

**New Thoughts on an Old Topic:  
Consistency and Inconsistency in Historical Keyboard Fingering**  
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Keyboard fingering is a traditional topic in historical performance that has been neglected in recent years as players and scholars have moved on to less basic issues. Yet keyboard players continue to grapple, literally, with the question of how to apply historical documentation about fingering to present-day practice. After more than a century of research and practical experience involving early fingering, new interpretations remain possible, and received ideas may be refined or refuted when familiar music is examined from new perspectives or in the context of previously overlooked sources.<sup>1</sup>

A typically problematical passage occurs in a toccata that is preserved anonymously in a manuscript copied by a pupil of Girolamo Frescobaldi.<sup>2</sup> The composer is uncertain, but the music originated at Rome around 1640 (ex. 1). The final section of the piece contains repeated statements of a scale motif, sometimes ascending, sometimes descending, sometimes both versions simultaneously. These figures raise questions about how such music was performed originally and how we might perform it today.

Unfortunately, Italian manuscripts of keyboard music from the early seventeenth century never contain indications for fingering. Two treatises give elementary rules for keyboard fingering, but these were published several decades before this manuscript was copied. If we attempt to apply the instructions of those treatises to the present example, we encounter further problems. The two treatises, by Diruta and Banchieri, prescribe different types of scale fingerings (ex. 2).<sup>3</sup> Exactly how to apply these fingerings is not always clear, especially in scales that include accidentals. Moreover, some of the prescribed fingerings imply inconsistencies in how notes are grouped within the same or similar figures, as shown by dotted slurs in the example.

These problems might be insignificant if they were limited to the obscure repertory represented by this piece. But they recur in music that can be definitely attributed to Frescobaldi, Froberger, and other seventeenth-century composers active in Italy and southern Germany. For compositions from England

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- 1 The present essay focuses on Italian and German repertories of the early to mid-seventeenth century. For a re-examination of similar issues in earlier English and Dutch keyboard music, see the author's "Ornaments, Fingerings, and Authorship: Persistent Questions About English Keyboard Music *circa* 1600," *Early Keyboard Journal* 30 (2013): 27–51.
  - 2 Biblioteca Apostolica Vaticana, Chigi, Q.IV.25 ("Chigi 25"); facsimile in *Vatican, Biblioteca Apostolica Vaticana, MS Chigi Q.IV.25*, ed. Alexander Silbiger, *17th-Century Keyboard Music*, vol. 1 (New York: Garland, 1988). The most recent printed discussion of this manuscript and of the attribution of its final three toccatas is by Christine Jeanneret, *L'œuvre en filigrane: Une étude philologique des manuscrits de musique pour clavier à Rome au XVII<sup>e</sup> siècle* (Florence: Olschki, 2009), 287–303. Performances by the author of this and several other works cited below can be heard at [http://faculty.wagner.edu/david-schulenberg/works\\_perfs-html/](http://faculty.wagner.edu/david-schulenberg/works_perfs-html/).
  - 3 Girolamo Diruta, *Il transilvano: Dialogo sopra il vero modo di sonar organi, et istromenti da penna*, 2 vols. (Venice, 1593–1609), seen in the Venice, 1625 edition, pp. 13–14; trans. by Murray C. Bradshaw and Edward Soehnlein as *Girolamo Diruta: "The Transylvanian" (Il transilvano)*, 2 vols. (Buren: Knuf, 1983), 1:56–60. Adriano Banchieri, *L'organo suonarino, opera ventesima quinta* [2d edn.] (Venice, 1611), 42; translation by Lee R. Garrett as *Conclusions for Playing the Organ* (Colorado Springs: Colorado College Music Press, 1982).

**Example 1.** ?Girolamo Frescobaldi (1583–1643), Toccata seconda from Biblioteca Apostolica Vaticana, Chigi, Q.IV.25 (“Chigi 25”), conclusion

The image displays a musical score for the conclusion of the Toccata seconda by Girolamo Frescobaldi. The score is written for a single melodic line on a grand staff (treble and bass clefs) in a 3/4 time signature. The key signature is one flat (B-flat). The score is divided into five systems, each starting with a measure number: 75, 78, 81, 84, and 87. The music features a variety of rhythmic patterns, including eighth and sixteenth notes, often grouped together. There are several instances of staccato articulation, indicated by a vertical line with a diagonal slash through it. The piece concludes with a final cadence in measure 90, marked with a double bar line and a repeat sign.

and northern Europe, including those of Byrd, Bull, and Sweelinck, we possess manuscript copies with clearly marked fingerings. But even in their music we know little about the intended musical effect of those fingerings or whether they were in fact used to articulate groupings like those shown in my example. Nor do we know how fingering related to what might be called the general or default approach to articulation in a given repertory—that is, whether staccato articulation, legato playing, or something in between was commonly used for the notes that make up the figuration in small note values that is ubiquitous in this music.<sup>4</sup>

<sup>4</sup> English keyboard fingering was the subject of many publications during the twentieth century; for a more recent discussion, with citations to older writings, see my “Ornaments, Fingerings, and

**Example 2.** Opening of example 1 (?Frescobaldi, Toccata seconda from Chigi 25), with fingerings and groupings of notes as suggested by Diruta and Banchieri

The image shows a musical score for two staves, likely a keyboard instrument. The score begins at measure 75. The upper staff is in treble clef and the lower staff is in bass clef. Both staves are in common time (C). The music consists of a series of eighth notes, some grouped together. Above the upper staff, there are two sets of fingerings: "after Diruta: 1 2 3 4 3 4 3" and "after Banchieri (?): 2 3 4 3 4 3 4". Above the lower staff, there are two sets of fingerings: "after Diruta: 3 2 3 2 3 2 3" and "after Banchieri (?): 2 1 2 1 2 1 2". The score is annotated with various musical symbols, including slurs and ties, to indicate phrasing and articulation.

Like the use of historical bows or woodwind tonguings, fingering is part of how one physically handles the instrument. It must condition musical interpretation to some degree. Yet for any documented fingering, we might ask, first, when and where was it used? how consistently was a given type of fingering employed within a given tradition? how does fingering relate not only to grouping or local articulation but also to general or default articulation, and beyond that to tempo, phrasing, and other parameters of performance?

The remainder of this discussion focuses on linear passagework in seventeenth-century keyboard music and the effect, if any, of fingering on the articulation or grouping of these notes. “Grouping” does not necessarily mean the use of slurs, although this is one way of joining notes into larger units. In examples 1 and 2 the first such unit is the written-out trill on beats 1 and 2 of the first measure. The second unit is the scale that begins after the tie and ends on the following downbeat. The notes of that scale might be articulated as a single legato gesture, a series of individual staccato notes, or several pairs or other small groupings of notes. One question is whether there is any reason to articulate the simultaneous ascending and descending scales inconsistently, producing the distinct groupings implied by the type of fingering recommended by Diruta.

Inconsistency of this sort is unlikely to have arisen in England, where players for two centuries or more normally placed the first, third, and fifth fingers of each hand on so-called good or accented notes. This led to so-called paired scale fingerings, as in a little teaching piece by John Bull (ex. 3). The treatises of Diruta and Banchieri, as well as music manuscripts with fingerings from central and northern Germany, suggest that practices in other parts of Europe were less regular.<sup>5</sup> The very idea that fingering could be worked out systematically might have been foreign to some players, and in Italy the writing of fingering indications into musical scores was rare or unknown before 1700 or so. When Alessandro

Authorship.”

5 See, e.g., the fingerings traceable to Sweelinck and his German students in Pieter van Dijk, “Aspects of Fingering and Hand Division in Lynar A,” in *Sweelinck Studies*, ed. Pieter Dirksen (Utrecht: STIMU, 2002), 127–44; Pieter Dirksen, *Heinrich Scheidemann’s Keyboard Music: Transmission, Style, and Chronology* (Aldershot: Ashgate, 2007), 155–67; and Harald Vogel, “Zur Spielweise der Musik für Tasteninstrumente um 1600 / Keyboard Playing Techniques around 1600,” in his edition of *Samuel Scheidt: Tabulatura nova*, part 2 (Wiesbaden: Breitkopf & Härtel, 1999), pp. 145–80.

Scarlatti finally decided to indicate fingering for his pupils, he used symbols which modern editors have had to translate into numerals (exx. 4a–b).<sup>6</sup>

**Example 3.** John Bull (?1562/3–1628), Praeludium (BuK 121), from London, British Library, Additional ms. 31403, including original and suggested modern fingerings

The image displays a musical score for John Bull's Praeludium (BuK 121) in G major, 2/4 time. It is presented in two systems. The first system shows the original manuscript with various symbols and numerals above the notes, and a modern edition below it with standard fingering numerals (1-5). The second system continues the piece, also showing the original manuscript and a modern edition with suggested fingerings. The score includes both treble and bass clefs, with the right hand playing a melodic line and the left hand providing harmonic support. The piece concludes with a final cadence in the right hand.

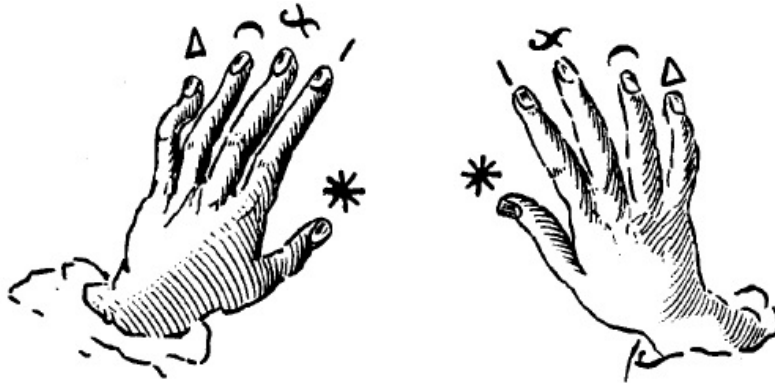
Scarlatti's fingerings already resemble modern, or rather nineteenth-century, fingering in many respects. But his music differs considerably in style from that of Frescobaldi, Froberger, and other earlier composers, and how his fingering related to theirs is impossible to say. But does it matter? Modern keyboard technique is based on the assumption that fingering is independent of articulation or note grouping. A player must be able to execute every instance of a given motif in the same manner, regardless of the fingering used. Could a similar presumption have held also for earlier repertoires? Modern writers on the subject have tended to assume that the answer is no. The two who have devoted the most sustained attention to issues of fingering are Mark Lindley and Harald Vogel. Both reject the idea that historical fingerings necessarily imply numerous short slurs like those in my second example. On the other hand, both observe that early writers often seem to prescribe some degree of non-legato as a default articulation.<sup>7</sup>

<sup>6</sup> Scarlatti's fingerings were first reproduced by John Shedlock in his edition of *Toccate per cembalo ... del Sig<sup>o</sup>: Cavaliere Alessandro Scarlatti* (London: Bach and Co., 1908); further discussion in Mark Lindley, "An Introduction to Alessandro Scarlatti's 'Toccatà prima,'" *Early Music* 10 (1982): 333–39.

<sup>7</sup> E.g., Lindley, p. 333, and Vogel, p. 161, both citing Tomás de Sancta María, *Libro llamado arte de tañer fantasía* (Valladolid, 1565).

**Example 4.** Alessandro Scarlatti (1660–1725), Toccata prima from London, British Library, Add. ms. 32161 (and other sources), (a) opening as reproduced by Shedlock and (b) mm. 6–8 as given by Lindley, example 1

(a)



(These are very likely drawings from Scarlatti's own hands.)

## TOCCATA PRIMO.

(Allegro.)

The musical score consists of three systems of music, each with a treble and bass staff. The first system begins with a treble clef and a common time signature. The first measure contains a whole note chord with a circled '0' and an asterisk below it. The second system shows a more complex texture with sixteenth-note patterns in both hands. The third system features a treble clef and a key signature change to one flat. The word 'simili' is written above the treble staff, and a long horizontal line with a curved end is drawn below it. Various markings (triangles, crosses, asterisks) are scattered throughout the score, corresponding to the hand drawings above.

(b)

As late as 1753, C. P. E. Bach instructed “clavier” players to hold unslurred notes for just half their written values.<sup>8</sup> It is unclear how literally he expected this to be taken, but he certainly did not mention any sorts of grouping or articulation that might result from his recommended fingerings. Paired groupings of notes might be implied by historical techniques used on other instruments: alternating feet for organists, up- and down-bows on bowed strings, paired right-hand fingering on lute and guitar. Yet none of these techniques necessarily groups notes audibly in pairs. Singers employed so-called *gorgia* or throat articulation for quick passagework in Italian music.<sup>9</sup> Yet there are no indications that they intentionally used articulation to group notes into pairs or other small figures. Inasmuch as singing was the most common model for good instrumental performance, this again raises the question whether keyboard players typically expected fingering patterns to produce particular groupings of notes.

The idea that historical fingerings *necessarily* imposed slurs or groupings clearly depends on anachronistic assumptions about hand position and technique. Lindley suggests that paired fingering in scales is facilitated by turning the hand in the direction in which the notes are moving.<sup>10</sup> This requires holding the wrist relatively high, as can be seen in some early pictures of keyboard players.<sup>11</sup> Through use of such a technique, it is possible, with practice, to attain almost any type of articulation. Hence regular grouping or even slurring of notes in twos, as recommended in older writings on the subject, cannot be considered an inevitable consequence of paired fingering.<sup>12</sup> Vogel asserts that historical “string bowing and wind instrument tonguing reveal a much more subtle articulation.”<sup>13</sup> This suggests that keyboard players might attain a comparably subtle type of articulation through the use of historical

8 Carl Philipp Emanuel Bach, *Versuch über die wahre Art das Clavier zu spielen*, 2 vols. (Berlin, 1753–62), 1:127 (chap. 3, para. 22); translated by William J. Mitchell as *Essay on the True Art of Playing Keyboard Instruments* (New York: Norton, 1949), 157.

9 See Sally Sanford, “National Singing Styles,” in *A Performer’s Guide to Seventeenth-Century Music*, 2d edn., ed. Stewart Carter, rev. Jeffrey Kite-Powell (Bloomington: Indiana University Press, 2012), 5–7 (citing Lodovico Zacconi, *Prattica di musica*, 2 vols. [Venice, 1596–1622]); further in Richard Wistreich, *Warrior, Courtier, Singer: Giulio Cesare Brancaccio and the Performance of Identity in the Late Renaissance* (Aldershot: Ashgate, 2007).

10 Lindley, 333, citing Maria Boxall, “English Keyboard Technique up to the Death of Henry Purcell” (diss., Trinity College, London, 1970).

11 Notably on the widely reproduced frontispiece of *Parthenia* (London, ca. 1612), [visible here](#).

12 See, e.g., the examples in Arnold Dolmetsch, *The Interpretation of the Music of the Seventeenth and Eighteenth Centuries* (London: Novello, 1915), 380ff.; articulation of paired notes in twos was “still promoted” (as Vogel notes, p. 171n. 52) by Howard Ferguson, *Keyboard Interpretation From the 14th to the 19th Century: An Introduction* (London: Oxford University Press, 1975), 76.

13 Vogel, 163.

fingering. He deduces no fewer than four distinct types or principles of early fingering (“position,” “paired,” “step-over,” and “thumb-under” fingering), yet none of is laid out in the sources quite as clearly as his discussion might suggest.<sup>14</sup> Nor do any of these technical approaches to fingering have unequivocal implications for articulation.

Indeed, only for woodwind instruments do we have clear documentation for details of articulation, chiefly as produced by tonguing. Tonguing on wind instruments was explicitly meant to produce audible articulations or groupings of notes, and the articulation patterns described in the eighteenth century by Hotteterre and Quantz extend beyond scales to other types of figuration. But how might woodwind tonguing relate to keyboard fingering and articulation? The instructions given by Hotteterre and Quantz tend to form pairs that move from “bad” to “good” notes (exx. 5–6).<sup>15</sup> For instance, in Quantz’s Figure 20 the plosive consonant “d” produces a stronger agogic accent than the lightly flipped letter “r.” The individual notes are unslurred, but each “bad” (unaccented) passing tone marked by “di” is articulated more strongly than the “good” (accented) consonance that follows on “ri,” creating a pair that moves from the unaccented to the accented note. Diruta’s fingerings usually suggest a similar, so-called countermetrical, type of articulation, and seventeenth-century keyboard music from central and southern Europe often employs figuration that moves from upbeat to downbeat (ex. 7); here the use of Diruta’s countermetrical scale fingerings would correspond with the motion of the passagework, as suggested in example 7c. But it is easy to find similar figures in music from England and elsewhere that would not have been played with such fingering (ex. 8).<sup>16</sup>

**Example 5.** Jacques Hotteterre (1673–1763), *Principes de la flûte traversière* (Paris, 1707; repr. Amsterdam, 1728), p. 22

*Premier Exemple.*

Mesure à Deux-temps



Tu ru tu ru tu ru tu ru tu ru tu tu.

*Deuxième Exemple.*

Autre Mesure à Deux-temps.



Tu tu ru tu ru tu tu ru tu tu tu tu.

<sup>14</sup> Vogel, 145–46.

<sup>15</sup> Jacques Hotteterre le Romain, *Principes de la flûte traversière* (Paris, 1707), seen in the edition of Amsterdam: Roger, 1728, pp. 21–29; translated by Paul Marshall Douglas as *Principles of the Flute, Recorder, and Oboe* (New York: Dover, 1968). Johann Joachim Quantz, *Versuch einer Anweisung die Flöte traversiere zu spielen* (Berlin, 1752), 62–73; translated by Edward R. Reilly as *On Playing the Flute*. 2d edn. (New York: Schirmer Books, 1985), 71–86.

<sup>16</sup> Following the usual pattern of English fingering, the first in each group of eighth notes in example 8 would have been played with the “bad” finger 2 or 4.

**Example 6.** Johann Joachim Quantz (1697–1773), *Versuch einer Anweisung die flöte traversiere zu spielen* (Berlin, 1752), from Tabula 3

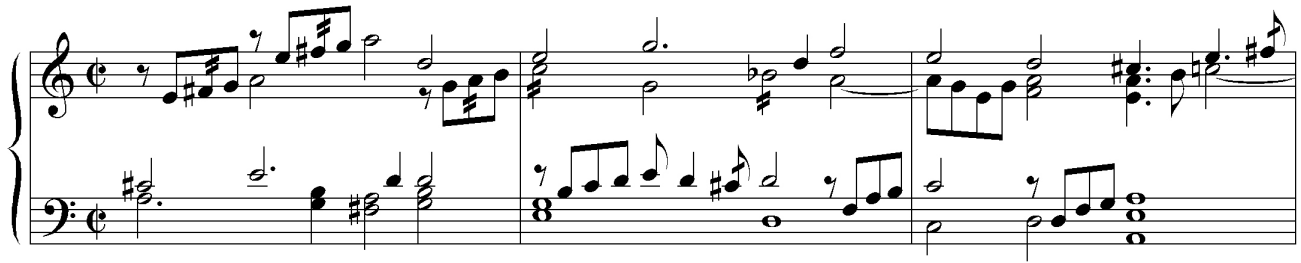
Example 6 shows a musical score for flute with six staves. The notes are accompanied by solfège syllables: 'ri di ri di ri di ri di', 'ri li li li li di di di di', 'di ri di ri di ri di', 'li li ri li li ri li li', 'li ri li li ri li li', 'li ri li ri li li', 'li ri li ri li li', and 'li ri li ri li li'. The score includes fingering numbers (e.g., 97, 92, 90, 20, 21, 22, 23, 24, 25, 26) and dynamic markings such as *F.* (Forte).

**Example 7.** Frescobaldi, Toccata prima from *Il secondo libro di toccate* (“Libro 2,” Rome, 1637), with possible fingering after Diruta

Example 7 shows a musical score for lute with three systems of staves. The score includes fingering numbers (8, 18, 30, 5, 3, 1, 3) and dynamic markings such as *p* (piano). The notation includes various rhythmic patterns and ornaments.



**Example 8.** William Byrd (1543–1623), “The iij pauian,” BK 14a, from London, British Library, ms. Mus. 1591 (My Ladye Nevells Booke)



How, then, can a modern player justify taking the time and trouble necessary for mastering the diverse types of documented historical fingering? Is there any reason not to use modern fingering in music by composers such as Frescobaldi and Froberger for which we have no real evidence about historical practice? Even in English music, why use historical fingering if it is irrelevant to articulation?

One reason is that historical fingering may fit the figuration better than modern fingering. This is especially likely to be true in English music from the time of Byrd to that of Purcell. In the little piece by Bull given in example 3, the historical fingering illustrated there consistently follows a pattern readily understandable by a beginning pupil. This is not true of thumb-under technique (also shown in the example), which in more advanced pieces may require irregular or awkward crossings of fingers and shifts of the hand. Historical fingering leads to a consistent association of good notes to good fingers; modern fingering generates a cognitive dissonance between hand and pattern (ex. 9).

**Example 9.** Byrd, “The galliarde to the same [the third pavan],” BK 14b, from the Nevell book, with possible historical and modern fingerings (beaming of small note values has been modernized for greater legibility)



A rare exception proves the rule (ex. 10). Here the index finger (2) literally points to the first note in each group. This note receives an agogic stress by virtue of the lifting of the finger if not of the whole hand after the preceding note, which is thereby shortened. To be sure, one could use finger substitution to eliminate such breaks in the line (for instance, by substituting finger 2 for 4 on the first eighth note c” before releasing it). But that technique is not documented before the eighteenth century.<sup>17</sup> Using the fingering indicated in this example does, then, lead to the distinct articulation of three-note groups, each fingered 2–3–4.

**Example 10.** Byrd, keyboard arrangement of John Dowland, *Lachrimae Pavan*, BK 54, from London, British Library, R.M. 24.d.3 (Will Foster’s *Virginal Book*), with original fingering



The fingerings shown in example 10 direct use of the index finger to “point” from one figure to the next, the hand following the finger. The more common paired fingering used for scales might be employed the same way, with the third finger (in the English system) “pointing” to each new group of two notes. But this requires the hand, following the finger, to jump to the start of each new pair, creating an agogic accent on the first note. It is possible, however, to reduce or eliminate the break in the line, and thus the agogic accent, by raising the wrist and turning the hand in the direction of the scale (as noted previously)—that is, allowing the hand rather than the individual finger to lead or point to the next note.

Outside England during this period, historical fingering is less easily reduced to readily summarized principles, raising greater uncertainties about the musical effects it might have been expected to favor. Even in the Netherlands, where Sweelinck and his pupils knew Elizabethan music and were deeply influenced by it, there is plenty of evidence for a less systematic or consistent approach to fingering. Sweelinck’s German pupils employed what today looks like a confusing inconsistency between the two hands (exx. 11–12). Good notes in the left hand are taken by the second finger even as the right takes them with the third. In this tradition, the association of good notes with good fingers was maintained, but each hand follows its own rule. Doing so might give a modern player the sensation of having a split brain, but, as with the cognitive dissonance that arises through the use of modern fingering, any confusion can presumably be eliminated through practice.

No sources survive from Italy or southern Germany for fingering in the early Baroque music that is likely to be of greatest interest to players today, that of Frescobaldi and Froberger. One reason could be

<sup>17</sup> Couperin, *L’Art de toucher le clavecin* (Paris, 1716), 19, described the technique, but C. P. E. Bach criticized Couperin as calling for it “too often and without need” (*zu oft und ohne Noth*), *Versuch*, vol. 1, chap. 1, para. 88.



that a musician who was attracted to regular systems, whether of fingering or anything else, might have avoided playing their music. Here the Renaissance-style divisions that still prevail in the works of Byrd, Sweelinck, and Diruta are replaced by more voluble Baroque *bizarria*. The virtuosos who invented the new style might have used an eclectic type of fingering that could not be reduced to the simple rules used for teaching beginners. But there is little actual evidence for this, and the absence of historical documentation for fingering also makes it hard to deduce anything about the intended or expected articulation of figuration in this repertory.

Diruta's book includes a toccata by Luzzaschi, who worked in Ferrara while Frescobaldi was growing up there. But there is no evidence that Frescobaldi studied with Luzzaschi or that Luzzaschi used Diruta's fingerings. Frescobaldi himself, despite his origin in northern Italy, worked for most of his career to the south in Rome. But he also traveled as far as Brussels, where he could have encountered Peter Philips and other English and Dutch players. He might well have known and used a wider range of playing styles and techniques than the relatively provincial Diruta. The same is equally true for Froberger, who was already a mature musician—an imperial organist at Vienna, no less—when he arrived in Rome to study with Frescobaldi. He subsequently traveled to Paris, London, possibly Dresden, and Madrid before returning to his native Stuttgart.<sup>18</sup> It is hard to believe that the music of such composers, which avoids system and formula, could have been dreamt up by one who followed Diruta's doctrinaire approach to fingering.

At the outset of the opening toccata from Frescobaldi's first book of toccatas, Diruta's fingering is readily applied in most instances of a recurring scale figure (ex. 13). But a subsequent burst of thirty-seconds (m. 11) is better suited to fingering like that used in England or recommended by Banchieri. The same may also be true of a subsequent passage that comprises descending scales played by the two hands in parallel sixths (m. 26). Eclectic fingering seems equally necessary elsewhere in Frescobaldi's music, including the famously difficult ninth toccata from his second book (ex. 14). Accidentals in the passage shown in example 14 make the fingering especially problematical, particularly if one wishes to apply the same pattern of articulation to certain recurring scale fragments or motives (marked by brackets).

Similar considerations apply to music by Frescobaldi's pupil Froberger. A spectacular effect used by both composers involves scales played by the two hands in contrary motion. An instance of this occurs near the beginning of example 1, and Frescobaldi called for it in toccata 10 from book 2 (ex. 15). Several of Froberger's toccatas end with similar figures, sometimes as part of a longer passage involving running notes in both hands (ex. 16).

Such passages do not require modern fingering, but they do force the player to abandon the elementary rules given in treatises, especially if the fingering of one hand is to be a mirror image of the other, with corresponding articulation. By the time of Alessandro Scarlatti, some players were probably using the thumb in such passages much as a modern pianist would do. Yet this was not necessarily done routinely or consistently, and older approaches remained in use. Even at the end of the eighteenth century, Türk reported that Wilhelm Friedemann Bach played the challenging scales and arpeggios of his music

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18 For Froberger's Spanish journey, see the rubric that accompanies an otherwise unknown "Meditation" in an autograph manuscript auctioned by Sotheby's in 2006 (current location unknown), image online at [https://sscm-jscm.org/v13/no1/maguire/maguire\\_10.html](https://sscm-jscm.org/v13/no1/maguire/maguire_10.html).

**Example 13.** Frescobaldi, Toccata prima from *Toccate d'intavolatura ... Libro P.o* (Rome, 1637), with possible “eclectic” fingering

The image displays five systems of musical notation for a toccata by Girolamo Frescobaldi. Each system consists of a grand staff with a treble and bass clef. The music is in common time (C) and B-flat major. The systems are numbered 2, 4, 11, 26, and 26 at the beginning of their respective staves. The notation includes various rhythmic patterns, including sixteenth-note runs and triplets. Fingerings are indicated by numbers 1-5 above or below notes. Some notes have a flat (b) or sharp (#) symbol. The piece concludes with a final chord in the fifth system.

**Example 14.** Frescobaldi, Toccata nona from Libro 2, with eclectic fingering

**Example 15.** Frescobaldi, Toccata decima from Libro 2

without employing the thumb.<sup>19</sup> This is so despite the fact that Friedemann’s brother Emanuel made regular use of it.<sup>20</sup>

That historical fingering could potentially influence both rhythm and articulation has long been recognized. But the degree to which this was so must have varied from one tradition to another, even between individual players. Lindley writes of repertories in which players were “indifferent” as to which fingers fell on good and bad notes.<sup>21</sup> In such repertories, which very likely included the music of Frescobaldi and Froberger, it might appear that there is nothing to be gained by adopting fingering that seems unnatural or difficult for a modern performer. Yet historical keyboard fingering is useful for the same reason that the employment of gut strings or historical woodwind and brass tonguing is important for other musicians: without mastering it, one has no idea what its effect might be.

19 Daniel Gottlob Türk, *Klavierschule, oder Anweisung zum Klavierspielen für Lehrer und Lernende* (Leipzig and Halle, 1789), 148.

20 As shown not only by the scale fingerings given in *Versuch*, vol. 1, chap. 2, but also in the fingerings printed in the composer’s *Probestücke*, which were published as a supplement to his treatise (six sonatas, W. 63/1–6; modern edition by the author in Carl Philipp Emanuel Bach: *The Complete Works*, vol. 1/3 [Los Altos: Packard Humanities Institute, 2005]).

21 Mark Lindley, “Keyboard Fingering,” part I/1 (“To 1750”), in *Grove Music Online* <oxfordmusiconline.com> (accessed August 20, 2017).

**Example 16.** Johann Jacob Froberger (1616–67), concluding passages in Toccatas 3, 7, 10, and 12, from the autograph manuscripts Vienna, Österreichische Nationalbibliothek, Mus. Hss. 18706 (“Libro 2”) and 18707 (“Libro 4”)

The image displays five systems of musical notation for a keyboard instrument, likely a lute or harpsichord. Each system consists of a grand staff with a treble clef on the upper staff and a bass clef on the lower staff. The first system is in common time (C) and features a complex, flowing melodic line in the treble with frequent sixteenth-note runs, while the bass line provides a steady accompaniment. The second system begins with a treble clef and a 3/4 time signature, showing a more rhythmic and chordal texture. The third system continues with a treble clef and 3/4 time, featuring a similar rhythmic pattern. The fourth system also uses a treble clef and 3/4 time, with a focus on melodic development. The fifth system returns to common time (C) and features a dense, virtuosic texture with rapid sixteenth-note passages in both hands. The notation includes various accidentals, slurs, and dynamic markings such as 'p' (piano) and 'f' (forte).

The conclusion of the present investigation, that fingering is “indifferent” in the music of Frescobaldi or Froberger, does not mean that a comfortable modern approach to technique is the best choice for their compositions. Nor could it have been reached without exploring other approaches, which can suggest effects of timing or articulation likely to be overlooked when using modern fingering. My personal preference for this music is to employ the “eclectic” fingering illustrated in examples 13–14, allowing the use of paired scale fingerings and other historically documented patterns to produce subtle groupings, as suggested by Vogel, as well as occasional clean breaks—as when articulations occur at leaps that modern fingering would bridge through finger substitution and use of the thumb, or when one must repeat the same finger on successive notes. I do not cultivate the more obtrusive type of articulation that results from actual slurs on paired or otherwise grouped notes, but I do avoid use of the thumb and hold the wrists relatively high, to favor a light and even default articulation. Necessity may be the mother of invention, but discomfort, inconvenience, and the sheer challenge of performing in a way that seems obviously impractical are its close relatives.

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