

The Last Bach-Family Engraved Print: The Musical Supplement to C. P. E. Bach's *Versuch*

Despite the obvious differences in style between the works of J. S. Bach and those of the next generation, it is possible to recognize certain commonalities between Sebastian's music and especially that of his older sons Wilhelm Friedemann and Carl Philipp Emanuel.¹ By the same token, the publishing projects of the Bach sons can be viewed as a continuation of a family tradition or business that J. S. Bach pursued during the last twenty-five years of his life. Friedemann and Emanuel, born in 1710 and 1714, respectively, came of age during the period when Sebastian was publishing his *Clavierübung*. They must have become intimately familiar with the preparation of music for publication, including the technical processes of music engraving and printing, as they followed the progress first of their father's and then of their own music publications. They must also have witnessed the great ingenuity and exactitude that Sebastian applied to his publishing projects, several of which reveal characteristic originality in design and content.² It should therefore come as no surprise that some of C. P. E. Bach's publications show similar originality of conception and care in production—not to mention considerable business acumen in the management of sales and subscriptions.

The depth of Sebastian's involvement in the production of his *Clavierübung*, *Musicalisches Opfer*, *Kunst der Fuge*, and other publications has become clear through the critical reports of the editors of these works for the *Neue Bach-Ausgabe*, as well as in separate investigations by Christoph Wolff, Wolfgang Wiemer, and especially Gregory Butler. Until the perfection of new forms of music typography during the late 1750s, the usual method of printing keyboard music in Germany involved what is now called engraving—more correctly a form of etching in which a manuscript supplied by the composer was either reproduced in facsimile (“reproduction” engraving) or copied freehand by the engraver onto a copper plate.³ This process gave the composer close control over the format of the final product, and although hardly as flexible as printing from type the process allowed limited corrections or revisions to the plates after the initial engraving. Moreover, whereas the printing formes of a typeset book would be broken up after the desired number of copies of each page had been printed (in order to make the type available for further use), copper plates could be retained for use in later reprints.

Emanuel Bach eventually worked out a relationship with the Leipzig publisher Breitkopf whereby the latter printed his music while Bach acted as publisher, selling copies by subscription through agents (including Breitkopf) throughout Europe. This system, which emerged in the

¹ I considered stylistic continuities between J. S. and C. P. E. Bach in my *Instrumental Music of Carl Philipp Emanuel Bach* (Ann Arbor: UMI Research Press, 1984), 13–14.

² The *Musicalisches Opfer* provides perhaps the best illustration of Bach's ingenuity in creating a distinctive format; on the latter see Gregory Butler, “The Printing History of J. S. Bach's *Musical Offering*: New Interpretations,” *Journal of Musicology* 19/2 (Spring 2002): 306–31.

³ For a concise summary of the process, see Gregory Butler, “Sources,” section 2 (“Printed Editions”), in *Oxford Composer Companions: J. S. Bach*, ed. Malcolm Boyd (Oxford: Oxford University Press, 1999), 460–1.

1760s, has been a focus of C. P. E. Bach studies in recent years.⁴ Less clear is the process whereby C. P. E. Bach's earlier, engraved works were printed and published. In some instances he used the same engravers and publishers as his father, implying similar practices and business relationships. But details of the process remain to be elucidated; no doubt critical examination of each work will reveal points unique to the publishing history of each, as has proved to be the case with the publications of J. S. Bach.

C. P. E. Bach's most famous engraved print was also his last: the musical supplement to his *Versuch über die wahre Art das Clavier zu spielen*. The complex printing and publishing history of this famous treatise remains to be fully reconstructed, although the broad outlines are clear enough.⁵ The first of two volumes of text, containing material about solo keyboard performance, appeared at Berlin in 1753 and was subsequently reissued in 1759, 1780, and 1787. Bach himself served as publisher until 1780, when he turned over publication rights as well as the remaining printed copies to the Leipzig publisher Schwickert. The latter designated the new 1780 issue as a second edition, although only the edition of 1787 incorporated any revisions by the author. This first volume of text was accompanied by a separate musical supplement, and it is the latter which is our principal subject. The second volume of text, which appeared in 1762, is of less interest in the present context, since by the time of its publication Bach was able to take advantage of developments in music typography that made it possible to incorporate the musical examples directly into the typeset text. This was not so in the first volume, whose musical component was printed separately, from copper plates.⁶

The musical supplement comprises two elements: numerous short musical examples on six unnumbered pages, as well as eighteen keyboard pieces or *Probestücke*, grouped into six sonatas (W. 63/1–6) and appearing on pages numbered 1 through 20. The present study is concerned primarily with the latter. But it is worth pausing for a moment to consider the originality of the design of this publication as a whole. François Couperin's *L'art de toucher le clavecin* (Paris, 1716; rev. ed., 1717), which Bach clearly knew, had combined text with both short musical examples and complete compositions (eight little preludes). This, however, was a much smaller work, which Couperin could afford to have engraved in its entirety. Bach instead followed the model of Johann Joachim Quantz, his colleague at the Berlin court, who in 1752 published his *Versuch einer Anweisung die Flöte traversiere zu spielen* as a large typeset volume

⁴ The business relationship between C. P. E. Bach and Breitkopf is documented in their extensive correspondence; see *The Letters of C. P. E. Bach*, translated and edited by Stephen L. Clark (Oxford: Clarendon Press, 1997), in which the editor's preface summarizes Bach's and Breitkopf's publishing practices.

⁵ Tobias Plebuch is in the process of editing the textual portion of the work for inclusion in *CPEBCW*.

⁶ The second volume did include a single sheet printed from a copper plate: the score of the fantasia W. 117/14. The engraver appears to have been distinct from the ones responsible for the musical supplement for volume 1. Strictly speaking, this single sheet is the last Bach-family engraved print, if by the latter is meant an item that was engraved on a copper plate, printed, and self-published.

of text accompanied by musical examples (*Exempeln*) printed from copper plates (*Kupfertafeln*).⁷ Perhaps influenced by his father's *Kunst der Fuge*—which was advertised in 1751 as a set of “examples” (without a treatise, of course)⁸—Bach also accompanied his treatise with a series of exemplary compositions.

The *Probestücke* constitute a graded set of pieces, advancing from a relatively simple Allegretto of thirty-two measures printed from a single, smaller plate to a famous free fantasia that extends over two densely printed pages.⁹ All eighteen pieces are in different keys, but they fall into groups of three in related tonalities and in the fast-slow-fast order of a typical keyboard sonata. The use of varied tonalities, although a natural pedagogical device, is more specifically reminiscent of a number of J. S. Bach's collections, such as the Inventions and the Well-Tempered Clavier. So too is the incorporation of a range of genres, recalling especially J. S. Bach's keyboard partitas; among the *Probestücke* are such fashionable types as a siciliano and a binary form with varied reprises. That the pieces form true sonatas might be questioned, inasmuch as no two are in the same key, and some of the titles “Sonata 1,” “Sonata 2,” and so on appear to have been late additions to the engraved plates. But the title pages of both the *Versuch* and the musical supplement itself refer to “eighteen *Probestücke* in six sonatas” (Fig. 1), and the pieces are designated sonatas in Bach's list of his own works.¹⁰ Only in one instance are two

⁷ A facsimile of the posthumous third edition (Breslau, 1789) has been edited by Hans-Peter Schmitz (Kassel: Bärenreiter, 1974). Quantz's first edition was issued more or less simultaneously with a French version, *Essai d'un methode pour apprendre à jouer de la flute traversiere* (Berlin, 1752; facs., Paris: Aug. Zurfluh, 1975). Bach did not emulate Quantz in this respect, although Marpurg would issue his *Anleitung zum Clavierspielen* (Berlin, 1755; rev. ed., 1765) in an expanded French version, *Principes du clavecin* (Berlin, 1756).

⁸ See *Bach-Dokumente III: Dokumente zum Nachwirken Johann Sebastian Bachs*, ed. Hans-Joachim Schulze (Kassel: Bärenreiter, 1972), pp. 8–9 (item 639). The announcement appeared in the *Leipziger Zeitungen* for June 1, 1751.

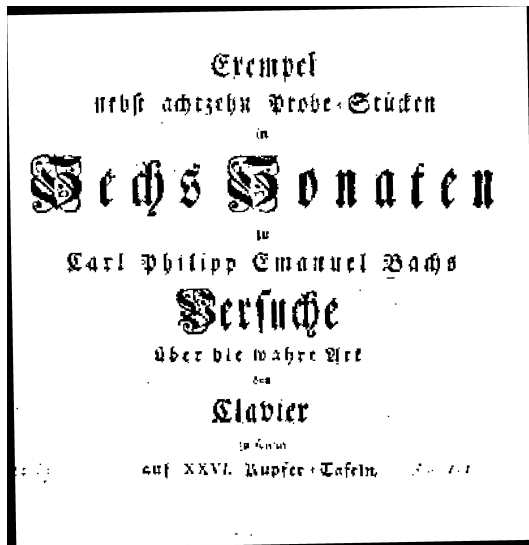
⁹ Although the page size is uniform, the size of the printing impressions varies, showing that some of the less densely printed early pages were printed from relatively small plates.

¹⁰ Bach wrote several other sonatas that begin and end in different keys, although none prior to the *Probestücke*. On Bach's autograph catalog of his keyboard works through 1772 (now in Berlin, Archiv der Sing-Akademie zu Berlin, SA D X 1822/1029), see Christoph Wolff, “Carl Philipp Emanuel Bachs Verzeichnis seiner Clavierwerke von 1733 bis 1772,” in *Über Leben, Kunst und Kunstwerke: Aspekte musikalischer Biographie: Johann Sebastian Bach im Zentrum*, ed. Christoph Wolff (Leipzig: Evangelische Verlagsanstalt, 1999), pp. 217–35 (including a complete facsimile). The information in this catalog was incorporated after Bach's death in the *Verzeichniß des musikalischen Nachlasses des verstorbenen Capellmeisters Carl Philipp Emanuel Bach . . .* (Hamburg, 1790); annotated facsimile edition by Rachel Wade as *The Catalog of Carl Philipp Emanuel Bach's Estate: A Facsimile of the Edition by Schniebes, Hamburg, 1790* (New York: Garland, 1981). As Wolff notes, both catalogs appear to derive from one or more lost lists of works, information from which appears in different forms in both catalogues.

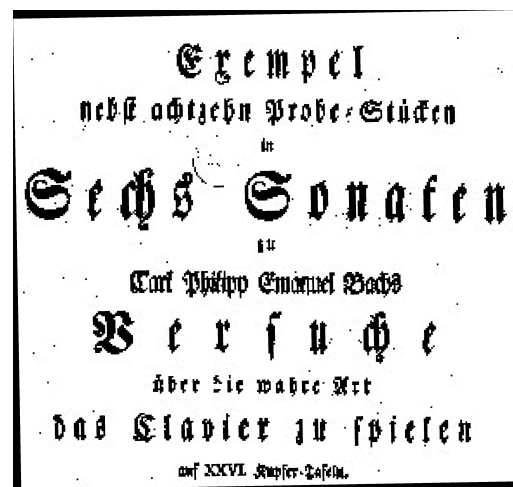
Fig. 1

The *Probestücke*: six sonatas in eighteen movements, items 63/1–6 in the Wotquenne thematic catalog (items 70–6 in the Helm catalog). Composed at Berlin in 1753 according to Bach's manuscript catalog of keyboard works (Berlin, Archiv der Sing-Akademie zu Berlin, SA D X 1822/1029) and his estate catalog (*Verzeichniß des musikalischen Nachlasses des verstorbenen Capellmeisters Carl Philipp Emanuel Bach*, Hamburg, 1790).

Published in *Exempel nebst achtzehn Probe-Stücken in Sechs Sonaten zu Carl Philipp Emanuel Bachs Versuche über die wahre Art das Clavier zu spielen auf XXVI. Kupfer-Tafeln*. Later expanded to include the *Neue Sonatinen*, W. 63/7–12 (H. 292–7), two sonatas in six movements composed at Hamburg in 1786. Facsimile: *The Collected Works for Solo Keyboard by Carl Philipp Emanuel Bach (1714–1788)*, edited by Darrell Berg (New York: Garland, 1985), vol. 1, pp. 39–59.



earliest version of title page



second version of title page

Bach's treatise: *Versuch über die wahre Art das Clavier zu spielen*. Two vols., Berlin, 1753–62. Reprints of vol. 1: 1759, 1780. Reprint vol. 2: 1780. Second edition of vol. 1: Leipzig, 1787. Second edition of vol. 2: Leipzig, 1797. Facsimile of the 1753–62 edition, with additions from later printings, edited by Wolfgang Horn (Kassel: Bärenreiter, 1994). Translation by William J. Mitchell as *The True Art of Playing Keyboard Instruments* (New York: Norton, 1949).

title page,
volume 1,
first edition
(1753)



movements actually connected musically.¹¹ But successive movements are always in different modes, so that the six sonatas alternate between those whose opening and closing movements are in the major and those whose outer movements are in the minor. That Bach chose the sonata as his medium reflects his intense concentration on the genre since the 1730s; an influence from his Berlin senior colleague (and potential rival) Quantz is also possible.¹²

Bach could have had the *Probestücke* printed and sold separately. But it made sense both economically and, perhaps, aesthetically, to issue them as an integral part of the *Versuch*, or at least as part of the same musical supplement that contains the examples for latter. Much later, near the end of his life, Bach added six more pieces (organized into two sonatas), now known as the *Neue Sonatinen* (W. 63/7–12).¹³ These, however, were engraved and published by Schwickert and incorporated by the latter into the expanded version of the musical supplement that accompanied the revised 1787 edition of the *Versuch*'s first volume. They are therefore peripheral to the present discussion.

Bach evidently composed the six *Probestücke* sonatas in 1753, the same year in which the first volume of the *Versuch* was published.¹⁴ No doubt the latter had been in preparation for an extended period, perhaps several years. In 1753 C. P. E. Bach had just assisted in the

¹¹ The second movement of Sonata 4 ends with a modulating transition to the key of the following movement. Connections between movements are not unusual among Bach's sonatas, especially those composed after the *Probestücke*.

¹² The variety of keys and genres in Bach's set had a precedent in the series of twenty sonatas for flute and basso continuo by Quantz preserved in a manuscript that Horst Augsbach supposes to have been used in Quantz's instruction of Crown Prince Frederick of Prussia; see Horst Augsbach, "Fragen zur Überlieferung und Datierung der Kompositionen von Johann Joachim Quantz, Teil II: Die Handschriften," *Tibia* 22 (1997): 5. (The manuscript is Berlin, Staatsbibliothek, Mus. ms. 18021; facsimile, as *XX sonate: a flauto traversiere solo e cembalo*, Ms. Berlin, in *Monumenta musica revocata*, vol. 21, Florence: SPES, 1997.) Although Augsbach's interpretation is open to question, Bach might have accompanied Frederick's performances of some of these pieces. On these sonatas, and on the possibility of Quantz's influence on Bach, see Mary Oleskiewicz, "Quantz and the Flute at Dresden: His Instruments, His Repertory, and Their Significance for the *Versuch* and the Bach Circle" (PhD. diss., Duke University, 1998).

¹³ The numbering of the *Neue Sonatinen* in the Wotquenne thematic catalog, unlike that of the *Probestücke*, does not respect the composer's organization of the pieces into three-movement sonatas. The latter, however, is documented in both the *Nachlassverzeichnis* and in a manuscript (Berlin, Staatsbibliothek, Mus. ms. Bach P 775) that was probably copied from the composer's lost autograph.

¹⁴ Because the only primary sources for the *Probestücke* are various exemplars of the printed edition—which is undated (see below)—the sole documentation for their date of composition is provided by the lists of works described in note 11. Both lists indicate that the pieces were written at Berlin in 1753.

republication of the *Kunst der Fuge*, the plates of which remained in his possession. He had also published five of his own works, including most recently two trio sonatas (*Zwey Trio*) in 1751 and the concerto W. 25 in 1752, both issued by the widow of Balthasar Schmidt; Schmidt himself had previously engraved Emanuel's concerto W. 11 as well as Sebastian's Canonic Variations BWV 769. In addition, in his youth Emanuel Bach had engraved his own *Menuet pour le clavecin* W. 111 of 1731.

Thus by 1753 Emanuel would have been thoroughly familiar with the issues and techniques involved in printing music. The decision to print the *Probestücke* through freehand engraving—not reproduction etching, as in the *Kunst der Fuge*—would have been deliberate, perhaps reflecting the relative complexity of the scores in the *Probestücke*, which include idiomatic keyboard textures replete with fingerings, ornamentation, and articulation. In addition, Bach must have been determined to avoid the need for last-minute renumbering of the plates or for manuscript corrections of printed sheets, such as his father had been forced to make in several publications. Despite the unprecedented complexity of Bach's musical text, errors are limited to a few seemingly misplaced performance indications (staccato dots and the like); only one exemplar of C. P. E. Bach's *Probestücke* has thus far revealed possible manuscript alterations.¹⁵

In fact, although modern reference books give 1753 as the year of the *Probestücke*, this date appears only in the treatise. No date appears in any printed exemplar of the music. Documents close to Bach do give 1753 as the year when the sonatas were completed; the verb used is *verfertigt*, which is usually translated as “composed” but in this case might have included the process of engraving, correcting, and printing the music. It would not have been impossible for Bach to carry all this out within a few months early in 1753. But he had completed relatively few works since his father's death in 1750. Writing of both the *Essay* and the *Probestücke* might have taken place during the intervening time. We have no clear indication at all as to the date of Bach's later alterations to the music. They were probably made by 1766, since that is the date of a manuscript copy that includes them.

The challenges that the *Probestücke* presented to the engraver are immediately evident from modern facsimiles, although these exaggerate the difficulties by reducing the size of the pages (Fig. 2).¹⁶ Like Couperin, Bach included numerals for fingering on practically every note (a feature also of two of J. S. Bach's unpublished preludes, BWV 930 and BWV 994). Bach also comprehensively marked signs for dynamics, articulation, and ornamentation. In the *Versuch*, Bach acknowledged compromises that were made necessary by the density of the notation: “due to limited space,” inner voices are sometimes notated without flags (*nicht besonders*

¹⁵ On page 20 of Stockholm, Statens musikbibliotek, Litt. Rar. Fol. Th. 3. K.M.A.

¹⁶ Dimensions of the paper now vary due to trimming and shrinkage; typical dimensions for a single leaf are 41.3 x 31.7 cm. For a facsimile (reduced in size) of the complete publication, see *The Collected Works for Solo Keyboard by Carl Philipp Emanuel Bach (1714-1788)*, ed. Darrell Berg, 6 vols. (New York: Garland Publishing, Inc., 1985), 1:39–60. Berg names as sources two exemplars in London, British Library. The title page appears to be reproduced from c.119.h.2, an exemplar of the earliest known state. The remainder is reproduced from 788.h.10, a copy of the expanded edition of 1787 (but with page 20 printed from the original, not the replacement, plate).

Fig. 2. Sonata III, mvt. 1

7.
Sonata III.
Poco Allegro
ma cantabile.

The image shows a page of handwritten musical notation for the first movement of Sonata III. The page is numbered '7.' in the top left corner. The title 'Sonata III.' is written in a cursive hand. Below the title, the tempo and mood are indicated as 'Poco Allegro ma cantabile.' The score is arranged in eight systems, each consisting of two staves. The notation includes various musical symbols such as notes, rests, slurs, and dynamic markings like 'p' (piano) and 'f' (forte). There are also numerous fingerings and articulation marks throughout the piece.

beschwänzt), and their note values must be determined from the context.¹⁷ In addition, the final product, although musically accurate, is not beautiful, lacking the elegant appearance of contemporary French prints or, for that matter, of the examples in Quantz's treatise (which, unlike Bach's, was dedicated to the king and published commercially, not by the composer himself).

Two engravers produced the original plates for the *Probestücke*: one prepared the first seventeen pieces, and a somewhat more practiced, elegant hand was responsible for the final fantasia. The first hand is characterized by simpler and somewhat rougher forms: in particular, thick slurs and somewhat inconsistently drawn numerals, always without serifs. The second hand writes figures with serifs as well as thinner, more cleanly drawn slurs and ornament signs, although this engraver sets the brace for each system about half an inch in from the left margin, resulting in a somewhat ragged appearance and some wasted space (see Fig. 3a).

Inconsistencies in format suggest that the engraving was not carried out all at once. Through page 8, tempo marks appear on the same line as the first system of music (see Fig. 2); beginning on page 9 (Wq 63/3/iii), tempo marks appear above the unindented first system of music, perhaps to save space (the music now quite fills the plates). A second change occurs on page 13 (Wq 63/5/i), where for the first time the title ("Sonata V.") is in large characters at top center; previously the titles are much smaller and, for the first three sonatas, to the left of the first measure of music. Conceivably, at the time these pieces were engraved, Bach had not yet decided to call each set of three pieces a sonata.

Although the presence of two principal engravers has long been recognized, traces of numerous additions and corrections on pages 1–18 have not been previously reported.¹⁸ The forms of these entries do not correspond precisely with the engraving style of pages 19–20, but they are closer to the latter than to the work of the first engraver. This is most obvious in certain fingering numerals (e.g., the first 1 and 3 in Wq 63/1/i, m. 25) that are more finely drawn and include serifs (Fig. 4). Also more elegantly drawn and smaller or thinner are certain ornament signs, slurs, and accidentals that appear to have been added after the first engraver had completed his work. The added trill signs generally comprise three "wiggles" of equal size and spacing, unlike those of the first engraver, whose trill signs possess a slight bulge in the middle.

Whereas some of the added or altered readings may reflect only careful proofreading,

¹⁷ *Versuch*, vol. 1, chap. 1, para. 96 and chap. 3, para. 16. A few manuscript copies provide definite note values for the inner voices in movements such as W. 63/4/ii, in which real ambiguities arise in interpreting the intended note values. In addition, Bach mentions that the presence of fingerings made it necessary to use dots for staccato instead of strokes, to avoid confusion with the numeral "1."

¹⁸ Erich Doflein, in his edition *Carl Philipp Emanuel Bach: Sechs Sonaten: Achtzehn Probestücke zu den "Versuch über die wahre Art das Clavier zu spielen" (1753)* (Mainz: B. Schotts Söhne, 1935), noted only the presence of variants between the original and re-engraved page 20. Miklós Spányi, in his more recent critical edition, *Carl Philipp Emanuel Bach (1714–1788): 18 "Probestücke" in 6 Sonaten; 6 Sonatine nuove; 6 leichte Sonaten; 6 Sonaten ("Damensonaten")*, *Sämtliche Klavierwerke, I/4* (Budapest: Könemann Music, 1999), declares that apart from the variants on page 20 the versions of the print are "identical."

Fig 3. Sonata VI, mvt. 3 (fantasia), middle section

This image shows a page of musical notation for the second edition of the middle section of Sonata VI, mvt. 3. The page is numbered '20.' in the top right corner. The tempo is marked 'Largo.' at the top. The score consists of six staves, with three systems of two staves each. The notation is dense and complex, featuring many ornaments, slurs, and dynamic markings. The key signature has two flats, and the time signature is 3/4.

(a) second edition

This image shows a page of musical notation for the third edition (1786 or later) of the middle section of Sonata VI, mvt. 3. The page is numbered '20' in the top right corner. The tempo is marked 'Largo' at the top. The score consists of six staves, with three systems of two staves each. The notation is dense and complex, featuring many ornaments, slurs, and dynamic markings. The key signature has two flats, and the time signature is 3/4.

(b) third edition (1786 or later)

Fig. 4. Sonata I, mvt. 1, mm. 23-5



Fig. 5. Sonata IV, mvt. 2, mm. 19-20



Fig. 6. Sonata VI, mvt. 2, mm. 19-21



Fig. 7. Sonata III, mvt. 3, mm. 29-32



others represent substantive, if small, revisions by the composer. Among the latter are two trill signs in Wq 63/1/ii (mm. 17 and 19), as well as three-note slurs in the left hand throughout Wq 63/3/iii (see Fig. 7). A few apparent amendments to the tempo marks may also fall into this category, as discussed below.¹⁹ On the other hand, in some places the first engraver may have intentionally omitted signs that were already present in his exemplar, as at the top of page 16 (Wq 63/5/ii, mm. 51–4), where it was left to the more practiced second engraver to squeeze the fingerings for the inner voice onto the already crowded plate.

Although the *Versuch* says relatively little about the individual compositions, it does point out some specific features of the *Probestücke*. Bach mentions that the tempo marks are more precise than was customary at the time. Thus the tempo mark for the first movement of Sonata III reads: *Poco allegro, ma cantabile*. As Figure 1 shows, however, the last two words, *ma cantabile*, are very small. Like the title, they were probably added by the corrector. Bach also mentions that, because the notation is crowded, incorporating numerous dynamics, ornaments, and fingerings, he has left stems and flags off certain notes in inner voices. In Figure 5, the precise note values of the inner voice must be determined from the context, and it is unclear exactly how to interpret Bach's notation on the downbeats of both measures shown. Modern editions have equated these note values with those of the upper voice, but this may not be correct in every instance.

Bach's notation in Figure 5 must have been an unsatisfactory compromise for a composer elsewhere so concerned with notational precision. The unprecedented graphic density of Bach's score for the *Probestücke*, which specifies more parameters of performance than almost anything previously published, reflected not only a family tradition of notational precision but also a culture of intellectual exactitude and rationalism that characterized the Berlin court. But in Bach's *Probestücke* the aspiration toward notational precision and completeness comes up against the limitations imposed by the available printing technology. In planning the work Bach may also have had uncertainties about the abilities of his engravers. In fact, however, only one movement shows this notational peculiarity, on a page virtually untouched by the corrector. Elsewhere the corrector appears to have added stems and beams, as well as fingering numerals, to inner voices, as in Figure 6. Here, in the second measure, the stems, beams, and fingerings for the tenor voice appear to be additions to the original engraving. Evidently the corrector was able to carry out these changes after the relevant passage in the treatise had already been written and perhaps printed.

Bach's substantive changes to the musical text involved only details, such as the addition of ornament signs and slurs. But in one case they substantially altered the musical character of a movement, again reflecting a passage in the treatise. Throughout the third movement of Sonata III, the corrector added three-note slurs in the left hand. In Figure 7 these added slurs are recognizable from their thinner lines. Without them one would detach the bass line, following Bach's instructions in the treatise to hold unslurred notes half their written values. With the slurs,

¹⁹ The *Probestücke* are remarkable for the various adjectives that follow the tempo marks as such (such as *Allegro*); in some cases the tempo words are written in larger characters and end with a full stop. This implies that the qualifying words were second thoughts by the composer, but only in the three instances listed below do they appear to have been added by a second engraver.

however, the notes, which form broken chords, are sustained for the full length of the slurs. The result is a more elegant, if less lively, musical affect.

It is possible that, in the hurry to prepare the engraved plates in a timely fashion, the corrector overlooked certain last-minute revisions that Bach had made on several pages of his autograph. Several substantive changes to the musical text were not made until after the initial publication of the work. Although very limited in scope, these constitute a third step in the engraving, in effect a second edition of the music. These changes consist mainly of ornaments added in just three movements, including two movements from Sonata III, which had already received changes. One such addition is visible in Example 6: it is the little trill in the last measure of the right hand.

That the first engraver intentionally withheld certain finishing touches from the plates is clearest from the fact that the pagination of the twenty numbered pages, which would presumably have been added only after the plates were ready for printing, is the work of the second engraver.²⁰ So too are the titles (“Sonata I,” etc.) for the first four sonatas. This suggests that the division of labor between two engravers, one more accomplished than the other, might have been planned from the start. It also implies that Bach may not at first have been certain of the order or selection of pieces. Indeed, it is curious that the *Versuch* refers only occasionally to specific movements from the *Probestücke*, never referring to them by number.²¹ If Bach had composed the *Probestücke* only after writing most of the text, this would explain the somewhat surprising paucity of references to specific pieces within the treatise.²²

Wolfgang Wiemer has shown that the principal engraver of pages 1–18 was also responsible for engraving portions of J. S. Bach's *Musicalisches Opfer* and *Kunst der Fuge*, as well as W. F. Bach's keyboard sonata in E-flat (F. 5).²³ On the basis of handwriting samples and other evidence, Wiemer concludes that this engraver was Johann Heinrich Schübler (1728–1807), who on Feb. 2, 1753 took a position as organist at Mehli's.²⁴ More recently, Gregory Butler has identified the principal engraver as Johann Georg Schübler, not Johann

²⁰ Not all page numbers are visible in the facsimile edition by Berg. The title page and the six pages bearing the examples are unpaginated.

²¹ These movements are cited in *Versuch*, vol. 1, chap. 3: W. 63/2/iii (para. 1); W. 63/6/i (para. 1); W. 63/6/iii (para. 15, referring to the fantasia as the “letzte Probe”); and W. 63/5/ii (para. 31, referring to “das Probe-Stücke aus dem F dur”).

²² The fact that pagination appears only on the pages bearing the *Probestücke* might suggest that Bach considered publishing the latter separately from the *Versuch* and its examples. However, in those exemplars whose collation could be observed, the title page appears to be printed on the same sheet of paper that also bears pages 4–5 of the *Probestücke* (W. 63/2/i–ii); page 1 (W. 63/1/i) is printed on the reverse of the last page (“Tab:VI”) of examples.

²³ Wolfgang Wiemer, “Johann Heinrich Schübler, der Stecher der Kunst der Fuge,” *Bach-Jahrbuch* 65 (1979): 77–95. A third engraver was probably responsible for the musical examples for volume 1 of the *Versuch*.

²⁴ Wiemer, 84.

Heinrich (he says he will send me samples): their eighth rests differ, especially in the upper bar, and in the figure “3”.²⁵

It is possible that the second engraver was called in only after Schübler took up his organ post and became unavailable. However, the work of the second, presumably professional, engraver on the fantasia might have been commissioned separately; indeed, there is no reason to assume that the fantasia was engraved later than the other pieces. But this engraver (or another from the same shop) might then have carried out the corrections to pages 1–18. In any case, if Bach had been pressed for time or money, it would have made sense to have the plates initially worked by a familiar and dependable person who did not necessarily command the highest price—one such as J. H. Schübler, “the youngest and least skilled of the Schübler brothers”²⁶—leaving the correction of errors and the insertion of difficult entries to a more skilled hand.

There are roughly one hundred entries attributable to a “corrector,” most falling into one of four categories:

sonata/ movement	mm.	staff	notes	comment (*illustration attached)
<i>1. addition of fingerings</i>				
1/i	25	r	1–2	fingerings 1, 3 added*
6/ii	20			last three fingerings 1, 1, 1 in inner voice added (serifs); traces remain of older fingering 1 on each of the last two notes g–f, engraved over the beams of the 16ths; also, slur on l.h., 2–3 short and light, added?*
6/ii	21			fingerings 4, 1 in inner voice (a b, g) added*
<i>2. alteration of fingerings</i>				
1/ii	29	r	4	fingering orig. 5, corr. to 4 (serif on 4)
<i>3. addition of ornament signs</i>				
1/ii	17, 19	r	2	small trill signs added
2/ii	4	r	11	trill sign inserted beneath turn and fingering 2
<i>4. addition of slurs</i>				
3/i	10	r	4–5	slur is finer than others, probably added
3/iii	1–9, 17–20, 25–8, 30–4,* 36, 50–4, 61–4	l		slurs thin and light, probably added*

²⁵ Personal communication. I am grateful to Prof. Butler for sharing his findings with me prior to publication.

²⁶ Butler, “The Printing History,” p. 310.

3/iii	6, 8	r	1–2	slurs thin and light, probably added
6/ii	20	l	2–3	slur short and light; added?*

In addition, the final words of certain tempo markings appear to have been late additions. In at least one case the addition appears to have been squeezed in by the first engraver:

<u>sonata/</u>	<u>mm.</u>	<u>staff</u>	<u>notes</u>	<u>comment</u>
<u>movement</u>				
5/ii	tempo mark			words “Adagio” and “assai” run together

But in other cases the additions show the characteristic letter “o” and serifed characters typical of the corrector (see Fig. 1):

<u>sonata/</u>	<u>mm.</u>	<u>staff</u>	<u>notes</u>	<u>comment</u> (*illustration attached)
<u>movement</u>				
3/i	tempo mark			“mà cantabile..” (sic) very small, possibly added*
3/ii	tempo mark			“lusingando” possibly added
4/i	tempo mark			“grazioso” added (serifs; final “o” same as zero in page nos.)

The lists above are exemplary, not complete. Relatively few of the changes prior to publication were of any musical significance; the greatest number are of the first two types listed, involving changes to fingering numerals. Even fewer changes were made after publication, and these, apart from the resetting of the title page, were similar to those listed above. The reprinted title page uses a less ornate typeface for the principal words *Sechs Sonaten*, inserts spaces between the letters of the word *Versuche*, and sets the words *das Clavier zu spielen* on a single line. The musical changes in the *Probestücke* are restricted to pages 7, 9, and 18:

<u>sonata/</u>	<u>mm.</u>	<u>staff</u>	<u>notes</u>	<u>comment</u> (*illustration attached)
<u>movement</u>				
3/i	7	r	1	trill added*
3/iii	22	r	7	trill added
3/iii	32	r	4	trill added*
6/ii	31	r	1–2	two slurs added, for both right-hand voices (fingering 1 on d \flat also added, but prior to publication)
6/ii	51	r	1–2	double appoggiatura (<i>Anschlag</i>) added*

What is possibly another ornament was also added on page 18:

<u>sonata/</u>	<u>mm.</u>	<u>staff</u>	<u>notes</u>	<u>comment</u>
<u>movement</u>				
6/ii	16	r	2	indistinct trill sign apparently inserted beneath turn sign and figure 4 (very light in some exemplars; looks blurry, like a stray mark, in one Berlin exemplar)

In addition, one fingering was corrected:

<u>sonata/</u>	<u>mm.</u>	<u>staff</u>	<u>notes</u>	<u>comment</u>
<u>movement</u>				
5/iii	39	1	2	5 (sic); changed to 2 (blot in one exemplar)

The original plate for the last page of the fantasia also shows a few alterations (prior to its replacement by a newly engraved page):

<u>sonata/</u>	<u>mm.</u>	<u>staff</u>	<u>notes</u>	<u>comment</u>
<u>movement</u>				
6/iii	15–16			slur in inner voice added
6/iii	16–17			slurs added on e b'-d', c'-b b, a b-g (displaced to right), d'-c'

The slurs in mm. 16–17 remain in the re-engraved page, which also shows the following variants:

<u>sonata/</u>	<u>mm.</u>	<u>staff</u>	<u>notes</u>	<u>comment</u>
<u>movement</u>				
6/iii	11	r		slur in inner voice (f#'-g'-f#') omitted
6/iii	11–12	r		tie omitted
6/iii	17	r	2	“f” omitted
6/iii	22b	1		rests above dotted quarters f# and f<double-sharp> are quarter, quarter (not quarter, 8th)
6/iii	22c	1		rests above dotted 8ths e ♯, d ♯, and f# are dotted 8th, 8th (not 8th, 16th)
6/iii	22d	1		cautionary flat on a" in first r.h. chord; additional slur above “p” e ♯–e–f (16th); the word <i>arpeggio</i> over the last two chords but one begins to the right of the first of these two chords in 2d engraving

Thus we have evidence for the following stages of production:

1. initial engraving of pages 1–18 and 19–20 (prior to publication)
2. corrections and alterations of the plates for pages 1–18 (state A1)²⁷
3. musical revisions to pages 7, 9, and 18 and correction of page 20 (state A2)
4. re-engraving of page 20 (B2)

Unfortunately, the relatively small number of minor revisions undertaken after the initial publication—that is, at stage 3—do not allow the drawing of conclusions as to the engraving hand. Nor has any evidence emerged for precisely dating any of these stages of production; even the initial publication of the musical supplement cannot be reliably dated. It has generally been assumed that the musical supplement appeared in 1753, simultaneously with the text volume. Reference works and library catalogs often state that the *Probestücke* were first printed by Henning in 1753 and later reprinted by Winter and Schwickert, in 1759 and 1780 respectively—that is, mirroring the publication history of volume 1 of the *Versuch*.²⁸ But the title page of the printed musical supplement does not state any facts of publication, and there is rarely any evidence connecting a given exemplar of the text with one of the music.

Because the engraving is at least partly of the freehand or mechanical, not the reproduction, type, it does not show identifiable elements of Bach's own hand and cannot be dated on that basis. One manuscript copy bearing the date 1766 appears to derive from the revised print (state A2) and therefore may give a *terminus ante quem non* for the latter.²⁹ Comprehensive study of all surviving exemplars, including paper identification, might produce more definitive results than those obtained here. But at this point an absolute chronology cannot be established, apart from the unsurprising conclusion that the final stage, the re-engraving of page 20, took place at about the same time as the engraving of the *Neue Sonatinen*—that is, in or about the year of the latter's composition, 1787, which also saw Schwickert's publication of the revised first volume of the *Versuch*. This is evident from the similarity of the engraving hand as well as the presence of small errors in both the re-engraved last page of the *Probestücke* and in the six added pieces. The errors point to engraving and printing that took place after the composer had ceased to play an active role in the work's production.

²⁷ These sigla refer to the states of the print recognized in my forthcoming critical edition of the *Probestücke* in *CPEBCW*, vol. I/3. State B1, not included in the present list, adds the *Neue Sonatinen* and a corresponding new title page but still contains the original page 20 (as in the exemplar reproduced in the Berg facsimile).

²⁸ See, e.g., *Répertoire internationale des sources musicales [RISM]*, vol. vol. A/I/1: *Einzeldrucke vor 1800*, ed. Karlheinz Schlager (Kassel: Bärenreiter, 1971).

²⁹ The title page of D DS, Mus. ms. 1305 reads “VI Sonaten. // di Carl Philipp Emanuel / Bach. // Poss. G. H. J. Gebhar[di] 1766.” Two other dated manuscript copies appear to derive from state A1 and therefore do not aid chronology: D LEm, Poel. mus. ms. 47, signed by Christian Friedrich Penzel and containing the entry “Scr. Lips. d. 2 Nov. 1765” (not on a page bearing the *Probestücke*, however); and D DI, Mus. ms. 3029-T-9, signed “Finivit dem 4. August. / 1768. Fischer.”

The replacement of page 20—the very last page, containing the conclusion of the fantasia—was evidently due to a defect in the plate that eventually grew so large that the plate had to be replaced (see Fig. 3b). This was probably due to corrections made previously; at some point, perhaps only after Schwickert obtained the plate, it became unusual, forcing the Leipzig publisher to replace it. Bach's previous changes had involved only minute details, especially the addition of a few slurs. None of these is of any musical consequence, since the intended readings were already clear. Yet Bach had been sufficiently concerned with achieving a perfect musical text that he risked damaging the plate in order to correct it.

Unfortunately, Bach's surviving correspondence postdates the composition of the *Probestücke* and the initial publication of the *Versuch*. Until 1780 Bach evidently sold individual exemplars of both the text and the musical supplement on his own. But he must not have received as many orders for the music as he had expected, for, as he wrote in 1783, “The *Probestücke* increase too fast in difficulty. . . . Many people wanted just the text and no *Probestücke*, since the latter were too difficult for them. . . .”³⁰ The transmission of the examples in some manuscripts together with the *Probestücke* suggests that some musicians may have avoided paying for the printed music by copying it out by hand. But in any case, even after the first volume of the *Versuch* had been reprinted, Bach may have continued to fill orders for the musical supplement from older stock.

In 1780 Bach sent the engraved plates together with the remaining printed copies to Schwickert, who would later issue the expanded version of the musical supplement that included the new sonatinas.³¹ A letter of 1785 confirms that Bach had by then divested himself of the remaining exemplars of the *Probestücke*, for he found it necessary in that year to request a copy from the publisher Johann Gottfried Immanuel Breitkopf (1719–94).³² Even after the addition of the *Neue Sonatinen*, Schwickert evidently continued to sell copies of the musical supplement that incorporated previously printed pages; state B1 of Schwickert's expanded print continues to show the original page 20. When reprinting of the *Probestücke* became necessary, Schwickert must have found the existing plate for page 20 no longer usable and had a new plate prepared. The errors on the re-engraved page suggest that it was never proofread by Bach; it might even have been engraved and printed posthumously.

The extraordinary attention to detail and the high level of accuracy evident in the original publication indicate the significance that Bach attached to it. In this he maintained the family tradition of precise planning and editorial control of engraved prints. Most of Bach's subsequent publications were typeset, and although Bach's correspondence provides evidence of systematic

³⁰ Letter to Schwickert, Feb. 18, 1783; no. 224 in *Letters*.

³¹ Letter of May 19, 1780 (no. 185 in *Letters*). Although this letter specifies the precise number of copies of the text handed over, it mentions only “all copper engravings from both parts and all incomplete ones.”

³² Letter of Feb. 8, 1785 (*Letters*, no. 268). It is unclear why Bach requested the copy from Breitkopf instead of writing directly to the publisher Schwickert, with whom Bach also corresponded during this period. Probably Bach, who had another request as well for Breitkopf, was merely saving on postage to Leipzig.

proofreading, he evidently accepted the reduced level of control made necessary by the new technology and the new conditions of publishing that went with it.³³ Several later printed works, such as the *Damensonaten* of 1768 or 1769, were again engraved, but these were produced and sold outside Germany, and Bach seems to have tolerated a reduced level of accuracy and control in these publications.³⁴ Evidently these popular keyboard collections were of less significance to him than the vocal works, such as the *Auferstehung* cantata, and the keyboard series *für Kenner und Liebhaber*, in whose publication Bach took an active role during the last two decades of his life. No doubt the *Probestücke* also remained important to him even after his surrender of the plates in 1780. But just as he had previously found it not worthwhile to save the plates for his father's *Kunst der Fuge*, he now gave up the plates to his own works. That he did so may be an indication not that he had ceased to value the music, but that he was confident that it would remain available to those willing to seek it out.³⁵

Although this investigation has shed some light on details in the history of the *Probestücke*, many small mysteries remain. In addition to that concerning the true date of their first composition, another involves the famous concluding fantasia. The *Essay* refers to this fantasia as the “last” of the *Probestücke* without specifying its key; Bach describes this piece as “a short introduction” to the genre. He adds that although such pieces bear a common-time signature, “barlines are always omitted” and the tempo is indicated by the marking “Moderato.” In fact, the great C-minor fantasia is a fairly lengthy piece; it includes a central barred passage in 3/4 time; and its unbarred sections, although bearing a common-time signature, fall into common time less consistently than in other fantasias by Bach. Its tempo mark is *Allegro moderato*, the second word much smaller than the first, which is followed by a period, suggesting that the word *moderato* was an addition, although engraved by the same hand. Hence it is not entirely clear that this is the piece that Bach was describing when he wrote his text.

As noted above, Bach would actually publish one more work engraved in copper. This was a little fantasia in D, W. 117/14, printed on a single sheet as an attachment to the second volume of the treatise in 1762. Volume 2 of the *Versuch* includes Bach's analysis of this work, which meets most of the criteria for a free fantasia given in volume 1. No other documents refer to this work, which might have been composed originally for the *Probestücke*, then replaced by the more substantial fantasia in C minor as Bach's plan for the work crystallized.

There is another possibility. Prior to the *Probestücke* Bach had composed one other free fantasia, a work in E-flat major (Helm no. 348) that was identified as a work of Bach's by

³³ Numerous letters to Breitkopf from the 1760s and later refer to Bach's reading proof for typeset publications printed by Breitkopf; some actual proof sheets survive.

³⁴ *Six sonates pour le clavecin à l'usage des dames* (W. 54), published by Hummel in Amsterdam, is usually dated 1770, but the publication bears no date and the plate number suggests that it was issued during the previous year or two; an announcement was published late in 1769. Details will appear in *CPEBCW*, vol. I/3.

³⁵ Thus C. P. E. Bach could assure Forkel that, although printed copies of the *Musicalisches Opfer* were no longer available, the work was readily obtainable in manuscript (letter of Sept. 15, 1774).

Douglas Lee.³⁶ It lacks a tempo mark, but it is somewhat shorter than the C-minor fantasia. Its notation entirely lacks barlines, yet the opening passage is clearly in common time. Its autograph manuscript appears to date from around 1747. By then Bach might well have been planning his treatise, in which the performance and improvisation of free fantasias is viewed as the highest achievement of the keyboard player's art.

There is no evidence that Bach ever had this fantasia engraved. If Bach did write it down in relation to his plans for a treatise, it was eventually replaced and forgotten, apparently even by Bach, who did not include it in lists of his own works. The mystery does not end here, for, as we have seen, the fantasia included in the *Probestücke* was engraved separately, in a format suggesting that it was not originally intended to be the third movement of a sonata. Although published as the last movement of the *Probestücke*, it was not necessarily the last one composed. Clearly we remain in the dark about the precise history of this enigmatic piece.

The textual history of the *Probestücke* does not end with the final authorized edition, which probably appeared in 1787. By that date at least two unauthorized editions had appeared in which Bach's text underwent further evolution. Figure 8 provides details about these editions. We are familiar with the changes in the musical texts of keyboard works of J. S. Bach, Mozart, and other eighteenth-century composers, whose transformations in nineteenth-century editions have been traced by Matthew Dirst and George Barth, among others. For Emanuel Bach's *Probestücke* the process began with a pirated London edition by William Forster. Forster's edition, which probably appeared in 1783, attributes the works to "Mr. Bach," which in England would have been taken to mean the recently deceased Johann Christian Bach. Indeed, Forster's edition was itself pirated in a French publication whose title page claims it to be the work of J. C. Bach, together with Francesco Pasquale Ricci. The pedagogic intent of this French publication is clear from the inclusion of the *Probestücke* alongside an elementary glossary of musical terms and a large number of additional keyboard exercises of a much simpler sort.

Forster's title page declares that "*The Expression & fingering are properly marked by Mr. Bach.*" This indicates the importance that the publisher expected purchasers to attach to the authentic indication of performance nuances. But in fact the original ornament signs, which follow the north-German conventions described in Bach's *Essay*, are replaced by the less precise signs that would have been recognized in England or France. There is also a loss of accuracy in the notes and slurs.

The same process can be observed in manuscript copies of the *Probestücke*, especially in a group of German and Austrian copies that appears to extend into the early nineteenth century. Manuscript copies of the *Probestücke* circulated independently of the examples, often in incomplete form. Sonata VI/i, in particular, evidently came to be studied alongside a few other favorites in a tradition that probably extended into the nineteenth century, as evidenced by a number of late manuscripts. One of the latter (D B, N. Mus. Ms. 10480) includes two other pieces also involving hand-crossing or like techniques (Wq 117/2 and BWV 825/vi), suggesting that the presence of these techniques was an important attraction. Alternate notation for the hand-

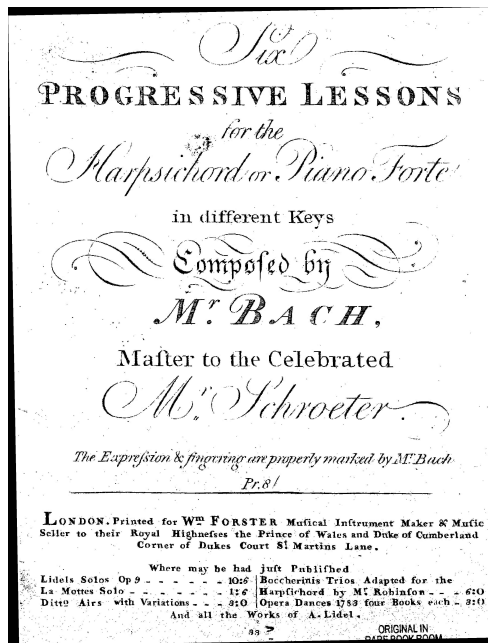
³⁶ "C. P. E. Bach and the Free Fantasia for Keyboard: Deutsche Staatsbibliothek Mus. Ms. Nichelmann 1N," in *C. P. E. Bach Studies*, ed. Stephen L. Clark (Oxford: Clarendon Press, 1988), pp. 177–84. Peter Wollny has subsequently edited the work in *Carl Philipp Emanuel Bach: The Complete Works*, vol. I/8.1 (Los Altos: Packard Humanities Institute, 2006).

Fig. 8. Pirated editions of the *Probestücke*

Six / PROGRESSIVE LESSONS / for the Harpsichord or Piano Forte / in different Keys / Composed by / Mr. BACH, / Master to the Celebrated / Mr. Schroeter. / The Expression & fingering are properly marked by Mr. Bach. / Pr. 8// London. Printed for W^m FORSTER Musical Instrument Maker & Music / Seller to their Royal Highnesses the Prince of Wales and Duke of Cumberland / Corner of Dukes Court St. Martins Lane. London, ca. 1783.

METHODE OU RECUEIL / De Connoissances Elementaires pour le Forte-Piano ou Clavecin / ŒUVRE MELÉ DE THÉORIE ET DE PRATIQUE / Divisé en deux Parties / COMPOSÉ / Pour le Conservatoire de Naples / PAR J. C. BACH ET F. P. RICCI. Paris, ca. 1786.

Forster's title page



Sonata VI, mvt. 3, opening, 2d edition



Same, Forster's edition



Fig. 9. Sonata VI, mvt. 1, showing tranposition of m. 28 in US NHy LM 4813b



The image shows a four-staff musical score for the first edition of Sonata VI, mvt. 1. The music is highly complex, featuring dense textures with many notes, including triplets and sixteenth-note runs. Numerous fingerings are indicated with numbers 1-5 above the notes. The notation is dense and intricate, typical of modernist or serialist compositions.

(a) first edition



The image shows a four-staff musical score for the US NHy LM 4813b edition of Sonata VI, mvt. 1. This version is significantly simplified compared to the first edition, with a much sparser texture and fewer notes. The fingerings are also reduced, and the overall complexity is lowered, making it more accessible for performance.

(b) US NHy LM 4813b

crossing passages in several other manuscripts (e.g., D B, Mus. ms. Bach P 1176), placing the notes for the crossing hand on the staff for the other hand, rather than in their proper staff with a changing clef, appears to be an unauthorized adaptation.

In addition to specifying the piano as the intended instrument, some of these manuscript copies also introduce slurs and dynamics that reflect the generation or two after Bach. One passage that Bach might have transposed in order to keep it within the four-octave compass of the *Probestücke* is retransposed back to where it apparently belongs. This is visible in Figure 9, which shows the passage in both the original printed edition and a copy now at Yale (US NH, LM 4813b). The same copy omits some of the original ornaments while adding a few appoggiaturas seemingly more in keeping with late-eighteenth-century style. Oddly enough, in light of what seems to be the pedagogic intent of these manuscript copies, Bach's fingerings are omitted. But this may be because Bach's comprehensive indication of fingering numerals for practically every note was no longer a novelty and might even have been a hindrance to the relatively advanced players capable of performing this movement.

The attractions of this movement for players of the early Romantic era would have included its virtuoso hand crossings; its use of figuration resembling an Alberti bass; and a blustery pathos that seems unusually direct in expression, thanks in part to the phrasing, which falls quite regularly into eight-bar periods. All these features are very uncharacteristic of Bach's music. But it may be precisely because it is so atypical of Bach that this movement, of all the *Probestücke*, had a special appeal to late-eighteenth-century keyboard players in Germany and Austria. Among the latter was the young Beethoven, who probably knew the *Probestücke*; he would later recommend Bach's treatise to his student Czerny. The sixth sonata from the *Probestücke* has distinct echoes in the first movement of Beethoven's *Sonate pathétique*, several of which are shown in Figure 10.

Bach implies in his *Essay* that he wrote the hand-crossing piece only so that his *Probestücke* would include an example of this popular eighteenth-century keyboard technique. Thanks to the popularity of this movement, C. P. E. Bach evidently joined the ranks of composers whose best-known works were among their least characteristic. The apparent parallelisms with Beethoven would have reinforced the belief of many of his younger, Romantic contemporaries that Bach was one of them. Echoes of this conviction, which of course is not entirely without foundation, have reached into the musicology of the present day.

Fig. 10. Sonata VI, mvt. 1, and Beethoven, *Sonata pathétique*, op. 13, mvt. 1 (Vienna, 1799)



(a) hand-crossings, falling third $a b''-f''$



(b) broken-chord figuration (compare the second measure in Figure 9a above)