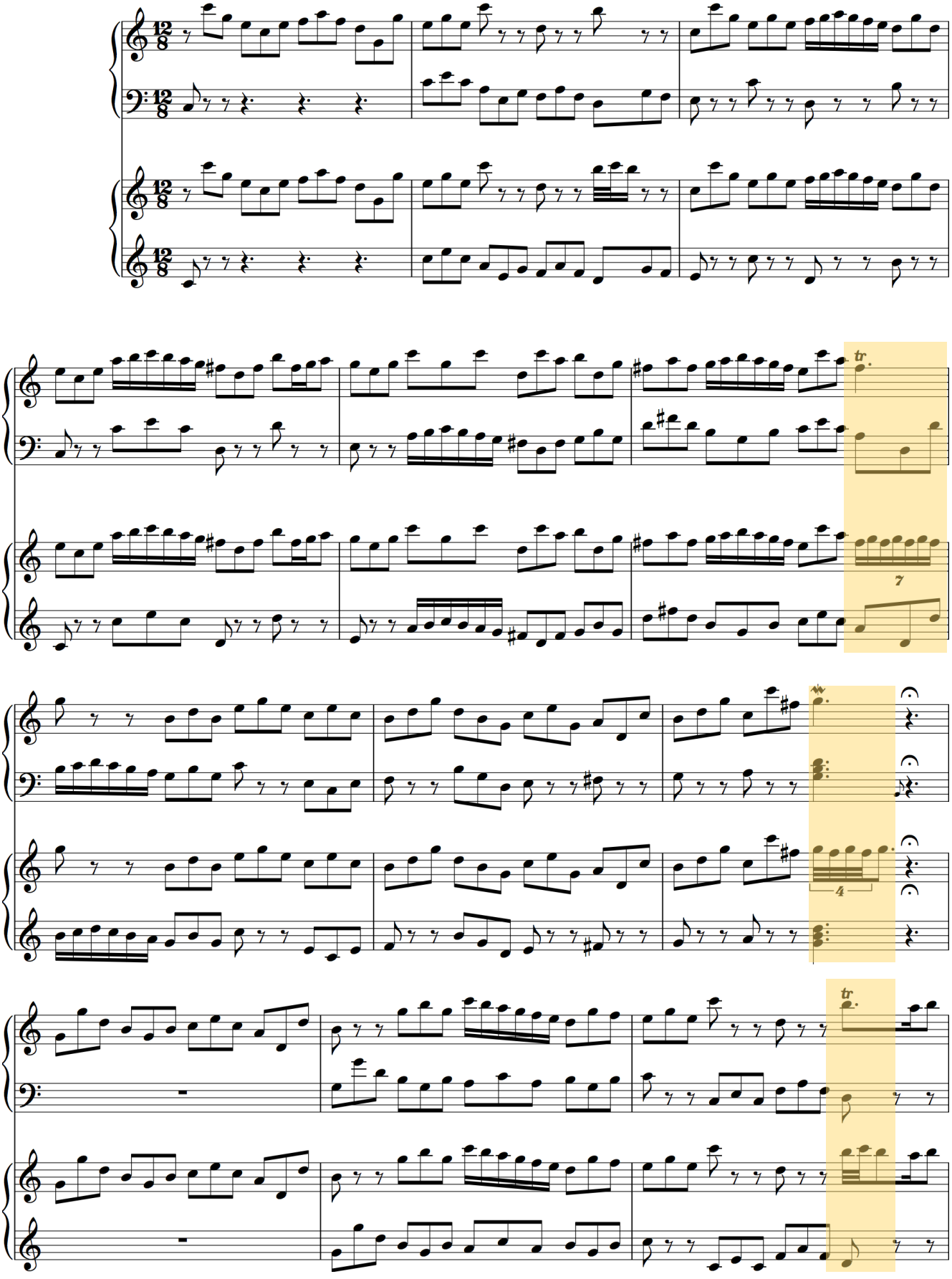

-fan-nail noc-chie - ro nè tro - va ri - po - so, se sta - bil col pie - de sul li - do non stà s'af - fan - nail noc-chie-ro nè
30
tro - va ri - po - so, se sta - bil col pie - de sul li - do non stà, se sta - bil col pie - de sul li - do non stà, sul
li - do non stà, sul li - do non stà se sta-bil col pie-de sul li-do non stà, s'af - fan - na il noc-chie-ro, in
40
mar tem - pes - to - so nè tro - va ri - po - so, se sta - bil col pie - de sul li - do non stà, sul li - do non stà

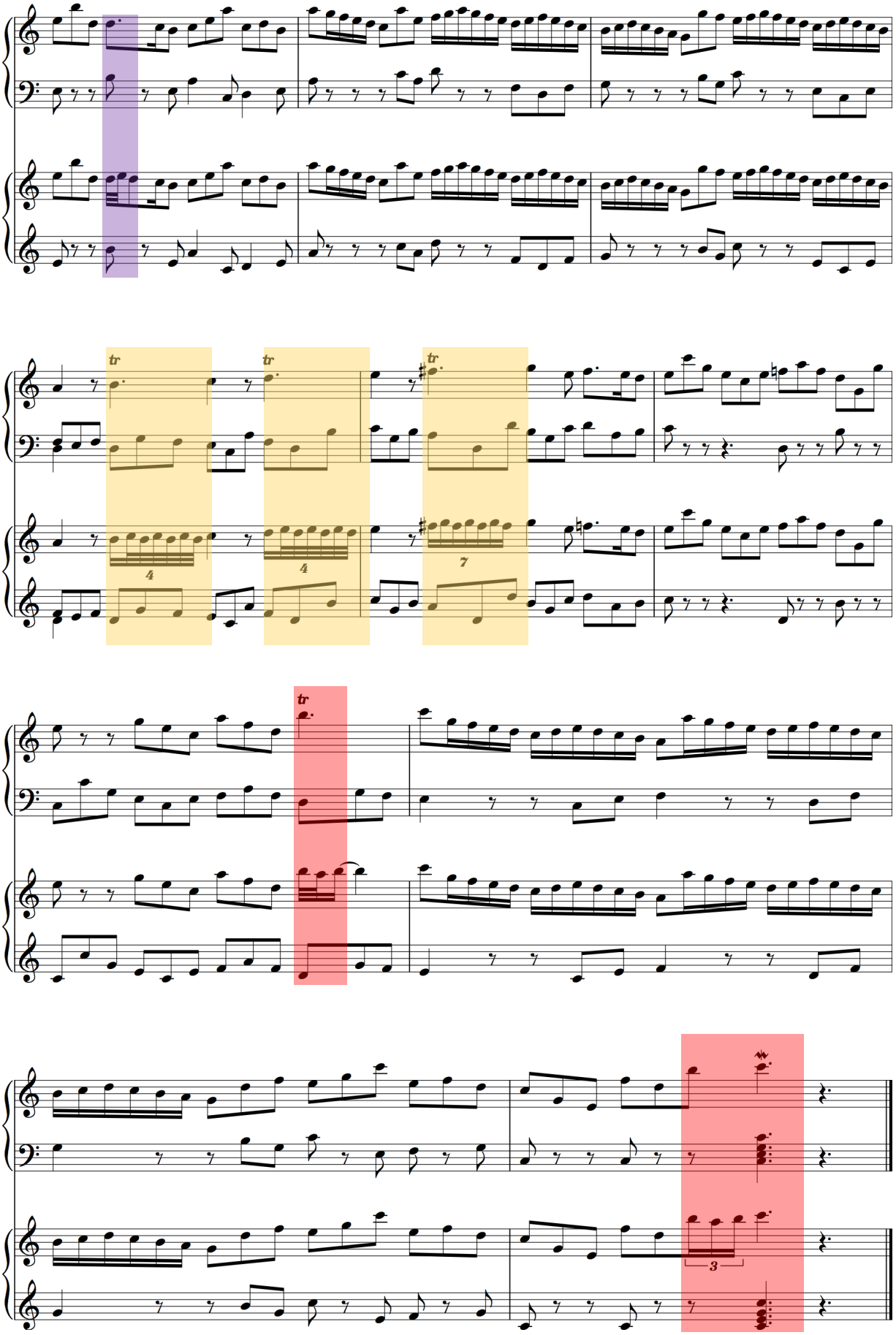
Example 4.30 - Comparison Score of Untitled 1.




tr

Example 4.31 - Comparison Score of Untitled 3.





Chapter 5: Longitudinal Comparison (1) of Two Mechanical Versions of the Minuet from Handel's Overture to Ariadne from Different Points in the Eighteenth Century.

5.1 Introduction and sources

The first of these versions of the Minuet from the Overture to Handel's *Arianna in Creta*[199] is found in a clock made by Charles Clay, known as the Braamcamp Clock, after a wealthy Dutch merchant, Gerrit Braamcamp (1699-1771), in whose collection it remained for some years.[200] A recording of this clock was made when it passed through Christie's auction house in 1973; since this date the instrument has been in a private collection, although the Museum Speelklok in Utrecht (Netherlands) has recently acquired it and kindly made a recording available for this study. This recording has made it possible to verify the accuracy of the published transcriptions of this clock, and of the Windsor Castle clock, previously discussed.[201]

The second version is from the barrel-organ discussed in Chapter 2, made by Henry Holland and dated to around 1790.[202] It is housed in the Colt Clavier collection in Kent and has 16 barrels, most of which remain in perfect working order.[203]

Although the two versions are therefore separated by a period of 40-60 years, there is a marked similarity in the fundamental ornamentation style. There could be several reasons for this, one being the lineage between the two makers. Holland was nephew and apprentice to George Pyke who was in turn trained by his father John Pyke, contemporary of Charles Clay and one of the executors of Clay's will when he died in 1740. Therefore there may have been a tradition of musical practice which was passed on via this line of succession. The ornamentation is not identical, however, and demonstrates slightly different choices by the different arrangers/pinners, albeit within very similar parameters.

This similarity may also demonstrate a wider lineage of stylistic practice in which, as pieces become well known, even canonic, their performance style is consequently likely to change little in fifty years of continuous performance. A performer, or barrel-pinner in this case, would probably reproduce a piece as he expected to hear it, i.e. the way in which he had always heard it and similar pieces before. Likewise, an aristocrat, used to hearing master musicians and possibly also playing the music of Handel himself would expect the music he requested to be pinned into his mechanical organ to sound in the style to which he was accustomed. This would be particularly true in a society setting such store by 'good taste'. New fashions in musical performance practice would of course occur over

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[199] The anglicised title 'Ariadne' has been used in this chapter, to reflect the terminology of the Holland organ.
[200] Haspels' Introduction to Dirksen, *Twenty Pieces,* p. 5.
[201] Dirksen (*ibid*) and also found in Haspels, *Automatic Musical Instruments*, pp. 210-234.
[202] Transcribed by the author (2014).
[203] The contents are detailed in Appendix B.

this time but would perhaps be more evident in newer music, allowing for a co-existence of conservative and more progressive musical styles.

Hitherto this thesis has focused on comparing single transcriptions to a notated score. There are numerous additional problems which arise when comparing two transcriptions; even if the transcriptions are as correct as possible, some decisions made by transcribers are subjective and therefore another may arrive at slightly different notations. For this reason, as far as possible it is preferable to return to the original instruments or recordings of them rather than to rely purely on published transcriptions. Dirksen's transcriptions are generally accurate, but there are occasional note lengths which seem different on close listening to the recording from his transcription. Similarly, there are occasional 'phantom' notes which Dirksen notates but which were not detected when listening to the recordings for this study. It is impossible to know for sure why this is but perhaps it is possible that these notes were pinned on the barrel but not functioning, or that the notes were assumed based on other sources or information. These are editorial decisions necessitated by the ambiguity of recordings (like the quantisation of ornaments) which may be made differently by different listeners using different equipment.[204]

Fractional variances in articulation speed become important issues when examining whether ornaments occur on or before the beat. Generally, in this study the sounding bass note is taken as indicating where each beat of the bar occurs (assuming there is a bass note articulated at this point). In most cases this is easily audible, even allowing for fractional differences in articulation speed. However, there are occasions where it is unclear whether ornaments such as fast appoggiaturas or *coulés* are intended to sound exactly with the bass or slightly before and this is then for editors to decide, based on other available evidence (period publications, trends throughout the rest of the piece etc.). Usually it is clear where the notes should lie but in one or two cases there is ambiguity due to a potentially late-speaking bass note.

The Clay clock tunes generally only contain two parts and it is only at selected points, usually cadences, where more notes may be added to fill out a chord. Much of the music in mechanical organs contains only minimal harmonic realisation, as limited ranges mean it is unnecessary or obscured. More harmonic realisation occurs in the Holland organ, since the range is larger (three octaves) allowing for harmony notes to be added more freely without obscuring the melody and bass lines. In the transcriptions herein, the inner harmony parts have been filled in only occasionally, where they are necessary for analysis, to avoid overcomplicating the scores.

It is important to remember that the pinners of the different barrels were unlikely to have used the same scores. Since rhythm, especially in passing notes, often varies from source to source, it is sometimes impossible to gauge whether the barrel-pinner is inserting a rhythmic device as an

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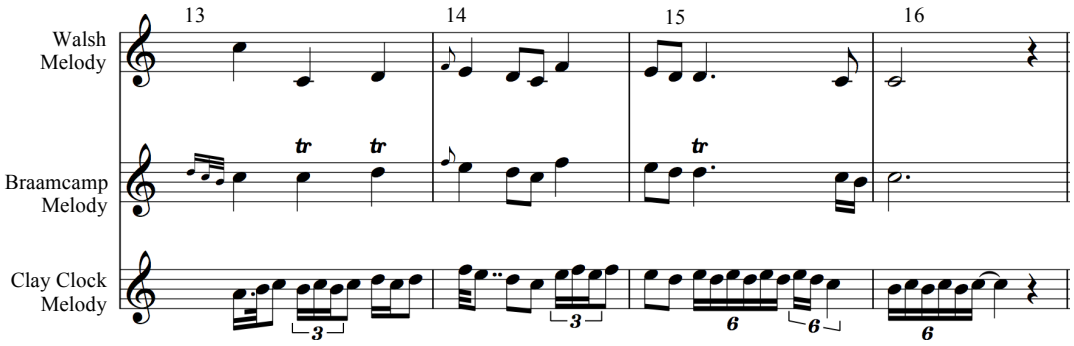
[204] See Chapter 1 for the transcription methodologies used in this study.

ornament or if this was written into the score supplied by their arranger. For this reason, the decision has been made to exclude minor rhythmic alteration from the lists of ornaments in these pieces unless there is a clear indication that a rhythm has been deliberately altered (e.g. back-dotting a repeated figure which has been previously straight or simply dotted).

The scores used as 'originals' in this case are twofold. The first is a keyboard score published by John Walsh[205] which seems to correspond to other period versions of the Minuet. Secondly there is also an extant score which was found in the case of the Clay clock when it was sold (hereafter referred to as the Braamcamp score).[206] This score has close connections with the minuet found in the Clay clock, containing precisely the same octave transpositions and arrangements (see Ex. 5.1). The ornaments, while clearly related are not identical, as will be discussed, so it seems that this score was the original from which the clock was pinned, rather than a transcription of the clock's performance. It is more likely that a pinner made musical choices to add, omit or change ornaments which he found in the score, than that a transcriber aiming for accuracy would make such easily avoidable errors.

Example 5.1 - Bars 13-16 of Minuet from Ariadne showing Walsh publication's original melody, Braamcamp arrangement and Clay clock realisation, which follows the Braamcamp octave transposition but alters the indicated ornaments.



5.2 The ornaments

The ornaments in both versions of the piece remain very close to the main notes of the melody (placing them in the category of graces rather than melodic alterations) and are very densely packed. In the Clay clock 40 out of 43 bars (93%) contain at least one and often two or even three separate ornaments. In the Holland organ, the proportion is similar with 66 out of 76 bars (87%) containing ornaments.

Both versions transpose the piece into C major from the D major of the keyboard version to suit the ranges available in the Clay clock and Holland organ.[207] This enables the maximum range to

[205] Handel, G. F. (1760). *Handel's Overtures from all his Operas and Oratorios. Set for the Harpsicord or Organ, etc*. (London, Printed for I. Walsh).
[206] This is not widely available but a copy is printed in Haspels *Automatic Musical Instruments,* p.184-5.
[207] The overture to the original opera also places this minuet in D major.

be utilised, facilitating a fuller sound and maximum scope for nuance. The Holland organ plays the entire piece as found in the Overture to Ariadne, which runs to 76 bars of 3/4, whereas the version found in the Clay clock is truncated (43 bars), omitting repeats and *petits-reprises* within phrases. The comparison score can be found as Ex. 21 at the end of this chapter.

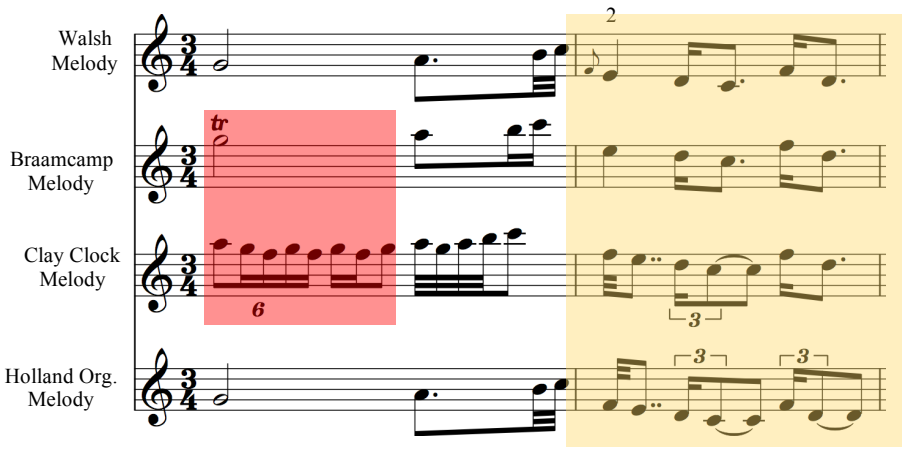
5.2.1 Opening notes

The Clay clock, with its limited range (only two octaves from middle C) contains more arrangement than the Holland organ. The need to differentiate between melody and bass notes in a melody which itself originally spans two octaves requires some octave alterations. Thus the opening four bars are transposed up an octave, as is the beginning of the B section, necessitating other slight re-arrangements of the melody to allow these transpositions to sit well within the overall structure of the piece. This re-composition of the melody is not considered to be ornamentation since it is indicated in the Braamcamp score arrangement and is functional rather than interpretative.

Walsh's print contains no ornament indications in the opening bar and the Holland organ follows this; however, the Braamcamp score has a ***tr*** marked and Clay's version of the piece begins with an interesting grace. This is a long mordent but it begins with a long upper appoggiatura of just under a quaver (see Ex. 5.2). This is an unusual ornament, both in mechanical sources and elsewhere. An ornamented opening note is a controversial inclusion, as discussed in Chapter 3, since it contravenes the advice of writers who advocate a plain opening statement, in keeping with a rhetorical delivery.[208] The upper appoggiatura with which it begins momentarily alters the harmony from C major to an implied A minor, which then trills to the lower note, not settling on the main melody note until halfway through the second beat of the bar (the halfway point of the bar itself). The treatment of this bar is identical at the opening of sections two (the repeat of the opening) and four (its closing recapitulation) in the Holland organ and whilst in the Clay clock the repeat (section A2) is omitted, in section A3 the ornaments remain the same, although the appoggiatura and long mordent are slightly shorter, so the main note is arrived at earlier (see Ex. 5.19 bar 57).

[208] Tarling, *The Weapons of Rhetoric*, p. 161.

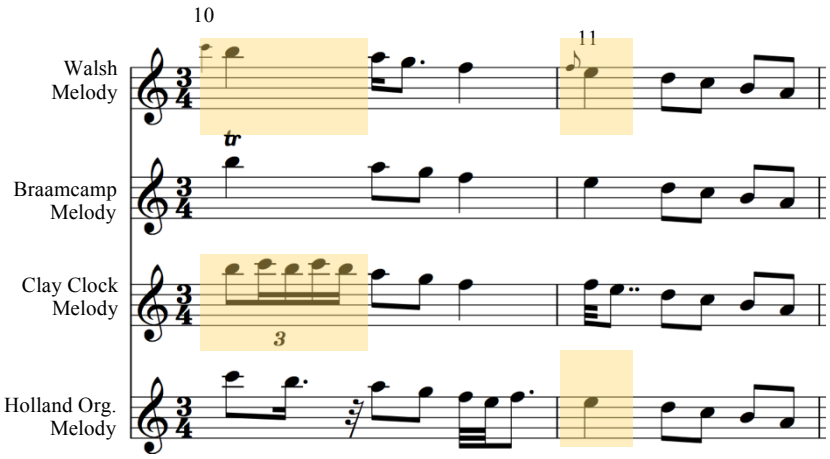
Example 5.2 - Bars 1-2 of Minuet from Ariadne. Clay Clock realisation of ornament marked in red and realisation of appoggiaturas and back-dotted figures in yellow.



5.2.2 Appoggiaturas

This term refers to an auxiliary note which occurs at the beginning of a main melody note, then resolves to the written pitch. From the very start of the piece questions arise regarding the placing of appoggiaturas both in performance and in transcription from audio sources since there seems to be little to distinguish them rhythmically from the back-dotted figures which proliferate in this piece. In bar two (Ex. 5.2 in yellow) Walsh notates the appoggiatura on beat 1 with a grace-note quaver preceding the main crotchet. On beats two and thee there are very similar rhythms notated within the main melody. There is very little difference in the rhythmic realisation, but the figures have quite a different position in the melodic structure. The implication is that the back-dotted figures are essential to the piece, whilst those indicated with grace-notes are decorations. The decision has been made, then, to consider additions indicated by grace-note style notes as indicated appoggiaturas, though obviously there may also be cases where these are not realised as such, and places where appoggiaturas are added without any indication in a printed score. There is at least one case in each organ (see Ex. 5.3) where a grace-note appoggiatura is omitted in the organ realisations, which supports this assessment.

Example 5.3 - Bar 10-11 of Minuet from Ariadne. Bar 10:1 shows appoggiatura omitted in Clay clock and bar 11/1 shows an appoggiatura omitted in Holland organ.



There are moments where the notated back-dotted figure is altered to two straight quavers (e.g. Ex. 5.2 bar 10:2), which could either be an ornamentation of the figure or the result of a variance in the score used by the pinner.

The majority (8/11) of the appoggiaturas in the Clay clock are performed short (i.e. taking up less than half of the note value on which they are placed) and in the Holland organ the proportion is 10/17. The first appoggiatura, indicated with a grace-note (see Ex. 5.2 bar 2:1) is performed by both organs with a length of 1/8 of the total note value (an over-dotted 'scotch snap' feeling). The back-dotted figures on beats two and three are performed fractionally slower in both cases, with a length of either 1/6 or 1/4 of the beat. However, there are many instances of both 'grace-note' appoggiaturas and back-dotted figures throughout both versions of the piece and in neither does their realisation form any kind of pattern, even in the repeated sections, so any correlation between the two instruments is apparently coincidental. In fact, throughout the piece there is never a regular pattern of difference in terms of timing between the back dotted figures and the grace-note appoggiatura. The majority of both types of notations are performed with a length of 1/6 beat[209] (see Ex. 5.1 bar 2:2) demonstrating that at least in these makers' minds, back dotted notes are more often than not interpreted as being slightly over-dotted and that the use of grace-note style notation, whilst it carries harmonic significance, is of little significance to the temporal value given to the realisation of the notes.

The second most common realisation has the appoggiatura taking up 1/8 of the note value: even more over-dotted. There are also some cases in which the appoggiatura takes up 1/4 as notated in the Walsh score: these do give a more relaxed feel to the notes and it is noticeable that in neither rendition of the piece do these ever occur on the first beat of the bar. A 'Menuet', according to Quantz and others, is performed 'springily' and the second and third beats are usually weaker which would

[209] 50% in Clay clock and 52% in Holland organ.

bear out the pinner's decision to use weaker, less 'springy' rhythm on latter beats.[210] Indeed, sometimes all three realisations are used in the same bar (as the Clay clock version of bar 2).

There are fewer long appoggiaturas (taking up half of the note value on which they are placed) added to this piece; one in Clay's clock (bar 47:1) and five in the Holland organ (two of which are themselves ornamented with a trill - see Ex. 5.12). Of these only one is indicated in the Walsh score (bar 10:1 see Ex. 5.3) and interestingly, it is indicated in Walsh's score by a grace-note crotchet, as opposed to all other cases in the piece, which are all quavers. This may be significant but as there is no pattern (the other long appoggiaturas are not indicated in the score) it is not possible to draw conclusions from this.

Finally, there are clear examples of pre-beat appoggiaturas in the Holland organ: at bar 46 before beats two and three. The Clay clock also contains three pre-beat ornaments, these could be described as appoggiaturas, or as opening auxiliary notes attached to short mordents. As such they will be addressed in section 5.2.4.

All of the appoggiaturas in this piece are upper auxiliary notes; however, not all of the appoggiaturas indicated in either score are realised. Some are omitted but it also seems that they are often interpreted as opportunities for other ornaments, particularly trills. Indeed, some appoggiaturas are indicated alongside trills, seemingly to indicate an upper starting note (see section 5.2.3). However, in the Clay clock two notated appoggiaturas are realised as mordents (see section 5.2.7).

5.2.3 Trills

There are 22 trills included in the Clay clock minuet; of these all are long trills and 20 (91%) begin on the upper note. There are no short trills in this version. Interestingly, the opening mordent of the piece is the only grace to begin with a long upper appoggiatura; none of the trills do this. In the terminology of Donington therefore these would be 'unprepared' trills which he recommends should be used less frequently than their 'prepared' counterparts (with long upper appoggiaturas).[211] Many seventeenth and eighteenth-century writers do mention trills beginning with a long upper note, however it is generally written in ornament tables as a separate ornament, such as the *tremblement appuyé* described by D'Anglebert[212] and Rameau[213] or the *plain-note-and-shake* described by Purcell and others.[214] Most notated representations of a trill give a short upper note at the beginning with some beginning on the main note. Walsh's score includes an indication of a grace-note style appoggiatura at eight of the points where trills are found in the Clay clock (36%) but there are no

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[210] Quantz, *On Playing the Flute*, p. 291.
[211] Donington, *The Interpretation of Early Music*, p. 241.
[212] D'Anglebert (1689). *Piéces de Clavecin, Livre 1re.* (Paris). p. *e*.
[213] Rameau, J.-P. (1731). *Pieces de Clavecin, avec une Table pour les Agremens.* (Paris, Chez Boivin). p. 9.
[214] Purcell, H. (1696) *A Choice Collection of Lessons for the Harpsichord or Spinnet* (London, H. Playford). p. 6. This treatise and its companions are discussed further in Chapter 6.

grace-note style appoggiaturas written in the Braamcamp score at points where the Clay clock includes a trill. This may be an indication that the trill should start on the upper note, but as most trills begin on the upper note anyway, it impossible to know. It does not seem to have any impact on the length of the opening note of a trill either. This may simply indicate that the points at which grace-notes are placed are considered by the pinners to be suitable for some kind of additional ornament, not only the one specifically indicated.

Of the 32 trills in the Holland organ, 27 (84%) begin on the upper note, and five (16%) begin on the main note. Only one of these is a short trill (the only one to occur in either rendition), in bar seven of the Holland organ. Three of the long trills begin with long upper appoggiaturas (under 10%). One of the main note trills (bar four) in the Holland organ appears on a note for which only an upper appoggiatura is indicated in the Walsh score, possibly another indication that a notated ornament was a suggestion and an indication of the moment's suitability for decoration rather than an instruction for a specific grace. The grace-note appoggiaturas in the Walsh score again appear to have no impact on the length of the opening note of any trill. There are also trills in the bass part at three points (bar eight and its repetitions in bars 28 and 63). These are all long trills beginning with a short upper appoggiatura and ending with a turn, linking the note to its successor; they occur at moments where the melody line is static.

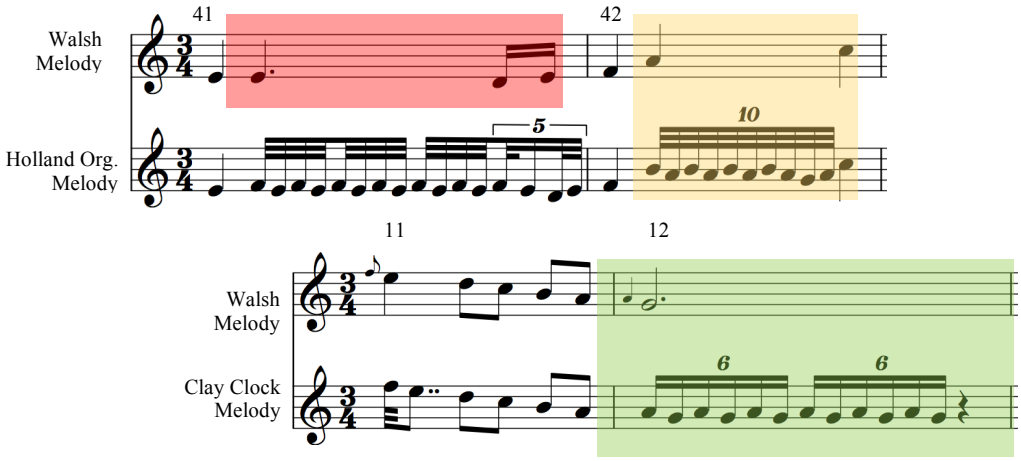
Trills with turned terminations are in the majority in the Holland Organ, with 18 out of 31 (58%) having a turn at the end. In five of these cases (bars 41, 43, 45, 50 and 52) the turn is indicated with semiquavers in the notation of the Walsh score. Again, these are never realised with the printed grace-note values, but with faster notes integrating them into the ornament. By comparison, the Clay clock only includes a turn in 4/22 trills (18%), three of which are indicated in the Braamcamp score, and all in the Walsh score. This may be evidence of a small style shift, at least in the performance of this piece, although since there are many indications of turned trills across the rest of the Clay clock repertoire, it may not be significant. What is significant, however, is the fact that in every case where the figure of a dotted crotchet is followed by two auxiliary semiquavers leading to the note one step up, (such as the figure shown in red in Ex. 5.4), this is always taken as an indication that a trill should be added on the dotted crotchet. Therefore, the turn may not always be applied to the trill but there is always a trill added before a notated turn-like figure.[215] In the Holland organ, there are also several terminated trills on notes which do not necessarily move by step (see Ex. 5.4; yellow), so the turn does not serve the function of linking two conjunct notes together (as is often the case). This is not without precedent; Geminiani frequently uses this ornament on intervals of a third or more in either

[215] N.B. In the charts at Fig. 5.1 of this chapter, trills which precede a notated turned figure which is part of the main melody are not classed as trills with turns, as the turn cannot be strictly said to be an ornament in this case.

direction in his *Treatise of Good Taste in the Art of Music*.[216] It is also used elsewhere in the Clay clock, for example in its version of 'Si, tra i ceppi'.[217]

As noted in the previous chapters, trills often take up the entire length of a note, not 'settling' on an elongated main note at all before the melody proceeds (e.g. Holland organ bar 42, see Ex. 5.4 yellow). They may even continue through the final note of a phrase without settling at all as the Clay clock demonstrates in bar 12 (Ex. 5.4 green)

Example 5.4 - Bars 41-42 of Minuet from Ariadne as heard in the Holland organ and bars 11-12 as heard in the Clay clock.



Within nearly half of the terminated trills in the Holland organ however, there are notes which are fractionally elongated. The elongation is always on the main note and generally occurs towards the end of the ornament just before the final turn. The note is generally twice to three times the length of the oscillating notes surrounding it, and as such is still only very short (between a semiquaver and a dotted semiquaver long). When listening to the performance at full speed, these elongations are almost imperceptible, except that they serve to anchor the listener's ear to the main note, reinforcing this as being the principle note of the melody. This is an essential technique, commonly employed by performers, in my experience, so it demonstrates the subtlety and musicality of the barrel-pinner's art.

As discussed in the transcription method section of Chapter 1, every attempt at accuracy has been made in notating the ornaments, but the rhythms within them are sometimes indistinct. The emphasis has therefore been placed on pitch accuracy (i.e. having the correct number of notes within an ornament) and the notated rhythms have often been arrived at by assessing each note's length relative to the beat on which it is placed. For example, Ex. 5.5 (yellow) shows a trill which takes up two beats and has seven oscillations between the upper and main note followed by the two notes of the termination. All the oscillating notes seem to be the same length except for the final iteration of

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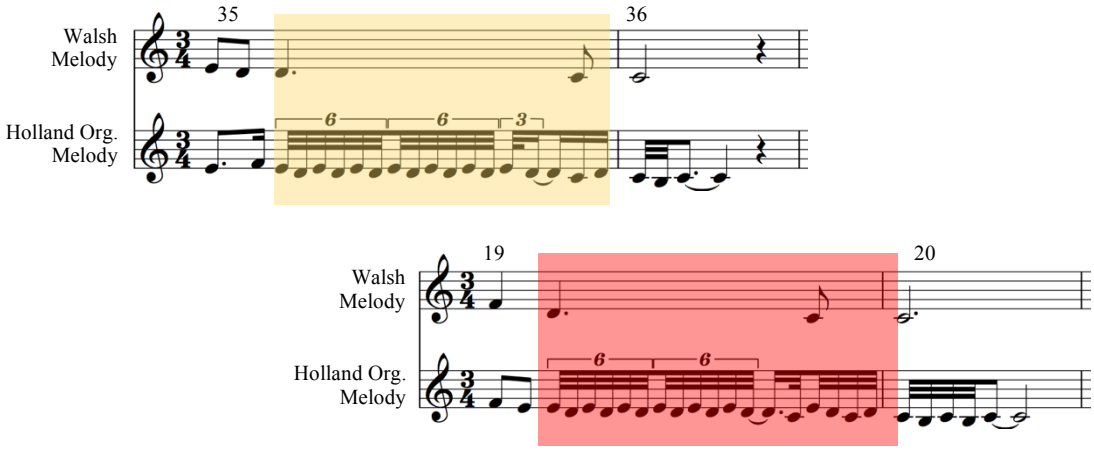
[216] Geminiani. *Treatise of Good Taste,* p. 18 for example.
[217] Dirksen *Twenty Pieces,* p. 17, bar 38:1.

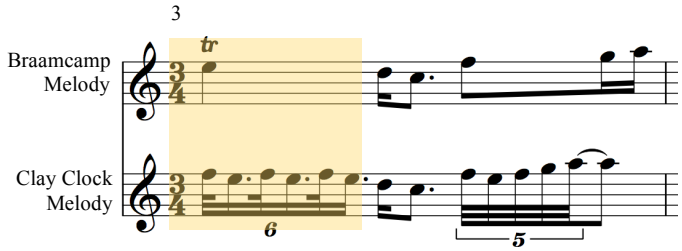
the main note which is twice as long. This is followed by two termination notes which are slightly slower than the earlier oscillating notes. These are in fact a decoration of the final note of the bar, an anticipation of the final cadence note, as is often the case. Ex. 5.5 (red) shows another example of a similar ornament, except here there is an additional lower auxiliary note following the held main note and before the final turn to terminate the trill.

Example 5.5 - Trill realisations in bars 35 and 19 of the Holland organ.



As discussed in Chapter 1 there may occasionally be mechanical reasons why some notes appear longer than others despite careful maintenance. However, the rhythmic nuances discussed above are repeated consistently throughout the piece and indeed throughout the Holland organ's remaining barrels. This strongly suggests that they are deliberate interpretative figures, rather than the result of a malfunction. In the Clay clock, however, occasional rhythms are more problematic. Ex. 5.6 shows how the trill rhythm in bar 3:1 actually sounds.

Example 5.6 - Bar 3 of Clay clock realisation.



This rhythm is not featured in other sources for trills in the eighteenth century, though it does appear as the *groppo* in some seventeenth-century sources, such as Mylius's influential *Rudimenta Musices* (1685).[218] It could be significant therefore, were it not for the fact that the rhythm throughout

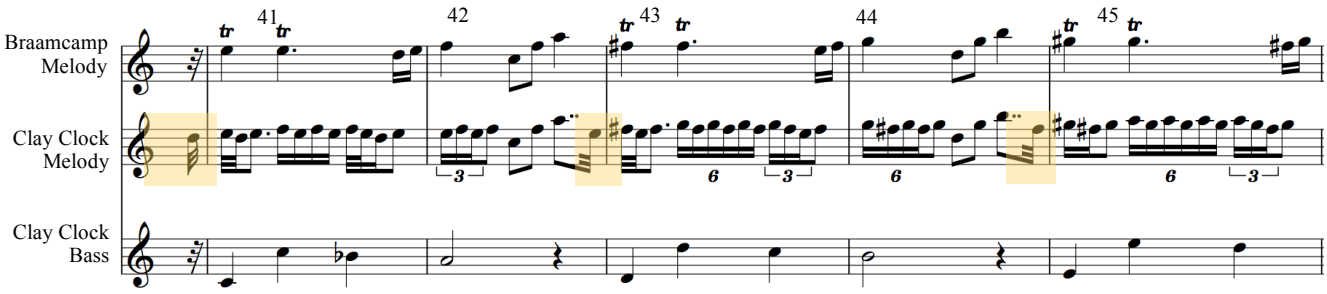
[218] Cited in: Neumann, *Ornamentation,* p. 299.

the clock's performance is decidedly uneven and additionally, this rhythm seems to recur particularly on the notes E and F at this octave. Consequently, it seems likely that this rhythm is due to mechanical wear-and-tear, and that in this case it should be evened out in transcription to enable useful comparison. This rhythm has therefore been omitted in the comparison score at Ex. 5.21.

5.2.4 Mordents

Mordents are the second most common ornament after trills in both renditions, numbering 18 in the 43 bars of the Clay clock melody (ten short, eight long) and 25 in the 76 bars of the Holland organ (23 short, two long). In the Holland organ, all of the mordents begin on the main melody note whereas in the Clay clock 3/8 long mordents begin on the main note, one long mordent (at the opening of the piece, discussed above) with an upper opening note. All of Clay's short mordents have a lower opening note. All of the opening notes in both sources are short and most occur on the beat, with three notable exceptions in the Clay clock, where they appear to begin before the beat (see Ex. 5.7). This is unusual and it is possible they are anomalies, but the notes do very much sound as if they occur before the bass note and there are certainly examples of pre-beat, anticipatory graces in primary sources. Leopold Mozart, Quantz and Tartini all refer to pre-beat *Vorschläge* and Neumann finds many further examples from Italian and French sources where an on-beat grace would not seem appropriate, so it is possible that these are a deliberate choice on the part of the pinner.[219] Indeed, Neumann cites indications of grace-note appoggiaturas before written-out mordents in the work of Locatelli, Vivaldi, and others, indicating a pre-beat realisation precisely like that which seems to occur in the Clay clock at this point.[220]

Example 5.7 - Bars 40:3-45 of Minuet from Ariadne showing pre-beat placing of appogiaturas before mordents on the barlines.



Regarding the placing of mordents, they frequently occur (with or without appoggiaturas), in disjunct melodic passages and on the first beats of phrases and on ending notes. They are also frequently used in places where they are immediately preceded, or followed by another ornament.

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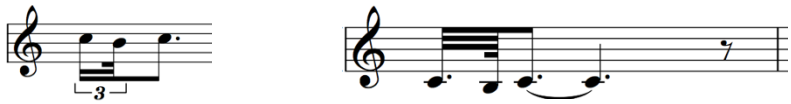
[219] Neumann, *Ornamentation,* pp. 49-199.
[220] ibid. p. 167.

In the Holland organ, just as there are rhythmic figures incorporated into some trills, so the rhythms in mordents, particularly short mordents can vary. The most frequent short mordent realisations consist of notes with a value of between a hemi demisemiquaver and triplet semiquaver long and as such usually last between 1/8- and 1/2 of a crotchet beat. Within this timing range, however, there are also occasional variations in rhythm, such as those seen in Ex. 5.8. These realisations lengthen the initial note, giving it more weight and delaying the auxiliary, which then feels more like a decoration of the note itself; as opposed to the quick, even realisations at the very start of the note, which seem rather to decorate its opening articulation.

Example 5.8 - Two alternative realisations of a mordent. Taken from bars 33 and 72 of the Holland organ version of the Minuet.



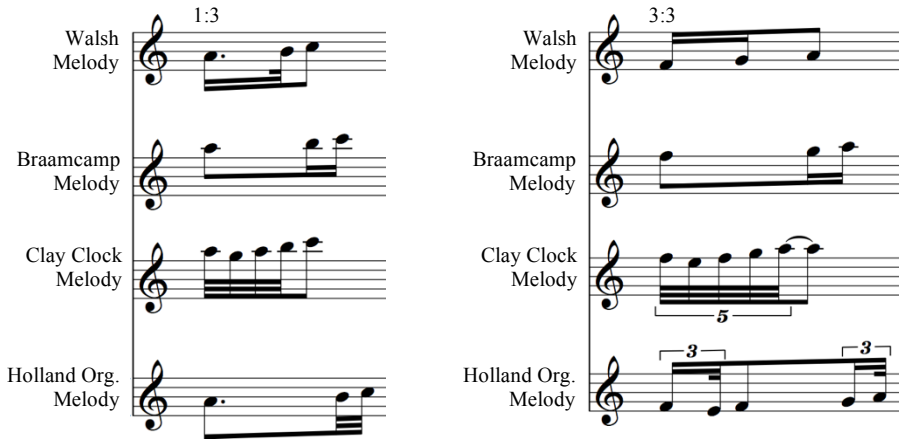
This dotted mordent figure is something that is not found in any notated explanations of the mordent as a grace. It also distances the short mordent from what might be considered its primary function, to intensify articulation making it somewhat gentler, in keeping with Geminiani's observation that the 'beat, when performed with different stresses and realisations, can express several Passions [*sic*]'. Indeed this rhythm could even be a possible interpretation of Geminiani's description of 'making it short and swelling the Note gently' which expresses 'Affection and Pleasure'.[221]

5.2.5 Turns

Turns occur frequently throughout both versions of this piece, generally attached to trills (as discussed above) but also alone. The decorations of a stepwise rising melodic figure, such as is found in bar 1:3 and 3:3 (see Ex. 5.9) appear to be turns, but, in fact, as only one lower auxiliary note is in fact added, these are short mordents.

[221] Geminiani, *Treatise of Good Taste,* p. [3].

Example 5.9 Bars 1:3 and 3:3 of Minuet from Ariadne showing decoration of rising figure with a mordent, forming a turn-like figure.



The Clay clock remains close to the original rhythm, adding a short mordent to the dotted semiquaver to create a turn-like figure of four demisemiquavers, whilst the Holland organ elongates the opening note to a dotted quaver and then shortens the final two to demisemiquavers. The Braamcamp score has a rhythm different to Walsh's edition on this beat, and the Clay clock actually seems to have more of a link with the Walsh version whilst the Holland organ is closer to the rhythm of the Braamcamp score. This, however, merely illustrates that the notation of smaller rhythmic figures can vary widely between period sources, so there is no particular significance to draw from this.

Turns are not used exclusively as linking ornaments, as mentioned before, and are often employed, like the mordent, to decorate the beginning of a note. Bar 19 of the Holland organ (see Ex. 5.5 - red) may even be a case of an internal turn in the middle of a trill. Elsewhere in the Holland organ, there is evidence of turns being used on short or final notes; for example, this occurs often in the final movement of Handel's F Major Organ Concerto, discussed in Chapter 8.[222] As with the trills and mordents, there are also cases of rhythmic weighting within turns, always on the main note, as demonstrated in bar 13:3 of the Holland organ (Ex. 5.19).

5.2.6 Other ornaments and anomalies

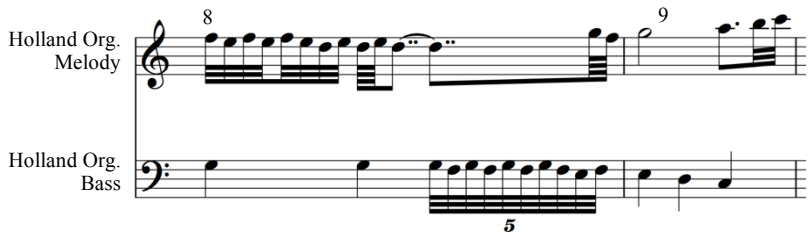
In both instruments, there are a few anomalous ornaments which do not fit readily into the patterns or categories defined above. In live ornamentation, a spontaneous decoration of the music, it should be expected that performers would use defined ornaments as a starting point rather than a prescriptive ‘menu’ from which to select their decorations. In the same way, as has been noted barrel-

[222] Handel/Fuller, *Two Organ Concertos*.

pinners seem to have combined or adapted defined ornaments to provide variety and the illusion of live spontaneity.

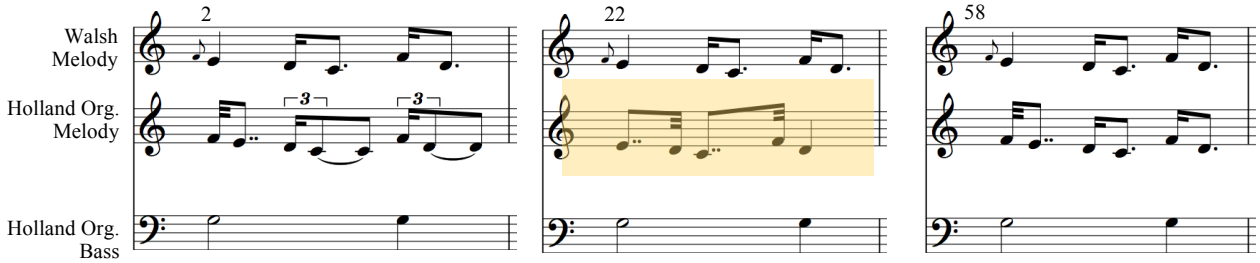
As mentioned before, almost all the ornaments added to both versions of this piece occur on the beat. However, in both instruments there are however exceptions to this rule. In the Clay clock, as discussed earlier, there are three appoggiaturas which occur before a mordent which is placed on the beat. (see Ex. 5.7). In the Holland organ, there are also three examples of pre-beat graces. There is an anticipatory mordent before the first beat of bar nine in which the G and F# demisemiquavers at the end of bar eight lead onto the G at the start of the following bar (see Ex. 5.10). Interestingly, there is an ornament in the bass part at the same point and, on close listening it is clear that the last two demisemiquavers of the bass ornament sound almost exactly with the melody part's anticipatory ornament so that the melody and bass at the opening of the next bar sound together. This is unusual as bass ornaments are usually only heard when the upper line is relatively static.

Example 5.10 - Bars 8-9 of the Holland organ realisation of Minuet from Ariadne.



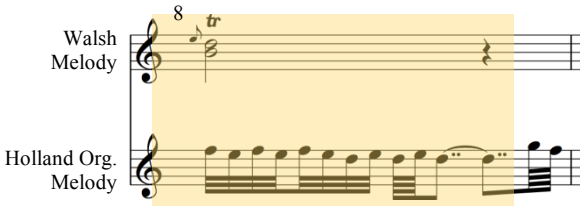
It appears therefore that this simultaneous ornamentation is entirely deliberate. However, it is the only occurrence in the versions examined here except for the double trills found in the previous chapter. The only other notes which appear to anticipate the beat are not strictly speaking added ornaments, but an alternative rhythmic interpretation of the main melody notes. These occur in the Holland organ at bar 22 (Ex. 5.11 in yellow) at the opening of the repeat of the first section. These are very short notes but definitely sound before the beat compared to the other iterations of the same second bar of the A section (Ex. 5.11).

Example 5.11 - Bars 2, 22 and 58, (equivalent bars) of the Holland organ realisation of Minuet from Ariadne.



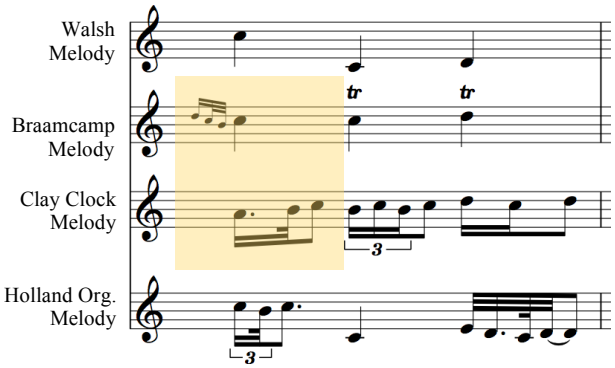
It is possible that this is the result of a delay in the sounding bass note of beat three, meaning that the melody note above it sounds early, giving the illusion of an anticipation; but the surrounding material seems well regulated so this seems unlikely. This is likely, therefore, to be a decision by the pinner modifying the repeated section for variety.

Example 5.12 - Bar 8 of Minuet from Ariadne as seen in Walsh's score and the realisation by the Holland organ.



Possible evidence that grace-note style appoggiaturas should be considered part of the essential fabric of the piece could be inferred from the fact that these are themselves occasionally ornamented. In Ex. 5.12, the upper appoggiatura indicated in the Walsh score lasts for a whole crotchet and is itself ornamented with an upper-note trill.

Example 5.13 - Bar 13 of Minuet from Ariadne.



Geminiani gives many examples of ornaments which are themselves ornamented and compound ornaments comprising two or three different symbols so again this has a precedent in primary source material.[223]

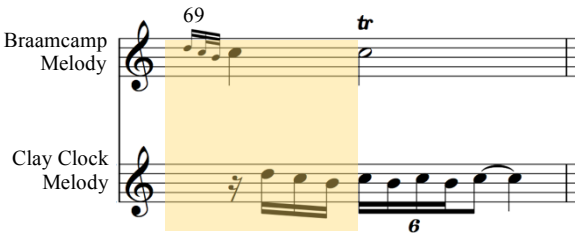
In bar 13 of the Clay clock (Ex. 5.13) there is a possible instance of an 'elevation' (a run of two auxiliary notes approaching the main note from below) also known as a 'slur', 'slide' (upwards), or *coulé de tierce* as detailed by some English and French ornamentation tables in the seventeenth and eighteenth centuries[224]. The C on the first beat is notated plain by Walsh, whereas in the Braamcamp

[223] Geminiani *The Art of Playing on the Violin*, p. 26.
[224] Christopher Simpson appears to be one of the earliest to give an explanation of this, but it may also be related to D'Anglebert's *coulé sur tierce*.

score it is decorated with what ought to be a turn-like figure, but seems to be realised as a slide. There is, however the possibility that there is a note missing here; the A which opens the ornament is also the bass note at this point (and thus effectively the only note sounding). If there were a C missing above this, then the ornament would be a short mordent on C with the A in the bass. Again however, there is no evidence of damage in the bars surrounding this, so it may be an entirely intentional instance of a lesser-used ornament.

There is one other instance, in the Clay clock, of an ornament which may be intentional but which may also be the result of a missing note. Interestingly, this occurs at exactly the same point (bar 69) in the musical line as the slide just discussed: when the first section is repeated at the end of the piece. Here the Braamcamp score indicates the same ornament as in bar 13, whereas the Clay clock realises this as shown in Ex. 5.14, following the figuration indicated in the score but delayed until well after the beat. Couperin and Rameau do provide a precedent for this type of delaying of a note or '*suspension*'.[225] This grace is not found elsewhere in this piece, so it is possible that there is a C missing on the first beat of the bar which would make the decoration a turn. There are no other notes missing or other audible signs of surrounding damage however, so it is possible that this too is intentional.

Example 5.14 - Bar 69 of Minuet from Ariadne as found in the Braamcamp score and the Clay clock realisation.



5.2.7 Omitted ornaments

As it is not possible to be certain precisely which score was used by the pinners of these instruments, it is impossible to definitively ascertain where omissions have taken place. There is no strong connection between the Holland organ and the Walsh score except that it is the closest extant score to the Holland organ's realisation (in both the melody and the bass parts). There is a close connection between the Clay clock and Braamcamp score, and it is likely that this was the 'original' from which the barrel was pinned but this is not certain. However, there is a good correlation between

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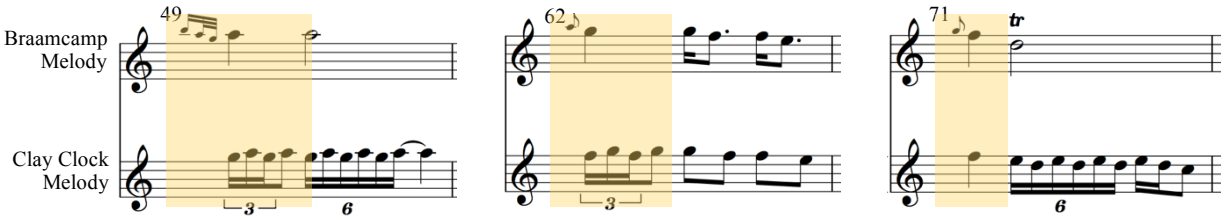
Simpson, C. (1659). *The Division-Violist: or An Introduction to the Playing upon a Ground: Divided into Two Parts ... To which, are Added some Divisions made upon Grounds for the Practice of Learners*. (London, William Godbid & John Playford).
D'Anglebert (1689). *Piéces de Clavecin, Livre 1re*. (Paris).
[225] Couperin, F. (1713) *Pieces de Clavecin* (Premiere Livre) (Paris, Ches L'Auteur). p. 75.
Rameau, J.-P. (1731). *Pieces De Clavecin, Avec Une Table Pour Les Agremens*. (Paris, Boivin).

the placing of the ornaments in both scores and those included in the mechanical renditions (notwithstanding the high volume of extra additions). It is therefore worth noting where indicated ornaments have been omitted as there are several instances in both instruments of ornaments which are either altered or disregarded. For example, the upper appoggiatura, which generally appears at the start of the second bar of the A section, is omitted in bar 22 (Ex. 5.11) when the Holland organ repeats the melody for the first time. Additionally, in the Clay clock, notes which are indicated in the Braamcamp score with an upper appoggiatura are occasionally realised with a main-note, or lower-note ornament (such as in Ex. 5.15)

Example 5.15 - Bars 49, 62 and 71 of Minuet from Ariadne demonstrating points at which the Clay clock deviates from the Braamcamp score in its realisation of the indicated ornaments.

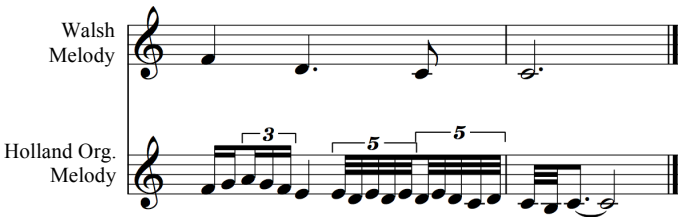


These are small alterations, but nevertheless indicate a certain level of autonomy and freedom from strict adherence to an 'original' given to those who pinned the barrels and perhaps demonstrating an engagement with the musical material which may not have been hitherto considered.

5.2.8 Melodic alteration

There is only one alteration of the melody which is not demanded by necessary octave transposition. It occurs in the Holland organ and is used three times throughout the piece, always at the approach to the cadence. The Holland organ contains four extra bars at the end of each section, compared to the Clay clock, and it is in these bars that this figure occurs so there is no direct comparison possible or conclusions to be drawn from its absence in Clay's version. It occurs on a descending third and includes auxiliary notes up to a third above the first main note which then descend via a triplet to a long upper appoggiatura before trilling to the second main note (see Ex. 5.16). The figuration is one commonly found in the later eighteenth-century works in the Holland organ and so may be an example of a later style finding its way into this piece. It is interesting therefore that the three instances of this ornament contain the only appoggiaturas in either rendition of the piece which take up more than half of the main note value to which they are attached.

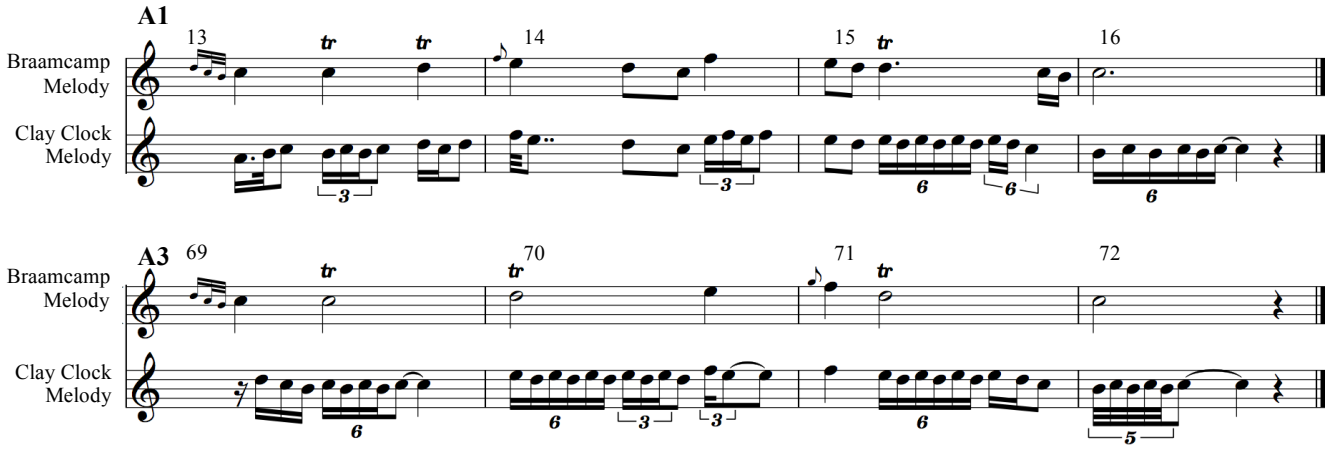
Example 5.16 - Bars 75-76 of Minuet from Ariadne as performed by the Holland organ (a similar figure is found at 39-40 and 55-56).



5.2.9 Repeated sections

The A section of this piece (bars 1-16 in the Clay clock and 1-20 in the Holland organ) occurs three times in the Holland organ and twice in the Clay clock with the frequency and type of ornaments remaining quite constant. However, there are minor changes, more so in the Clay clock than the Holland organ and the biggest differences in both versions occur in the final third of the section. In the Clay clock the final four bars of the A section (see Ex. 5.17) contain most variances between the first and second iterations; there are also changes to the melodic line in the Braamcamp score, though these are not always the same as the Clay clock realisation.[226]

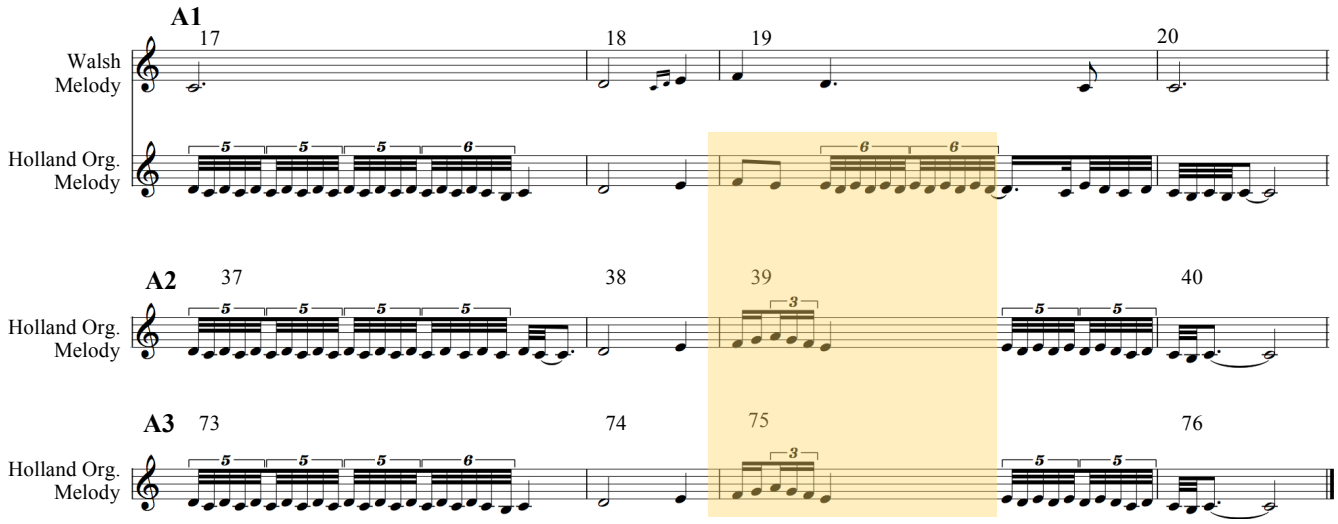
Example 5.17 - Final four bars of A section both times it is heard in the Clay clock realisation with the corresponding bars of the Braamcamp score.



The main variance in the ornamentation in the Holland organ also occurs at the end of the A section and is relatively small, essentially only the small melodic alteration (highlighted in yellow.

[226] NB There is no section A2 in the Clay clock version of this piece (see comparison score ex. 5.21).

Example 5.18 Final four bars of each iteration of the A section found in the Holland organ. NB the grace-notes indicated in the Walsh score at bar 18 (never heard) are only included in the A1 section, otherwise the score is identical each time.



The changes to the remainder of the ornaments in both renditions are small, sometimes an addition of a mordent or *port-de-voix*, the omission of an appoggiatura, or an ornament being moved to just before the beat.

5.3 Observations

The charts at figures 5.1 and 5.2 illustrate differences and similarities between the two mechanical sources, and make it possible to observe patterns in the ornamentation style. Most trills begin on the upper note, unlike those in the Clay clock pieces in preceding chapters which favour main-note trills. A higher proportion of trills have turns incorporated in the Holland organ than in the Clay clock, one way in which fashions may have changed between the earlier and later examples. Similarly, there are more long appoggiaturas in the later style. The overwhelming evidence of both sources, is that the opening notes, at the beginning of trills (whether auxiliary or main notes), are short. Similarly, the majority of appoggiaturas are also short. This appears to be at odds with the writings of CPE Bach and his contemporaries as assessed by Donington,[227] who advocates the 'prepared' trill with a lengthened upper opening note and assumes that almost all baroque trills will begin on the upper note. Much modern historical performance practice is based on this premise; however, the piece was composed around 20 years before these treatises and therefore perhaps demonstrates a slightly earlier style. Additionally, as noted earlier, very few ornamentation tables from the first half of the eighteenth century give a long upper note at the beginning of a trill and those that do (like D'Anglebert's *tremblement appuyé* or Purcell's 'plain note and shake'), consider it a separate ornament.

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[227] Donington, *Interpretation,* p. 241.

There is a proliferation of short mordents in both versions; in the Clay clock these are often preceded by an auxiliary opening note (also short), but in the Holland organ they begin on the main note. These occur frequently at all points in phrases including on the opening and final notes. Indeed, there are few final notes of phrases which do not have either a short or long mordent added to them.

Figure 5.1 - Ornament distribution in the Clay clock version of Ariadne Minuet: 44 bars - 61 ornaments - 34 beats left unornamented (out of 132) = 26%

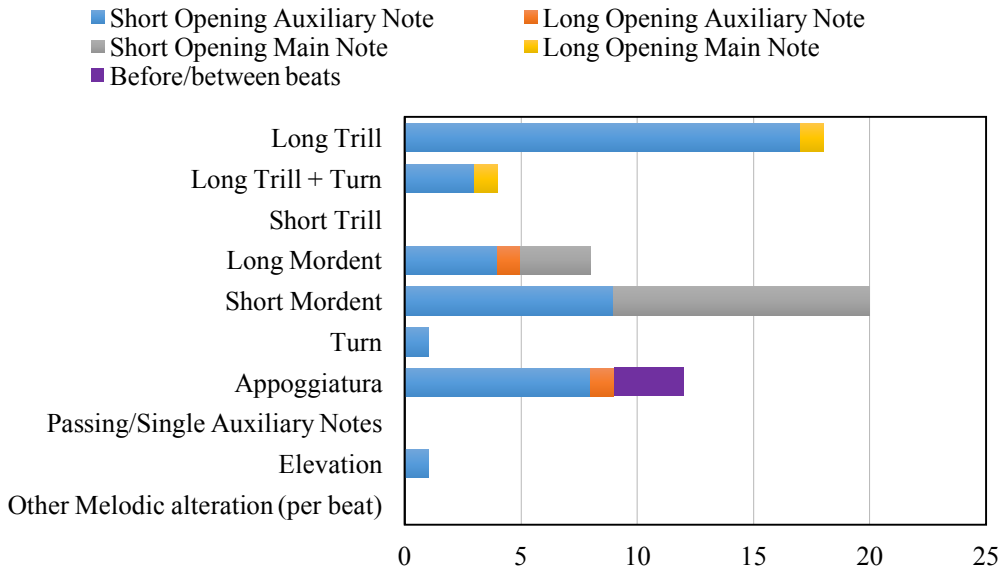
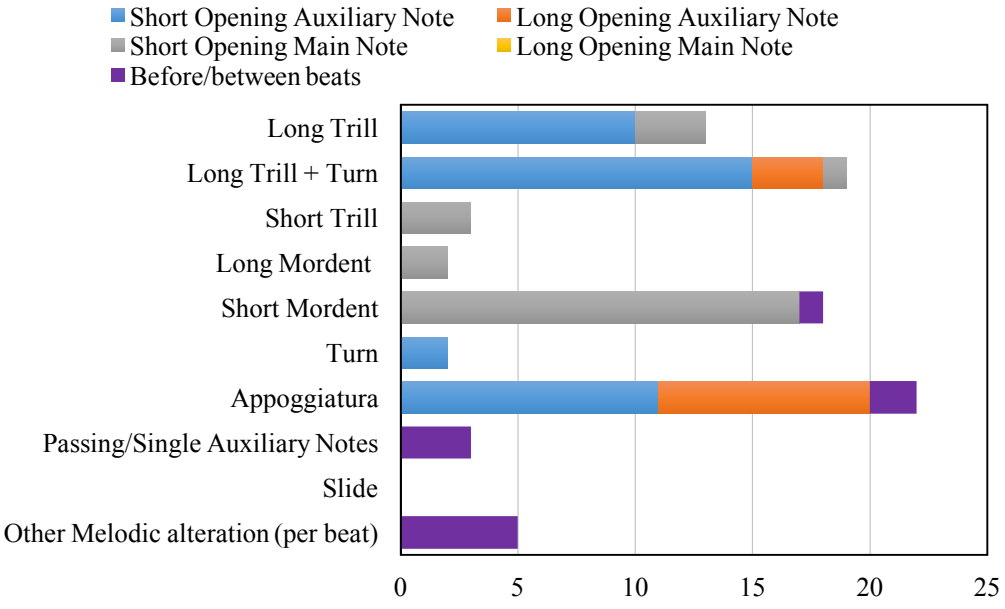


Figure 5.2 - Ornament distribution Holland Organ version of Ariadne Minuet: 76 Bars - 86 Ornaments - 78 beats left unornamented (out of 228) = 33%



Turns and terminations also occur frequently; again, more so in the Holland organ. These are sometime used to link ascending conjunct notes, but they often simply decorate single notes, and almost always occur on the Holland organ's cadential trills. These terminations often incorporate the notated anticipations of cadential resolutions in the Holland organ, though the Clay clock generally ends cadential trills with the anticipation alone.

The lengthening of the main note within ornaments is also common, especially in the Holland organ. This is not universal and some trills continue with equal note values for their entire duration; however, many trills do contain, or end, on a held main note. Where these held notes occur, it is usually either at the very end of the notated duration, or just before the final termination of the trill.

Repeated sections generally contain a similar amount of decoration and the initial A section is heavily decorated in both versions. The ornaments are often very similar, but are not identical, and some ornaments are omitted or changed, so these minor variations must be intentional.

5.4 Conclusions

The primary conclusion of this study is confirmation that the fundamental style of the ornamentation is remarkably similar in these two versions of the piece. The same types of ornament are generally used, as can be seen by comparing the two charts at figs. 5.1 and 5.2. Despite minor differences, the performance style of the Holland organ is broadly similar to the Clay clock meaning that if the Clay clocks are evidence of a style that would have been recognisable to Handel, then the Holland organ must be as well with only a few small developments. With regard to how that style sounds, it could perhaps be expected that there might be more ornaments in a minuet than in slower movements since the form is characterised by Quantz as being 'played *springily*, the crotchets being marked with a rather heavy, but still short, bow stroke, with a pulse beat on two crotchets'.[228] The ornaments largely occur on the beginning of the beat and thereby they do add a certain ‘spring’ and variety to the articulation as well as colouring notes themselves. None of the ornaments included by either maker are unprecedented in other primary source material; indeed the ornaments used are found commonly in treatises from across Europe. If there is anything surprising about the decoration in this piece it is the volume of graces rather than their type. There are many more ornaments than are found in the only recent recording of the piece, by the Orchestra of Patras.[229] This recording is by no means undecorated, generally placing ornaments at similar points to the Walsh score, with additional cadential trills; but this is nothing like the level of decoration in the two mechanical performances, which include ornaments on 66% - 74% of beats across the whole minuet.

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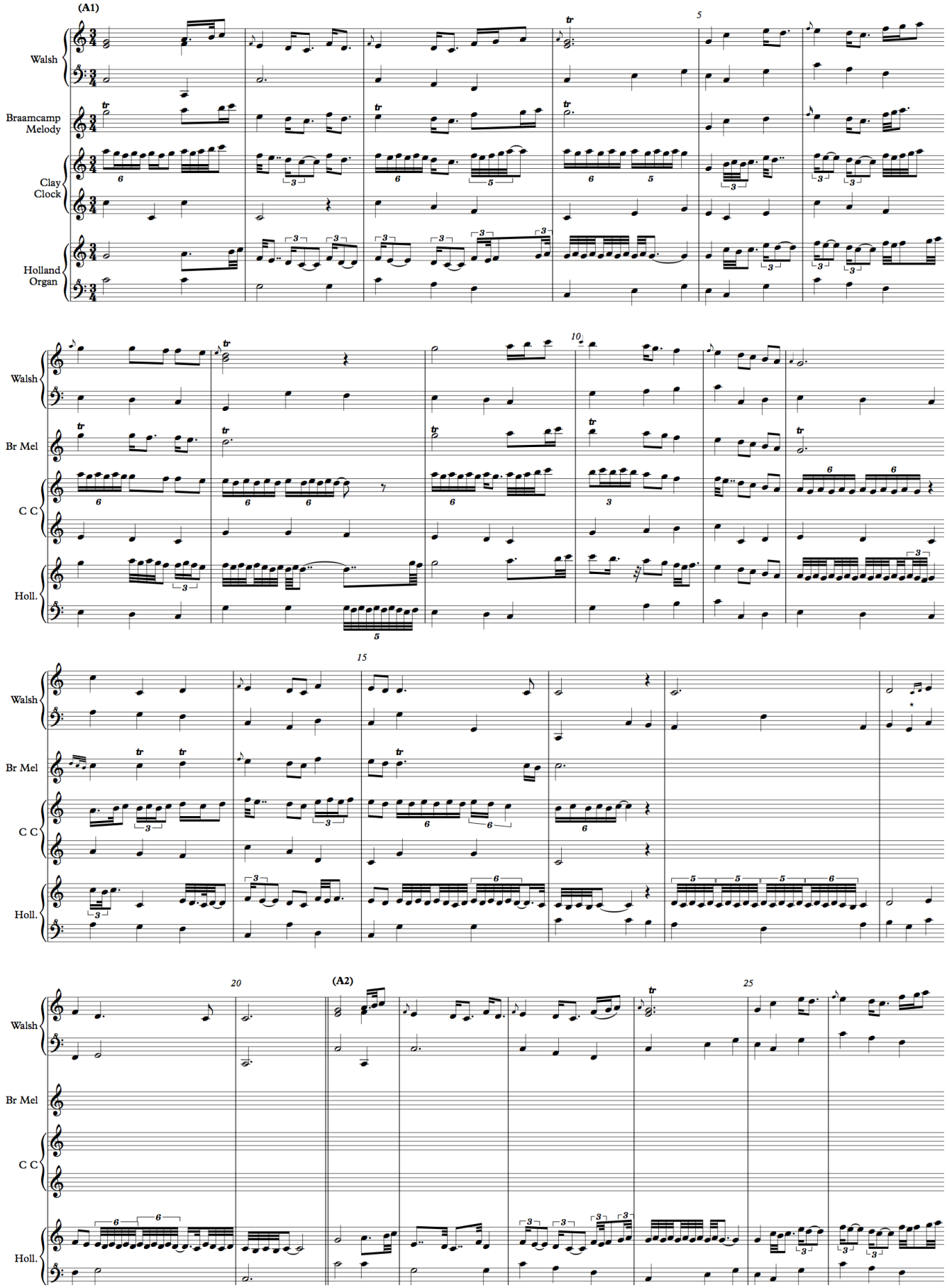
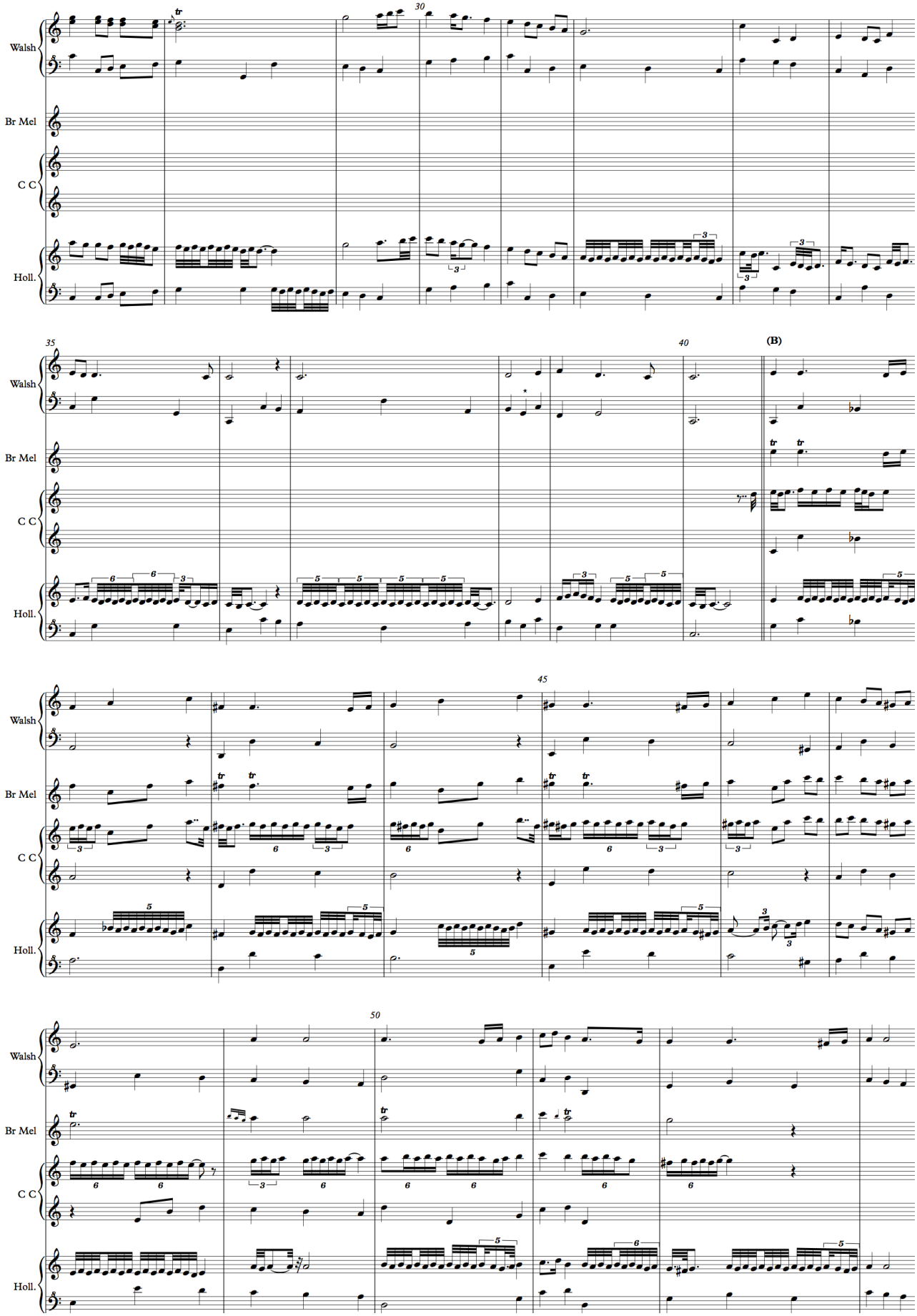
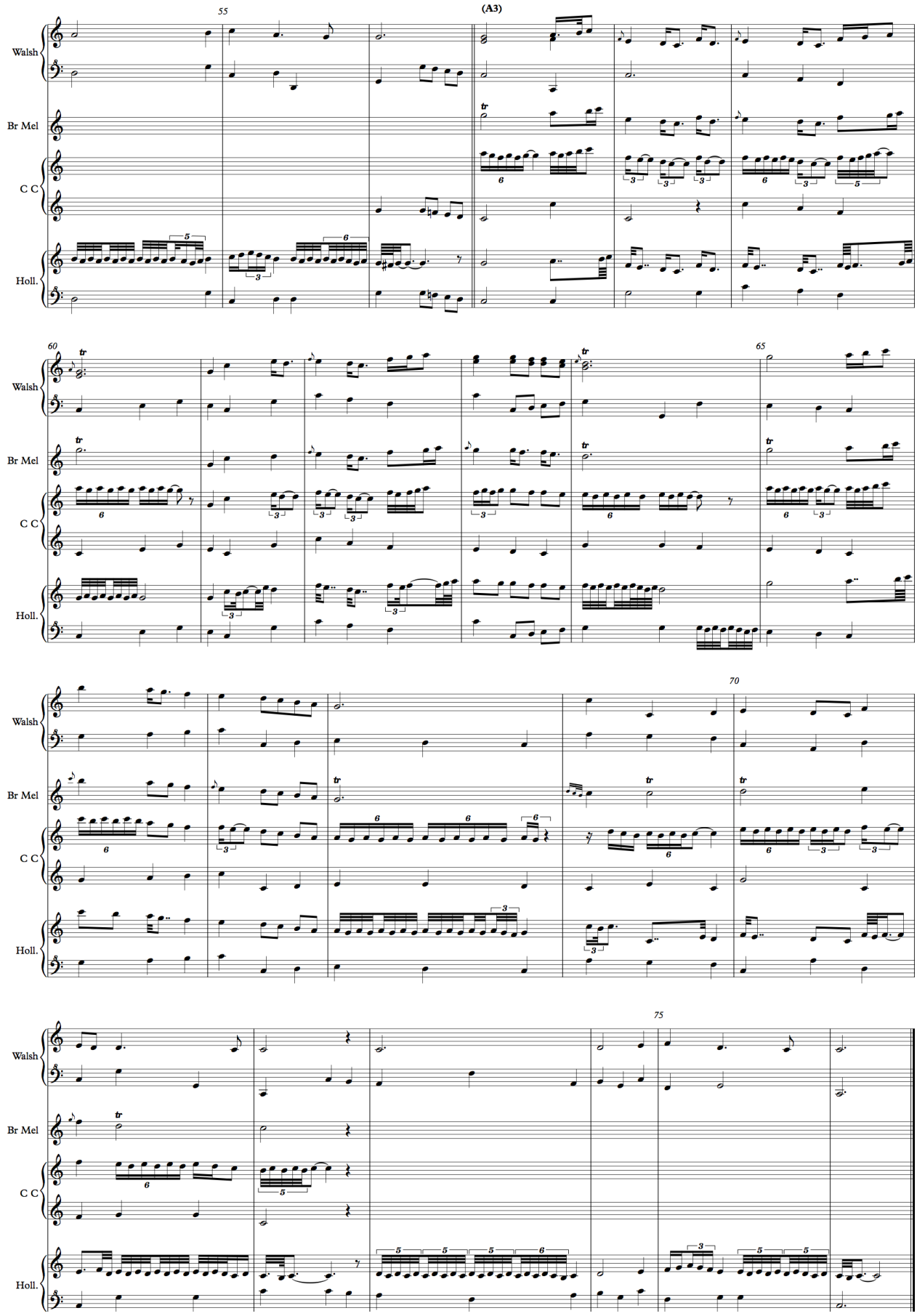
[228] Quantz *On Playing the Flute* p.291.
[229] Handel, G. F.(2005). *Arianna in Creta*, MDG (Orchestra of Patras/George Petrou).

The differences in some nuances of the graces should be pointed out, however, since this may be an indicator of a slight style shift between the 1730s, when the Clay clock was produced, and the 1780/90s, when the Holland organ was constructed. There is a slight increase in the use of long appoggiaturas in the later Holland organ, and a similar increase in trills with turns attached. Both of these stylistic elements are advocated very commonly by writers in the second half of the eighteenth century. In the later organ, the long opening auxiliary note to begin a trill also makes a brief appearance, but it is still very much the exception rather than the rule.

Example 5.19 - Minuet, from 'Overture to Ariadne' (Comparison Score)




Walsh
Br Mel
C C
Holl.
30
35
40
(B)
45
50


55
(A3)
Walsh
Br Mel
C C
Holl.
60
65
70
75

Chapter 6: Longitudinal Comparison (2) of the Holland Organ's Ornamentation Style to Written Sources from Different Points of its Historical Timespan.

6.1 Introduction and sources

As seen in the previous chapter, the differences between the Clay clock ornamentation style and the later Holland organ are minor, demonstrating a continuity of fundamental style through the 50+/- years which separate their production, and confirming the Holland organ as a viable source for Handelian performance style. But does this viability extend out into wider eighteenth-century musical styles? The timespan of the majority of the musical compositions contained within the Holland organ is about 90 years, with Purcell and James Hook providing the earliest and latest inclusions. In fact, there are two earlier pieces: 'Evening Hymn', a version of Thomas Tallis's 'Canon';[230] and 'The Mariners', first found in Ravenscroft's *Deuteromelia*.[231] These two pieces have not been included in this chapter, due to their remoteness from the period of the organ's construction. The Tallis is so altered from the original melody that it must be treated as an eighteenth-century tune based on Tallis's earlier composition (it does not function as a canon). Pieces by Purcell, therefore, provide the starting point here; his work was continuously performed through the eighteenth century and textual sources are available with which to compare its performance style. Several questions must be addressed to further define the organ's relevance as a source for general performance practice. How does the performance style in the earlier pieces found in the organ compare with contemporaneous written evidence from seventeenth-century England? If it corresponds closely, are there differences in the organ's performance style in the music of Purcell and later composers such as Arne or Hook? If the treatment of early and later tunes is similar, what conclusions can be drawn from this? Does any similarity mean that the earlier music of Purcell was pinned in a later style to suit contemporary tastes? Or does it identify fundamental aspects of the style of Purcell's era which persisted through the eighteenth century?

To answer these questions a selection of pieces which span the Holland organ's time frame will be compared to textual sources identified for use as benchmarks. These will provide visual musical material and verbal explanations of style with which to compare the audio evidence. The first example is a treatise, published by Henry Playford in 1696, the year after Purcell's death, which is attributed to the composer himself.[232] This comparison will establish whether the performance style found in the Holland Organ's rendition of Purcell's music would have been recognisable at the time of its composition. Following this the style will be compared to that of later pieces with a similar

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[230] Tallis, T. (1575) *Cantiones Sacrae* (London).
[231] Ravenscroft, T. (1609). *Deuteromelia; or, the Second part of Musicks melodie, or melodius Musicke of Pleasant Roundelaies; K. H. mirth, or Freemen's Songs and such delightfull Catches*. (London, For T. Adams).
[232] Purcell, H. (1696) *A Choice Collection of Lessons for the Harpsichord or Spinnet, etc* (London, Playford).

character also found in the organ to indicate whether there were stylistic features which persisted throughout the eighteenth century.

Secondly, this study will address works from the mid and later eighteenth century and examine how close the Holland organ's renditions of these are to the style advocated by Domenico Corri. Corri's publications are particularly relevant when examining the Holland organ, since the publication of his *Select Collection* is close to the date of construction for the organ.[233] Corri's works were also published in England (although he was living in Scotland at the time), probably for a similar target audience to that for which the Holland organ was manufactured: wealthy enthusiasts or students rather than the established musical elite. His collection also contains works from a remarkably similar time span to those of the music contained within the Holland organ and similar composers are shown favour: Purcell (the earliest composer to be named, demonstrating his enduring fame), Handel, Arne and Hook among others. Clearly the music valued by Corri and his readers is indicative that the collection of music in the Holland organ is a true reflection of educated popular taste.

6.2 Comparing the style of late seventeenth-century pieces in the Holland organ to contemporary written sources.

The first two pieces for comparison, both by Purcell, are 'Britons Strike Home', from the semi-opera *Bonduca* and a piece entitled 'March in the Opera Bonducca [*sic*]'. This March does not in fact appear in any of the seventeenth-century collections of Purcell's music for the play, but is ascribed to Purcell in a publication of music to *Macbeth* by Samuel Arnold (1740-1802), to which it is added as an appendix.[234] Both pieces had clearly remained enduringly popular throughout the eighteenth century and were adapted for use in new theatrical productions.

Most late seventeenth- and early eighteenth-century treatises on playing musical instruments address two very different forms of ornamentation separately: the addition of graces to music, and improvised melodic alteration. The first is included in the very rudiments of musical performance, the second is a separate technique, learned later, which is, in essence, a mode of composition, involving an intimate knowledge of harmony and musical structure. This second might result in melodic additions or variations to a pre-existing melody line, improvised cadenzas, or indeed in whole improvised pieces constructed on a pre-existing bass. The primary concern here is with the first set of ornaments, the graces, because these were considered most essential; also, there are relatively few alterations of the second type found in the pieces performed by the Holland organ.

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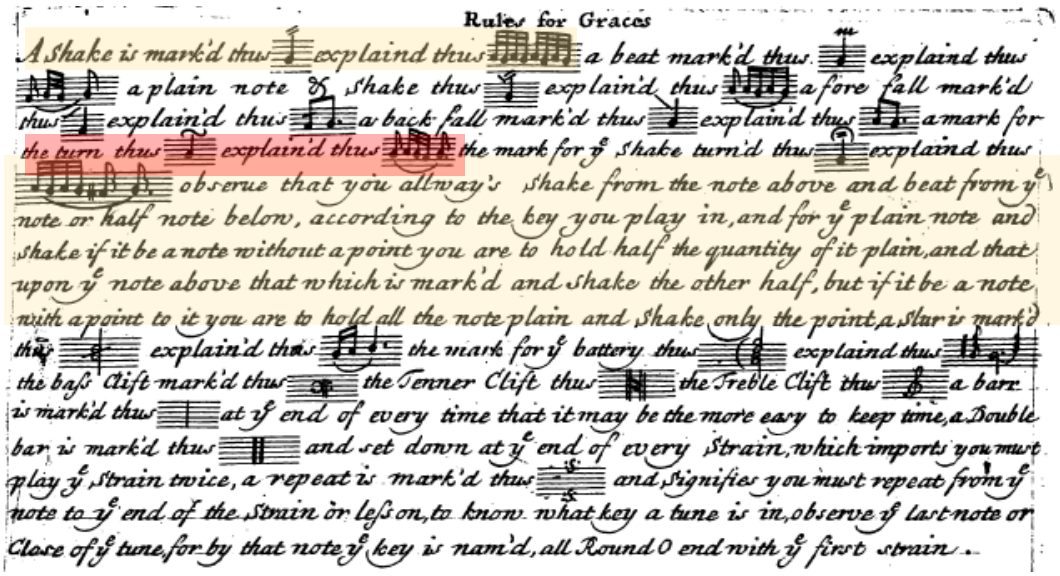
[233]Corri, D. (1779). *A / Select Collection / of the Most Admired Songs, Duetts, &c. / From Operas in the highest esteem, / and from other Works, in Italian, English, French, Scotch, Irish, &c., &c. / In Three Books. / The First /Consisting of Italian Songs, Rondos, Duetts &c./ The Second of English Songs Duetts, Terzetts &c./ The Third of Airs, Rondos, Canzonette, Duettini, Terzetti, Catches, Glees &c / All in their Respective Languages.* (Edinburgh, Printed for John Corri).
[234] Arnold, Samuel. (1775) *The Favourite Scotch Airs...[etc.]* (London, Warrell).

The *Choice Collection*, whilst it is attributed to Purcell, is in a mixture of engraving styles and was probably put together by Playford. The music contained within it is Purcell's however, and the style is one which would surely have been recognised by him. The latter decades of the seventeenth century saw the publication of many instruction books for a variety of instruments, often re-using the same publishing plates for universal topics such as 'Rules for Graces'. The graces detailed by the treatise attributed to Purcell (Fig. 6.1) are similar to others found in the latter seventeenth century, both in England or France. Simpson, D'Anglebert, Mace, Salter, Carr, and others describe the same, or at least similar ornaments, either verbally or using notation.[235] The nomenclature occasionally varies, as do the symbols, but for the most part they describe trills (or 'shakes', usually beginning on the upper note), mordents (or 'beats', often beginning with a short lower appoggiatura), appoggiaturas, turns, 'slurs' (sometimes called 'slides' or 'elevation' if leading up to a note or 'double back-fall' if descending to it), and trills with a long upper appoggiatura (called 'plain-note-and-shake' to distinguish it from the ordinary trill).

Figure 6.1 - 'Rules for Graces': from 'A Choice Collection of Lessons for the Harpsichord or Spinnet' p.6. Highlighted sections refer to performance of trills.



Descriptions from the passage above resonate strongly with the observations made in preceding chapters. Purcell is quite specific about the length of appoggiaturas which are performed at

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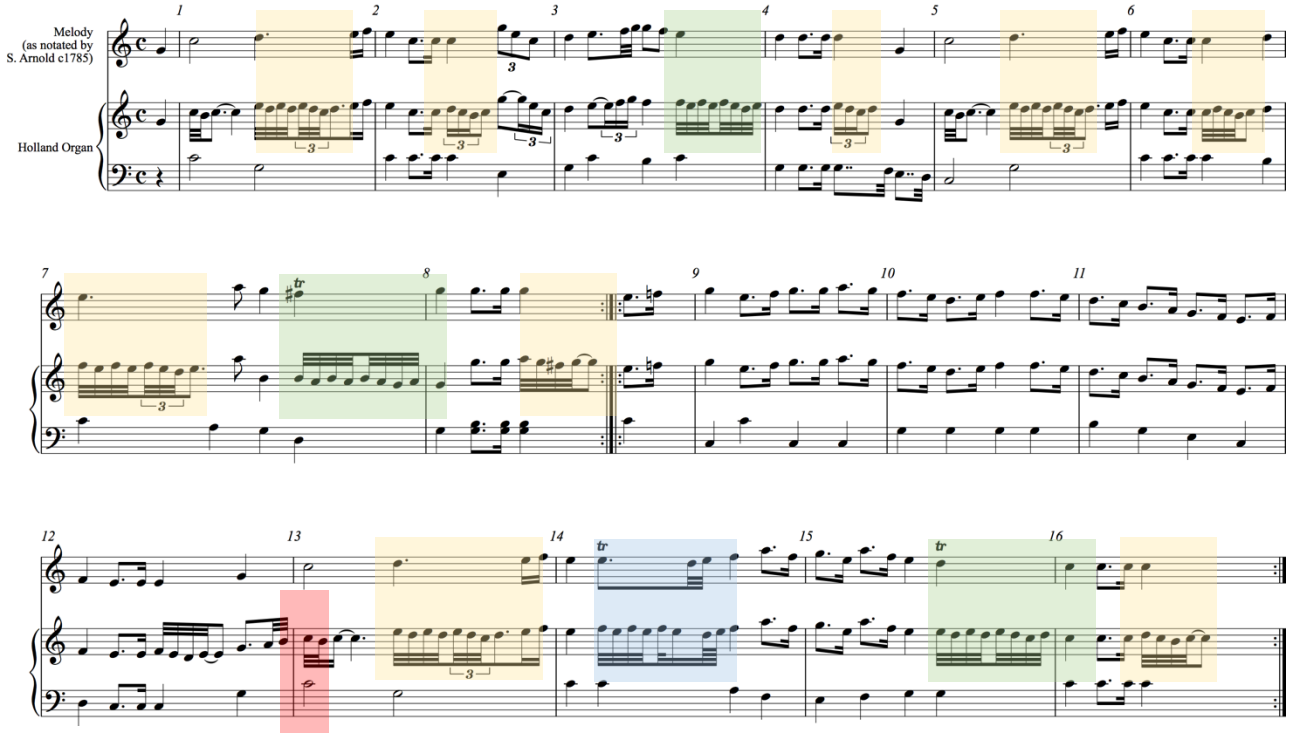
[235] Carr, R. (1686). *The Delightful companion, or choice new lessons for the recorder of flute.* (London, J. Playford & J. Carr).
D'Anglebert (1689). *Piéces de Clavecin*. Livre 1re. (Paris).
Salter, H. (1683). *The Genteel Companion, being exact directions for the recorder, with a collection of the best & newest tunes & grounds extant.* (London, R. Hunt & H. Salter).
Simpson, C. (1659). *The Division-Violist: or An Introduction to the Playing upon a Ground: Divided into Two Parts ... To which, are Added some Divisions made upon Grounds for the Practice of Learners.* (London, Printed by William Godbid, and sold by John Playford).

the outset of a 'plain note and shake' and insists they should be played long. The 'plain note and shake', however (as observed in Chapter 5) is a wholly separate ornament to the 'shake' (basic trill), clearly notated with a short upper note at the beginning. The stand-alone appoggiatura appears as the 'forefall' (short lower appoggiatura) and 'backfall' (short upper appoggiatura); there are no long appoggiaturas depicted which do not precede other ornaments.

Interesting to note in the passage at fig. 6.1 is the realisation of turns. Turns are often realised as linking ornaments, either joining together two successive notes (by taking up the entire value of the note over which they are indicated), or by terminating a trill and thus moving the musical line on to the next note. Therefore, the turn generally occurs at the end of the note value over which is it indicated or takes up the whole note value.[236] However, the notation of the turn in fig. 6.1 (highlighted in red) does not attest to this. Here the turn begins with a short initial note (in this case it is a semiquaver, a quarter of the note value of the melody note) followed by three notes in quick succession and finished with a longer note (in this case a dotted semiquaver) the longest note sounded in the ornament. Thus, the turn is a decoration of the beginning or middle of the ornamented note, not a link to its successor. This is certainly corroborated by the Purcell pieces found in the Holland organ. Time and again through the ‘March’ there appear turns or trills incorporating turns which include a longer iteration of the main note before the melody proceeds (see Ex. 6.1. highlighted in yellow); whereas the turns which occur as a link to the following note are less frequent (Ex 6.1 in green). There is possible further linking turn incorporated into the main musical text in bar 14:2 and this has a lengthened main note before the turn (blue). Likewise, frequent turns followed by held notes can be seen in ‘Britons Strike Home’ (Ex. 6.2 yellow), the only usages of turns in this piece. Two of these (bars seven and nine) also have held main notes at the beginning, so are decorating the middle of the note rather than its articulation or ending.

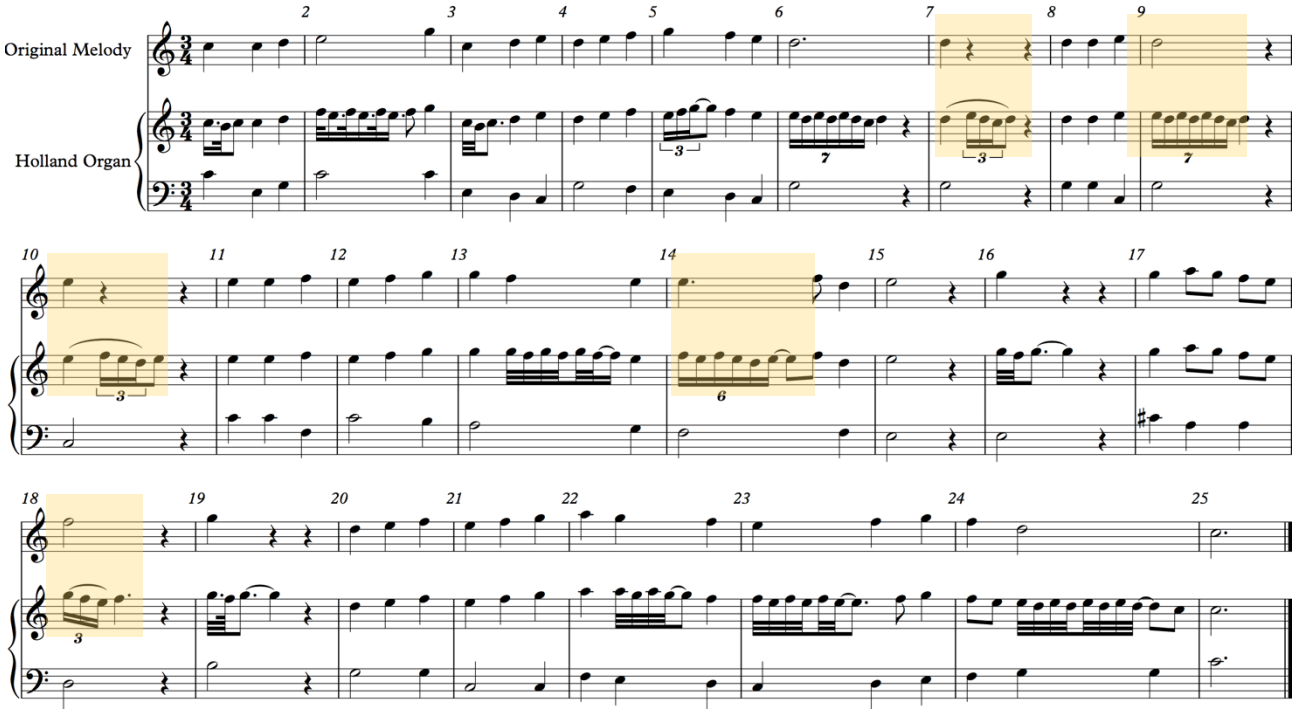
[236] Bar 19 of Ex. 6.3 has an example of this.

Example 6.1 - 'March in the Opera Bonducca': showing the plain melody taken from Samuel Arnold's publication of 1785 and transcription of the version found in the Holland organ.



All of the ornaments found in the Purcell pieces can be identified in the explanatory table found at Fig. 6.1. These are mostly ordinary shakes which are performed exactly as described in the treatise (i.e. with a short upper opening note), and beats (mordents) which are similar to those in the table but which lack the accented lower auxiliary note advocated. There is even a possible example of a slur or 'elevation' as it is sometimes called (Ex. 6.1, bars 12:4-13:1 in red), although in this instance it occurs before the beat.

Example 6.2 - 'Britons Strike Home'; Original Purcell melody and transcription of the Holland organ version.[237]



The passage at Fig. 6.1 clearly states that beats should begin with a lower appoggiatura. This is generally the case in the Clay clocks but occurs less frequently in the Holland organ. An anonymous treatise on playing the recorder, however, entitled *The Compleat Flute Master* (1695),[238] implies that a beat should be played without a lower appoggiatura 'by shaking your finger over the half hole immediately below the note to be sweetened ending with it off, as thus you must sweeten D[…] sound your D […] shaking the 3rd finger of your left hand over the half hole immediately below keeping your finger up.' which would give a lower mordent or trill beginning and ending on the written D oscillating to C#. [239]

This treatise (the plates of which were used well into the eighteenth century by Walsh and Hare) goes on to give detailed instructions as to the placing of ornaments.

> 'All descending long notes must be close shook, ascending long notes sweetened. Slur down to a 3rd descending crotchet [i.e. a crotchet descending by a 3rd from the one preceding] if two 3rd descending crotchets come together shake the first slur to the next. If two crotchets happen together in one key [ie on the same note], *sigh* the first sound the second plain, a sigh divides a crotchet into a prickt [dotted] quaver and a semiquaver slurd the prick'd quaver to be on its proper key the semiquaver on the note or half note just above[..]'

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[237] Purcell, H. (1710). *To Arms [and Britons strike home]. A Song, etc,* [London].
[238] Anon. (1695) *The Compleat Flute Master* (London, Walsh & Hare).
This treatise was probably put together by the publishers as again there is a mixture of engraving styles as in the Purcell/Playford publication.
[239] Walsh (ibid.) uses a slightly confusing combination of terminologies to describe this ornament: 'An open shake, beat, or sweetening'.

> 'If 3 crotchets come together in one key [i.e. on the same note] beat the first, sigh the 2nd, the 3rd play plain. If 3 crotchets gradually descending, beat the first, shake on the 2nd, the 3rd play plain
> If 3 crotchets gradually ascending sigh the 1st, double rellish [*sic*] the 2nd, the last play plain – providing that the movement of the tune be slow enough to allow the dividing of your crotchet. A double rellish divides a crotchet into a quaver and two semiquavers slurred. The quaver to be shook on its proper key the 1st semiquaver to be on the note or half note below [,] the latter semiquaver on the key [same note] with the quaver [...]'[240]

These are very precise instructions for the performance of very common musical figurations, and, if followed to the letter, would produce an extremely intricate effect. It is possible that the authors, aiming at an amateur audience, are being somewhat dogmatic in their advice regarding the formulaic use of the ornaments described but the overall effect, if this were followed, would not be unlike that of the Holland organ. Indeed, there are moments in these two Purcell pieces which fit rather well with the spirit of these instructions. Bar 1-2 of the upper line of 'March in the Opera Bonducca' (Ex. 6.1) contains a rising figure, effectively C, D, E, on which the pinner has broadly complied with the given advice; there is a 'beat' (mordent) on the first note, a 'double-rellish' *(*or 'shake turn'd' to use Purcell's terminology) on the second, and a plain third note. In 'Britons Strike Home', the opening (repeated) note has a mordent added to it, as advocated at the beginning of the second paragraph quoted above. Admittedly, this is a case of two repeated notes, rather than the three in the treatise, but it is not a dissimilar situation. There are, of course, exceptions; bars 20 and 21 of 'Britons Strike Home' are left entirely plain by the Holland Organ's pinner but this should demonstrate that, rather than the pinner thoughtlessly adhering to a set of formulae, he has clearly made deliberate musical decisions.

One difference is the addition of a turn to the final note of the March. This is not found in 'Britons Strike Home' and is not described in treatises from the late seventeenth century. However, throughout the Holland organ, as well as other barrel-organs and the Clay clocks, this practice is so common as to suggest that it could have been an assumed practice, at least by the mid to late eighteenth century. Generally, however, the musical style in the Holland organ's rendition of pieces by Purcell shows a remarkable connection to the style advocated in the late seventeenth-century English instrumental treatises.

6.3 Comparison of the style found in the Purcell treatise to later music

To examine whether similar ornamentation practice pervades into later pieces, it is necessary to find music which is comparable in character, since ornamental style would vary with differing *affects*. Handel's 'See the Conquering Hero Comes' (from his 1745 oratorio *Joshua* and 1746 reworking of *Judas Maccabeus*) and Arne's 'Rule Britannia' (from his 1740 opera *Alfred*) are suitable choices since they have a similarly martial theme and upbeat, patriotic mood.

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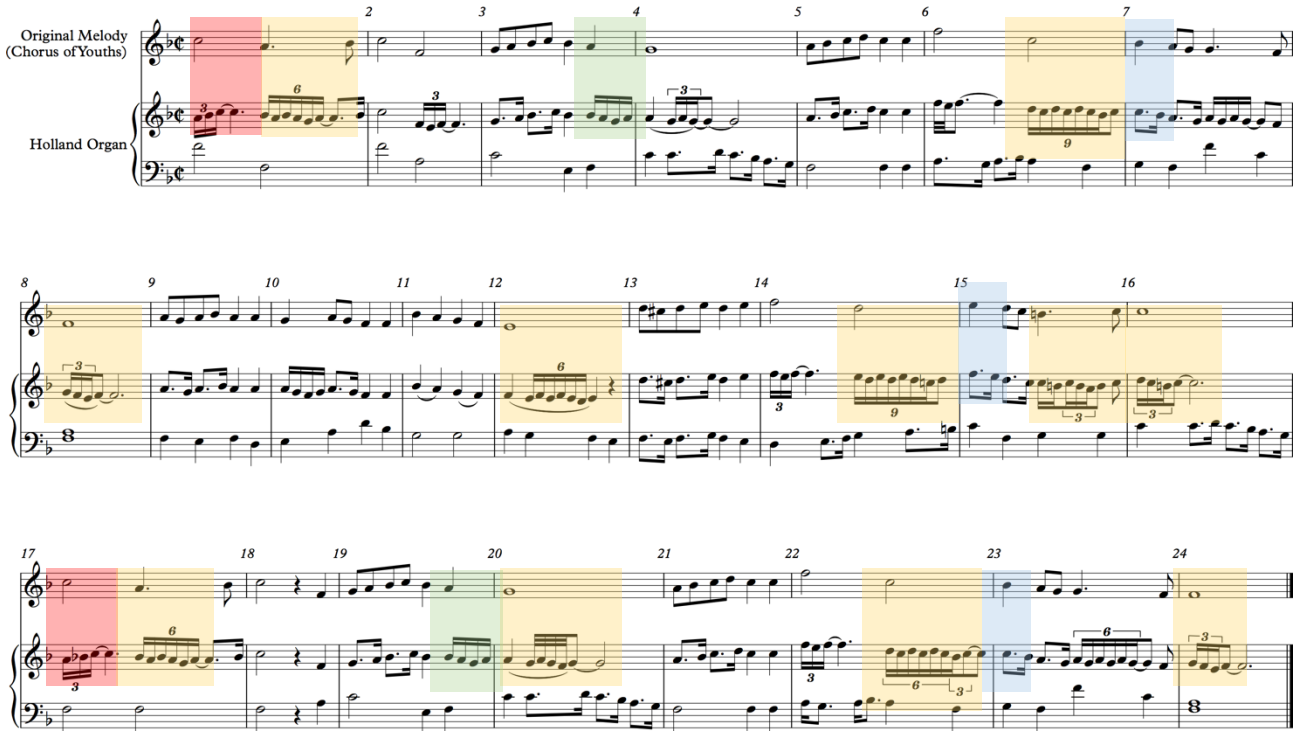
[240] Anon, (1695) *The Compleat Flute Master*. pp.6-7.

Example 6.3 – 'See the Conquering Hero Comes': original melody from the 'Chorus of Youths' and the ornamented Holland Organ version. [241]



In Ex. 6.3 for the most part, the ornaments and their frequencies are, again, similar to those described by Purcell and the anonymous treatise above. The first phrase (and its reiteration as the final phrase) begins with a slide or 'elevation': the approach of a melody note by two steps, from the third below (in red). The trills which have terminations generally follow them with a held main-note (in yellow), as in the earlier pieces. There are a few instances of turns which take up an entire note value with no held note at either the beginning or end (in green), which are perhaps a stylistic development since these do not occur in the earlier works, but this is not a large departure from the Purcell instructions.

An interesting comparison can be made here with the works of William Babell, a performer on violin, harpsichord and organ, who was well known by Handel and whose playing became renowned across Europe.[242] Babell set many of Handel's overtures and vocal works for the harpsichord and these include a great many graces as well as extended Corelli-esque melodic embellishments. The graces he uses (shakes, beats, double backfalls etc.) are the same as those

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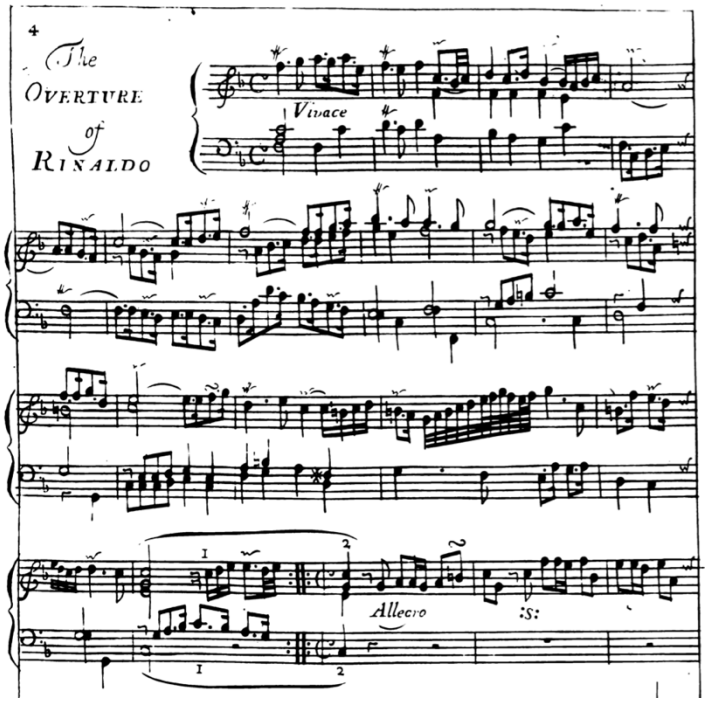
[241] Handel, G. F. (1769). *Judas Maccabeus/ Oratorio / in Score / As it was Originally Performed / Composed by / Mr Handel / with / his Additional Alterations*. (London, Randall).

[242] Mattheson refers to his having been a student of Handel, but this is not certain, though as a court musician the two would certianly have been known to each other.
Price, C.G. (2001) 'Free Ornamentation in the Solo Sonatas of William Babell - Defining a Personal Style of Improvised Embellishment' *Early Music* **29**(1). pp.29-54.

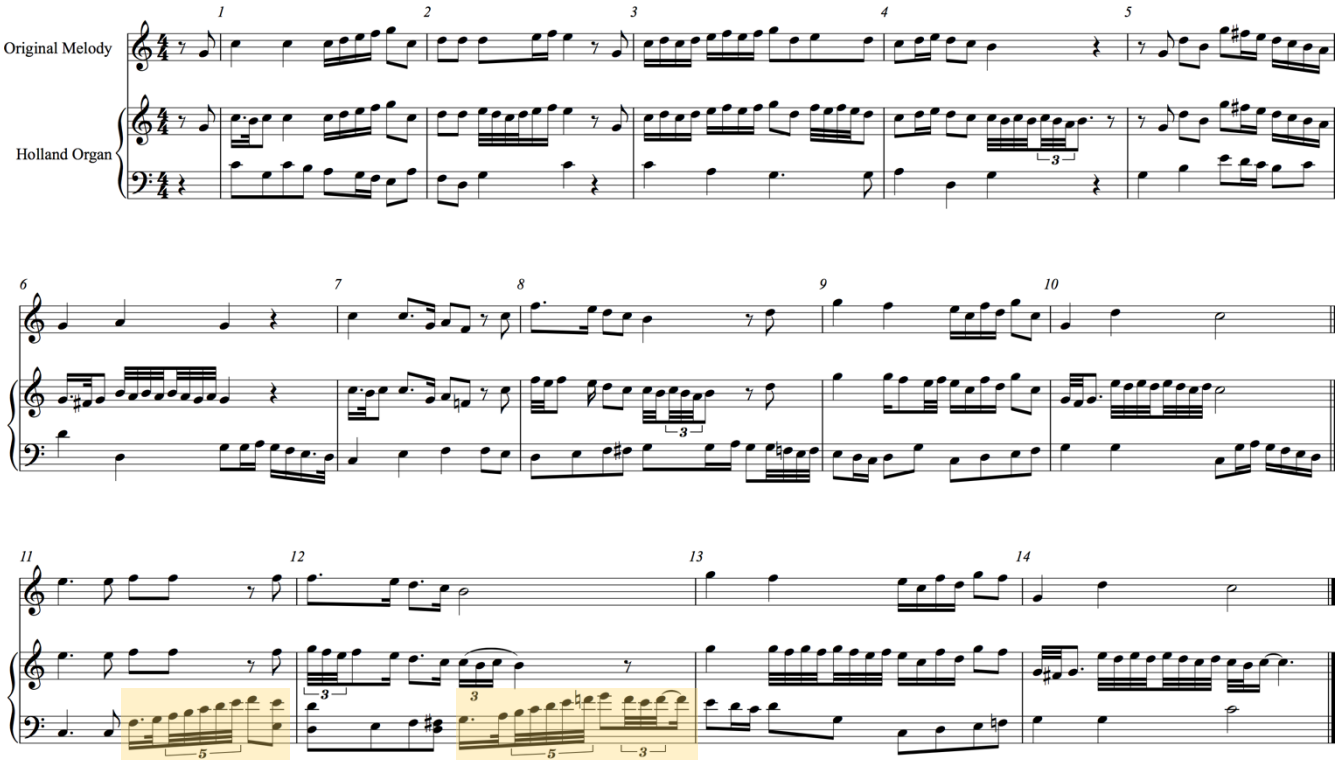
described by Purcell and, again, their usage is broadly in keeping with the instructions above (see Fig. 6.2).

Figure 6.2 - Extract from William Babell's 'Suits of the most Celebrated Lessons' showing the opening to his arrangement of the overture to Handel's 'Rinaldo'



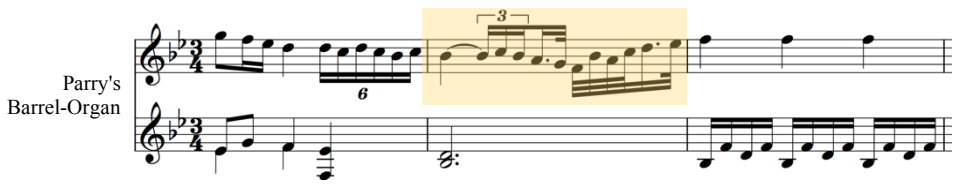
In Ex. 6.3, there are some long upper appoggiaturas preceding other ornaments, e.g. bars 4, 12 and 20. These broadly follow Purcell's instructions for the 'plain-note-and-shake': the appoggiatura takes up a quarter of the note value (not half, as Purcell advocates) and although none of the succeeding ornaments could be described precisely as a shake, they are related and clearly fulfil a similar function. There are three further long upper appoggiaturas, unattached to other ornaments (highlighted in blue). These are broadly similar to the 'back-fall' in the Purcell treatise, although his notation of this shows the appoggiatura taking up a quarter of the note value to be ornamented, whereas these, in keeping with the rhythms employed throughout this piece, take up three quarters. The dotted rhythm featured throughout the piece is interesting, particularly its use in the bass line, as it demonstrates a mode of performance for this piece which is not notated, and which has not filtered down into modern practice.

Example 6.4 - 'Rule Britannia': showing original melody from Arne's 'Alfred' and Holland organ ornamented version.



The ornaments added to 'Rule Britannia' (Ex 6.4), do not deviate either in any major way from those in the Handel or earlier Purcell pieces.[243] Again 'beats', 'shakes' and 'double-rellishes' are added to figurations such as repeated notes and stepwise passages with very little melodic alteration. Two exceptions to this are the rising runs, added to the bass in bars 11 and 12 (highlighted), which show a cadenza-like improvisatory flair. In keeping with many ornaments in bass lines, these occur at points where upper voice is static, forming a linking passage. This type of connecting flourish is found more in the later eighteenth-century pieces both in the Holland organ and other barrel-organs: e.g. the passage linking the verse and chorus of 'God Save the King' taken from the barrel-organ belonging to Sir William Parry, c.1810 (Ex.6.5).[244]

Example 6.5 - Bars 13-15 of 'God Save the King' from Parry's Barrel-Organ (Saydisc CD).



[243] Arne, T. A. (1750). *Rule Britannia set by Mr. Arne.* (London, printed for J. Phillips).
[244] Holland, C. a. H., F.F. (1972). 'Sir William Edward Parry's Barrel-Organ'. *Polar Record* vol 16, pp.413-414 and (2011) *Parry's Barrel-Organ.* CD (Saydisc).

6.4 Comparison of Holland organ music from later periods with the ornamentation style of Domenico Corri

As the Holland organ seems to preserve some performance practices of previous generations in its earlier repertoire it could be expected that the style might seem conservative or 'old fashioned' compared to that of Corri, writing at the very end of the eighteenth-century and wishing to make his name by establishing his own innovative musical practices. Corri (like most publishers) bolsters his authority by invoking performers such as Senesino (1686-1758), an almost exact contemporary of Handel, illustrating the respect in which great performers of the past were held. Great interpreters of Handel's music were long revered, although this reveals little of how much about Corri's recommended style has its roots in the performances of those he invokes.[245]

None of the pieces by Purcell which Corri includes in his treatise is also in the Holland Organ so it is not possible to make direct comparisons. There are some short catches and the song Bess of Bedlam, but this piece is in so different a style to those Purcell pieces in the Holland organ that there is little to be gained from comparing them. There are, however some pieces by other composers which do correspond and this section will therefore focus primarily on these. It will examine whether there are stylistic features found in the Purcell pieces discussed above which can be observed in the later pieces, and whether any of these pervasive stylistic features are to be found in Corri's performance recommendations. Corresponding pieces by Handel and Arne are found in both Corri's *Select Collection….* and the Holland organ and so two pieces with similar tempi and mood, though different subject matter will be examined: 'Pious Orgies, Pious Airs' from Handel's *Judas Maccabeus* and 'Water Parted from the Sea' from Thomas Arne's *Artaxerxes*

Some differences can be observed from the outset between Corri's recommended performance style and that found in the Holland organ. Corri only occasionally indicates trills in his *Select Collection*, although in his *Singer's Preceptor* published thirty years later he states that the shake (like other graces) should be used in moderation.[246] He discusses the fact that a great many singers use shakes frequently, in places where they are not desirable, such as the opening word of 'Comfort Ye' in Handel's *Messiah*. The Holland organ, contrary to Corri's notation, adds trills frequently in both pieces, though their positions often correspond to places where Corri indicates other ornaments (highlighted in Ex. 6.6).

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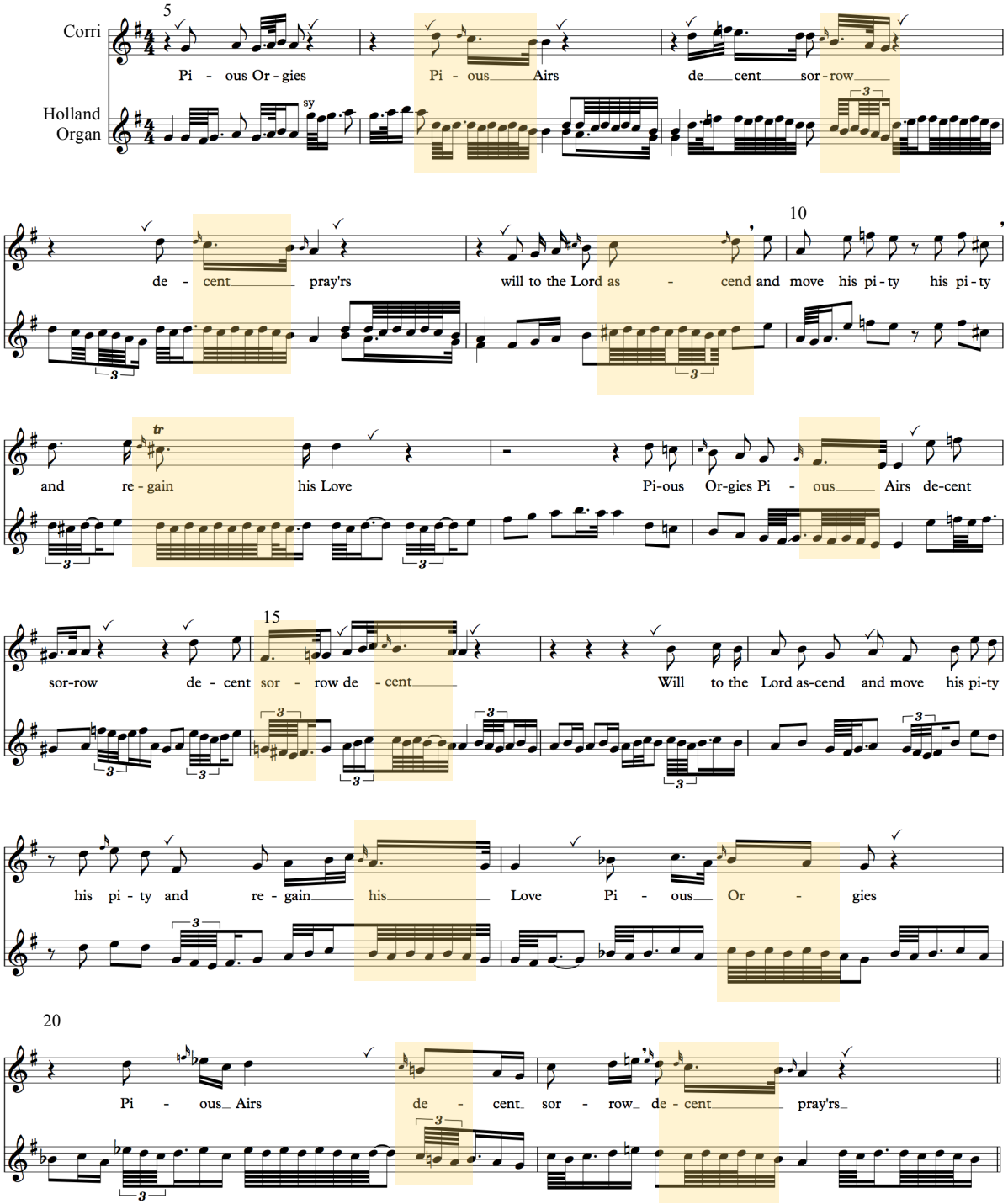
[245] Corri, D. (1779). *A Select Collection*.
[246] Corri, D. (1810). *The Singer's Preceptor, or Corri's Treatise on Vocal Music, Etc*, (London). p.7.

Example 6.6 - Bars 5-21 of Handel's 'Pious Orgies, Pious Airs' as notated by D. Corri in A Select Collection (1779) and realised by the Holland organ. The vocal line and the organ arrangement both begin at bar 5.



It was noted in chapter 5 that in both the Holland organ and Clay clocks notated appoggiaturas are frequently realised with different ornaments (most commonly trills). Again this may be evidence that the indication of one ornament might simply denote that moment's suitability for an ornament of some kind, rather than the requirement for that specific grace. However, there are significantly more ornaments in the Holland organ's rendition of the vocal line than in the decorated

version by Corri. Corri adds 21 ornaments to the line, plus a choice of three different cadenzas for the final cadence, compared to 34 ornaments added to the vocal line by the Holland organ. Corri does not ornament the accompaniment at all, whereas the Holland organ does occasionally, when it fills in gaps in the vocal part.

Corri's accompaniment is essentially a skeletal reduction of the orchestral parts, with some essential harmony notes filled in. During the instrumental passages the upper violin part and bass are present in the score and during the vocal sections the keyboard realisation doubles the vocal part and the bass (with added functional harmony notes). Any ornamentation of the vocal line, where the line is doubled without the ornaments, would produce a heterophonic effect, so Corri's decorated vocal part and plain accompanying line raise the question of whether the Holland organ's ornaments should be considered a replication of a vocal performance, or an accompanying part designed to be sung to (possibly with fewer ornaments then added by the singer). This will be discussed in the following chapter. If this is the case, it raises an issue regarding the usefulness of comparing the two versions, since one would be an accompanying line, and the other instructions for a singer. However, the frequency with which Corri chooses similar placings for his ornaments to those in the Holland organ suggests that they share basic elements of taste, and the placing of ornaments may therefore be similar for singers and instrumentalists, even if the actual ornaments chosen may differ according to the idiomatic preferences of each performer.

The majority of Corri's ornaments are appoggiaturas (which he somewhat confusingly terms 'graces'), whereas the Holland organ favours mordents, trills and turns. This may be due to the relative ease of executing trills instrumentally as compared to vocally. Indeed, Corri complains that many singers perform the trill 'with imperfection'.[247] He does have an interesting description of the various types of trill, however, which is pertinent to the performance by the Holland organ: 'The long Shake should begin with the Note on which the Shake is to be made. / The short Shake should begin with the upper Note.'.[248] These descriptions leave no place for a long upper note at the outset of either type of trill. The 'long shake' Corri describes has a gradation in the speed of the oscillations beginning on the main note and increasing in speed before coming to rest on it again. The initial main note should also have *messa di voce*, implying that this type of trill is a decoration of a sustained long note. However, the 'short shake', which he also confusingly calls *mordente*, generally contains just three or four oscillations, with no alteration in speed, and 'is no sooner born than it dies'. This type of trill generally concludes with a turn, Corri also states, though the manner of execution 'being so various, it is scarcely possible to ascertain it be any fixed rule'. So the vast majority of the Holland organ trills are what Corri would term a 'short-shake' which he admits are widely used by many:

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[247] ibid.
[248] ibid. p.30.

> There are various opinions respecting the manner of executing the shake some are for a Close rapid Shake, giving a brilliancy and shortness to the upper Note; others prefer both Notes of equal length and force:[249]

These executions are still remarkably like the Purcell ornaments, and decorate similar places in this melody to the places decorated in the earlier pieces. It is important to bear in mind that all the Holland organ pieces were probably pinned in the same workshop at a similar time, and therefore a 'house style' is likely to have arisen among the artisans working there, so perhaps it is to be expected that the level of ornamentation and the ornaments used are not significantly different in the music of Purcell and Handel in this one source. The placing of ornaments by Corri in 1779 does have some links with the placing of ornaments in the Holland organ, although the types of ornaments are different. In his *Singer's Preceptor*, Corri complains at the overuse of trills in Handel's music.[250] However the two examples he cites for his disapproval are 'long-shakes' (to use his terminology) used in slower pieces to ornament sustained notes, rather than the 'short shakes' of the Holland organ.[251] The functions of these two types of trill are very different and the swift graces found in the Holland organ are more often than not a tool for adding colour and brilliance to articulation, rather than decorations aimed at varying or embellishing the melody. They may also be more suitable to instrumental accompaniments than a vocal practice, and would certainly be easier to play than to sing.

Almost all the quick ornaments (generally mordents and turns) in the Holland organ occur on strong syllables in the text, and those that do not do so, generally occur on strong beats of the bar. They are clearly, then, consciously placed to add articulatory colour or weight, a vertical emphasis from which the melody may spring; conversely the rolling trills serve to move the music horizontally onwards whilst also providing colour of course.

Thomas Arne's 'Water Parted from the Sea', like his opera *Artaxerxes* from which it is taken, remained enduringly popular from its first performance in 1762 until well into the nineteenth century. It was widely published as a single song, often with the accolade 'Sung by Mr Tenducci' (the castrato who first played the part of Abaces in the opera). There are many publications which include ornaments, indeed there appear to be none published without ornamentation, and many authors added their own embellishments. The two compared here are Corri's version and that by Filippo Trisobio, an Italian, who, so he claimed, had been employed by the royal court in Portugal and sung for royalty in London but who later settled and published in Philadelphia.

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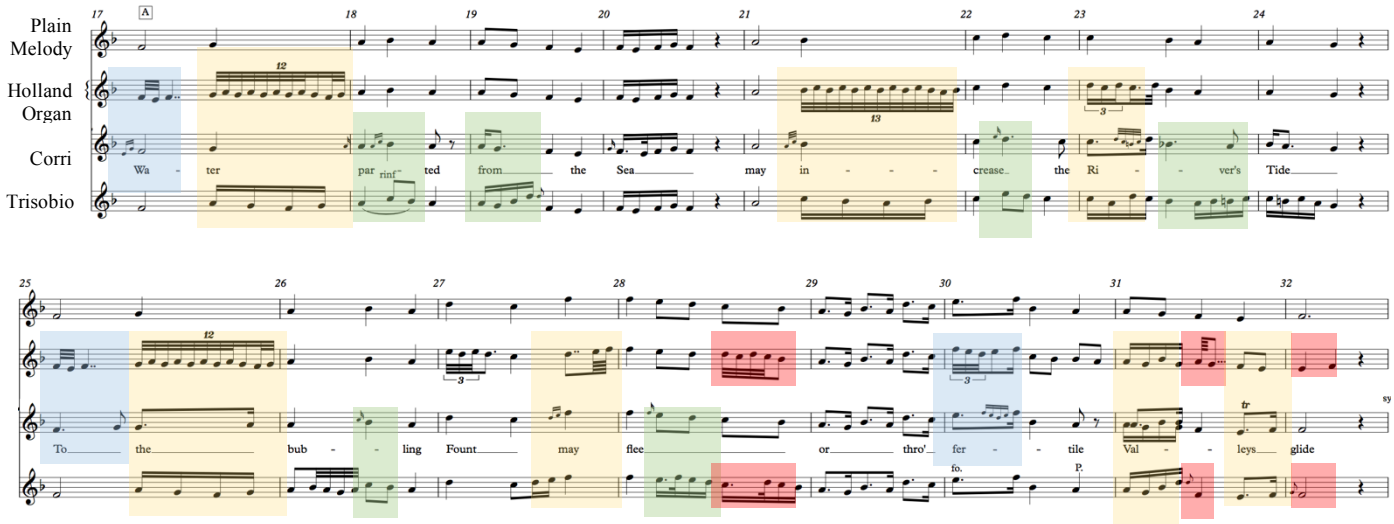
[249] ibid.
[250] ibid. p.3.
[251] ibid.

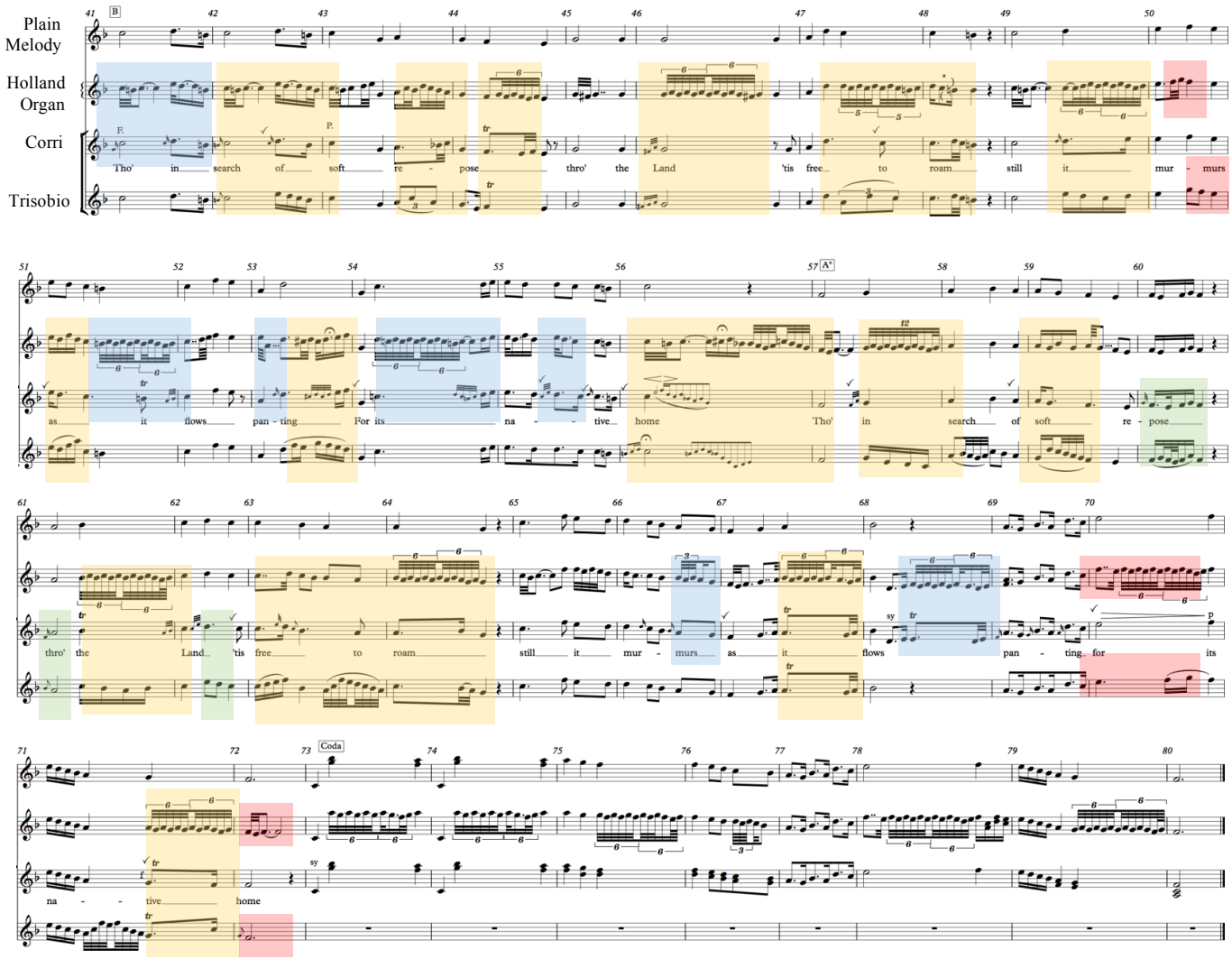
Example 6.7 - Bars 17-32 (opening vocal phrase) of Arne's 'Water Parted from the Sea'.



Examples 6.7 and 6.8 show the points of correspondence in the placing of ornaments between the Holland organ, Corri's vocal line and Trisobio's vocal line. The yellow highlighted sections show the ornaments, whose placing corresponds in all three sources: blue sections highlight where placing corresponds between Corri and the Holland organ; green shows correspondence between Corri and Trisobio and red correspondence between the Holland organ and Trisobio. There are hardly any ornaments in the Holland organ whose placing does not correspond to the placing of an ornament in at least one of the vocal versions. There are occasional similarities in the type of ornaments used as well, though in general the Holland organ's ornaments contain more, and faster notes than their vocal counterparts where turns and appoggiaturas (single or double) comprise the majority. In Bar 32 the Holland organ contains a long appoggiatura, a rarity in the organ's music studied hitherto; however, in late eighteenth-century music it is not unexpected. What is clear, here, is that although the types of ornament used in the Holland organ are slightly different, perhaps more similar to those found in the Purcell treatise, the placing is frequently the same as that of later writers.

In Ex. 6.8 again, there is an 81% correspondence of the placing of ornaments in the Holland organ to those in the other two sources; only 10/54 do not correspond. The ornaments are not the same, however, with Corri favouring appoggiaturas and the Holland organ favouring trills, often with additional measured appoggiaturas, turns and some melodic variation (e.g. bar 19). There are some places where the correspondences are closer: Bar 1 has a mordent in the Holland organ and a double appoggiatura (on two auxiliary notes) in Corri's version, which would produce a similar effect; Bar 27 has almost exactly the same ornament in all three versions, though the placing and notation of it is slightly different. Likewise, bars 30, 31:2, 44, 53, 61, 63:2, 66, 67, 68 and 71 show very similar ornaments in Corri's version and the Holland organ; 53 being remarkably similar, and perhaps unusual, with both ornaments moving to the semitone below the main note and then moving by step to the third above the main note, before dropping down a seventh to begin the next phrase.

Example 6.8 - Bars 41-80 of 'Water Parted from the Sea' by Arne with point of correspondence highlighted.



Corri's and Trisobio's placing of grace-notes are interesting: all grace-notes are clearly attached to a beat with a clear indication of where within the beat they should be placed. Most occur on the beat, though a few are definitely anticipations of the following note (e.g. bars 17:4 and trill terminations). This piece also contains two rarities for the Holland organ; a long appoggiatura and a cadenza, both of which are paralleled by one or both vocal versions. Bar 32 has a long appoggiatura on the final note of a phrase, frequently used by composers and writers on late eighteenth-century music and it is mirrored by an indicated appoggiatura in the Trisobio version (though there is no indication of Trisobio's intended realisation). As observed earlier in the chapter, this is a rare, though not a unique, ornament in the Holland organ.[252] Cadenzas of the sort found in bar 56, however, are scarce in the Holland organ. There are a number pieces in barrels 1-4 which have some sort of pause

[252] There are more long appoggiaturas found in the 'Minuet from Rodelinda', 'Dead March' and Handel's organ concerto in F (found in the recording attached as Appendix D).

at the zenith of one phrase (generally the final one but it can also be at the end of the B section, as in this case) at which some extra time is taken. Melodic cadenzas, however, are much more uncommon, occurring only in this piece and the first movement of Handel's organ concerto in Bb. Bar 56 also includes chromatic movement, which is also unusual and is suggestive of a progression in stylistic taste from the earlier Purcell pieces. This sort of ornamental chromaticism does happen elsewhere (e.g. movement III of Handel's organ concerto in F), and it is also in keeping with the harmony of Arne's piece which includes some chromatic progressions. The cadenza in this piece is very measured, and at the constant speed at which the organ was recorded for this study, it sounds somewhat rushed. It is just possible that there may have been an expectation that whoever was turning the handle might manually slow down at this point, but there is no evidence for this. There are also other moments in the barrels where extra time is taken, so it should have been possible to pin this so as to take a little longer than the allotted bar length, if that were desirable.

6.5 Conclusions

Clearly the style advocated by late seventeenth-century writers is remarkably similar to that found in the Holland organ. The proliferation of ornaments such as trills, turns, mordents, back/fore-falls, etc. is in keeping with the advice concerning the placement of these which would result in a highly ornate style if adhered to strictly. All trills begin with short upper notes, as Purcell and others indicate and this does not alter from earlier to later pieces. Indeed, the general style of the ornaments themselves does not differ in any meaningful way from that found in the Purcell pieces.

All the Holland organ pieces would have been pinned at roughly the same time so it seems logical that there could have been a 'house style' and any variation to allow for differing periods or characters would remain within the parameters of this. Perhaps, therefore, the style heard in the Holland organ might have been somewhat insulated by its long tradition from external trends in performance practice, and is consequently evidence of an earlier practice more contemporaneous to that found in the works of Babell, rather than the 'cutting-edge' of 1790s trends. The Holland organ's ornaments themselves are often different from those used by Domenico Corri despite their similarity of placing, although there are notable concordances. It seems there are two purposes for the ornaments; first, ornaments which happen at the beginning of notes are applied in order to add colour and variety to the articulation and second, ornaments occurring in the middle of notes are to vary or embellish a melody, adding colour and direction to longer notes of a phrase. The second function would seem logically to feature more frequently in lyrical passages, with the exception of dramatic linking passages which occur in more upbeat pieces.[253] Perhaps these melodic alterations would be the most likely ornaments to change over time, as tastes regarding style changed (e.g. the appearance of

[253] See *Rule Britannia* and *Handells Coronation Anthem* [*sic*] on Barrel 9 (Appendix D; recording of the Holland organ).

chromatic movement). However, the majority of all ornaments across the range of the pieces examined in this chapter are in the former, articulatory style. Corri and Trisobio use grace-notes which almost all occur at the start of beats or as anticipations to succeeding notes (suggesting that those placed at the start of notes occur on the beat). The use of grace-notes which are often the same as the note preceding that on which they are placed is a feature of many folk singing styles, and this can be linked to the observation in earlier chapters that the frequent small graces added to instrumental melodies is reminiscent of a folk style. As observed in Chapter 1 there have been a number of practitioners and scholars who have linked existing folk and non-western performance styles. Further investigation into links between eighteenth-century barrel-organ ornamentation and modern folk performance practice is beyond the scope of this study, but this is a possible future direction for this line of research.

As might be expected, there is more correspondence in the ornamentation between Corri and the Holland organ in the latest work to be included here (Arne's 'Water Parted from the Sea'). The first performance of this piece was still in living memory at the time of both the Holland organ's construction and the publication of Corri's *Select Collection*. However, we can see that a style very closely related to that found in Purcell's and other treatises persisted at least in instrumental music for much of the eighteenth century and many stylistic discrepancies could be due to one being an instrumental rendition and one an advocated style aimed at student or amateur singers.

What is notable however, is that there are ornament tables found within many treatises on music from the mid-seventeenth to the nineteenth centuries. Whilst there may be differences in those advocated by different authors, the ornaments themselves remain similar, with only small changes (such as the propensity for longer appoggiaturas in later works) over the years. This in itself suggests an underlying continuity of the 'essential graces' as a means of expression, despite the changes and developments in the music to be expressed.

Chapter 7: Cylindrical Pinning and its Implications for Both Ornamentation and Heterophonic Performance Style.

7.1 Repertoire and function of repeating barrels

As discussed in Chapter 2, there are two modes of pinning found in the barrels of the Holland organ: cylindrical and spiral. Barrels 1-4 are pinned cylindrically and 5-16 are spirally pinned. This difference of techniques employed by the same maker imparts important information regarding the function of the organ. When barrels are pinned cylindrically, the barrel remains horizontally static as it turns,[254] meaning that, rather than automatically moving on to the next piece when one finishes (as occurs with spirally pinned barrels), pieces repeat as many times as the operator wishes. Pieces are selected by fractionally adjusting the horizontal position of the barrel, aided and kept in place by grooves in the central stud. The pieces are then pinned in such a way as to enable repetitions to proceed immediately so the performance can continue without interruption to the rhythm. Each piece lasts around forty to fifty seconds, although the barrel turning-speed would of course affect this. Tempo is at the operator's discretion, perhaps more so than in the spirally pinned 'concert' barrels, since the pieces have been pinned so that they repeat musically; thus, shorter pieces may have the spaces between pins fractionally expanded so that the music perfectly fits the barrel, so the operator may choose a slightly faster turning speed to suit their taste. Likewise, a longer piece may require a fractionally slower turning speed since the pin spacing will have been made as small as possible to perfectly fit the available space.[255]

A consequence of the short length of these pieces is musical simplicity. Songs are strophic and dance forms are short, generally minuets or marches, (though these terms simply denote a dance in triple or duple time). Neither form includes a great deal of musical development, but their simplicity belies their usefulness as performance sources, which is centred on their function. The repeating nature of the barrels signifies that these are not 'concert' performances, purely to be listened to, as may be the case with the spirally pinned barrels. Rather it implies a more practical use, as an accompaniment to dancing or singing for domestic entertainment, supported by the fact that certain types of music are broadly grouped together. There are forty-one pieces on the first four barrels, of which 27 are strophic airs taken from operas, ballad operas, oratorios, plays and single song publications.[256] Some are originally solo songs or duets, whereas others (e.g. 'Rule Britannia' and 'See, the Conquering Hero Comes') contain choruses. The pieces with choral sections feature mostly on Barrel 4, for example, and barrel 1 contains ten songs which seem to have a folk-song, or pastoral

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[254] See Chapter 2 for further information on pinning systems.
[255] The scope for variation in the turning speed is limited, as discussed in Chapter 1.
[256] For a full list of the pieces included in the Holland organ see Appendix B.

theme. These follow the vogue for Scottish and Irish 'folk' songs, so prevalent in England throughout the eighteenth century, though some of these were actually composed in England, and many were used frequently in theatrical productions.

Of the remaining pieces, nine are dance tunes, either independent, or taken from theatrical productions, operas or oratorios. These are mostly grouped on Barrel two (seven pieces) with two found on Barrel four.[257] There are three minuets by Handel, taken from *Ariadne*, *Samson* and *Rodelinda*, pinned into Barrels eight and nine but these are pinned spirally and therefore not repeatable, suggesting that they are intended for listening rather than for accompanying dancers. The repeating tune would enable a dance pattern to be completed as many times as required, necessary when dancing for social entertainment.

The final six pieces in the first four barrels are hymns, and additionally there is a 'Christmas Hymn' pinned on barrel ten (alongside 'Every Valley' from Handel's *Messiah*). It is the presence of these which confirms that the Holland organ was not merely a curiosity, or only intended to be listened to, but was a practical aid to domestic musical performance and private devotion. Barrel-organs were widely used to accompany church services in the late eighteenth and early nineteenth centuries; they were purchased for this purpose by many small parishes, and indeed there are still some remaining in English churches to this day.[258] It is therefore possible that the Holland organ was intended to occasionally accompany either solo or group singing. Hymn singing was a popular domestic pastime, encouraged since the beginning of the Protestant movement but particularly fostered by John and Charles Wesley. In the latter half of the eighteenth century their practice of communal singing of hymns in the 'modern', simple style, accessible to all, was adopted by the mainstream Church of England and engaged in throughout the nineteenth and into the twentieth century by many strata of society both in church and in the home. It is extremely likely, therefore that the organ was intended to support this practice. It is unlikely that hymns well known to most, if not all in England at the time, would have been listened to as 'concert' pieces.

7.2 Hymnody and heterophonic performance practice

The hymns in particular raise the interesting prospect of a heterophonic performance practice, which could therefore be carried over into other vocal pieces. Any barrel-organ's performance of these hymns would have the melody (also sung by the congregation) as the top line heard in the arrangement. However, the Holland organ adds a great many ornamental graces, as do many other barrel-organs, some even adding cadenzas to hymns. It is impossible that congregations would have

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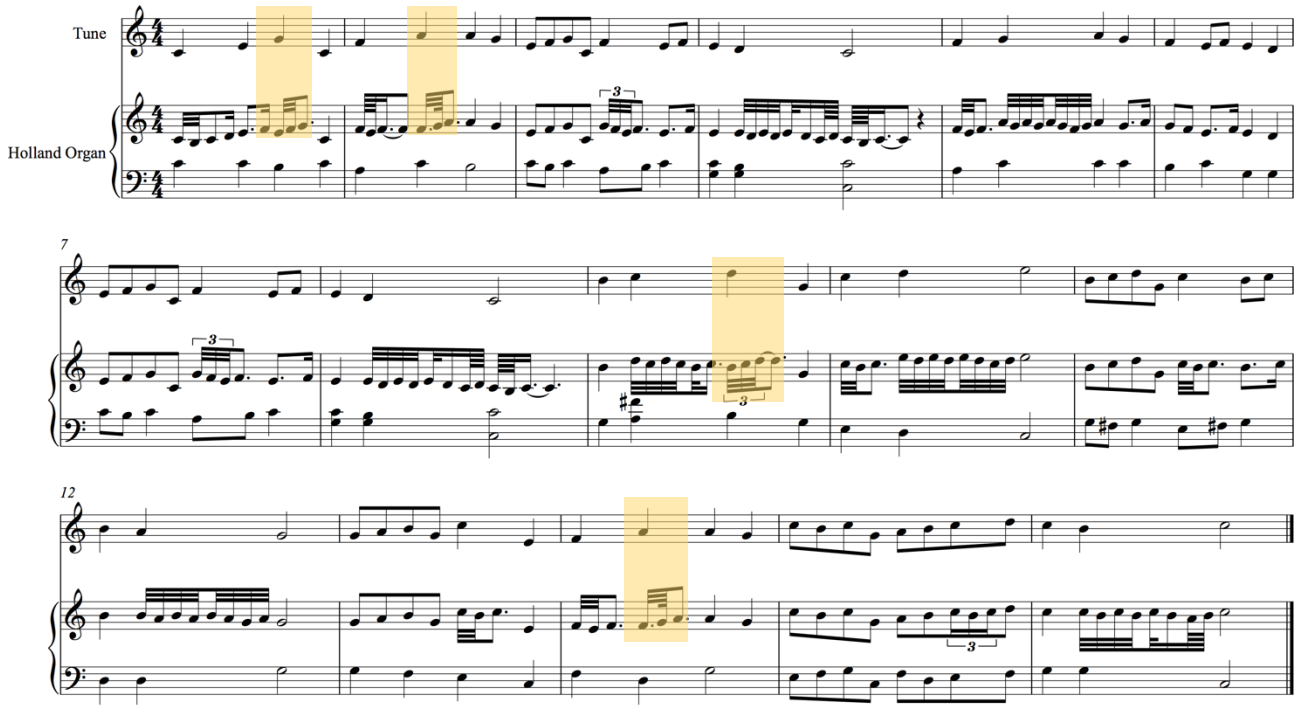
[257] This placing of two dances on barrel four rather than two with the other dance music may also be for the reason of length. The barrels are of slightly differing sizes, smaller barrels being more suited to shorter pieces and larger ones to longer. This may partially dictate the placing of certain pieces together. However, stylistic groupings seem to be the pinner's primary concern.

[258] The organ at King Charles the Martyr, in Shelland, Suffolk is a very fine example of a working church barrel-organ, one piece is included in the recording in Appendix E.

been expected to ornament in this way so we must therefore arrive at the conclusion that the 'plain' melody would have been sung at the same time as the ornamented melody was played by the organ creating a heterophony (as notated in Ex 7.1).

This hymn entitled 'Easter Hymn' in the Holland organ's list of contents is now generally associated with Charles Wesley's text beginning 'Christ the Lord is risen today, Hallelujah'. It is first found in *Lyra Davidica*, a collection of hymns published by Walsh, Hare and Randal with the text 'Jesus Christ is risen today, Halle-Hallelujah', clearly a starting point for Wesley's later lyric.[259] Although the tune is somewhat altered from this first source, it is clearly recognisable. It was evidently an enduring favourite by the mid-eighteenth century and is found in many of the published hymn books which became widespread in England and America as the century progressed.

Example 7.1- Easter Hymn as found in Lyra Davidica and the Holland organ.



As must by now be perceived as usual in the Holland organ, every one of the sixteen bars of this hymn contains at least one, and often two or three ornaments. These are generally trills, mordents and turns, but there are several instances of auxiliary notes (e.g. bar 1:1-2) filling in intervals of a third, like the French *coulé* or decorating the end of a note as does the French *accent*. There are also slides (shown in yellow). The clear majority of these ornaments decorate the beginnings of notes, leaving a substantial portion of every note plain. The six trills (all with terminations) are the only

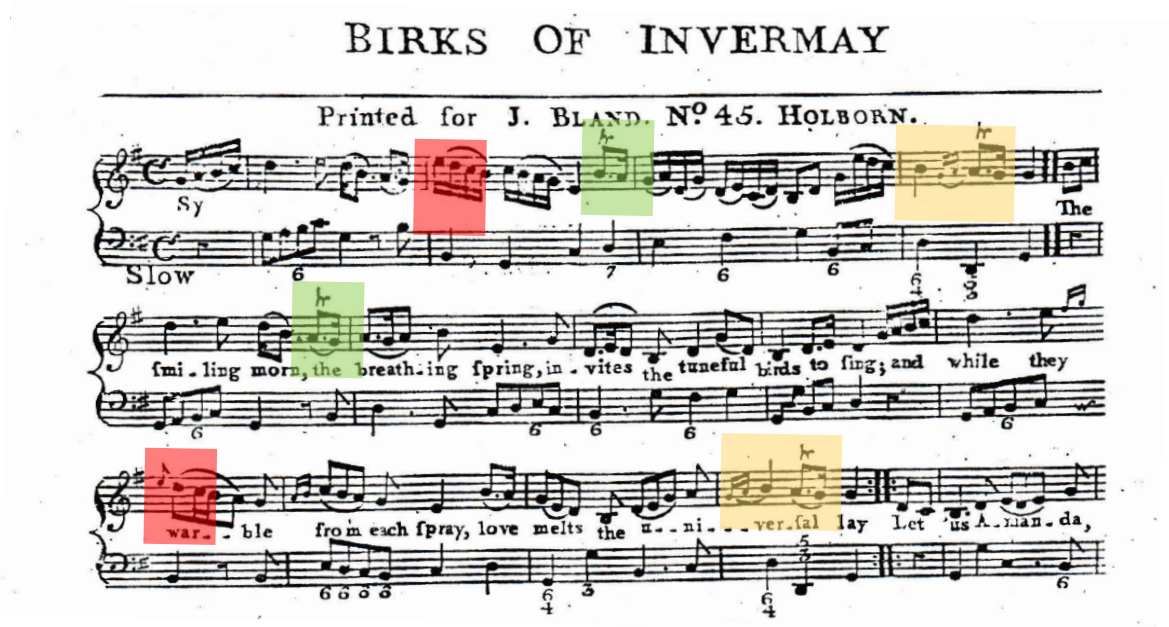
[259] Anon. *Lyra Davidica: or, a Collection of Divine Songs and Hymns, partly New Composed, partly translated from the High-German, and Latin Hymns: and set to easy and pleasant Tunes, for more General Use. The Musick Engrav'd on Copper Plates* (Walsh, J. Hare, J. and Randal, P. London, 1708). p.11.

moments at which most, or all of a note is decorated and these all serve to link two notes together. Since none of the ornaments depart significantly from the main melody notes, they would be perceived as adding colour and intensity to the melody sung by the congregation, rather than creating dissonances in conflict with it. It is difficult to establish firmly from textual sources whether organists accompanying a congregation in a church would have added these graces to their accompaniments. However, graces are widespread in small organs like the Holland organ which survive from the period, and some are included in organs built specifically for use in churches, so it seems safe to propose that this was an accepted practice amongst churchgoers (other audio examples can be heard in the recording included as Appendix E).[260]

7.3 Implications for strophic songs

This heterophonic performance style, created by an instrumental part doubling, and ornamenting a sung melody must have been accepted, even appreciated, in domestic worship and public church services. It seems logical, therefore, that if heterophony was found and accepted here, then it could also have occurred if the organ were used as an accompaniment for other domestic musical performances. This carries huge significance for the vocal pieces included (particularly in the four repeating barrels). The dances included in these barrels will be disregarded, in this chapter, since their functionality - to accompany dancing - would preclude heterophony, unless other instruments played along.

Figure 7.1 - 'Birks of Invermay' published by Bland of Holborn, now in the British Library (G.426.kk f.88).



[260] Langwill, L. G. and Boston, J. N. T. (1970) *Church and Chamber Barrel-Organs: their origin, makers, music and location*. 2nd ed. (Langwill, Edinburgh). p.20.

The songs found in the first Holland organ barrel were clearly among the most enduringly popular songs of the age, and can be found in many published versions, whether scores, collections, or single sheets, throughout the eighteenth and nineteenth centuries. Many were also included in other mechanical musical instruments for which the contents lists survive. Ex.7.3 (at the end of this chapter) comprises a full comparison score of one song, 'The Berks of Endermay', which includes the Holland organ transcription, alongside ornamented versions published by Bland of Holborn[261] and Domenico Corri in his *Select Collection*.[262] The Bland edition is typical in including only two lines of music, the uppermost of which is intended for both the voice and the right hand of the keyboard player, including the melodies for the *symphonies* as well as the texted vocal line. There is a figured bass included with this, and it is not clear whether the arranger expected the keyboard accompanist to double the vocal part throughout, as well as realising the figured bass, but it does seem to be implied. There are also some corresponding ornaments in the texted and non-texted version, as can be seen in Fig. 7.1 highlighted in the same colour.

Corri's version holds more clues to the question of heterophony. He claims in his publication to have developed a 'New System' of notating accompaniment. This replaces the figures attached to the bass line with a small stave on which are indicated, without rhythm, the notes of the harmony to be applied. Corri specifies that these should be played in the same rhythm as the bass, unless otherwise indicated.[263] However, the recommended right-hand accompaniment generally doubles at least the skeleton of the vocal melody, omitting some passing notes and the graces (see Fig. 7.2). This clearly implies a form of heterophony, since the vocal part is ornamented and the keyboard is instructed to play a simplified version of the same melody.

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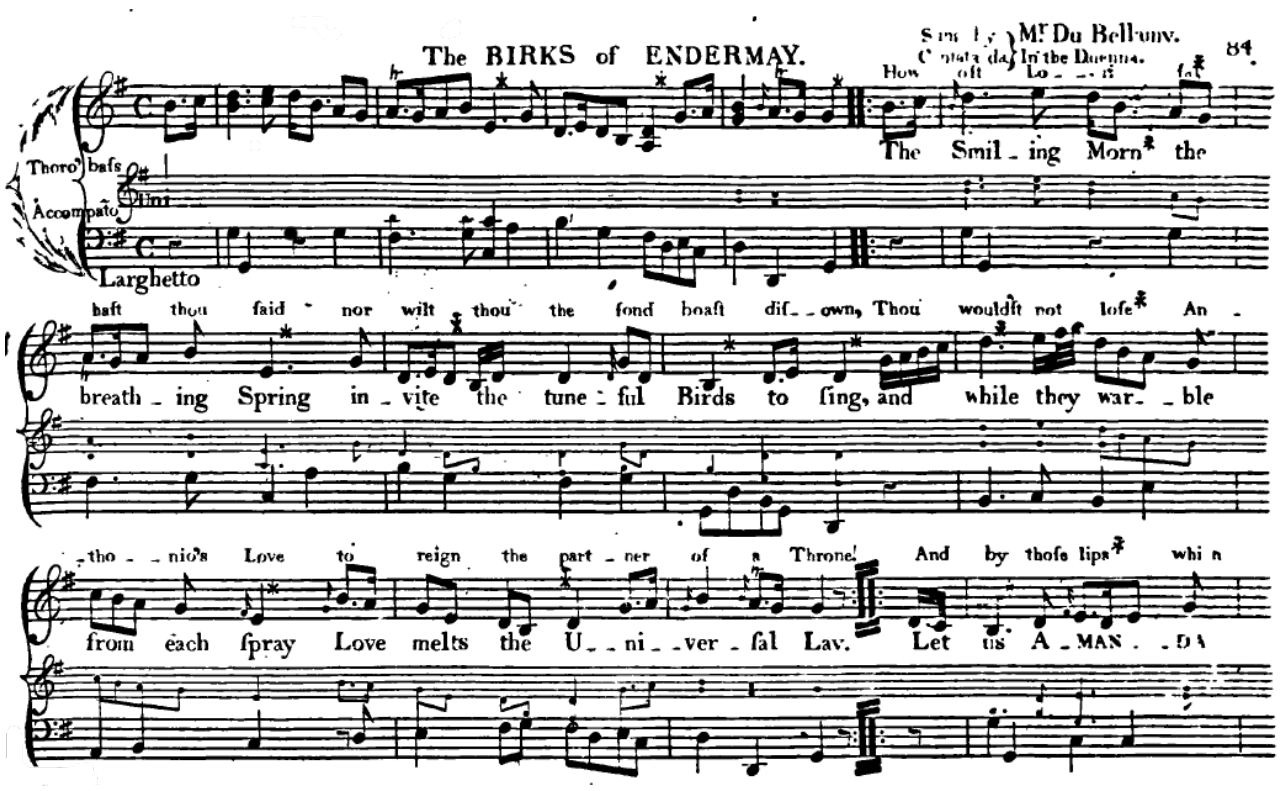
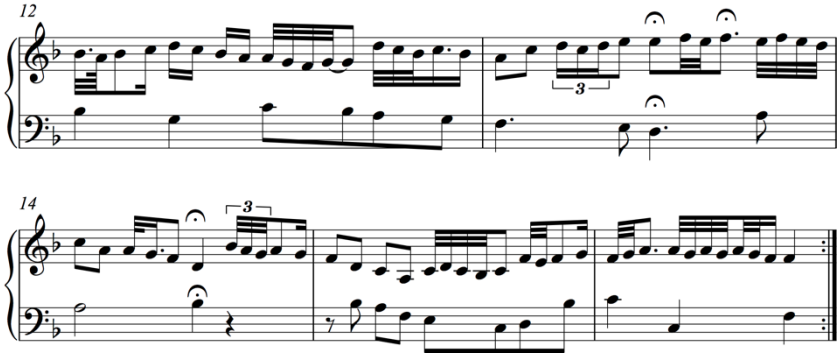
[261] Anon (c.1790) *The Smiling Morn. Birks of Invermay.* (London, Printed for J. Bland).
[262] The title used for this piece is the one found in the Holland Organ contents list, but there are many different spellings used including 'The Birks of Endermay' and, probably most correctly 'The Birks of Invermay'. The song was used in the opera *The Duenna* (with lyrics by Sheridan) and Samuel Foote's play *The Maid of Bath* (based on the same story).
[263] Corri, *Singer's Preceptor,* p.10.

Figure 7.2 - 'The Birks of Endermay' from Corri's 'Select Collection' p.84



Interestingly, the Holland organ version of this piece seems to include a combination of the vocal ornaments found in both Bland and Corri as well as additional ones not found in either. Important amongst these extra inclusions are two pauses found near the end of the piece (Ex. 7.2). These pauses constitute ornaments in themselves, of course, but there is also the possibility that they allow space for a performer to add small melodic embellishments of their own. They are not long, however, roughly doubling the length of the notes on which they are placed, so this does not allow a great deal of scope for musical additions. It would be possible, with forethought, to fractionally slow down the turning of the organ's handle at this moment, in order to create a slight ritardando and lengthen these pause notes, but it would not be possible to completely stop and hold the note (to allow a long cadenza), as the lack of turning momentum would result in the air from the bellows ceasing to flow, causing the sound to tail off with a drop in pitch.

Example 7.2 - Final five bars of 'The Berks of Endermay' as found on Barrel 1 of the Holland organ.



7.4 Other evidence regarding the doubling of a melody line in the accompaniment

There are those, such as C.P.E. Bach, who consider the constant doubling of the melody line (as would occur if the Holland organ were used to accompany a singer) to be bad practice; however, Corri's keyboard realisations, like other strophic song publications, seem to advocate it..[264] These seem to be aimed at an amateur market, as Corri gives advice on simplifying any complicated accompanying parts, especially in faster moving passages where the accompaniment differs from the vocal part (such as in opera arias with orchestral reductions).[265] If an accompanist were supporting an amateur or student singer, this doubling may well have proved useful both for pitching and ensuring rhythmic unity. Geminiani provides further precedent for doubling the melody in *A Treatise of Good Taste in the Art of Musick* (1749) in which he includes arrangements of four songs 'Accompany'd by two Violins, two German Flutes, Tenor and Thorough Bass'. These have clear indications that the uppermost violin and/or flute should double the vocal melody and indicate ornaments which are to be added (see Fig. 7.3). It is unclear whether these are to be added by the voice as well as the instruments. They certainly lie most easily under the fingers of instrumentalists, but he clearly states in his opening 'Examples' section that his ornaments are applicable to singers as well.[266] Therefore, perhaps those who were capable would have been expected to ornament both vocal and instrumental lines which would create a kind of close heterophony even if all used the same ornaments, since violins, flutes and voices produce their ornaments in differing ways with consequent variance in the results.

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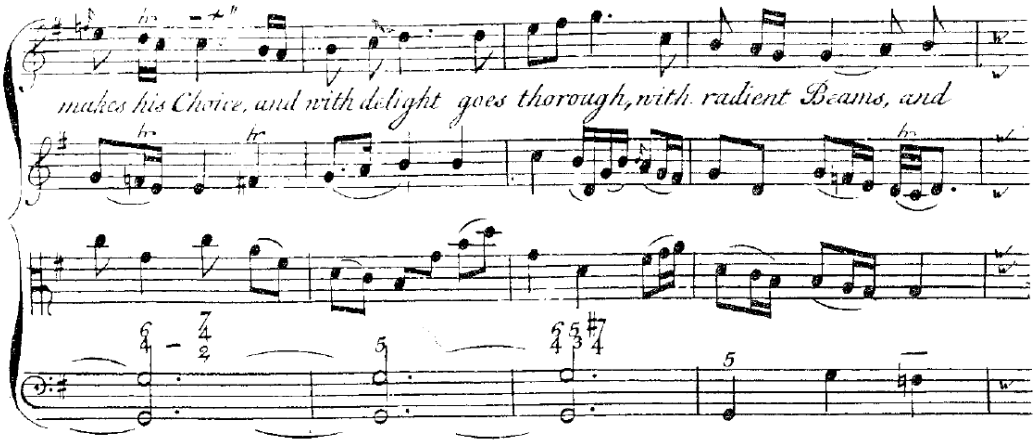
[264] Bach, *Essay on the True Art of playing Keyboard Instruments,* p. 377.
[265] Corri *Singer's Preceptor,* p. 10.
[266] Geminiani, *A Treatise of Good Taste in the Art of Musick*, pp. 2-12.

Figure 7.3 - Excerpt from 'When Phoebus Bright' from Geminiani's 'A Treatise of Good Taste…' (1749) showing ornament symbols in upper line (for both 1st violin and voice).



Geminiani's inclusion of singers in his advocation of ornaments could imply that singers may also have been expected to adopt the ornaments included in the Holland organ. However, it is equally possible that a singer (particularly an amateur performing in a domestic setting) may have chosen to omit ornamentation, or adopt only a few and leave the others to the accompaniment. The evidence from Corri and Geminiani supports the notion that it is possible to perform the same line in differing ways simultaneously allowing the singer to leave much of the ornamentation to the organ, the opposite of Corri who omits ornaments in the accompaniment.

There is some evidence for one instrument ornamenting their line whilst others play it plain even in an orchestral setting. In their article *Improvised Ornamentation in Eighteenth-Century Orchestras*, John Spitzer and Neal Zaslaw quote sources which seem to suggest that, although it was disapproved of by some, ornamentation certainly did take place in orchestral playing, sometimes by only one instrument (generally the orchestral leader), but sometimes a whole section.[267] Most of their sources are German, but it is not inconceivable that the controversial practice took place in English orchestras as well, meaning instrumental ornamentation against a plain vocal line would have been an acceptable, or at the very least a widely recognised aesthetic.

7.5 Conclusions

The cylindrical pinning of the Holland organ gives a clear indication of its optional accompanying function. The large amount of instrumental music and the popularity of instrumental performances of vocal works point to its use as a solo instrument as well, confirming its dual function. Consequently, it must therefore be accepted that any heterophonic performance implied by the

[267] Spitzer, J., Zaslaw, N. (1986) 'Improvised Ornamentation in Eighteenth-Century Orchestras' *Journal of the American Musicological Society* vol 39:3 (University of California Press). pp. 524-577.

ornaments in the Holland organ was an accepted practice (if not embraced by all) during the eighteenth century. This may have been particularly true in the solo song and duet repertoire found here, since the domestic setting for which the organ was constructed lends itself to amateur performance in which the vocal part may be taken by a singer who requires support in holding their melodic line.

The presence of hymns supports the proposition that the cylindrical barrels had an accompanying function, which in turn suggests that this was also true for secular strophic songs and choruses. This leads to the inevitable conclusion that it was standard practice for ornaments to be included in the accompaniment of hymn singing, whether small-scale or congregational. This would have meant that heterophonic performance was part of the most fundamental musical experience of the majority of the English population during the period in question.

As a final note, however, is important to connect this to the conclusions of the previous chapters regarding the proliferation of what are now considered to be ornaments. It is common to view trills, turns etc. as additions, imposed on a 'pure' musical score, but at the time this organ was pinned these were 'essential graces', as Quantz and others so aptly termed them.[268] These were not really considered to be ornaments at all, in the sense of melodic embellishment, and the Holland organ recordings may well have been regarded as empty of all but the most vital 'ornaments of expression'.[269] This, in fact, imbues the mechanical sources with even more importance. If the only musical additions included here are those considered too essential to be omitted, then perhaps this should therefore be considered the minimum level of decoration. The optional additional decoration would of course be melodic alteration, and indeed it is possible to see this in the works of some composer/practitioners. William Babell, for example, in his *Suits of the most Celebrated Lessons* for the harpsichord, includes both a high density of symbols for graces, and more elaborate melismatic decoration, as a standard in his keyboard arrangements of popular melodies by other composers including Handel, with whom he was well acquainted.[270] These more elaborate additions are only found occasionally in the Holland organ, generally in the longer and more musically developed pieces, which will be discussed in the next chapter.

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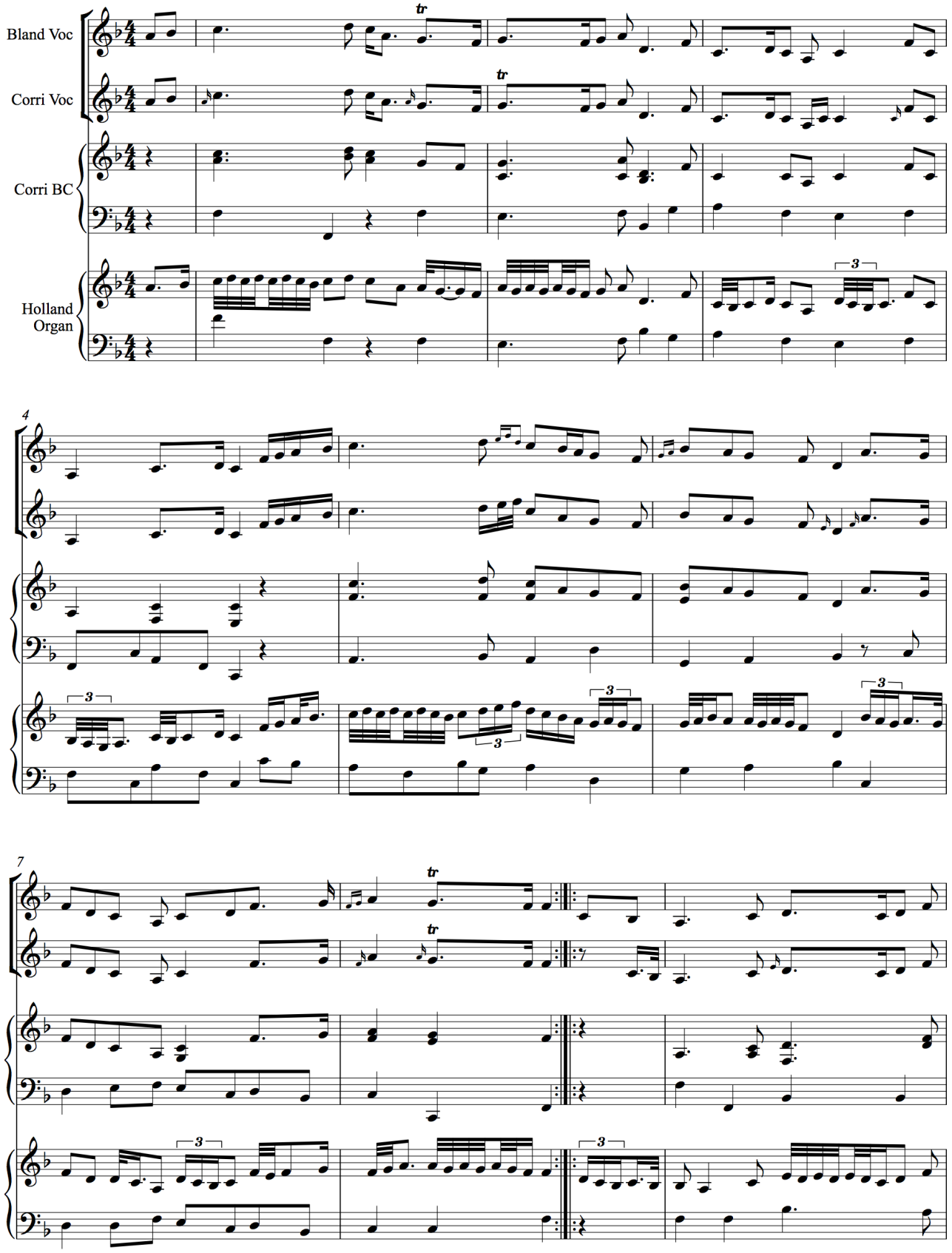
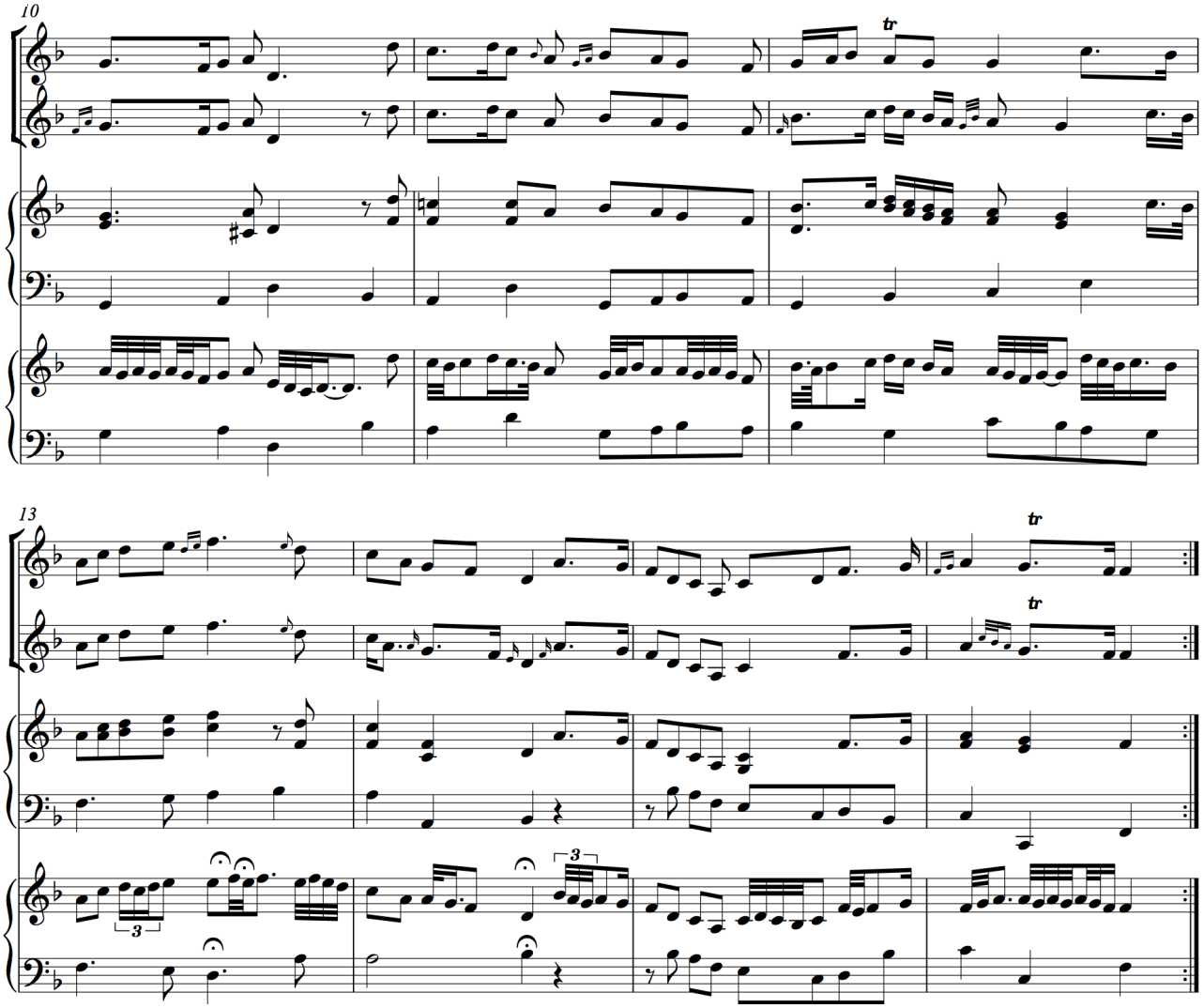
[268] Quantz, *On Playing the Flute,* p.291.
Tromlitz, J. G. (1791) *The virtuoso flute-player.* (trans. A. Powell, 1991). (Cambridge, Cambridge University Press) p.317, among others.
[269] Geminiani, preface to *A Treatise of Good Taste in the Art of Musick*, p. [2].
[270] Babell, W. (1717) *Suits of the most Celebrated Lessons collected and fitted to the Harpsicord or Spinnet* (London, Walsh).

Example 7.3 – 'The Berks of Endermay/ The Birks of Invermay', Comparison Score of versions published by Bland, Corri, and found in the Holland organ.




10
tr
13
tr
tr
3
3

Chapter 8: Implications of the Holland Organ's Performance of Handel's Organ Concertos Op. 4 in B flat and F major

These two concertos take up one whole barrel each in the Holland organ. They demonstrate how the ornamentation found in the shorter pieces, which comprise the majority of the contents of the organ, might be extrapolated into longer and more musically involved works. They also give valuable information on other aspects of performance, not necessarily related to ornamentation, but which nevertheless have a bearing on it, since all strands of performance style are closely interwoven. The initial discussion, therefore, will focus on the frequency with which certain ornaments are used, and how this relates to the material already studied, alongside observations of any peculiar features. Thereafter, wider issues will be addressed, including: the use of cadenzas; melodic alteration, treatment of repeated sections; realisation of tempo indications; and the implications for the use of ritardando. It will also reference key historical sources, examining whether they align with the organ's evidence. As discussed in chapter 1, the pieces have been published in transcription by David Fuller[271] and discussed in articles, also by Fuller,[272] with other contributions by Arthur Ord-Hume[273] and David Lasocki.[274] However, the specifics of their performance style have only been lightly touched on by these authors and merit further discussion in light of the findings in previous chapters.

8.1 Patterns of ornamentation

Rather than examining each type of ornament and its placing and prevalence within the piece, as has been the case in previous chapters, it is now more useful to broadly examine patterns of ornamentation and examine how the style compares both from movement to movement within the concertos, and to the rest of the Holland organ. To this end fig. 8.7, at the end of this chapter, contains charts enabling a visual comparison of the distribution of ornaments across the movements of both pieces. These charts enable quick comparison, showing which ornaments are the most frequent and demonstrating their density. The caveat of this methodology is that, for reasons of comparison, it is necessary to categorise the ornaments, which does not always allow for subtle differences in interpretation. Where ornaments are closely related, or easily confused, every effort has made to maintain consistency. It has been decided that most single auxiliary notes added at the beginning of a beat should be classed as appoggiaturas, but added auxiliary notes which occur during a beat creating scalic movement have been deemed to be passing notes. Appoggiaturas which occupy half (or more)

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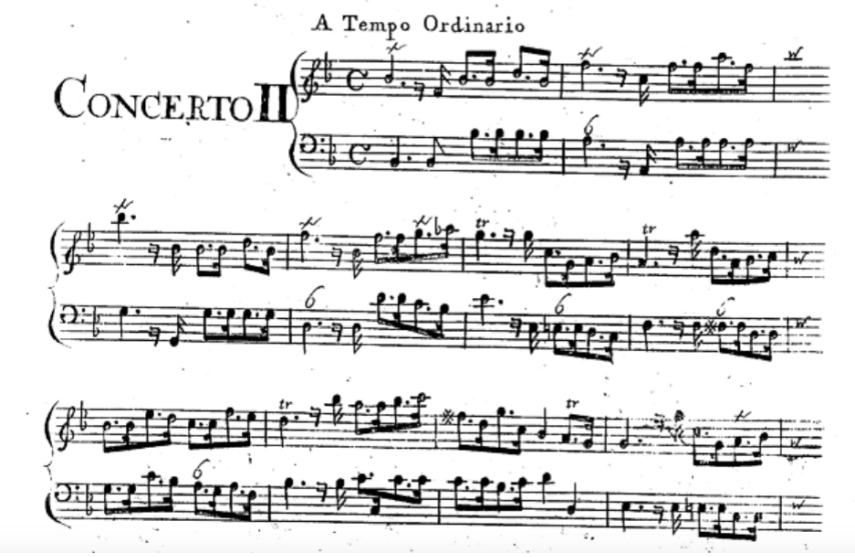
[271] Handel/Fuller *Two Ornamented Organ Concertos*.
[272] Fuller, 'Mechanical Musical Instruments as a source for Notes Inégales'.
Fuller, 'An Introduction to Automatic Instruments', pp. 164-166.
[273] Ord-Hume, 'Cogs and Crotchets: A View of Mechanical Music.', pp. 167-171.
Ord-Hume, 'Ornamentation in Mechanical Music', pp. 185-193.
[274] Lasocki, D. 'A New Look at Handel's Recorder Sonatas: 1, pp. 2-9.

of the length of the note on which they are placed have been termed 'long', with the exception of those placed on very fast moving semiquavers (which then take up a demisemiquaver) since these create the character of a quick appoggiatura despite filling half the note length. The charts do not indicate, for example, how many trills continue throughout notes or how many have lengthened notes within them. In addition, some short mordents which are immediately followed by an upward-moving melody note give the impression of a turn when listening to the piece, but must be classed as mordents.

The primary observation from the charts at fig. 8.7 is that trills and mordents, whether short or long, form the clear majority of the graces used, in keeping with the findings of the preceding chapters. From the charts, it can be noted which graces are particularly apt for the musical material in certain movements; for example, the appoggiatura is featured quite frequently in the F major concerto's *Allegro* (movement 2), being frequently added to quavers which descend by a third, to create a run of semiquavers. It is to be expected that short mordents and trills are more frequent than their long counterparts in quick movements, since there would be more opportunities for shorter ornaments, but in fact, the frequencies are generally similar. The final movement of the F major concerto (*Presto*), features turns as the most common ornament, after trills and mordents. These are commonly used to decorate beginnings of longer notes, lending emphasis and a sprightly character.

Figure 8.1 - The opening of Handel's organ concerto in Bb (first movement) as published by J. Walsh (1738).



The organ part from Walsh's published version of the organ concertos is a useful source for this comparison.[275] As previously noted, publications are not taken to be the originals from which the organ was pinned, but rather a widely available and reasonably authoritative edition, demonstrative of

[275] Handel, G. F. (1738). *Six Concertos for the Organ and Harpsichord: also for Violins, Hautboys, and other Instruments in 7 Parts ... Opera Quarta.* (London, J. Walsh).

what would perhaps have been available to the maker. The Holland organ version includes all the points at which Walsh indicates ornaments, though the actual graces used deviate to a small degree. For example, in the first movement of the Bb major concerto (see Fig. 8.1) the mordents, indicated in the score, are realised as both the long or short variety (many beginning with lower auxiliary notes), and also as turns.

Trills, the only other type of ornament indicated by Walsh, are likewise largely realised as such (again, both long and short). This is striking considering there is in all likelihood around 50 years between the publication by Walsh and the manufacture of the Holland organ, and no evidence that the pinner was using the Walsh version as his model. It could lend credence to the suggestion that J. C. Smith Jr. (a man with first-hand, intimate knowledge of Handel's playing style) had a hand in the arrangements for the Holland organ (as claimed by Roux, Fuller and Ord-Hume) but it has not been possible to trace any evidence to support this theory.[276] If Smith did have an input, this could provide a link between Walsh's publication and the Holland organ's manufacturer. However, any similarities could also indicate that the ornaments Walsh included were so commonly applied throughout the century, that they were held to be self-evident by the barrel-pinner.

8.2 Ornament placing in passage work

Many more ornaments, of course, are included in the Holland organ than are indicated by Walsh. Fig. 8.2 shows a chart comparing the number of bars containing at least one ornament in each movement of the Holland organ. From this it is clear that, although the movements with a slower speed contain ornaments in every bar, the proportion of bars containing ornaments is not very much lower in quick movements. Even as a very broad comparison (it does not indicate the density of ornaments within the bars) this is evidence that in faster movements there are still a great number of additions to the musical text and many ornaments must therefore occur during fast passage-work. The ornamentation of fast passages was also observed in the version of 'Alla Fama' from the Aylesford MS[277] and is found in fast moving passages in other pieces, for example the section of 'Every Valley Shall Be Exalted' from the Messiah, at Ex. 8.1.

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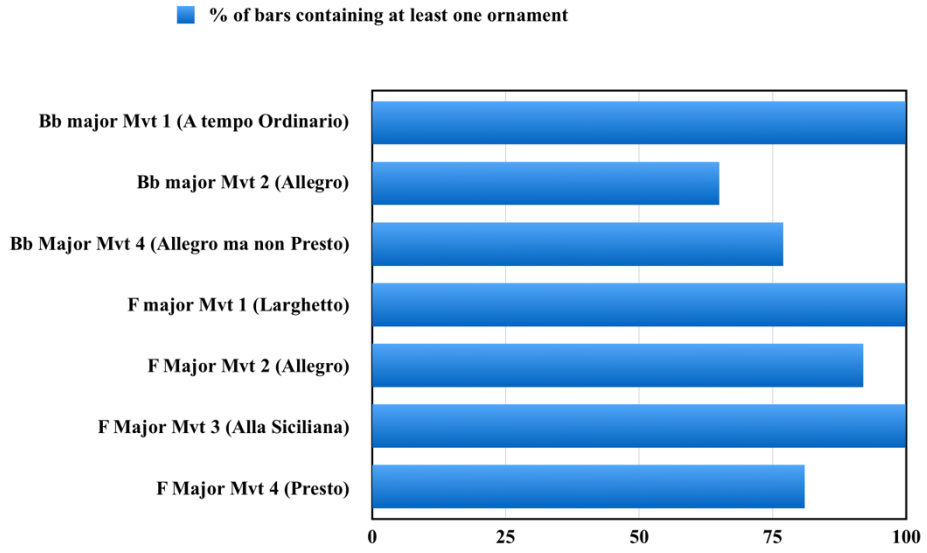
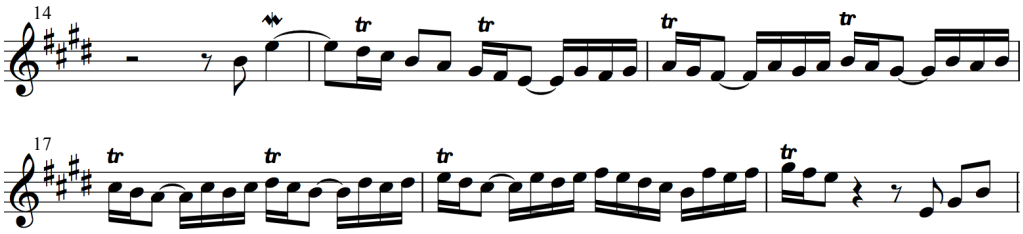
[276] Ord-Hume (1983) 'Ornamentation in Mechanical Music'.
Fuller, 'Mechanical Musical Instruments as a source for Notes Inégales.'.
Roux, O. (1985). *Haendel, Un Enregistrement d'Epoch.* LP. (France, Erato).
[277] See Chapter 3.

Figure 8.2 - Chart showing the percentage of bars containing at least one ornament in the Holland organ versions of Handel's organ concertos in Bb and F majors (as transcribed by Fuller).



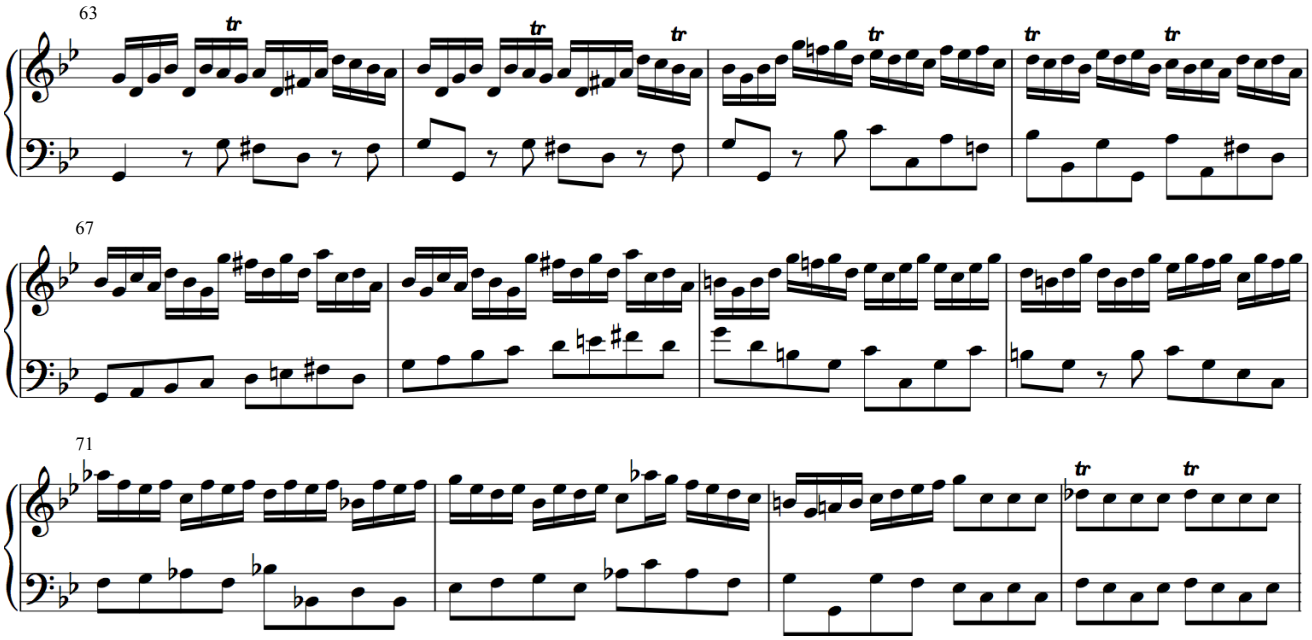
The use of small ornaments during fast passage work is very often in evidence throughout the two organ concertos. Alongside the rest of the evidence from the Holland organ, this demonstrates that, at least for this maker, it was a common practice. However, they are not used uniformly throughout the passages in which they occur: for example, in Ex. 8.1, most of bar 18 is left unadorned, breaking the pattern set up in the preceding bars. Likewise, Ex. 8.2 shows a passage from the second movement of the organ concerto in Bb (upper line only) in which the passage-work is similarly ornamented at the beginning but as it moves on, the ornaments die out.

Example 8.1 - Bars 14-19 of the vocal line to 'Every Valley Shall Be Exalted' from Handel's Messiah as heard in the Holland organ.



The placing of the mordent and short trills both in 'Every Valley' and the organ concerto is not arbitrary, but marks important points in the phrases lending additional expressive intensity. Ornaments are often found on beats one and three of the bar, contributing to a strong sense of metre. In the organ concerto, the ornaments are often placed where the bass line re-enters after a rest. Once the bass line becomes continuous the ornaments first move to the main beats of the bar and then disappear, remaining absent until the musical material changes. This is consistent throughout the movement; where the bass line has gaps, ornaments are very frequently placed on the points of re-entry.

Example 8.2 - Bars 63-74 of the second movement of Handel's Organ Concerto in Bb indicating ornaments heard in the Holland organ version.



The consistent way in which the ornaments are applied shows that, not only is this a common practice, but it also has a clear role in the characterisation of the movements. Quantz does not object to the ornamentation of passage-work, in fact he clearly says that '[i]n the Allegro, as in the Adagio, the plain air must be embellished and made more agreeable by appoggiaturas, and by the other little essential graces'.[278] He also advises that 'In gay musical ideas the shakes must be played happily and quickly. [They] impart greater liveliness and shimmer to the passage-work. Yet you must not abuse them if you would not cause distaste'.[279] Trills should be used, he says when the passages are descending and mordents when the notes ascend. This seems quite generalised but is related to the advice quoted in chapter 7 from the Purcell/Walsh publication,[280] and indeed, it seems to be the general practice throughout the organ's contents, as can be seen in Exs. 8.1 and 8.2.[281] There are of course exceptions - the style is certainly not formulaic - but this does seem to be the guiding principle.

8.3 Opening/final note ornaments

An examination of the three slower movements reveals how frequently these 'essential graces' were also used in more sedate musical material. The chart at fig. 8.2 shows that there are ornaments in every bar but this figure somewhat belies the true frequency with which they are employed. These movements, 'A Tempo Ordinario', in the Bb major concerto and 'Larghetto' and 'Alla

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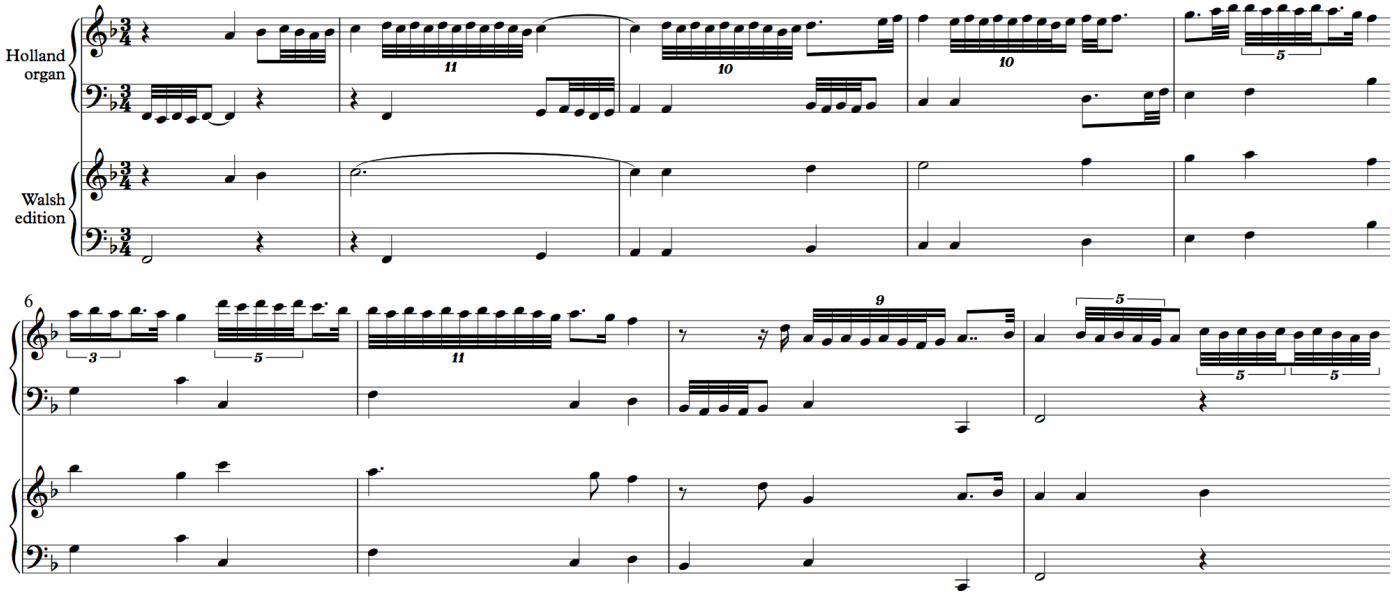
[278] Quantz, *On Playing the Flute,* p. 134.
[279] ibid. p. 132.
[280] Purcell, *A Choice Collection of Lessons for the Harpsichord or Spinnet*.
[281] The full recording of the Holland organ's contents is included as Appendix D.

Siciliana' in the F major concerto, not only have ornaments in every bar, but on almost every beat. In the sprightliest of these movements, the 'A Tempo Ordinario' in the Bb major concerto, only 14/60 crotchet beats (23%) do not contain ornaments. In the 'Larghetto' the number is only 10/132 crotchet beats (8%) and in the 'Alla Siciliana' there are only two unornamented dotted crotchet beats, giving a proportion 2/52 (4%). Almost all of these additions are graces, as has been previously found, with a few points of melodic alteration, which will be addressed later.

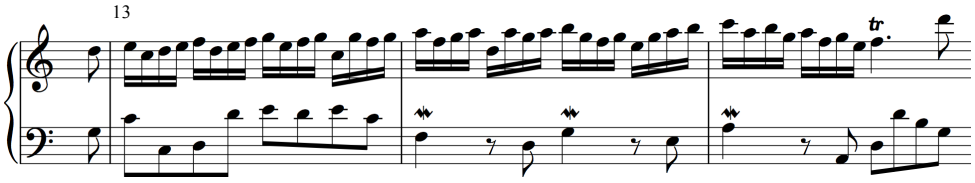
Even disregarding melodic alteration, there are some interesting quirks of ornamentation style found in the Holland organ. The only two real slow movements occur in the F major organ concerto: the third movement of the Bb major concerto is omitted in the Holland organ (possibly because of limited barrel-space). The opening of the F major concerto has two important ornaments in the very first two bars. The first is a downwards mordent on the bass note which begins the piece and the upper line does not begin until beat two so this demonstrates two things: firstly, that it is possible, indeed desirable to ornament the first note of a piece of music; and secondly, that it is perfectly possible to ornament the bass line.[282] Ornamentation of opening notes has been seen widely throughout the Holland organ; indeed throughout the Clay clock and the Holland organ versions of the minuet from *Ariadne* almost all opening and closing notes of phrases had an ornament of some kind.[283]

Example 8.3 - Bars 1-9 of Handel's organ concerto in F major, 1st movement ('Larghetto') as found in the Holland organ and Walsh edition (N.B. The ornaments here have been notated in full unlike the surrounding examples, so as to illustrate the interplay between melody and bass line ornamentation).



[282] This also occurs at the opening of the second movement of the Bb major organ concerto.
[283] See Chapter 5, Ex. 5.19.

Example 8.4 - Bars 13-15 of Handel's organ concerto in F major, 2nd movement ('Allegro') with ornaments marked as heard in the Holland organ.



Similarly, at the opening of nearly every movement in the organ concertos, there is an ornament on the first down-beat. The only exception to this is the opening to the fourth movement of the Bb major concerto which begins with three triplet quavers which are slurred. Despite Tosi's distaste for the practice of decorating opening notes, then, it seems to have been considered desirable by some.[284] The final notes of phrases are even more often ornamented than those at the openings, and there is almost invariably an ornament on the final note of movements, carrying implications for phrase endings and the use of ritardando, which will be discussed later in this chapter.

8.4 Ornamentation of the bass line and inner parts

The opening note of the F major concerto also raises the question of ornamentation in the bass line. This occurs much less frequently than in the melody but has been noted in earlier chapters (e.g. the linking ornaments in the bass line of 'Rule Britannia')[285] and here appears at more regular points, where the musical material permits it. In the first movement of the F major concerto the bass part is often melodic, in imitation with the upper line and the graces frequently echo those heard in the other voice. It is very clear, however, that the ornaments are fitted around those in the upper line, so that the two parts never ornament at precisely the same time, even if they frequently follow each other closely. This can be seen in Ex. 8.3; the ornaments occur at moments (however brief) where the melody line is relatively static. Later in the movement they again seem to link phrases together, or decorate moments where the upper voice remains plain. In the second movement ('Allegro') of the F major concerto, a slightly different use of bass line ornamentation is encountered, when the melody line is moving in semiquaver passages. There are no ornaments added to the passage work in this case, but the bass adds them on some first and third beats, punctuating the texture when it is moving in a slower harmonic rhythm. This is comparable to the use of ornaments in the upper passage work where the bass is used more sparely (see Ex. 8.2). Graces appear to be acceptable in either the melody or bass part during passage-work, but only when the texture is sparser. Once the bass becomes busier, in this case moving on every quaver, the ornaments cease (see Ex. 8.4).

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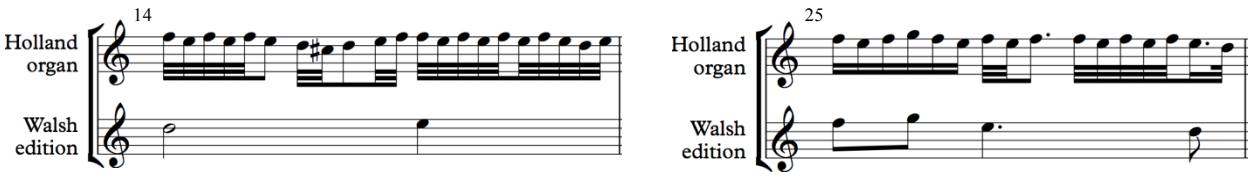
[284] See Chapter 3, section 3.2.
[285] See Chapter 6, Ex. 6.4.

There are also a few points at which the inner voice is ornamented; these are infrequent and can generally be classified as either short linking ornaments (again placed to avoid interfering with the upper or bass lines), or decorations of final notes of slow movements (seen in Ex. 8.9). So the pinner clearly had access to knowledge of how to apply ornaments in order to achieve a tasteful and expressive performance, in both slow and fast-moving passages, to the melody, bass and even to the inner lines.

8.5 Unusual and hybrid ornaments

The second bar of the opening movement of the F major concerto demonstrates another interesting ornament placing: the trilled C in bar two of the melody line (see Ex. 8.3). The Walsh edition has a C held for four beats filling bar two and the first crotchet of bar three. In the Holland organ, this is realised as a held main note (C) for one crotchet, followed by one crotchet entirely taken up with a trill and its termination, which then proceeds to hold the main note again for two beats, under which the bass adds a turn. This trill decorates neither the beginning nor the end of the note on which it is placed, but only its mid-section. The pattern is repeated in the next phrase, which begins with the same musical material. The use of long upper notes to begin trills is the exception rather than the rule in the Holland organ, but a long main note beginning a trill is even rarer. It is not without precedent, however; another example is found in the Clay clock version of the minuet from *Ariadne.*[286]

Example 8.5 - Bars 14 and 25 of Handel's F major Organ Concerto, 1st mvt. (Larghetto) as heard in the Holland organ, and compared to the Walsh edition.

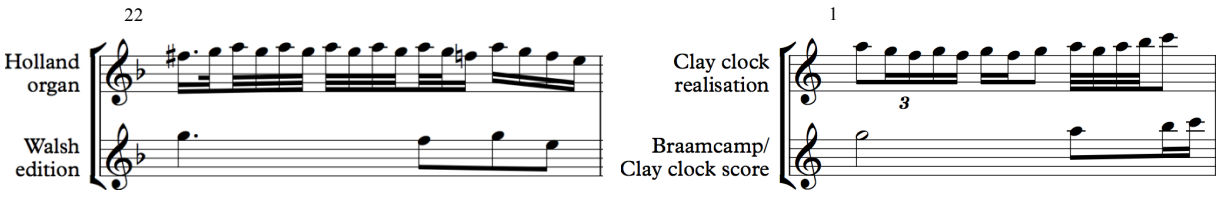


Another uncommon ornament is a long upper note preceding a trill or other ornament, which is itself ornamented. Ex. 8.5 shows two examples of this phenomenon. Bar 14 beats 1-2 of the first movement of the F major concerto shows a minim D which has an added upper long appoggiatura E (worth one whole beat) which is ornamented with a long trill before resolving on the D. The D is then also decorated with a short mordent, which is then followed by an upwards slide leading to the E on beat 3 (also ornamented). Bar 25 beats 2-3 of the same movement show a dotted crotchet E (in fact it is over-dotted) which has an added upper appoggiatura F (worth one crotchet) which is ornamented

[286] *Ariadne* Minuet Comparison Score (see Chapter 5, Ex. 5.19), bar 10.

with a short mordent. This is then followed by an upper-note trill on the main E. Geminiani provides examples of this in his ornament examples so it is not unprecedented, but it is found more rarely, even in Geminiani's own work.[287] This type of 'ornamented ornament' was also observed in the Holland organ's version of the minuet from *Ariadne* examined in chapter 5.[288] The over-dotted realisation of the written rhythm is also found in the minuet, and seems to be a common occurrence throughout the mechanical sources.

Example 8.6 - Bar 22 of Handel's organ concerto in F major as found the Holland organ and Walsh edition and bar 1 of the Minuet from the Overture to Handel's Ariadne as found in the Braamcamp Score and Clay clock.



Continuing with anomalous ornaments, Ex. 8.6 shows examples of notes which trill to the upper note whilst being preceded by a lower appoggiatura or vice versa. These could in fact be a conjunction of a slide upwards at the beginning of the trill and a slide downwards onto the F halfway through beat two, although the lengthened opening note implies an appoggiatura and slides usually begin a third above or below the main written note. These figurations are rare but striking, their hybrid nature lending the flavour of live performance, and avoiding the rigidity that might be expected from a mechanical rendition. They demonstrate the flexibility and imagination of the arranger, and the effort invested to convey the unpredictability of live music. They also provide important examples for current performers, demonstrating the flexible use of ornamentation practices in the eighteenth century.

It appears, therefore, that the same types of ornament found in the shorter pieces examined earlier are found in similar proportions in the organ concertos. Again, trills occasionally begin with a long auxiliary note but this is the exception, and most trills and mordents begin with short opening notes. Short graces are frequent in fast movements, but they are truly everywhere in slower moving music, often conjoined to produce longer or more convoluted ornamentation, which, nevertheless, remains close to the original notation. One thing to note is that, in the fast movements, short ornaments such as mordents often consume the full length of the note on which they occur. So, when placed on a dotted semiquaver which is followed by a lower auxiliary note, a short trill would create an inverted turn-like figure. There are fewer long upper appoggiaturas attached to lingering trills etc.

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[287] Geminiani, *The Art of Playing on the Violin,* p. 26.
[288] *Ariadne* Minuet Comparison Score. (see Chapter 5, Ex. 5.19), bar 64.

in quick movements as well; these are mainly the stuff of slower movements. In both slow and fast tempi, however, the vast majority of ornaments occur on the beat, primarily decorating the articulation and the beginning of the note, though often continuing through the note value, as seen previously.

8.6 Repeated sections and melodic alteration

Fig. 8.7 (at the end of this chapter) contains a chart which refers to the fourth movement of the Bb major concerto, in which the bar labelled 'Other Melodic Alteration' is proportionally larger than for any other movement, or, indeed, any other piece found in the Holland organ or any other mechanical musical instrument from this period. For the most part this is due to a large repeated section, 28 bars long, in which this type of decoration is prevalent. In the rest of the movement melodic alteration is mostly small-scale, briefly filling in intervals with notes from the harmony or passing notes, as seen in other movements and previous pieces. However, this large repeat contains material which departs significantly from the original. Quantz allows for this type of deviation from the melody in an 'Allegro', with the caveat that 'you must not do so before the repetition'.[289]

Whether he was aware of it or not, the barrel-pinner adheres to Quantz's advice, using variation only after the main theme has been heard with just the 'essential graces'.[290] The main variation occurs in bars 21-23 and 26-31, but even in these sections the original melody notes are heard at the beginning of every beat of the bar, filled in with demisemiquavers (see Ex. 8.7).[291] The variation heard here is also carried through the rest of the movement, when similar themes recur.

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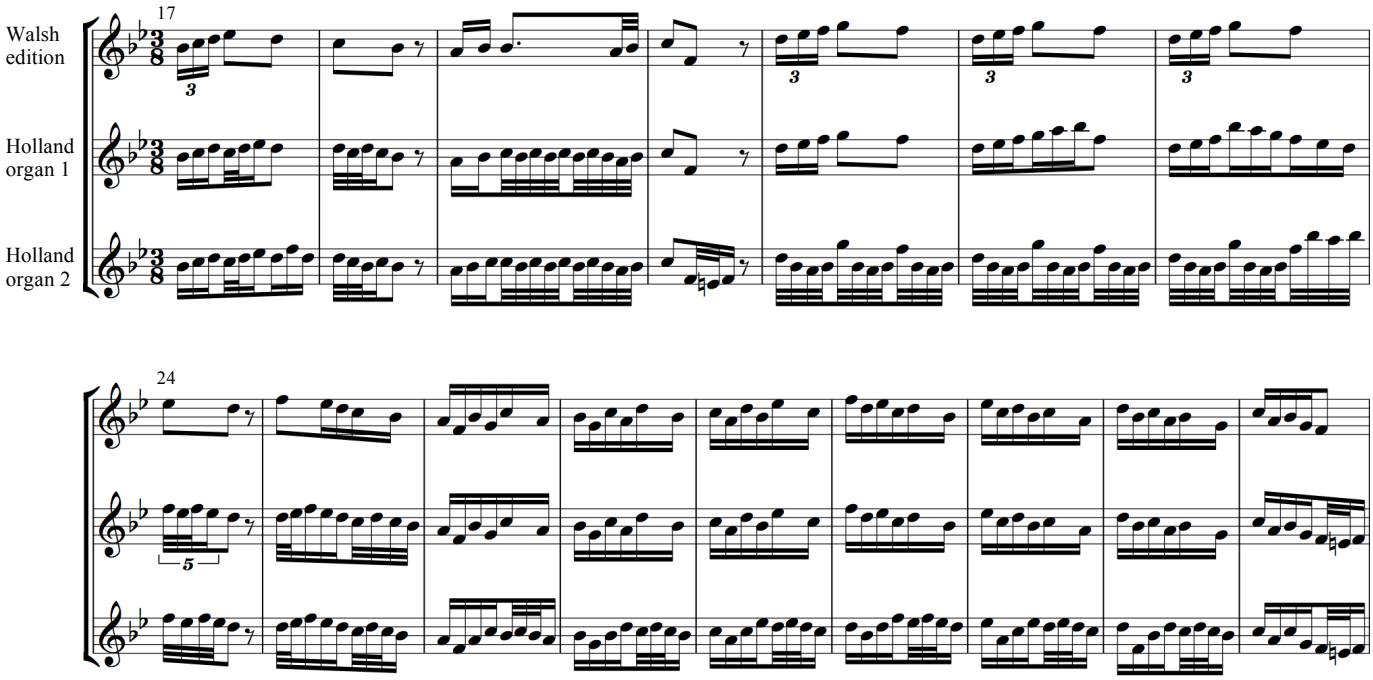
[289] Quantz, *On Playing the Flute,* p. 134.
[290] ibid.
[291] Handel/Fuller, *Two Ornamented Organ Concertos,* pp. 17-20.

Example 8.7 - Bars 17-32 of the fourth movement to Handel's organ concerto in Bb. The upper line shows Walsh's edition; the second line the Holland organ version for the first time; and the lower line the Holland organ version on the repeat (transcribed by D.Fuller).



The other movements of both concertos do contain moments of melodic alteration, but on a smaller scale. Most involve additional notes from the harmony, used either to begin or end short runs or arpeggios, which fill in an interval, or leap, and then return to the main passage. These moments are generally brief and occur only occasionally. In general, this mirrors the use of melodic variation in the rest of the organ, but it is possible to gain an insight into the possibilities available when large repeated sections are encountered. Even so, the departure from the original melody in the variation above is limited, from which it might be concluded either that this pinner was somewhat conservative or that dramatic departures from the melody shape were not the norm.

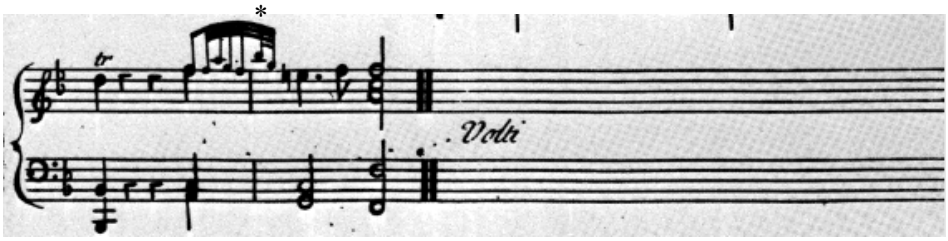
8.7 Cadenzas

Apart from the melodic alteration detailed above, the only real departure from the original musical text is the addition of a cadenza at the end of the first movement of the Bb major concerto. Fig. 8.3 shows a facsimile of the final two bars of the movement as found in a version also published by Walsh in *The Lady's Entertainment; 5th book* which contains a short cadenza not included in his 1738 edition.[292]

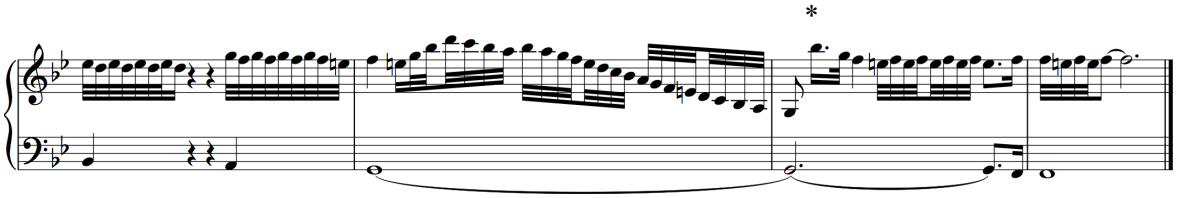
[292] Handel, G. F. (1735). *The Lady's Entertainment: fifth book, being a collection of the most favourite aires from the late operas set for the harpsichord or spinnet, to which is prefix'd the celebrated organ concerto* (London, J. Walsh).

Ex. 8.8 then shows the Holland organ cadenza as transcribed by Fuller.[293] It is much more elaborate and involves the augmentation of the last five beats of the movement, marked 'Adagio', which are expanded to take the time of three bars plus a beat.

Figure 8.3 - Final two bars of Handel's organ concerto in Bb found in 'The Lady's Entertainment: fifth book' with an added cadenza linking the final two bars.



Example 8.8 - The same two bars as in Fig. 8.3 transcribed from the Holland organ with the final bar expanded to accommodate the extended cadenza (transcribed by D. Fuller).



This is one of very few cadenzas found anywhere in the Holland organ (or elsewhere in this type of barrel-organ) and, unlike the cadenza found in 'Water Parted from the Sea' it appears less measured and sounds unhurried.[294] The F crotchet found at the end of the first bar of the melody line in Fig. 8.3 is effectively doubled in the cadenza shown in Ex. 8.8 (as if the trill takes up one beat and the main note is then settled on for one crotchet). Thereafter, an extra four beats of material are added before the cadential trill. The trill then takes up three beats rather than two, and the final minim is extended to a whole bar. The added notes are clearly audible and, when analysed, quite regular, with all fitting into neat divisions of the beat. However, the augmentation of the underlying harmonic rhythm makes the cadenza appear fluid and improvisatory.

The bass crotchet which occurs under the F crotchet described above, which opens the *Adagio* section, is not doubled. This could raise doubts over whether the augmentation really begins on the fourth crotchet of the first bar shown or the first crotchet of the second (the held crotchet F then becoming an upper appoggiatura to the E on which is placed the cadenza). In many notated cadenza examples the bass part often sets its fermata one note after the treble has arrived at the fermata to be embellished, examples of which can be seen in CPE Bach's *Essay.*[295] This adds to the impression of

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[293] Handel/Fuller, *Two Ornamented Organ Concertos*.
[294] as discussed in Chapter 7.
[295] Bach, *Essay on the True Art of playing Keyboard Instruments,* p. 144-146.

freedom, though in fact all the notes, as mentioned earlier, remain quite strictly measured and within the extended bar structure.

The cadenza is obviously much shorter in Fig. 8.3 than in Ex. 8.8, but it is striking that the Bb-G figure (marked with *) occurs in both versions.[296] The Holland organ's cadenza is constructed using an ascending arpeggiated figure followed by a descending scalic passage and concluded by a leap upwards to the figure which leads into the final cadential trill figure. The principal notes used are those of the 7 - #6 chord progression above the bass, with the primary use of notes found in the melody line. This is in keeping with advice and examples from C.P.E. Bach and Quantz on the cadenza, particularly at the 'half cadence'[297]. For example, Quantz states:[298]

> The principal notes must be taken from the chord of the seventh, reckoned from the bass, and consist of a third and a fifth below and a fourth and a sixth above the suspended seventh in the upper part.

8.8 Use of ritardando

The above cadenza is one of the few places in the Holland organ at which the melody is really slowed down at the end of a movement, and even so there is no real perception of the underlying beat being gradually lengthened. An entire section is unilaterally played slower, rather than gradually slowed down as might be expected at the end of a movement. This is indicative of a general lack of the use of ritardando at the end of pieces throughout the organ. There are moments of 'pause', where notes are lengthened, for example in 'The Birks of Endermay' discussed in Chapter 7, section 7.3. This demonstrates that there was no real technical problem with the extending of beats to create a ritardando effect. The lengthening of notes by an exponential amount would be possible with the disc system, though it would complicate the mathematics to work out the total length of the piece (and thus the precise number of beats into which the barrel surface needed to be divided). This may have contributed to the fact that there are no instances of its use, but it seems likely that if it were really considered necessary, a solution could have been found. In the pieces which are pinned cylindrically, it is easy to see why a ritardando might not have been required, as these are intended to repeat; so unless every verse is to slow down, (as must be the intention in 'The Birks of Endermay'), a pinned-in ritardando would be undesirable.[299]

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[296] The two versions realise the bass differently with the Holland organ (and Walsh's *Six Concertos*) version implying a G minor 6/5 harmony, whilst the *Lady's Entertainment* version alters this to a C major 6/4 chord which would lead to obvious differences in the notes of the cadenza so it is interesting that this figuration remains although further conclusions would be tenuous.

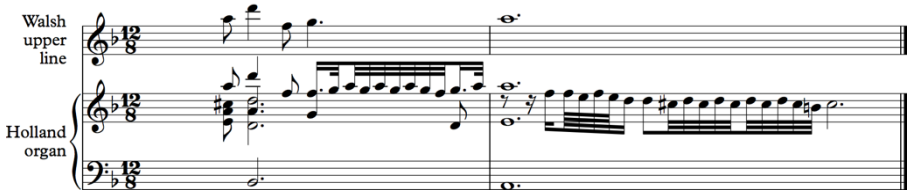
[297] The term 'half cadence' refers to an imperfect cadence resolving to chord V. Both writers agree that by the 1750s its use at the end of movements was declining but they still give advice as to its treatment.
Bach, *Essay on the True Art of playing Keyboard Instruments,* pp. 143-146.
Quantz, *On Playing the Flute,* pp. 179-195.

[298] ibid. p. 193.

[299] NB: This fermata effect does not occur on a final cadence or end of verse but rather marks a climax point near the end of the verse at which a bar is lengthened before the piece resumes its tempo, continuing in tempo until the end of the verse.

Perhaps even in spirally pinned music this is not so surprising, considering the predilection for ornamented final notes, observed earlier. If a movement slows down considerably at the end, then a mordent on the final melody note (the most common ornament in this place) sound awkward and out of place. If these graces are to sound fitting, the piece must still be in tempo, with a distinguishable regular beat. Even the occasional melodic decorations of final notes, like that found in the inner part at the end of the third movement (*Alla Siciliana*) of the F major concerto, have a continual regular beat to which they relate (see Ex. 8.9).

Example 8.9 - Final cadence of the third movement (Alla Siciliana) to Handel's organ concerto in F major, with the melody line as shown by Walsh and the realisation in the Holland Organ (transcribed by D. Fuller)



Generally, there is not any extension of final notes, which performers might employ to create a feeling of finality in a movement. All movements, slow or fast, end strictly in time with no extension of the final note, or preceding ritardando. In pieces pinned spirally there is no repetition to accommodate, and therefore no reason to avoid slowing down, so it can only be concluded that it was not considered necessary.

8.9 Relative *tempi* of movements

As has been previously discussed it is not possible to accurately gauge any absolute tempi from the Holland organ, because it is hand cranked and therefore the tempi are somewhat at the discretion of the operator. However, there are minimum turning speeds below which notes of the organ do not sound efficiently due to the levers releasing air to the pipes too slowly; pitch is not accurate and air escapes without flowing in to the pipes causing a 'wheezing' sound. As discussed in chapter 1, the recording used for this study was made with a constant cranking speed of 77 turns per minute. This is of only slight relevance in the cylindrically pinned barrels since these are pinned in such a way that they must take an entire rotation of the barrel in order to repeat with no gaps between verses. If a piece is slightly longer, therefore, the pins will be closer together (i.e. it will be pinned 'faster') in order to fit on the barrel, possibly necessitating a slower cranking speed than a short piece, in which the pins may be more spaced out. In the shorter pieces, however, a faster turning speed might be required (though all turning speeds must be above the minimum threshold mentioned above). On the spirally pinned barrels, this varying of the cranking speed would not apply, as the pieces would be pinned in such a way that the total piece would fill the barrel, so the spacing would

be determined by the total length of the piece/pieces for that barrel. Thus, although it is not possible to measure absolute speeds, it is possible to measure the relative *tempi* of movements. The *tempi* do fluctuate slightly within the movements. This is interesting in and of itself, since this would be expected from a live performer, who may alter the speed fractionally with phrasing, but not, perhaps, from a machine. The tempi listed here are averages however,[300] with a cranking speed of 77 turns per minute.

Figure 8.4 - Table showing the tempo indications, time signatures and average tempo (beats per minute) of the two organ concertos found in the Holland organ.

Bb major concerto	**Time Signature**	**BPM**	**F major concerto**	**Time Signature**	**BPM**
A tempo ordinario	**C**	♩ = 70	*Larghetto*	**3/4**	♩ = 64
Allegro	**C**	♩ = 101	*Allegro*	**C**	♩ = 97
Adagio e staccato	**C**	N/A	*Alla Siciliana*	**12/8**	♪ = 105
Allegro ma non Presto	**3/8**	♪ = 150	*Presto*	**12/8**	♩ . = 103

If the movements are perceived as being in pairs, first paired with second, and third paired with fourth, then relationships begin emerging. Where the first and second share a time division (beat in crotchets/quavers etc.) the faster movement's tempo is roughly 1.5 times that of the slower movement. Where the second and third share a time division (only applicable in the F major concerto unfortunately since the third movement is omitted in the Bb major concerto) the relationship is roughly 1:3 with the quaver beat of the *Alla Siciliana* becoming the dotted crotchet beat of the *Presto*. Of course, the note values are often smaller in the quicker movements as well but there is clearly a relationship between the fundamental tempi of the paired movements.

[300] Average tempi ascertained using www.tempotap.com.

Figure 8.5 - Graph showing the BPM of each movement of Handel's organ concerto in Bb as performed by the Holland organ and recorded by selected players.

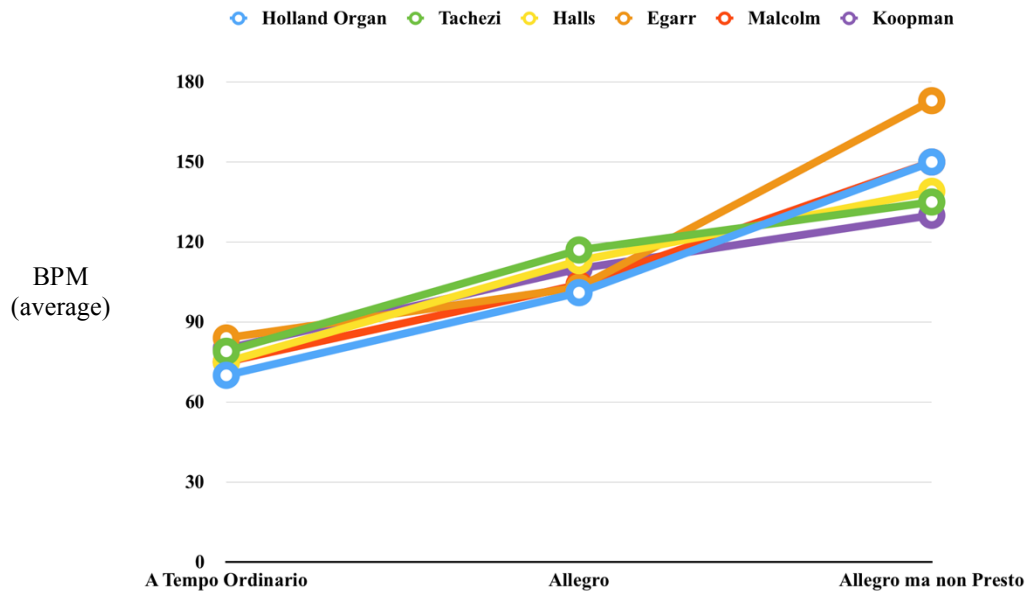
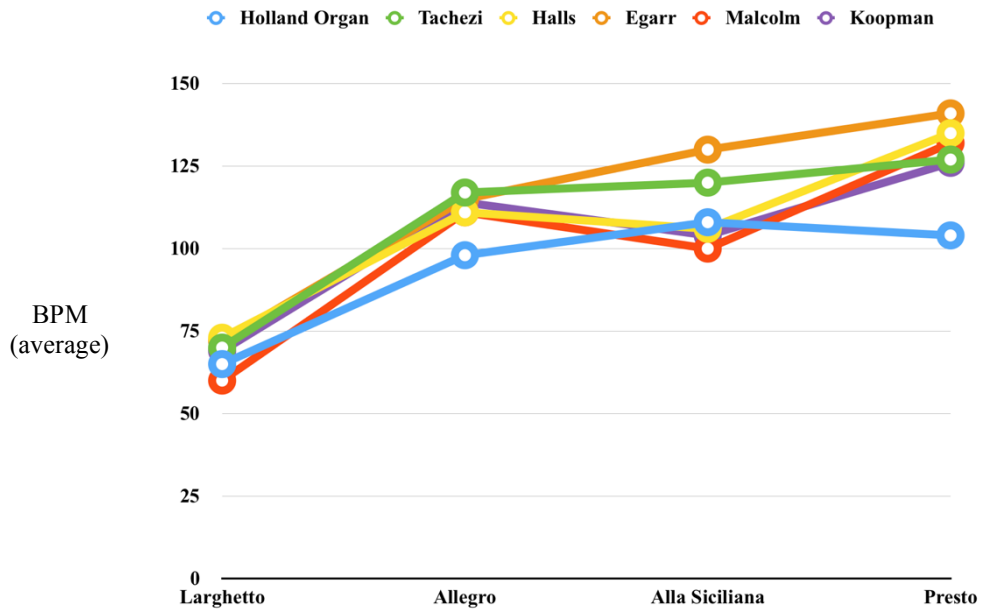


Figure 8.6 - Graph showing the BPM of each movement of Handel's organ concerto in F as performed by the Holland organ and recorded by selected players.



This is an interesting observation, especially as compared to modern practices. The graphs in Figs. 8.5 and 8.6 show the tempi found in some well-known recordings of these pieces, some of which correspond to the relationships found in Fig. 8.4, and some of which do not.

From these graphs it is possible to gauge any correlations between the tempi chosen by performers and those of the Holland organ. Perhaps the closest correlation is in the Bb major concerto between the Holland organ and the recording of George Malcolm (with the Academy of St Martin in

the Fields, Sir Neville Marriner conducting, and Christopher Hogwood as continuo). Indeed, it seems likely that the organist had heard the Holland organ versions of these pieces. The ornaments in the F major *Alla Siciliana* are extremely similar and there was certainly a recording of the pieces in circulation when the recording was made in 1973.[301] In the F major concerto, few performers seem to show a really close correlation, most taking the fast movements faster in relation to the slower movements, particularly in the case of the two movements in 12/8 which are so closely related in the Holland organ. The Tachezi/Harnoncourt recording is the closest in this respect with the fourth movement being only slightly faster than the third (in the Holland organ it is fractionally slower). However, it should be stressed that with such a small sample of music in the Holland organ on which to base these measurements of relative tempo, it is not possible to construe definite 'rules', only to observe what happens in these particular cases.

8.10 Conclusions

These two pieces, around 16 mins of music, contain a great deal of information both about the performance style to which the maker of, and listeners to, the organ, were accustomed. The style observed in earlier chapters is expanded into more developed works and it is possible to observe how it adapts to the various characters found therein. These are the only stand-alone multi-movement pieces found in the Holland organ, indeed in all of the English mechanical sources examined, with the exception of the overture from Thomas Arne's *Artaxerxes* (Barrel 5). All other pieces are stand-alone songs, dances or extracts intended to be heard individually or as part of a musical miscellany performance. It is now possible to understand therefore how the various styles of ornamentation encountered up to this point fitted together and how different styles work in movements with different characters. This confirms findings from earlier chapters, that trills and mordents are the most common ornaments, split almost equally between those going to the upper note and those going to the lower note, with a small majority tending towards the upper. There are a few long appoggiaturas which precede trills but these are very much in the minority and only occur in slow movements. There is also melodic alteration, but it is used sparingly; most decoration falls into the category of 'essential graces'. There are occasional cadenzas, in *Adagio* sections, and other more extended melodic alteration used in repeats of previously heard material, but even when material is heard for the first time, it is never without numerous 'essential graces'. The level of small-scale ornamentation is high throughout, in keeping with what has been seen previously, though it is perhaps surprising in longer works, where one might imagine the audience tiring of the intricacy. However, it seems that these

[301] David Munrow on his recording *The Amorous Flute* also used the Holland organ as the inspiration for Handel's Sonata for Recorder in F, HWV 369 (the same piece as the organ concerto).

ornaments really were considered to be an essential part of the articulation and expression, rather than optional decorations.

The absence of ritardando is striking, particularly compared to the many recordings made in the last 40 years all of which employ large ritardandos at the end of many movements, yet this ornamentation style does not lend itself to the gradual slowing down of tempo; so if it was in common usage they may not have been considered so fitting as they are now.

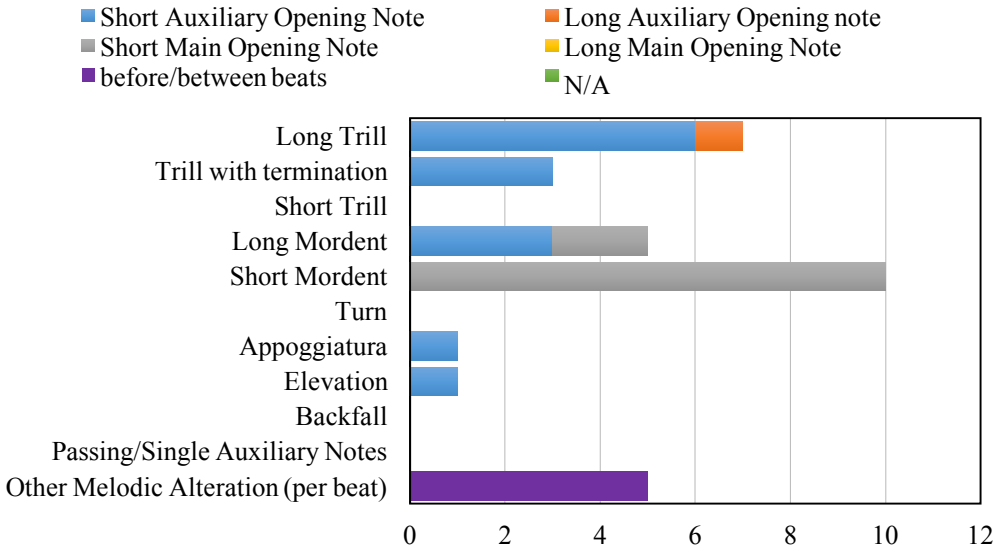
There are one or two areas which might occur to a listener but which have not been addressed here. Firstly, the question of rhythmic assimilation between upper and lower parts. There is an instance in which a dotted crotchet and quaver figure in the Walsh edition is assimilated with a dotted crotchet followed by a semiquaver rest and then a semiquaver (essentially a dotted figure assimilated with an over-dotted figure). However, this only occurs once (in the opening bar of the Bb major concerto) and throughout the rest of the movement the rhythms are similar. Furthermore, as has previously been stated there is no direct connection between the Walsh edition and the barrel-pinner so it is not possible to draw any specific conclusions from this other than noting its presence. Similarly, it is not possible to draw any major conclusions from an apparent de-synchronisation of melody and bass which occurs during some semiquaver passage-work in the second movement of the Bb major concerto. It is true that, in the remainder of the pieces, both voices sound well together. However, with the methodology employed here, assessing the pieces aurally rather than measuring the pinning (and even this would not be conclusive), it is not possible to tell if this is deliberate. A small miscalculation, damage to the pins, barrel warping, or an ageing mechanism which momentarily fails to pass air through longer and shorter pipes with precisely equal velocity could result in such an effect. It is possible that this de-synchronisation is deliberate, but it is not employed elsewhere in the organ or in other eighteenth-century barrel-organs.

It is important to remember, at this point, that all the ornaments used in the Holland organ (and Clay clocks), and their placing, are described in treatises regarding performance throughout the late seventeenth and eighteenth centuries. Therefore, there is nothing in this style which ostensibly disagrees with what is already known of historical performance style. If there are aspects of the style which are surprising to a historical performer therefore, it must be considered that there may be ways in which twentieth and twenty-first-century practitioners have misunderstood or misinterpreted written texts and there has been an underestimation of the extent to which eighteenth-century taste allowed for intricate filigree decoration. Similarly, the applicability of other techniques such as the ritardando may have been overestimated, and these may, in fact, have been used only sparingly.

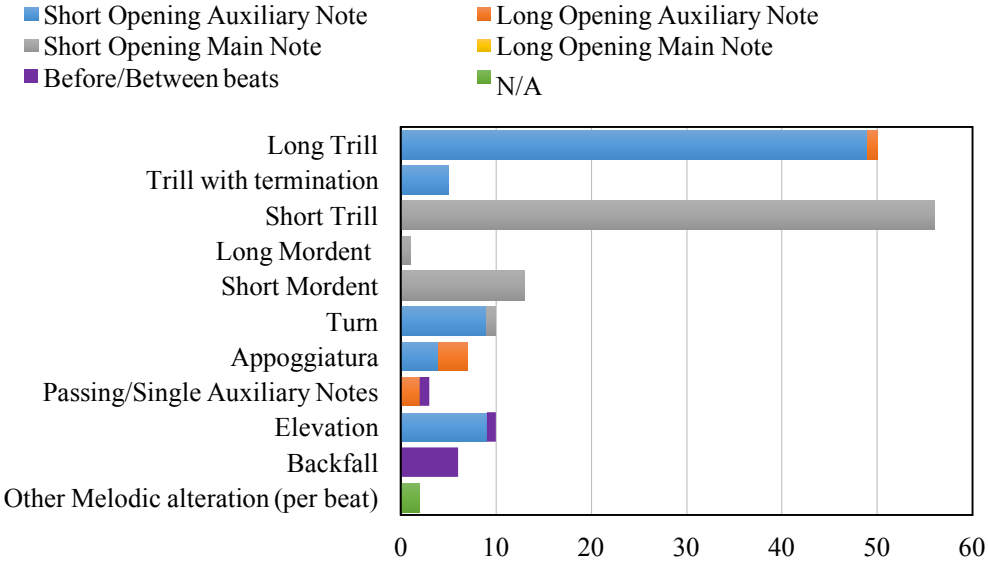
Figure 8.7 - Charts showing the types and distribution of ornaments in two organ concertos

G F Handel Organ Concerto in Bb

First movement: *A Tempo Ordinario*
15 bars (60 beats) - including augmented Adagio bar at end.
Total of 34 ornaments (14/60 beats are unornamented)

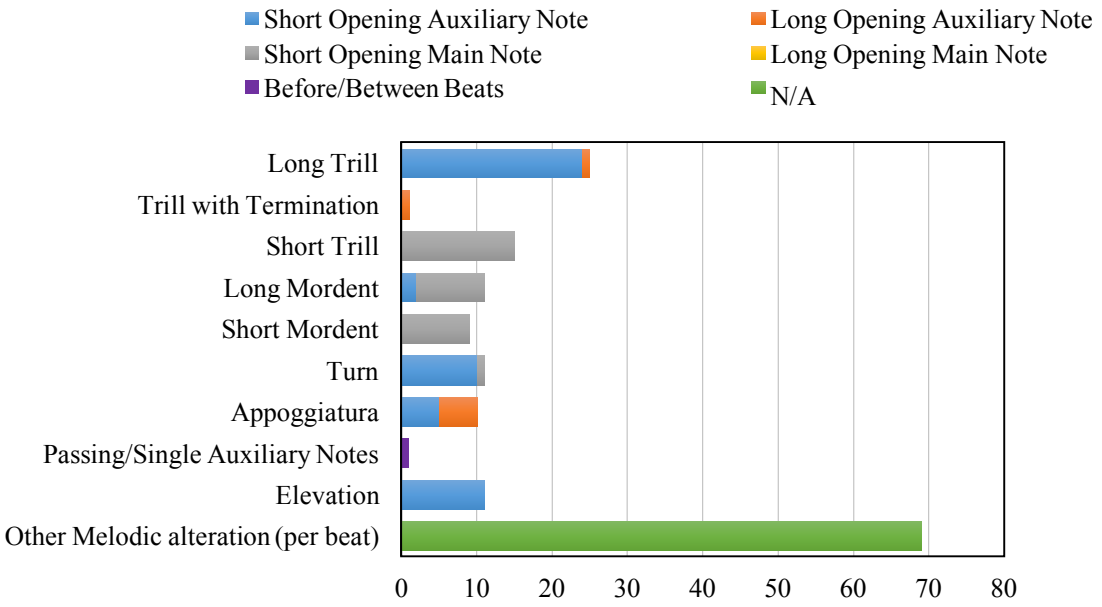


Second movement: *Allegro*
120 bars total - 42 bars are unornamented (35%)
163 ornaments



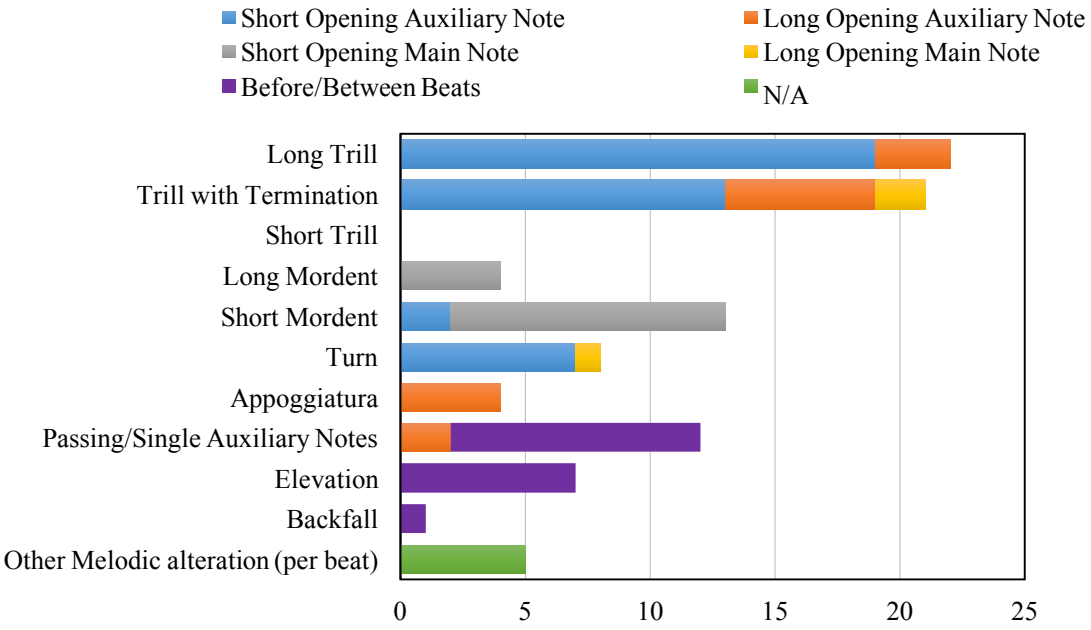
Third movement: *Adagio e staccato* - omitted in source

Fourth movement: *Allegro ma non presto*
128 bars (including 28 bar repeated section)
29 bars unornamented (23%)

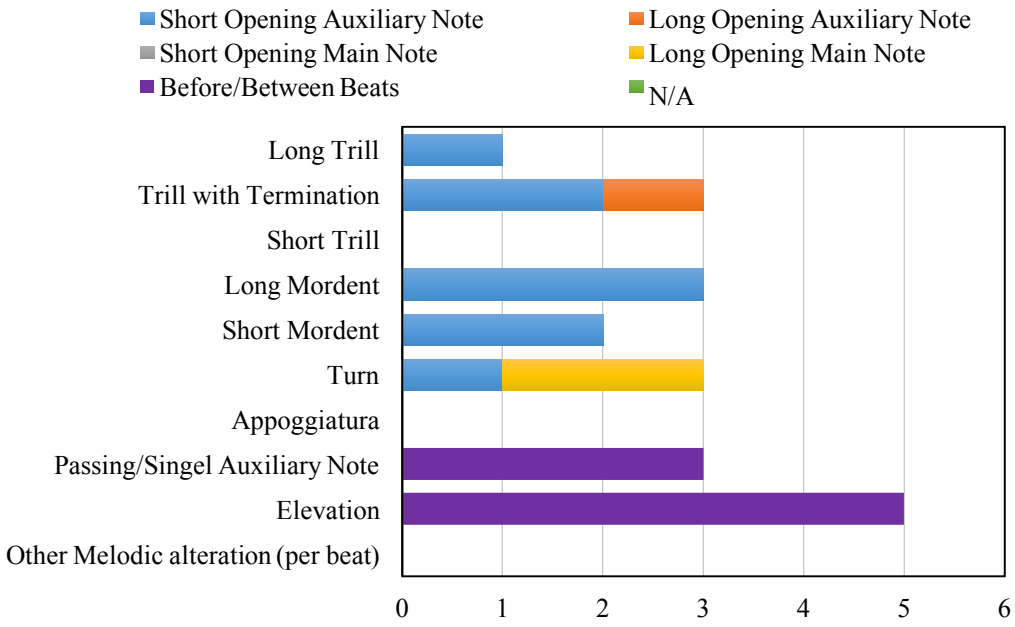


G F Handel Organ Concerto in F Major

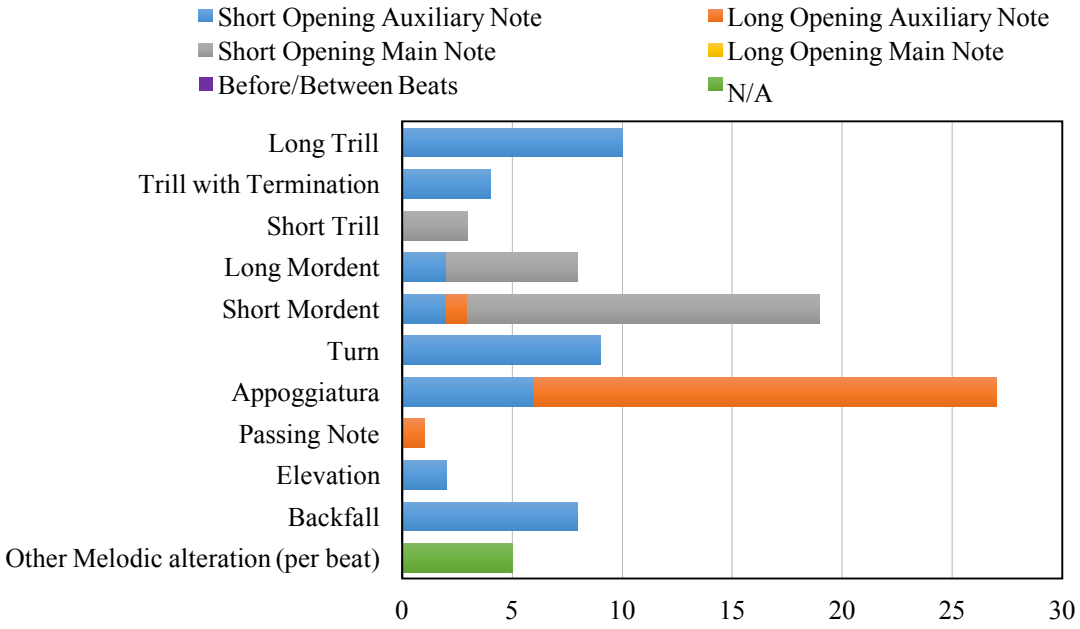
First movement: *Larghetto* (melody line only)
44 bars (10 beats unornamented including inner and bass parts - see below)
97 ornaments



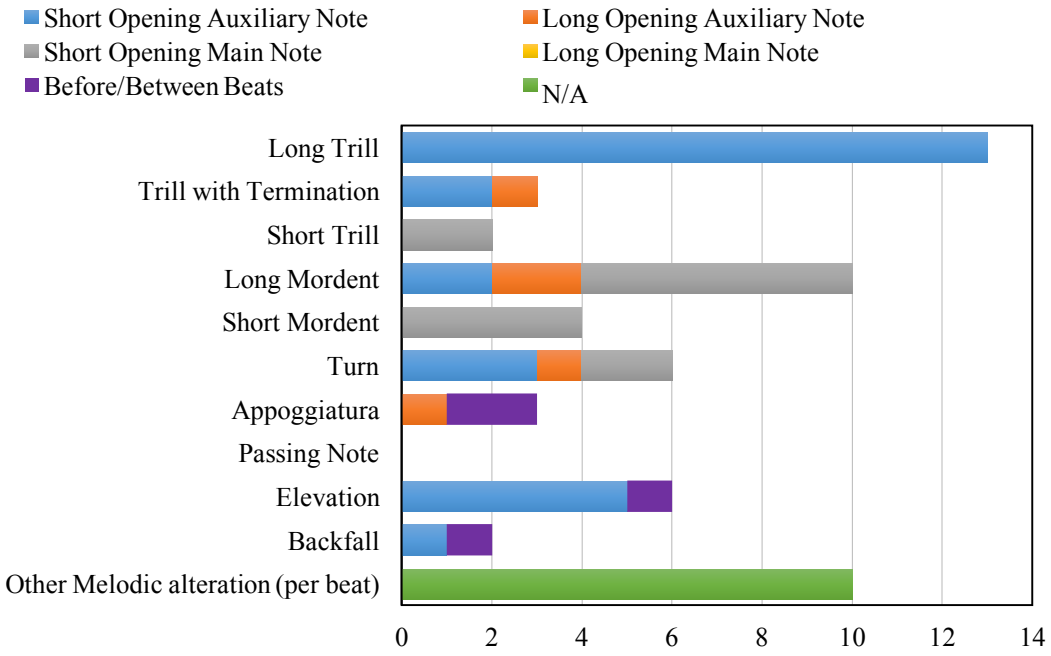
First movement *Larghetto* (bass and inner parts)
20 ornaments



Second movement: *Allegro*
61 bars (including 2x 14 bar repeats)
96 ornaments in melody line*
***Bass part contains 18 downwards mordents and 1 lower note trill**

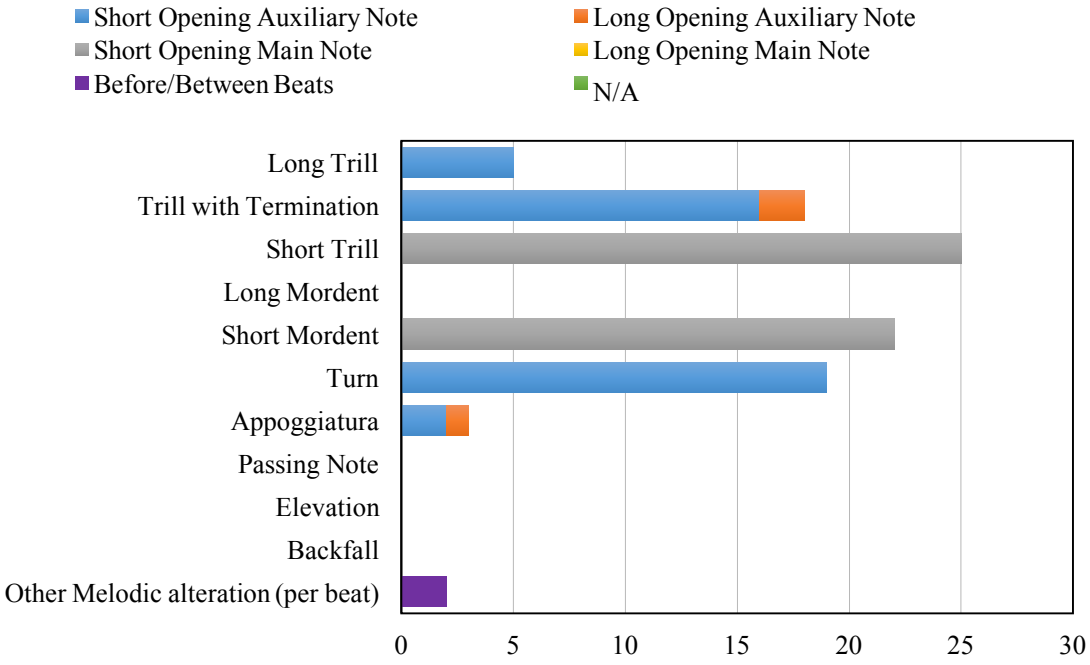


Third movement: *Alla Siciliana*
13 bars
59 ornaments in melody line**



**
Bass has 2 upwards trills, 1 downwards trill, 4 downwards mordents, 2 connecting appoggiaturas (10)
Inner part has 1 upwards trill, 1 upwards trill with turn and long upper appoggiatura (2)

Fourth movement: *Presto*
68 bars (including 12 bar repeat and 22 bar repeat)
104 ornaments



Chapter 9: Conclusions

Following the examination of the background, composer connections and style of the mechanical musical instruments of eighteenth-century England, it is now possible to draw together the threads of the questions posed in Chapter 1. Late eighteenth-century England embraced both a vogue for innovation and a conservatism, arising out of historical nostalgia and mistrust of large-scale change. The Holland organ, and others like it, seem to embody both; the style is probably quite conservative (in that it is representative of a slightly dated practice, rather than that it is reserved or understated) but the machines represent the most up-to-date technology. Similarly, the music is heavily biased towards Handel, and even contains earlier music (up to 200 years old), but there are also songs which may have been published only months before the organ was built, representing the newest 'hits'. This conservatism of style, together with the cult status in which Handel and his music were beginning to acheive suggests that the performance style heard during his lifetime may have endured with only minor mutations, at least until the turn of the nineteenth century. Of course, the same style is found in, and applicable to, the music of other composers of a similar time and location, and indeed the similarities to other styles outside the boundaries of this study may mean the findings regarding the mechanical musical instruments included here could have much wider consequences.

9.1 Whose style is it? Composer connections

Whether or not Handel's amanuensis and friend, J.C. Smith the younger, was involved in the arrangements for the Holland organ remains unproven. He certainly showed an interest in mechanical musical instrument production (as discussed in Chapter 2), and it is therefore possible that he was a conduit of Handel's performance style in that industry during the latter half of the eighteenth century. The evidence from Chapter 3 for the involvement of Handel in the production of arrangements for Clay's organ clocks is compelling, with known ornamentation in Handel's handwriting showing remarkably similar musical features to the arrangements made for Clay's clocks which are found in the Aylesford collection. That Handel wrote specific pieces for musical clocks further demonstrates his interest.[302] Therefore, the alteration of the original musical line in these arrangements is an important source for Handelian embellishment. Only sufficient pieces to prove the link between composer and manufacturer, and to establish the latter’s fidelity to the former, have been selected for analysis in this thesis so there is further work to be undertaken comparing the rest of the arrangements to their originals (where these exist) and examining the composer's deviations from the original line. This could provide particularly interesting material to singers interested in varying the vocal line of Handel arias.

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[302]See Chapter 3 section 3.1.

The evidence from Chapter 4 supports the view that the style found in the Clay clocks is one which remains close to Handel's influence. This chapter shows that there was little extra ornamentation added by Clay's craftsmen to the arrangements found in the Aylesford collection. The moment of deviation from the Aylesford score in 'Dell'onda i fieri moti', however, suggests that there may have been some re-drafting of the arrangements at some point, so it is not possible to state definitively that the Aylesford arrangements are precisely those used by Clay to produce the Windsor Castle clock, but the similarities are enough to convincingly prove that the arrangements used for the clock were extremely closely linked. The realisation of the ornaments is not indicated in the arrangements however, so clearly their mode of realisation was commonly understood by both composer and craftsmen.

9.2 What style is it?

Over the course of the previous chapters, some defining characteristics of the style heard in the organs have become apparent, the primary one being that ornaments are extremely frequent. These are generally short graces but there are also significant points where the melody is altered for decoration. The following points summarise the findings of these chapters (particularly the charts in Chapters 5 and 8) regarding the most common graces, their realisation, function, and placing.

What are the ornaments used?

- Trills are the most common type of ornament used and most begin on the upper note. However, a significant number, particularly in the Clay clocks (the earlier of the two sources) begin on the main note. The main note is also common for short trills in the Holland organ. Often in the Clay clocks the upper opening note is indicated with a grace-note in the score.
- Mordents of both the long and the short variety are the second most common ornaments, and occur nearly as frequently as trills; these can also begin either on the main note or the auxiliary.
- Trills often end with a turn (or 'termination'). This is more common in the Holland organ than in Clay's clocks and may be evidence of a small mutation in performance style during the latter half of the eighteenth century. In the Holland organ this ornament occurs very often at cadences.
- *Very* few trills begin with a long auxiliary note; these are usually short. They are therefore ordinary *shakes* or *tremblements* rather than examples of the *plain-note-and-shake* or *tremblement appuyé*, which are rarely heard.
- Appoggiaturas (not attached to any other ornament) are often also performed short. Longer appoggiaturas do occur more frequently in music composed in the second half of the eighteenth century demonstrating another stylistic development.

- Trills in the Holland organ often contain lengthened notes near to the end of the oscillations. This always occurs on the main notated note and serves to orientate the ear and maintain clarity in the harmony.
- Cadenzas occur only very occasionally, and are not generally long (usually 2-3 beats). Cadenza-like figures are sometimes used as flourishes to link or introduce new phrases; this generally happens in later repertoire.

Where are they placed?

- Some sort of ornamentation occurs in almost every bar, even in faster pieces (usually over 60% in faster pieces and over 80% in slower pieces). In the slow movements of the Holland organ concertos every bar is ornamented with only a few beats left plain.
- Ornaments are found throughout pieces on all beats of the bar with varying functions (see below), very fast pieces generally have fewer but they are by no means undecorated and have melodic alterations as well as graces. Slow movements are heavily ornamented sometimes with multiple ornaments in the space of a single beat.
- Occasionally ornaments (such as appoggiaturas) are themselves ornamented.
- Ornaments of some kind occur frequently on opening and final notes. (final notes of movements almost always use the lower note trill or lower mordent where an ornament is added).
- When ornaments are added to conjunct passages, in general mordents are added to rising figures, and trills to descending figures, in keeping with advice from many writers of the period.
- Ornaments are often found within fast passage-work and short trills and mordents are most common here. There is also occasionally some melodic alteration in fast passages, particularly if the material occurs more than once.
- Most ornaments occur on the beat, there are odd exceptions, however, so it would seem that some pre-beat decoration was occasionally acceptable.
- The majority of ornaments occur on the melody line, but they are also found in the bass. Bass-line and inner-part ornaments generally (but not exclusively) occur when the upper voice is relatively static. However, melody line ornaments occur when the bass line is moving quickly.
- Ornaments (in both bass and melody line) often highlight points of important harmonic rhythm.
- Sequences generally have the same level of ornamentation throughout, though the actual ornaments themselves sometimes change.

- Repeated phrases, such as A sections of Da Capo arias are often decorated the first time they are heard, and on their reprise. The ornaments themselves do vary slightly, but the level of decoration is similar. However, in the recurring section of the Bb major organ concerto, melodic decoration is greatly increased the second time the phrase is heard.

What is their function?

- Graces generally have either an 'intensifying' or 'connective' function: these terms are used by Neumann to describe the uses of the turn, but are actually applicable to almost all of these small-scale ornaments.[303]
- Most ornaments are decorations of the articulation at the start of a note and depending on the realisation, and the context, these can create various *affects*. Quick ornaments placed on strong beats add a sprightly character, also accenting the notes on which they are placed. Often moments of melodic interest or intensity or points of interesting harmonic rhythm are highlighted using articulatory ornamentation.
- Ornaments which are placed on off-beats or the middle/end of beats can create a sense of lightness and diminuendo.
- Ornaments which begin with longer opening notes serve to intensify emotion, and decorate the middle of the note on which they are placed, sometimes also decorating the end, linking into the following note.
- Ornaments are often used to link melodic notes together, providing a sense of direction and intensity moving through a phrase. They can also be used to link phrases together (especially in the bass part).
- Long appoggiaturas (which take up half the value of the note on which they are placed) are found in both faster and slower movements, often functioning as accented passing notes which fill in intervals of a third.

Other observations

- Dotted rhythms are often slightly over-dotted, particularly if the dotted note has an ornament placed on it.
- Back dotted rhythms are almost always over-dotted.
- Ritardando is used very rarely, if at all. There is some tempo flexibility within longer movements, but gradual slowing down at the end is absent. There are points at which a final bar, or phrase, is dramatically slowed (e.g. the Adagio at the end of the F major organ

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[303] Neumann, *Ornamentation,* p. 465.

concerto), but this generally happens instantaneously, rather than gradually, and is usually measured, being an exact multiple of the previous tempo.

- Final notes are not generally lengthened.
- From the limited data of the two multi-movement pieces, it appears that the tempi of paired movements can be related, with ratios in this case, approximating 2:3 or 1:3.
- Fermatas are used very occasionally and, again are usually measured, generally doubling the length of the note on which they are placed.
- There is evidence that the Holland organ and others like it were intended for use as accompanying instruments.[304] The ornamentation would therefore have caused a heterophonic effect.

9.3 Does the style have precedents elsewhere?

The graces which appear in the Clay clocks and Holland organ (along with other mechanical sources) are ubiquitous, appearing in treatises and other sources on performance style from across Europe, beginning in the seventeenth century and extending into the nineteenth. Their frequency does seem to fit closely with that described in English instrumental tutors of the late seventeenth century, and sheds new light on how literally the instructions given in Purcell's (and others') treatises on the interpretation and placing of graces, should be taken. The ornament frequency which would have resulted from following these 'rules for gracing' is certainly borne out by the mechanical performances discussed herein, and the fact that this style of ornamentation is found in mechanical organs spanning the eighteenth century shows these treatises to have much wider-reaching relevance for music composed in the years after their publication. The frequency of ornaments is also similar to those found, for example, in Quantz's description of the decoration of common intervals, although his ornaments often move beyond the use of simple graces, and into melodic alteration, which is less common in mechanical sources. Quantz gives two recommended style options when preparing an 'Adagio', either the French or the Italian.[305] Similarly, he recommends:

> In the Allegro as in the adagio the plain air must be embellished and made more agreeable by appoggiaturas and by other little essential graces as passion demands.[306]

This style he describes fits very well with that found in the Holland organ, but the frequency and type of ornamentation is also similar to the intricate style found in the works of composers such as François Couperin, Jaques Hotteterre etc. The inclusion of the Hotteterre pieces in the performance which runs parallel to the conclusion of this thesis, alongside transcriptions from Clay clocks and the

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[304] e.g. Longmann barrel-organ belonging to Sir William Parry and the Astor & Co. from the Morristown museum.
[305] Quantz, *On Playing the Flute,* p. 162.
[306] ibid. p.134

Holland organ, illustrates this. French treatises on ornamentation provide a great deal of the information available on the realisation of graces. They are somewhat removed by distance from the manufacturers of the organs in question here, but their style is clearly connected to that of the great treatise writers on mechanical organ building, Engramelle and Dom Bedos de Celles. Both the frequency of small graces, and their realisation are extremely similar, and this similarity is carried through into the Holland organ's style.

The function of the ornaments, as detailed above, is very much as C.P.E. Bach describes: 'They connect and enliven tones and impart stress and accent'.[307] Their frequency is similarly described by Marpurg in his *Historisch-kritisch Beträge*:

> Regarding the smaller ornaments, they are so essential at most places that without their strict observance no composition can please more refined ears.[308]

C.P.E. Bach equates the over-use of graces to 'orators who try to place emphasis on every word'.[309] This might at first seem to run counter to the frequency of ornaments in the mechanical sources; however, the comparison with an orator supports the use of graces as modes of articulation. 'Over-use' is a subjective term and it is difficult to detach one's modern ears from recent traditions of historical performance practice and to determine exactly how much would have been considered excessive from the vastly remote vantage point of around 250 years. In fact, despite their frequency, the direction of the melody and clarity of the harmony are not obscured and they are clearly placed at strategic points, with other points left plain. Bach's other simile, used to define the ideal amount of decoration is telling: 'Regard them as spices which may ruin the best dish or gegaws which may deface the perfect building'.[310] Considering the level of ornate decoration which covers so much baroque architecture, it may be assumed that, to the baroque eye, the perceived level at which a building might be considered over-ornate is somewhat different to modern tastes. Audio sources like mechanical organs may, in fact, provide a reference point for value statements like 'too much' and 'over-use', and the findings of this study, particularly in Chapters 4, 5 and 6, are that they seem to be close to the level of ornamentation expected by composers/writers who were contemporary with their manufacture.

The absence of ritardando from the ends of pieces/movements is an interesting point regarding the challenging of frequent modern performance norms. There is little evidence for the requisite presence of ritardando at the end of movements in period source texts, yet it is a frequent occurrence in many performances today. C.P.E Bach in his *Essay* says they are more apposite in slower movements, but seems to be referring principally to their use *during* movements rather than at

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[307] Bach, *Essay on the True Art of playing Keyboard Instruments,* p.79.
[308] Marpurg, F. W. (1754). *Historisch-kritische Beyträge zur Aufnahme der Musik*, (Berlin) quoted in Donington, *Interpretation,* p. 190.
[309] Bach, *Essay on the True Art of playing Keyboard Instruments,* p.79.
[310] ibid. p.81.

the end. He also advises in 'affetuoso playing' that 'every effort must be made [...] to keep the tempo at the end of a piece exactly the same as at the beginning', so in this instance, the organ's performance entirely supports the textual evidence, whilst challenging modern habits.[311]

Another controversial issue is that of the doubling of a vocal melody, and the potential heterophonic effect if one of these doubling lines inserts ornaments. Corri's 'new' style of accompanying the songs in his publications, in which the vocal melody is doubled by the keyboard but with one ornamented and the other plain, suggests that the idea of heterophony was not problematic, at least for him. Other writers were not so in favour of this, so opinion may have been divided, but what is clear from this disagreement is that the practice did happen.[312] If the organ were intended to be used at different times both as a solo 'performer' and to accompany live performers in the songs and hymns included, then the inclusion of the melody line would have been necessary. The presence of ornaments merely demonstrates that the heterophonic effect would not have posed an aesthetic problem for the arranger.

As discussed in Chapter 5, it is perhaps likely that in the Holland organ what is heard is a slightly old-fashioned style compared to what might have been expected in the cutting-edge music of c.1790. Clementi, in his treatise *Introduction to the Art of playing on the Piano Forte* (1802) states the 'the beat is seldom used in modern music', but the beat (or mordent) is very much still in evidence in the Holland organ.[313] There are some small mutations in the later organ, compared to the 1730s organ-clocks, but the basic style is still remarkably similar in essentials. This is not perhaps as surprising as it might seem, as ornament tables appear in English treatises on performance from the mid-seventeenth century until well into the nineteenth, and for the most part the graces included in them are broadly similar. When compared to treatises of the 1750s and 60s, which have become the standard texts on performance practice, there is actually very little to contradict the style found in the mechanical evidence.

9.4 Does the style change?

The performance style found in the mechanical sources seems to have changed little between the Clay clocks made in the 1730s and the Holland organ of the 1780s/90s. There are some small changes, however; for example, a slight increase in the numbers of turns especially at the end of trills, and in the number of trills which begin on the upper note, which seems to have become more of a standard practice as the century progressed.

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[311] ibid. p.160-1.
[312] such as C.P.E Bach, see chapter 7.
[313] Clementi, M. (1802) *Introduction to the art of playing on the piano forte: containing the elements of music, preliminary notions on fingering, and fifty fingered lessons* (London, Clementi, Banger, Hyde, Collard & Davis). p. 12.

There is a distinct difference in the use of ornaments in music of differing characters. Although graces are the general type of ornament used in all musical types, there is more variety in their realisation in slower movements than in faster ones, as time allows. Here they have space to continue for longer, decorating the middle of notes as well as the opening articulation. Faster pieces tend to favour articulatory graces which decorate the start of the note and occasional linking ones, though these are of course generalised observations and there are exceptions.

The Holland organ performs pieces in a broadly similar style whether they are by Purcell or Hook. Most of the features of this are generally still in keeping with the style found in Purcell's treatise, but there are notable correlations with Corri, particularly regarding the placing of ornaments, and new stylistic practices creeping in, such as the increase in use of chromaticism in the decoration of later music where there is perhaps more scope for this in the harmonic language used in these compositions. This suggests that the Holland organ reflects a continuum of stylistic practices, with its roots in the style of Purcell, but mutating over time, adding new colours to the palate as newer repertoire allowed.

9.5 Are there features of the instruments themselves which necessitate or facilitate a particular performance style?

There are certain features of these instruments which slightly limit the types of ornamentation used. They cannot, for example, vary dynamics, other than by adding extra notes, or manually changing the registration, and they cannot use vibrato to add colour to the sound. However, they are capable of most other types of musical expression. Articulation is carefully planned, with silences of varying lengths before notes, which lends further nuance. Any notion therefore that excessive ornamentation is present to compensate for a lack of sustaining ability is unfounded, as there is no problem with sustaining notes; both upper and lower voices often sustain long notes with no decoration or only decoration on some part of the note. There may be points at which, were another instrument performing, different idiomatic ornaments might have been chosen, but the level and type of ornamentation do not seem to be dictated by perceived 'failings'. On the contrary, the positive reception of these instruments at their time of construction illustrated that they were appreciated as imitators of live performers.

Of course there are no constraints of skill level (other than that of the pinner) placed on mechanical instruments. No technical facility, or lack of it, dictates how much decoration can be applied to the music found within them. This makes them excellent subjects for study, since it suggests that the graces and melodic alteration found within them are the ideal amount according to the taste of their makers and target audiences. In his introduction to *On Playing the Flute*, Quantz recommends that 'Each person so inclined need only choose and apply that which is suited to his voice or instrument', which seems to be excellent advice. As demonstrated in the performance

undertaken as part of the conclusion to these studies most of the decorations are entirely playable within occasional idiomatic parameters.

9.6 Is it performable?

In many ways this is the most important question, since the purpose of this project was to understand how mechanical musical instruments might influence a live performance style. Richard Egarr described the level of ornamentation in the Holland organ as 'superhuman' in the notes to his recording of the Handel organ concertos.[314] However, from personal experience I have not found it to be impossible to play them all on my instrument (recorder). The proliferation of graces can pose a challenge to begin with, but once the melody is learned plain, omitting any ornamentation, it can be gradually built up to the required level. There is no doubt that the level of ornamentation is the most challenging aspect of performance; one must achieve an authoritative expression and, in this instance, rather than choosing ornaments to underpin a personal interpretation, this model uses pre-existing ornaments to determine the interpretation of the original pinner which is then translated into live performance. The process through which this was achieved was not unlike many players' early experience of playing the highly prescriptive music of Couperin and other French writers who specified the ornaments to be used in their extremely ornate style. Replication is a means by which it is possible to understand both the function of the ornaments and the structures of the music on a deeper level however, so although it was painstaking at first, it has been most informative, often supporting, but sometimes challenging, my instinctive reading of the phrasing.

The level of detail required of the transcriptions changed over the course of the learning process. At the outset, it proved necessary to work with a score showing two simultaneous transcriptions, one with the plain melody evident and the other the detailed transcription showing every note of the ornaments. One line provides the individual detail of the ornaments to be played, for reference, and the other provides the means to add them to a musically satisfying line. The analysis of each piece serves to enable the player to understand the function of each ornament and therefore any implications they might have on the phasing of the piece. By the time of performance, however, only the melody line with ornament symbols is necessary, as an aide-memoire, since most of the stylistic interpretation is memorised by this stage.

The programme of music presented as part of the conclusion to this study (see Appendix F) placed transcriptions of barrel-organ/organ-clock music alongside scores intended for mechanical performance (such as those in the Aylesford Collection),[315] and notated pieces containing a comparable ornamentation style. It also included an example of my own application of the organ's

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[314] See chapter 1, section 1.1.4.
[315] See Chapter 3.

decoration style added to a piece from the mid-eighteenth century, demonstrating the wider applicability of this style and showing the conclusion of the process of replication, which should be to internalise the style and thereby develop the ability to apply it elsewhere.

'Reddins Ground' [sic], from Salter's *Genteel Companion*, contains a great many ornament symbols, and the instructions at the start of the treatise are very similar to Purcell's.[316] The effect of the ornament frequency described is very similar to that found in many pieces in both the Clay clocks and Holland organ. The same holds true for the other comparison pieces presented, with the density and placing of ornamentation symbols found in the works by Babell, Geminiani and Hotteterre, very similar to that found in both the Clay clocks and Holland organ. This is particularly interesting with regard to the Hotteterre's *Airs et Brunettes* (chosen both for their small scale, like many of the clock/organ pieces, and for their suitability for recorder performance) since it highlights a similarity in the means of conveying expression between two quite distinct practices, which is undeniable to the ear.

The playability of the style, for my part, posed few problems, since the range into which the clock and barrel-organ melodies are fitted is of a similar tessitura to the alto recorder. There were few ornaments which were not possible, and these were largely problematic either because they used notes which were out of range for the instrument, or very occasionally, because their placing on a register break meant that although possible, they were unidiomatic. It became apparent during the learning process that ornaments which were physically unidiomatic to the instrument, like these, were less useful as expressive tools. This complies with Quantz's advice, quoted in Section 9.5, regarding adopting stylistic features which are suited to the instrument in use. This is an area where there is the possibility for future research. It would be particularly interesting for string and vocal performers to experiment with the ornamentation style found here, as there may be aspects which affect them which are not common to other instruments. Vocal performance is indeed different from singer to singer and what suits one voice type may be entirely unidiomatic for another, but there would be much to be gained from such an investigation. For string players, aspects to consider might include how bowing affects the use of different ornamentation and whether certain ornaments are more expressive or idiomatic on up- or down-bows.

The scores intended for mechanical performance (as opposed to transcriptions of mechanical performances) do not contain any information as to the specific realisation of the ornament symbols, and in fact the ornaments are perhaps slightly sparser than in the transcriptions. This is only slight however, and since the findings in Chapter 4 suggest that the pinners made only minor deviations from the notated arrangements, I attempted to avoid adding much in the way of additional decoration, except for cadential ornaments. Regarding the realisation of the ornaments, the basic observations

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[316] Salter, H. (1683). *The Genteel Companion, Being Exact Directions for the Recorder, with a Collection of the Best & Newest Tunes & Grounds Extant*. (London, R. Hunt & H. Salter).

relating to the Clay clocks provided much of the detail for this. Short opening notes were used on most ornaments, with a slight majority beginning on the auxiliary (upper or lower), but many also beginning on the main note. The Barsanti sonata was an interesting project, selected because there are some ornament symbols notated at places where the composer clearly thought they were essential but perhaps not intuitive, and because the piece provides scope for the various different functioning decorations (e.g. to highlight harmonic rhythm, to connect stepwise moving notes, to provide articulatory emphasis in the bass at points of imitation etc.). The piece lent itself so well to the style, that it demonstrated, to myself, how much the stylistic features of the mechanical performances had consolidated their place in my own instincts. I began by approaching the piece in a broadly theoretical way, observing the patterns of application observed above and applying the ornaments to the piece in accordance with these. This was largely successful but I also found that as I proceeded it was possible to improvise their application and 'feel' where they should be placed and then assess whether this fitted with the observations made in my study of the style. The piece was very well received and, from my point of view, did not seem differentiated from the rest of the programme in terms of style and expressive ornamentation. This indicated the final stage of the process I set out to achieve, the absorption of this initially unfamiliar style into my performance practice and interpretative instincts, and therefore the ability to use it as a true means of expression, rather than as an abstract or purely academic exercise.

9.7 Closing comments

It is very difficult for a member of a tradition or society to objectively describe it to someone with no inherent knowledge of it, and therefore there are inevitably ways in which written treatises fall short of providing a complete picture of the style in which they aim to instruct. Writers of the period are also by their own admission not objective and give primarily their personal views on how music should be performed, with other information provided only when it becomes relevant for contrast or as supporting evidence. Historical performers, meanwhile, aim to engage with a remote and unfamiliar society and therefore, by extension, an unfamiliar sound-world. Modern aesthetic values cannot be applied wholesale to such distant practices, and very little of what modern players consider self-evident can be assumed. In a way, therefore, it matters not whether mechanical musical instruments are archetypes of best practice. The study of them takes scholars into a realm of musicology which is inaccessible by any other means. These instruments can demonstrate in a way that no other source can, sounds that an eighteenth-century listener would have encountered and a performance style they would have been familiar with, providing an orientation point from which to view historical treatises afresh. That they question some modern conventions surrounding the performance of this repertoire is important, but it is also important that there are some aspects of contemporary HIP styles which are supported. If the style found in mechanical sources seemed

entirely at odds with the textual sources as well as modern conventions, it would be more likely that they were evidence of an anomalous practice, applicable perhaps only to mechanical musical practices. The fact that they agree with so much writing and confirm some of the modern understanding of period performance practice, makes the points at which they are at odds much more interesting. These are the ways in which their information can deepen modern understanding of this remote sound-world, and add new colours to the palate of modern HIP players and singers.

It is generally acknowledged by eighteenth-century authors, that listening to good performers is invaluable to any student of music, and the primary means by which to develop a sense of good taste; as Quantz succinctly puts it 'Licensed thievery...produces the greatest artists'.[317] However as regards ornamentation, the most frequent element of style examined in this project, Marpurg's advice is also important:

> One should try to give a piece of music in which ornaments have not yet been marked to ten different people, each playing in the good style of the day, and ask them for their ornaments. In certain places, perhaps, many will agree; in the rest, they will all be different.[318]

If mechanical musical instruments are to be treated as one performer, from whom it is possible to gain an example of a widely known and appreciated performance style, then this is a huge asset to the study of period performance practice. The style heard throws much new light on written evidence from the seventeenth and eighteenth centuries, primarily by illuminating the frequency of graces, and their patterns of usage, in a practical way. These are often referred to in written sources, but it cannot be certain to what extent, and how, the rules laid down by authors were applied in real life. The fact that these instruments were appreciated as being able to imitate live performers gives at least one answer to this problem.

There has never been a completely *correct* way to perform music. Controversy has always existed, and every generation has considered itself capable of more creative advancement than its forebears. The style found in the mechanical organs studied here may seem challenging to many. The frequency of the graces is something which will prove an obstacle to any who perceive these as 'ornamentation'. But here this perceived classification becomes vital, for if most of these are perceived as 'articulation' or expressive nuances, then the balance shifts. There is certainly scope for further study in this area, which might investigate links to more contemporary musical cultures. The graces used in these mechanical performances are extremely numerous, but a similar number of small graces of other types (also similarly used as aids to articulation expression) would be found in an examination of many performances from other musical traditions across the world including western pop, folk and jazz genres. These are the un-notated inflections which give the music its character, and

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[317] Quantz, *On Playing the Flute,* p.18.
[318] Marpurg, *Anleitung.* vol. 1 p. 44. Quoted in Donington, *Interpretation,* p. 190.

without which its cultural orientation is often indeterminate. However, primary audio sources are an unfamiliar commodity, and one to which many HIP practitioners are only just beginning to awaken, since written precedent has always been a mainstay of the movement. Therefore, if this style sounds 'wrong' to modern HIP ears, it might be pertinent to follow C.P.E. Bach's own advice on being exposed to challenging performance styles:[319]

> One should not be the last to acknowledge new ornaments in order not to fall out of style. Do not turn against them because they sound unattractive at first. The new, as engaging as it may be at times, very often repels us. This may indicate the presence of merits that will prove more long-lived than those qualities which at first are entirely too pleasant.

[319] Bach *Essay on the True Art of playing Keyboard Instruments,* p. 86.

Appendices

Appendix A: Makers of Organ clocks and Barrel-organs connected to this study

Makers	Dates	Notes
Christopher Pinchbeck (Sr)	c.1670-1732	Invented the 'Pinchbeck' alloy, a much used material consisting of nickel and copper which has the appearance of gold. His descendants continued to be prominent manufacturers of clocks and mechanical musical instruments throughout the eighteenth century
Henry Bridges	1697-1754	Maker of the 'Microcosm', with a possible connection therefore to Isaac Newton, who is advertised as having been consulted in its construction.
Charles Clay	d. 1740	Maker of musical clocks. Strong connection to Handel. Also connections to Roubiliac, Rysbrack and Geminiani. Also royal connections. (see chapter 3)
John Pyke	fl c1710 -1762	Executor of Clay's will. Probably finished some of Clay's later works despite stipulation that they should be 'broke to pieces' on his death. Visually his designs often share many characteristics with the work of Clay.
George Pyke	1725-1777	Son of John Pyke, apprenticed to Henry Page, Clockmaker. Eventually became 'organ builder to His Majesty' (George III)
George Lindsay	fl 1743-1776	Watchmaker to George III
Pinchbeck (Jr)	1710 - 1783	King's clockmaker (George III) and also worked on the first barrel-organ for the Earl of Bute
John Langshaw	1725-1798	Worked on Earl of Bute's barrel-organs with J. C. Smith
John Snetzler	1710 - 1785	Born in Switzerland but worked mostly in England. Also employed on the Earl of Bute's barrel-organ
James Longman	1740-1803	Organ builder and founder of the Longman firm c1776, making pianos and organs of different varieties. Various partners over the years, initially Edmund and then Francis Broderip.
John Longman		Succeeded his brother, James Longman, as head of the Longman firm. A second John Longman set up in business on his own as an organ builder in 1802 having been awarded a patent for certain improvements to barrel-organ design enabling other instruments to be played by the same barrel. His relationship with the elder Longmans is unclear, though he claimed he was a relative.
George Astor	fl 1778 - c1815	Maker of flutes and organs from near Heidelberg. Traded as George Astor & Co. and with various partners
Henry Holland	fl 1777 - c 1811?	Apprentice to George Pyke and Co-Executor of his will (alongside Pyke's wife Catherine) and his successor in business
Alexander Cumming	1733 - 1814	Scottish clockmaker and designer. Worked on the second barrel-organ for the Early of Bute and published an account of his involvement i 1812
Samuel Green	fl 1754 - 1796	Organ Builder .Another apprentice of George Pyke
Muzio Clementi	1752 - 1832	Pianist, composer, publisher and pedagogue. Bought a large share of the Longman & Broderip company in 1798

Appendix B - Contents Lists for Extant Clay Clocks and the Holland Organ

Braamcamp Clay clock contents[320]

No.	Title	Reference
1	Ariadne	'Minuet' from 'Overture' to *Arianna in Creta*
2	Allegro	unidentified
3	Minuet	'Menuett'o from *D minor Keyboard Suite* HWV 436
4	Variation	1st Variation of the above
5	1st Air	'Sì, tra i ceppi' from *Berenice*
6	2nd Air	unidentified
7	3rd Air	unidentified
8	4th Ait	'Andante' from *Concerto in G major* HWV 487
9	5th Air	unidentified
10	6th Air	unidentified

Windsor Castle Clay clock contents

No.	Title	Reference
1	no extant tune list	unidentified (c.f. Aylesford MS, BL, R.M.19.1.a, No.1 HWV 587)
2		unidentified
3		unidentified (c.f. Aylesford MS, BL, R.M.19.1.a, No.3 HWV 589)
4		unidentified
5		unidentified (c.f. Braamcamp No.2)
6		'Va godendo' from *Serse*
7		'In mar tempestoso' from *Arianna in Creta*
8		'Dell'onda i fieri moti' from *Ottone*
9		unidentified (c.f. Braamcamp No.9)
10		unidentified (c.f. Braamcamp No.10)

Naples Royal Collection Clay clock contents[321]

No.	Title	Reference
1	no extant tune list	unidentified
2		'Allegro' from 'Overture' to *Lotario*
3		unidentified
4		unidentified
5		'Se il caro figlio' from *Siroe re do Persia*
6		'Quel gelsomino' from *Riccardo Primo re di Inghilterra*
7		unidentified
8		'Caro vieni' from *Riccardo Primo re di Inghilterra*
9		'Sen vola lo sparvier' from *Admetro re di Tessaglia*
10		unidentified

[320] Dirksen, *Twenty Pieces.*
[321] Di Sandro, *Macchine Musicali al Tempo di Handel*, pp.118-137.

Holland organ contents[322]

Barrel No.	Title	Type	Composer	Date (approx)
1	The Dusky Night	song	Thomas Arne (adapted from an older tune)	1770
	Harry's The Lad for Me	song	William Shield (from Rosina)	1783
	How Sweet in the Woodlands	duet	Henry Harington	c.1770
	Gramarchree Molly	song	Anon (also Molly Astore)	1770
	Thro' The Wood Laddie	song	Michael Arne (?)	1768
	The Berks of Endermay	song	Anon (also The Birks of Invermay)	1742
	The Friend & Pitcher	song	William Shield (from The Poor Soldier)	1782
	The Topsails Shiver in the Wind	song	Michael Arne	1771
	Auld Robin Gray	song	W Leeves (this tune)	1772
	The Lass of Patties Mill	song	John Parry	c.1740
2	Malbrouc	song	Anon (French; also known as 'Marlbrough,' 'Moll Brooks' etc)	<1777
	Ma Chere Amie	song	James Hook	1786
	New German Spa Dance	dance	Anon	1780
	Lady Priscilla Bertie's Minuet	dance	Anon	1785
	Martini's Minuet	dance	Giovanni Battista Martini	1750
	Minuet de la Cour	dance	Anon	1700?
	Masquerade Minuet	dance	Anon	1760
	March in the Desertore	dance	Pierre-Alexandre. Monsigny	1769
	The Junnisarys March	dance	Anon	1780
	March in the Opera of Bonducca	dance	H Purcell (attrib.) (Also called Timon of Athens)	1722?
3	Lovely Nymph	song	James Oswald	1764
	Favourite Song in the Heiress	song	Thomas Linley (adapted from Giovanni Paisello)	1786
	Finale de Figaro	song	Anon (possibly from'The Follies of a Day- Or The Marriage of Figaro')	1784
	Ask if yon Damask Rose be Sweet	song	G.F. Handel (from Susanna)	1748
	Hymn of Eve in the Oratorio of Abel	song	Thomas Arne	1755
	The Evening Hymn	hymn	Tallis (adapted by J. Arnold)	1567
	The Lord my Pasture Shall Prepare	hymn	H. Carey ('Carey's Surrey') J. Addison (lyr)	1723
	Easter Hymn	hymn	Anon (tune 1708): Lyric C. Wesley ('Christ the Lord is Ris'n today')	1708
	104th Psalm	hymn	'Hanover' attrib W Croft	1708
	100th Psalm	hymn	'Old 100th' attrib Louis Bourgeois	1551
4	La Belle Catherine	dance	Anon (Also known as 'The Duke of York's March')	1785
	Gavot in Otho	instrumental	G F Handel	1723
	Che Bello Stare	song	untraced	-
	Love in his Chair	dance		1785

[322] Dates established using date of first performance, or first publication (if known). Other works (many are approximate based on library datings of folios) have been dated using a combination of RISM online database (www.rism.org.uk) and library and other search databases (bl.uk, worldcat.org, ballads.bodleian.ox.ac.uk, tunearch.org, www.oxfordmusiconline.com, www.hymntime.com) and Kassler, M (2004) Music entries at Stationers' Hall, 1710-1818, (Ashgate, Aldershot).

	Britons Strike Home	song	Anon (Also known as ‘The Bedfordshire March’)	1695
	Rule Brittannia	chorus	H Purcell (from ‘Bonduca’)	1740
	He Comes He Comes	hymn	T A Arne (from ‘Alfred’)	1762
	See the Conquering Hero Comes	chorus	Anon 'Ode to Judgement' (from The Christian's Magazine)	1746
	The Jolly Bowl	duet	G F Handel (from 'Joshua and‘Judas Maccabeus’)	1770
	Drink to Me Only With Thine Eyes	chorus	William Markham Andrews?	1750
	The Mariners	song		1609
	Fill your Glasses	song	Ravenscroft (Deuteromelia) untraced	-
5	The Overture in Artaxerses	instrumental	T A Arne	1762
6	Handell’s 2nd Concerto	instrumental	G F Handel	1735-6
7	Handell’s 5th Concerto	instrumental	G F Handel	1735-6
8	Minuet in Ariadne	instrumental	G F Handel	1734
	Handells Water Piece	instrumental	G F Handel	1717
	Minuet in Samson	instrumental	G F Handel	1741
9	Minuet in Rodelinda	instrumental	G F Handel	1725
	Handells Coronation Anthem	chorus	G F Handel (‘God Save the King’ from ‘Zadok the Priest’)	1727
	Dead March in Saul	instrumental	G F Handel	1738
10	Every Valley Shall Be Exalted	aria	G F Handel (Messiah)	1741
	Christmas Hymn	hymn	John Page (lyrics by Harrison)??	1791
11	Ye Men of Gaza Hither Bring	aria	G F Handel (Samson)	1741
	Come Ever Smiling Liberty	aria	G F Handel (Judas Maccabeus)	1746
	Lett the Bright Seraphims	aria	G F Handel (Samson)	1741
12	Return O God of Hosts	aria	G F Handel (Samson)	1741
	Pious Orges Pious Airs	aria	G F Handel (Judas Maccabeus)	1746
13	Oh Had I Jubal’s Lyre	aria	G F Handel (Joshua)	1747
	Tis Liberty Alone gives Beauty to the Sun	aria	G F Handel (Judas Maccabeus)	1746
14	Father of Heaven	aria	G F Handel (Judas Maccabeus)	1746
	Tears such as Tender Fathers Shed	aria	G F Handel (Deborah)	1733
15	Tune your Harps to Chearfull Sounds	aria	G F Handel (Esther)	1732
	So Rapid Thy Course is	aria	G F Handel (Judas Maccabeus)	1746
16	Time has not thin’d my Flowing Hair	duet/chorus	W. Jackson	1780
	Come Live With Me and Be My Love	chorus	S. Webbe (a Glee)	1780
	Water Parted from The Sea	aria	T Arne (Artaxerxes)	1762

Appendix C: Engramelle's Table of Symbols from *La Tonotechnie*[323]

43

TABLE DES CARACTÈRES

AVEC LEUR EXPLICATION.

Caractères. Effets indiqués par les Caractères.

Petites tactées très-détachées dans quelques cas particuliers, pour marquer le commencement des Notes d'une manière presqu'insensible.

Tactées ordinaires ou détachées, c'est-à-dire, notes dont on n'entend que le commencement, soit en noires, soit en croches, doubles croches, &c.

Tenues simples, longues ou courtes sur toutes les notes.

Tenue simple, suivie d'un silence de la valeur d'une double croche.

Tenue simple, suivie d'un silence de deux doubles croches; (elle ne peut convenir qu'aux rondes, blanches & noires.)

Tenue simple, suivie d'un silence de trois doubles croches; (cette *tenue* ne peut convenir qu'aux rondes, blanches & noires.)

Tenue simple, suivie d'un silence de quatre doubles croches; (cette *tenue* ne peut convenir qu'aux rondes & aux blanches.)

44

Caractères. Effets.

Tenue simple, suivie d'un silence de cinq doubles croches; (elle ne peut convenir qu'aux rondes & aux blanches pour les reprises d'haleine).

Quant aux autres *silences*, on emploiera ceux usités dans la musique, ou bien l'on augmentera le nombre de points pour chaque valeur de doubles croches.

TENUES COMPOSÉES.

MARTELLEMENS.

Martellement simple de deux *modules*, du dessus au-dessous, avec une petite *tenue* à fin.

Martellement simple de deux *modules*, du dessous au-dessus, avec une petite *tenue* à la fin.

Martellement de trois *modules*, cadencé avec la note de dessus, & une petite *tenue* à la fin.

Martellement de trois *modules*, cadencé avec la note de dessous, & une petite *tenue* à la fin.

Martellement d'un *module* & une grande *tenue* à la fin, cadencé du dessus au-dessous.

45

Caractères. Effets.

Martellement d'un *module* avec une grande *tenue* à la fin, cadencé du dessous au-dessus.

Martellement de deux *modules* & une grande *tenue*, cadencé avec la note de dessus.

Martellement de deux *modules* terminé par une grande *tenue*, cadencé avec la note du dessous.

Martellement doublé de trois *modules* à grande *tenue*, cadencé avec la note du dessus.

Martellement doublé de trois *modules* à grande *tenue*, cadencé avec la note du dessous.

Martellement de quatre *modules* à grande *tenue*, cadencé avec la note dud essus.

Martellement de quatre *modules* à grande *tenue*, cadencé avec la note du dessous.

Et ainsi toujours en augmentant pour les notes plus considérables, comme la ronde & la blanche pointée, &c.

PORT-DE-VOIX.

Port-de-voix terminé par un seul *module*, avec la note du dessous.

46

Caractères. Effets.

Port-de-voix terminé par un seul *module*, avec la note du dessus.

Port-de-voix terminé par trois *modules*, avec la note du dessous.

Port-de-voix terminé par trois *modules*, avec la note du dessus.

On pourroit aussi aux ports-de-voix augmenter le nombre des *modules* dans les plus longues notes.

ACCENTS.

Accent avec un seul *module* sur la note du dessus.

Accent avec un seul *module* sur la note du dessous.

Accent avec trois *modules* sur la note du dessus.

Accent avec trois *modules* sur la note du dessous.

Et ainsi toujours en augmentant au besoin.

COULÉES.

Coulée du haut-en-bas.

Coulée du bas-en-haut.

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[323] Engramelle, M. D. J. (1775). *La Tonotechnie, Ou L'art De Noter Les Cylindres, Et Tout Ce Qui Est Susceptible De Notage Dans Les Instrumens De Concerts Mechaniques* (Paris, P. M. Delaguette). pp.43-50.

47

Caractères. Effets.

FLATTÉES.

Flattée de deux *tenues* & deux *modules*, cadencée avec la note de deſſous & celle de deſſus.

Flattée de deux *tenues* & deux *modules*, cadencée du deſſus au-deſſous.

Flattée de quatre *modules* & de deux *tenues*, cadencée du deſſus au deſſous.

Flattée de quatre *modules* & deux *tenues*, cadencée de deſſous au-deſſus.

CADENCES.

Cadence de trois *modules*, du deſſous au-deſſus.

Cadence de trois *modules*, du deſſus au-deſſous.

Cadence de quatre *modules*, du deſſus au-deſſous.

Cadence de quatre *modules*, du deſſous au-deſſus.

Cadence briſée de cinq *modules*, du deſſous au-deſſus.

Cadence briſée de cinq *modules*, du deſſus au-deſſous.

48

Caractères. Effets.

Cadence de ſix *modules*, du deſſus au-deſſous.

Cadence de ſix *modules*, du deſſous au-deſſus.

Cadence briſée de ſept *modules* du deſſus au-deſſous.

Cadence briſée de ſept *modules*, du deſſous au-deſſus.

Cadence de huit *modules*, du deſſus au-deſſous.

Cadence de huit *modules*, du deſſous au-deſſus.

Cadence briſée de neuf *modules*, du deſſus au deſſous.

Cadence briſée de neuf *modules*, du deſſous au-deſſus.

Cadence de dix *modules*, du deſſus au-deſſous.

Cadence de dix *modules*, du deſſous au-deſſus.

Et ainſi des autres cadences plus étendues, en augmentant la quantité des *modules* à proportion.

49

Caractères. Effets.

CADENCES FLATTÉES.

Cadence flattée de ſix *modules*, du deſſus au-deſſous.

Cadence flattée de ſix *modules*, du deſſous au-deſſus.

Cadence flattée de huit *modules*, du deſſus au-deſſous.

Cadence flattée de huit *modules*, du deſſous au-deſſus.

Et ainſi des autres plus conſidérables, en augmentant le nombre des *modules*.

PINCÉES.

Pincée de ſix *modules*, du deſſus au-deſſous.

Pincée de ſix *modules*, du deſſous au-deſſus.

Pincée de huit *modules*, du deſſus au-deſſous.

Pincée de huit *modules*, du deſſous au-deſſus.

Et ainſi des autres plus ou moins étendues.

CADENCES précédées par une tenue.

Cadence de trois *modules*.

50

Caractères. Effets.

Cadence de cinq *modules*.

Et ainſi des autres plus ou moins étendues.

CADENCES ſuivies d'une tenue.

Cadence de cinq *modules*.

Et ainſi des autres plus ou moins étendues.

CADENCES précédées & ſuivies de tenues.

Cadence de ſix *modules*, du deſſus au-deſſous.

Cadence de ſix *modules*, du deſſous au-deſſus.

Et ainſi des autres plus courtes ou plus étendues.

CADENCES PRÉPARÉES.

Cadence préparée d'abord lentement, en augmentant inſenſiblement de viteſſe.

Appendix D: Holland Organ Recording

CD 1 - Barrels 1-4

1. The Dusky Night
2. Harry's The Lad for Me
3. How Sweet in the Woodlands
4. Gramarchree Molly
5. Thro' The Wood Laddie
6. The Berks of Endermay
7. The Friend & Pitcher
8. The Topsails Shiver in the Wind
9. Auld Robin Gray
10. The Lass of Patties Mill
11. Malbrouc
12. Ma Chere Amie
13. New German Spa Dance
14. Lady Priscilla Bertie's Minuet
15. Martini's Minuet
16. Minuet de la Cour
17. Masquerade Minuet
18. March in the Desertore
19. The Junnisarys March
20. March in the Opera of Bonducca
21. Lovely Nymph
22. Favourite Song in the Heiress
23. Finale de Figaro
24. Ask if yon Damask Rose be Sweet
25. Hymn of Eve in the Oratorio of Abel
26. The Evening Hymn
27. The Lord my Pasture Shall Prepare
28. Easter Hymn
29. 104th Psalm
30. 100th Psalm
31. La Belle Catherine
32. Gavot in Otho
33. Che Bello Stare
34. Love in his Chair
35. Drink to Me Only With Thine Eyes
36. The Mariners
37. Fill your Glasses
38. Britons Strike Home
39. Rule Brittannia
40. He Comes He Comes
41. See the Conquering Hero Comes
42. The Jolly Bowl

CD 2 - Barrels 5-13

1. The Overture in Artaxerses
2. Handell's 2nd Concerto
3. Handell's 5th Concerto
4. Minuet in Ariadne
5. Handells Water Piece
6. Minuet in Samson
7. Minuet in Rodelinda
8. Handells Coronation Anthem
9. Dead March in Saul
10. Every Valley Shall Be Exalted
11. Christmas Hymn
12. Ye Men of Gaza Hither Bring
13. Come Ever Smiling Liberty
14. Lett the Bright Seraphims
15. Return O God of Hosts
16. Pious Orges Pious Airs
17. Oh Had I Jubal's Lyre
18. Tis Liberty Alone gives Beauty to the Sun

CD 3 - Barrels 14-16[324]

1. Father of Heaven
2. Tears such as Tender Fathers Shed
3. Tune your Harps to Chearfull Sounds
4. So Rapid Thy Course is
5. Time has not thin'd my Flowing Hair
6. Come Live With Me and Be My Love
7. Water Parted from The Sea

[324] N.B. There is some damage to Barrel 15 and therefore tracks 3 and 4 are incomplete

Appendix E: Other Recordings for Reference

1. Clay Clock_Minuet from Arianna
2. Clay Clock _Minuet
3. Langshaw Organ_See The Conquering Hero Comes
4. Langshaw Organ _Rule Brittania
5. Langshaw Organ _God Save The King
6. Parrys Barrel-Organ_God Save the King
7. Ayton Organ_God Save the King
8. Ayton Organ_God Save the King with percussion
9. Astor Organ_Hundredth Psalm
10. Longman Organ_Hundredth Psalm
11. Astor Organ_Evening [Hymn]
12. Longman Organ_Evening Hymn
13. Bryceson Organ_Creation Doubles

The instruments from which these recordings are taken are:

Barrel-Organ by George Astor, London c.1810
Recorded by E.B. with assistance from Arngeir Hauksson in Murtogh D, Guinness Collection, Morris Museum, 9Morristown, New Jersey, USA) with the kind permission of Jere Ryder, conservator

Barrel-Organ by William Ayton, London c.1800
Recorded by E.B. with assistance from Arngeir Hauksson in Richard Burnett Collection, Finchcocks, Kent, UK

Barrel-Organ by John Longman, London c.1810
Housed in Scott Polar Research Institute, Cambridge, UK. Commercial CD Recording 'Parry's Barrel-Organ' (Saydisc)

Organ-Clock by Charles Clay, London c.1738
Location undisclosed. Recording provided by Museum Speelklok, Utrecht with permission of owner

Barrel-Organ by John Langshaw, Lancaster c.1790
Recording provided by Judges Lodgings Museum, Lancaster, UK.

Church Barrel-Organ by Bryceson bros. London c.1810
Recorded by E.B. with assistance from Rob Jewers and Arngeir Hauksson in King Charles the Martyr Church, Shelland, UK.

Appendix F: Concert Programme for the Performance Element of this Study

This programme was presented at the Guildhall School of Music & Drama, at 12noon on Thursday 25th May 2017. The performers were:

Emily Baines – Recorders
Lucia Capellaro – Baroque Cello
Katie De La Matter – Harpsichord/Organ
Arngeir Hauksson – Theorbo/Baroque Guitar

Dead March in *Saul* (as played by H. Holland barrel-organ)	G. F. Handel
Minuet in *Rodelinda* (as played by Holland barrel-organ)	G. F. Handel
Mr Reddin's Ground (from The Genteel Companion)	Anon/H. Salter
Minuet from *Ariadne* (as played by C. Clay organ-clock)	
Alla Fama from *Ottone* (from Aylesford Collection, British Lib. R.M.19.a.1)	G. F. Handel
Overture (extract) from *Scipio* (from Aylesford Collection, British Lib. R.M.19.a.1)	
L'amour, le seul amour	J. J. Hotteterre
L'autre jour ma Chloris	(from Ornamented Airs and Brunettes)
Sonata in G minor	F. Barsanti
Adagio	
Allegro	
Largo	
Gavotta	
Minuet	
Overture to *Rinaldo* (1st Movt - ornaments after W. Babell)	G. F. Handel
The Lass of Paties Mill (as played by Holland barrel-organ)	Anon.
Auld Bob Maurice (from Treatise of Good Taste in the Art of Musick)	Anon./F. Geminiani
Handell's 5th Concerto (Organ concerto in F as played by Holland barrel-organ)	G. F. Handel
Larghetto	(transcribed by D.Fuller)
Allegro	
Alla Siciliana	
Presto	
March in the Opera *Bonducca* (as played by Holland barrel-organ)	H. Purcell (attrib.)

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