Bach's Goldberg Variations: Suggestions for Redistributing the Notes Between the Hands to Facilitate Performance on the Modern Piano

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BACH’S GOLDBERG VARIATIONS:
SUGGESTIONS FOR REDISTRIBUTING THE NOTES BETWEEN THE HANDS
TO FACILITATE PERFORMANCE ON THE MODERN PIANO

A Monograph

Submitted to the Graduate Faculty of the
Louisiana State University and
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Doctor of Musical Arts

in

The School of Music

by

Kia Hadipour
B. A., University of the Arts - Tehran, 2006
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To my parents,

for their unconditional love and support
especially during the time of financial hardship
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ABSTRACT

In Goldberg Variations, Bach has written overlapping voices originally intended for bi-manual harpsichord. However, playing the piece on the modern piano causes the hands to collide in those segments, creating a technical challenge that remains unresolved in available editions. In this thesis, I propose a method to reduce the hands' overlap by re-distributing the notes between them. This solution also improves readability of the score by obviating the need for a clef change at each voice cross. I further use a few examples in the piano repertoire to examine how hand and finger re-distribution may facilitate performance. As an appendix to this thesis, I provide a complete piano score for the Goldberg Variations that includes the mentioned changes.
A pianist’s primary task when learning a piece is to decide which finger of which hand should play each note, or in effect to distribute the notes among the fingers of each hand. My immense fascination with this topic flourished when my mentor Michael Gurt showed me a different fingering for playing the G major scale. During that lesson, I was amazed that an alternative fingering could noticeably facilitate playing a seemingly simple scale. This experience triggered a drastic change in my view, so that afterwards I often found myself re-distributing hands and fingers compared to a conventional solution. I therefore decided to explore this topic further as the subject of my thesis.

Bach’s Goldberg Variations provides a fertile ground to explore hand redistribution. Because of its musical complexity and the fact that it has been composed for a two-keyboard instrument, many times the choice of hand is ambiguous in Bach’s score. In this thesis, I examine those ambiguous sections and propose hand (and finger) redistributions that are not immediately apparent.

G-major scale: a window to redistribution

Scales are conventionally played by dividing the octave into two units of fingering: [5]4321–321 for an ascending left hand (LH) and 123–1234[5] for an ascending right hand (RH). In a descending scale, this fingering pattern is mirror reflected in the opposite hand (RH plays [5]4321–321, and LH 123–1234[5]). Although this works well for the C-major scale that lacks black keys, it is less suitable for most other scales because their raised black keys affect the way the scale feels under the pianist’s fingers. This brings up the question of what other fingering can be used.

In G-major, the key of the Goldberg Variations, the question pertains to F#, traditionally played by the 4th finger. This is the least movable finger because of a V-shaped complex tendon entanglement with the 3rd
finger.\(^1\) This anatomical entanglement is less problematic for playing melodically an ascending black–white (key topography matches finger length) or descending neighboring keys (raising the 3\(^{\text{rd}}\) is easier). However, the movement restriction arises mostly for ascending white–black neighboring keys\(^2\), further compounded by the mismatch of the fingers’ lengths relative to keyboard topography.\(^3\) Considering the problems with the 4\(^{\text{th}}\) finger, should we use the 2\(^{\text{nd}}\) (index) or the 3\(^{\text{rd}}\) (middle) finger for F#? The index is the only finger among the middle three that moves freely because its tendon operates independently and also it is separated from the thumb. However, although the middle finger is not as movable as the index, it is the longest and strongest, and it also balances the palm by aligning the hand with the forearm. These characteristics often makes the 3\(^{\text{rd}}\) the best choice for playing a raised key. Therefore, for a black key in the middle of a passage, piano players may benefit from a 3-2-4 order of finger preference.

This was the basis for Michael Gurt’s idea: In order to play an ascending LH scale easily with a thunderlike speed, we can use the 3rd finger for F#. Thus, the LH ascending patterns can be F#GA–BCDE (321–4321), BCDE–F#GA (4321–321), or EFGA–BCD (4321–321), and similarly the RH descending can be F#ED–CBAG (321–4321), CBAG–F#ED (4321–321), or GF#ED–CBA (4321–321). Note that this new ‘unorthodox’ finger assignment does not change the traditional dividing of the octave into two units, but changes the finger assigned to the tonic (traditionally played by the 1\(^{\text{st}}\) or 5\(^{\text{th}}\)). Since for RH ascending and LH descending the thumb has to sneak under either 3\(^{\text{rd}}\) or 4\(^{\text{th}}\)\(^4\), it is up to the pianist to see which choice works best for a given

\(^1\) Which may explain why the 4\(^{\text{th}}\) finger is generally believed to be “weak.” Famously, Chopin too, felt regretful towards his “undeveloped fourth finger.” See “First Piano Lesson: Five-Finger Freedom,” American Music Teacher 50, no. 1 (2000): 33.

\(^2\) For similar instances in the Goldberg Variations refer to the chapter on comparison of fingering in different editions (Var. 23 – m. 23, Var. 24 – m. 2, Var. 27 – mm. 2 & 29, Var. 30 – m. 11).

\(^3\) By the same token, 3-4 will be the most difficult finger combination for playing a trill.

\(^4\) This generally is not a challenge due to the natural and ergonomic feature of such turns over the thumb. This has been examined in detail in m. 4 of Var. 23.
passage. This mentality of looking at a scale as a juxtaposition of black and white keys is applicable to any other pattern that has infrequent raised keys.

In this thesis, I use Bach’s Goldberg Variations to explore methods of re-distributing notes among fingers and hands that can facilitate performance of technically-challenging passages. Chapter 2 explains technical issues specific to this piece. Chapter 3 discusses works previously done by other scholars around the topic of redistribution. Chapter 4 presents redistribution solutions for the challenging passages of the Goldberg Variations. In the penultimate Appendices, I present a historical background as well as fingering solutions for troublesome passages throughout the Goldberg Variations. In the final Appendix, I present a complete score of the Goldberg Variations that contains the discussed solutions.

*****

Below, I apply the above analysis to explore fingerings for select passages in two pieces.

Example 1 – Bach’s Goldberg Variations. Bearing in mind that the piece is written in the key of G, there are several instances of Bach’s scalar patterns that blatantly call for non-conventional fingerings. These are discussed in detail in Appendix 4. One example is the energetic ascending G major scale of the first measure of Variation no. 16 (French overture). This scale is a naturally unfolding response to the first solid chord of the LH. The G of the second staff line strives to reach the G at an octave higher in a rocketing manner, thus requiring a confident and firm execution of the notes in an upward motion. Due to this sense of excitement in the character of the music, we could withdraw the pinkie from landing on the high G. Therefore the 3rd finger rule for F# can be effectively used here towards the most convenient fingering of 12341234. Similarly, the second measure accommodates a LH response to first measure’s RH and can be fingered accordingly.5

5 Both instances appear in Appendix 4 that compares fingerings of the Goldberg Variations across different editions.
Example 2 – Chopin’s 4th Ballade. My mentor must have noticed the fact that I have small hands. For a long time, I had a considerable discomfort in playing the last few measures of Chopin’s 4th Ballade, for which Mr. Gurt erased and changed all of my fingerings. In this section, both hands play the same descending F-minor arpeggio together, flowing from the highest register of the piano to the lowest in a torrent-like fashion. This progression is musically and technically challenging because it breaks at points towards an opposite direction: it instantly hurdles a little backwards, but then again drifts towards its natural direction downwards. Here, a pitfall is to group notes according to what the score is telling us visually, that is, grouping every other four notes together (RH: 5421 etc., LH: 1245 etc). Since these four-note groups, or chords, fall on topographically different zones on the keyboard each time they occur, similar fingering for them forces the hand to change its shape at each occurrence. Most editors of Chopin’s Ballades have either proposed the said unsettling strategy or have left this challenging passage without any fingering suggestions.

Two notable exceptions are the scores edited by Cortot and Paderewski (Figure 1.1). For some of the more difficult passages, Cortot proposes his choice of fingering through short etudes that appears at the bottom of the last page of the score. For the RH, Cortot devotes the 4th finger to the Bb at m. 233, and index and thumb fingers to C and Ab of m. 234, respectively. These are great solutions for the RH, but his fingerings for the LH still picture the music as blocks of four notes, as in other editions. Paderewski introduces an over-the-thumb turn at m. 234 (so that the C and Ab in the RH is played with thumb and index, respectively), but he too fails to provide a solution for the LH. Moreover, leaving the highest Db without a finger solution, and then suddenly exposing the 4th finger to the Db of m. 234, is another shortcoming of Paderewski’s edition.

After considering the editions by Paderewski and Cortot, a fair question is: if a turn over the thumb at m. 234 is allowed and functional, why not also apply it to the Ab and F of m. 233? This brings us to the tactic that I

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6 According to Leone, in relation to playing the conventional piano keyboard, ‘small hands’ are those whose thumb to fifth finger (1-5) spans less than 8.5 inches. Mine falls in the same category. Leone promotes a downsized instrument of 7/8 ratio, built particularly for pianists with small hands: “Size Is Key,” *Clavier Companion* 7, no. 5 (October 9, 2015): 13–14.
Figure 1.1. Excerpt from Chopin’s Coda of Ballade Op. 52 in F minor, comparison of fingerings provided in different editions
From top to bottom: Cortot, Paderewski, and Gurt-Haripour
learned from Michael Gurt for fixing this problem. His solution is firstly to allow for a turn over the thumb in RH, and then to mirror reflect the same mentality in undoing the LH complex. Of course, in both of the processes there is a delicate sneaking-under of the thumb involved as well (Figure 1.1). In addition, the first Db octave delightfully invites for a practice of *redistributing* the notes by playing both notes with RH. Playing the first Bb with the stronger third finger of RH may create more stability compared to playing it with the 4th finger. Furthermore, the redistribution has the highly desirable feature of maintaining the position of the hand. Paying attention to Cortot and Paderewski again, we also discover that by applying the 4th to Bb, room opens up for the 2nd finger to travel across the keyboard, and over the thumb, to play the C freely. In contrast, the fingering of 3 (Bb) – 2 (Ab) entangles the second finger, thus holding it back from moving forward.

Later as I became more and more enthusiastic about learning other Chopin pieces, I was amazed to see a similar pattern in the final descending RH arpeggios in the Coda of Chopin’s Grand Polonaise Brillante Op. 22. In an analogous situation, the music provides us with an opportunity of redistributing the higher pitch of the two C’s in LH to octave-play it with RH. Further, the twirling shape of the Eb major descending arpeggio in the RH suites a fingering system identical to that discussed for the F–minor Ballade. Figure 1.2 shows how fingering is applied to Chopin’s Op. 22 (compare its RH with Op. 52 in Figure 1.1).

![Figure 1.2. Chopin: coda of Grande Polonaise Brillante, Op 22.](image)
Introducing the concept of hand “redistribution” – Bach’s Brandenburg Concerto No. 5

In the end, I introduce the concept of redistribution by using an unorthodox feature in Bach’s notation of Brandenburg Concerto No. 5, which I discovered when I played it years ago with the orchestra: At times, especially evident in mm. 47 through 49 of the Cembalo part, the piece requires redistributing the notes between the hands. Measures 47-49 present an exciting musical dialogue between soprano and alto voices in a scalar motion. Bach may well have written this passagework to show that it is physically possible to exchange the two voices between the hands of a single player, as if they were two distinct instruments. For a two-manual harpsichord, the right-hand may rest at the top keyboard and the left-hand at the bottom, playing one after another albeit at a fast tempo of Allegro. Below I compare three editions for these measures.

Farlau–Zelter edition. In addition to Bach’s original manuscript, another historical source of the Fifth Brandenburg dating back to late 18th century has emerged. This source is recognized as a ‘composite’ document that embraces eight different major sections that are all handwritten.7 The sections are comprised of one or more of these parts: the orchestra, celli, violin, flute, and Cembalo solos. Because the document has had multiple owners as well as different contributors, it is difficult to determine whose handwriting appears in each section. What we know for certain is that it belonged to Johann Christoph Farlau (owner-copyist) and Carl Friedrich Zelter (revisionist).

In this surprising composite document, two different Cembalo parts exist. The first one appears with the title Cembalo Concertato as section 3, and the second entitled Cembalo Concerto as section 8 at the end of the document. When compared with the composer’s manuscript, the latter follows Bach’s tidy and stylish manner of notation, and thus preserves his choices of note-distribution. The different custom of notating the same passage at mm. 47–49 in the former cembalo part sheds light onto my idea discussed above (Figure 1.3, below).

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7 The autograph manuscript is cataloged as St. 130, and the composite source is itemized as St. 132.
Note also that the final seven pitches of m. 49 in the composite manuscript are different from Bach’s original version.

**Figure 1.3. Brandenburg Concerto No. 5.**
Top: Autograph manuscript, mm. 43 – 49,
Bottom: The Farlau – Zelter manuscript

*Kalmus edition.* We next look at the modern edition that I used: Edwin F. Kalmus publication’s 1988 reprint of Bärenreiter’s Neue Bach Ausgabe, whose editors, Besseler and Wenzinger, have preserved the essence of Bach’s notation. For learning this particular passage from the Kalmus score, I redistributed the notes
between the hands by drawing irregular divisions between the notes in colored codes (Figure 1.4). Surprisingly, my solution follows exactly the F–Z manuscript during mm. 47 and 48, except for the second half of mm. 48, m. 49, and 50.1 where I redistribute the notes between hands again: I play multiple groups of four or more notes, with hands one after another in rotations, until I reach the half cadence on the down beat of m. 50.\(^8\)

**Reger edition.** One of the modern editions that has a notation different than Bach’s is Breitkopf und Härtel (1915), edited by Max Reger.\(^9\) Although Reger’s edition stays very close to Farlau and Zelter’s (Figure 1.5), it demonstrates fewer articulation points. One may speculate whether the graphical articulation in the F–Z or Reger’s editions indicates the choice of hand.

Finally, although the passage may seem as written in a single homophonic line, the entire segment is supported harmonically by a descending sequential pattern occurring within the circle of fifths and thus conveys a sense of polyphony within homophony. This musical feature, which appears in the repertoire of string instruments very frequently\(^10\), may thus correspond to Walter Piston’s idea of implied polyphony within compound melodies.\(^11\)\(^12\) An important question is therefore how to bring out the quasi–polyphonic

\(^8\) Shown here in Reger and F-Z examples only. Also, notice the downbeat of m. 50: While both editions fall on an A-major harmony, Reger preserved an E in RH whereas F-Z wrote a low A for LH.

\(^9\) Though it is possible that Reger’s be the only edition with an unorthodox notation for BWV 1050, mm. 47 – 49.


\(^11\) It is otherwise known as *Ausfaltung* or ‘unfolding’ in Schenkerian terminology.

characteristic of a compound melody (for example, through dynamics contrast). Another outstanding question is whether hand distribution affects the polyphonic nature of this passage.

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**Figure 1.4. Hadipour: suggestion for hand-distributing mm. 47 – 50 of Brandenburg no. 5**

- **R – L**: Right hand – Left hand
- □ Soprano voice
- ▪ Alto voice (Notice: *hidden polyphony* lies within soprano and alto voices in sequential imitation)

**Conclusion.** The complexity in the Brandenburg, especially in Bach’s manuscript, brings up the questions of how a composer shows the responsibility of each hand in the notation and how we can determine the hand-distribution if the composer leaves the score clueless. We cannot know for sure what exact
considerations Bach had in mind that led him to notate mm. 47–49 in such an ambiguous style. However, analysis of this example helps us reach the following points about redistribution:

- Compared to the FZ edition, Reger’s LH is less involved in the playing than RH. One reason may be that RH is assisting a less capable LH, thus redistribution working towards technical facility.
- Reger’s m. 49 suggests that a downward stem does not necessarily mean “to be played by LH.” Although, in a hypothetical context that presumes “upward stem means RH, downward stem LH,” Bach’s notation is not clear about stemming as the only criterion for hand distribution.

- The radical discrepancy between FZ and Reger in the up and down beaming of m. 49 shows the technical complexity of this passage.

- Another version along the lines of Reger’s arrangement is to play four notes instead of three in LH, therefore distributing four notes in each hand. This may improve the sense of balance in our execution.

- Future work may address means of determining if a passage requires a redistribution of the notes between the two hands.
Although Bach’s keyboard music is generally not as technically difficult for pianists as most Chopin’s or Rachmaninov’s are, his pieces usually embrace their own challenges. In performance, pianists may perceive Bach pieces to be either simple or complex. The simple category possibly covers the well-known repertoire of two and three-part Inventions, Preludes-Fugues, and some of the French and English suites, all familiar to piano students of intermediate to advanced levels. But the complicated pieces usually demand different types of skills, and even certain preparations to begin with. The Art of Fugue and the Goldberg Variations are certainly situated within the latter category. Bach wrote both pieces towards the final years of his life as a solemn summation of his musical devotion.

The fact that the hands can overlap freely at the bi-manual harpsichord has allowed Bach to write an extensive – almost exhaustive – contrapuntal masterpiece that takes the most advantage of voice-crossing. At each instance where voices/hands cross, there is an exchange of treble and bass clefs, a notation feature that makes sight reading of the score less accessible. In this chapter, we scrutinize each issue mentioned. Chapter 3 discusses works previously done by other scholars around the topic of redistribution. Chapter 4 presents a redistributed score for the Goldberg Variations as a proposed notation that is capable of fixing both issues addressed.

**Hand-crossing as a performance technique**

Yearsley reveals some information about the idiom of hand-crossing, its historical background, and its relationship with the music of Bach.¹ According to this author, the gesture became a fad during the mid-18th

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century, around the same time the Goldberg Variations was written. Among notable composers who wrote technically sophisticated examples of hand-crossings are Rameau and Scarlatti. Rameau’s *pieces de clavecin*, and Scarlatti’s *Essercizi* are most famous for their extensive employment of this idiom. However, Yearsley especially credits Scarlatti for introducing this technique to the entire Europe of the time. Scarlatti used hand-crossing towards two purposes: 1. The “three-hands” effect, which consisted of one hand being busy with playing a passage in the middle range of the keyboard while the other hand bounces over it back and forth to echo bass and soprano voices. 2. Showmanship. By means of this intriguing compositional ‘device’, Scarlatti immensely enriched the repertoire of keyboard instruments. In his pieces, the hand-crossing contrivance corresponds very well to both musical and idiomatic rudiments. Yearsley also denotes the *Gigue* from the first Partita, BWV 825, and the *Praeambulum* from the Fifth Partita as two of the most significant hand-crossing instances in Bach.

But in the Goldberg Variations, J. S. Bach creates a novel universe. He not only perfects the three-hands flamboyance in the Goldbergs, but shows his extraordinary musicianship by introducing a completely new type of hand-crossing. His virtuosic hand-crossing meant for gratifying vigorous voice-crossings is directly pointing at, but also subtly making a mockery of, Scarlatti’s favorite trick. While Scarlatti’s three-hands effect mandates the two hands to bounce up and down the keyboard, Bach’s linear counterpoint in the Goldberg Variations spreads the two hands horizontally across the keys.

**Novel aspects of Bach’s music**

Newcomb introduces a notion of contrapuntal artifice as a historical “device” that played a significant role in musical compositions of the 1600’s. Although the author does not mention Bach’s name, all of the keywords he addresses can be applied to Bach’s time and his works as well. Newcomb’s idea includes polyphony, counterpoint, voice-overlapping, melodic design of individual voices, and even visual manifestations of complexity. According to this author, during that era a contrapuntally complex piece of music
was not necessarily meant for performing, because at the time its audience would not have been able to fully appreciate the sophisticated structure and the inner logic of the composition through listening per se. As a result, the said devices were occasionally delivered by rare composers such as Frescobaldi to serve particular theoretical purposes. Newcomb asserts: “To modify or add to or subtract from the notated elements on the page would threaten to destroy the identity and value of the piece.”² The author further maintains:

One could not and did not vary these elements in performance by such procedures as conflation or subtractions of voices, extraction of individual voices and/or revision of the contrapuntal complex without destroying the structure, the very identity of the piece.³

According to this author, a complex polyphonic music aims at transporting its values only through scrupulous analytical scrutiny. Therefore, the score by itself would arouse a sense of appraisal, visually and theoretically, which indirectly established the composer’s social status among the uppermost intellectuals in the eyes of the society.

Silbiger studied the intavolatura⁴ style of notating keyboard music that was customary around late 1600’s and early 1700’s.⁵ In Silbiger’s terms, the Intavolatura is an Italian quasi-tablature system that is manifest in a composer’s original notation, which appears to be convenient for the keyboardist to execute from due to its ‘keyboard’ style. However, this Intavolatura fails to demonstrate voice-leadings. To solve this problem, someone (i.e. an editor) would have to detabulate the score, so that the performer’s eyes can track individual voices in it. Nevertheless, such an edition might not necessarily be easy to play from compared to prior to editing. An early example Silbiger shows to clarify his purpose belongs to a piece written by Andrea


³ Ibid., 13.

⁴ Translated in the article as “intabulated,” then simplified again by the author to yield “tabulated.”

Gabrieli: *Toccata in the ninth tone*. The author compares three different editions of the same music: 1. Gardano 1593, 2. Bärenreiter 1967, and 3. Silbiger’s own de-tabulation. Figure 2.1 below displays this comparison.

Figure 2.1. Silbiger cross-compares editions of Gabrieli’s composition Toccata in the Ninth Tone, Top: Gardano, middle: Bärenreiter, bottom: Silbiger.
Although this example can be illuminating in certain ways, another presentation by the same author raises questions. Figure 2.2 compares Bach’s 1722 autograph manuscript of Fugue no. 11 in 3 voices from the first book of Well-Tempered Clavier against Silbiger’s transcription (1991) and the Neue Bach Ausgabe edition (1989).

Figure 2.2. Silbiger compares editions of J. S. Bach’s Fugue No. 11 from WTC I.

Top: Autograph manuscript,
Middle: Silbiger’s transcription,
Bottom: NBA.
Silbiger’s ideas seem to correspond well with Newcomb’s *contrapuntal artifice*: complexity has implicit and explicit manifestations. However, concerns about the above example are of the same nature to those in any other perplexing Bach score such as the Brandenburg Concerto No. 5 discussed in the Introduction of this monograph. Like the fifth Brandenburg, here too we are confronted with a notation that is not easily comprehensible visually. Since both this Fugue and the Concerto Grosso example have the same issues, it is appropriate to ask:

1. Why did Bach use the clef of C1 for notating the top stave?
2. If there are only 2 voices present, why are they written so entangled, thus ambiguous?
3. What is a reason behind Bach’s disregard towards the bottom stave writing in his notation?
4. Is there a way to make a distinction between hand-distribution and voice-distribution without falling in the trap of beam heads?

Interestingly, the Goldberg Variations evokes an opposite concern: Bach’s notation seems to be primarily designed to demonstrate voice leadings, and lacks legibility during sight-reading. In this case, a *detabulating* approach may redistribute the problematic score towards facilitating its performance at the keyboard.

**Bach’s notation of the Goldberg Variations**

Here we explain the clef inconsistencies and other problems that exist in Bach’s notation of the Goldberg Variation. We use Var. 5 as an example to demonstrate these issues.

Specifically, about the Soprano (otherwise known as C1) clef, Tomita states the following:

> From the manuscript evidence, it appears that Bach preferred to use the soprano clef for the right-hand staff for his clavier pieces ever since his youth. That Bach used the treble clef for his *Clavierübungen* series was likely related to the fact that the treble clef was more widely used beyond his native land, whereupon his ambitions must have been.⁶

The clef inconsistency can be seen in manuscript sources of Variation No. 5 of BWV 988, as well as in modern editions. Curiously, Var. 5 – emblematic of the Scarlattian hand crossing – has been notated differently in various editions. Both Schmid’s and the Handexemplar contain a C3 clef in the bottom stave, for the first three-and-half measures. All modern editions including Schott, Bärenreiter, Peters, Henle, and Kalmus alternate between bass and treble clefs in the bottom stave. An exception is Schirmer: Kirkpatrick provides an alternate rendition – a redistribution – above the bass-treble alternating clefs of other modern editions, in the form that is familiar to us today (i.e. top: treble clef – bottom: bass clef). Figure 2.3 shows the first edition (Schmid’s) and the Handexemplar together. Figure 2.4 compares Schott as a representative of all modern editions with Kirkpatrick’s.

![Variation 5 from the Goldberg Variations.](image)

**Figure 2.3.** Variation 5 from the Goldberg Variations.
Top: Balthasar Schmid’s (first edition), Bottom: The Handexemplar.

Tomita further complicates the scene by introducing yet another historical source for Variation 5. This highly significant source is labeled ‘Go. S. 19’ and is kept at the Manfred Gorke Collection. Although it is
incomprehensible whose handwriting the source accommodates, according to Tomita it is a draft that may demonstrate the early stages of the creation of this variation. Three observations stand out in this draft. First, its title Praeambulum, which reminds us of J. S. Bach’s fifteen two-part inventio’s (otherwise known as praeambulae) and three-part inventio’s (alternatively known as sinfonias). Second, the application of a Soprano Clef in the top stave, and alternating bass and soprano clefs in the bottom. Third, the complete change of melody of m. 4, and two of the 16th notes of m. 5 (the ones that fall on the first and second beats). Figure 2.5 below shows this important source from Tomita’s article.

![Variation 5 from the Goldberg Variations](image)

**Variatio 5 a 1 ò vero 2 Clav.**

**Variatio 5. a 4 ovvero 2 Clav.**

Figure 2.4. Variation 5 from the Goldberg Variations.  
Top: Schott edition – Christoph Wolff,  

We know that writing for the keyboard instruments has not been without problems. While being tremendously educational, the so-called *keyboard harmony* (*harmonie pratique* in French) proves to be a hazy practice which certain concerns – including its style of notation – arise. “One of the biggest problems for the author of text is to correlate the theoretical aspects of the keyboard performance” Wildman states. This author
recognizes an extremely vital distinction between two existing notations for the keyboard harmony: The Choral style vs. the Piano style. Duckworth and Brown support:

Writing chords in the choral style . . . has the advantage of making individual voices easier to distinguish. In playing such examples on a keyboard instrument, however, soprano, alto and tenor voices should be taken with the right hand, bass voices with the left.\(^7\)

![Figure 2.5. Tomita introduces a rare historical source for Variation no. 5 of the Goldberg Variations](image)

It is hard to believe that “the true purpose of studying keyboard harmony is to train the mind and the ear, not the fingers.”\(^8\) Figure 2.6 shows the two contrasting styles of notating keyboard harmony, shown by Wildman. This author further illuminates:

One must question why it is not important to ‘make individual voices easier to distinguish’ in keyboard performance as it is in writing notation. Pianists agree that individual voices are easier to distinguish when only two pitches are played in one hand. Consequently, even though most keyboard harmony texts disagree, for the


purpose of bringing out individual voices choral style is more ‘pianistic’ than piano style.  

Figure 2.6. Wildman depicts the choral style, as opposed to the piano style. 

Although the above quotation is informative, it lacks a clarification about the term pianistic. To what extent ‘pianistic’ has to do with another widely-used word: idiomatic? Composers exactly abide by what criteria when writing idiomatic pieces? In performing either style on the piano, we are faced with the visual (legibility) and physical (execution) properties of the notation. It is not clear which style is more legible graphically: Choral style written within ample space between the SATB parts (thus each individual voice being easily identifiable to our eyes), or Piano style written densely (hence quickly comprehensible at a glimpse)? In addition, which style provides a more balanced execution on the piano? Noticing the vast majority of piano players are right-handed, balance or evenness may be biased towards playing more number of notes with RH. Moreover, assuming choral and piano styles correspond with open and close positions respectively (i.e. a basic principle of the general harmony), we can question whether in composition the close position is always a pure harmonic necessity, or whether it targets piano performance in particular ways. Admittedly from the standpoint of a small-handed pianist, the corresponding RH keys on the piano are more convenient to grasp and execute. Also, one may find the bass-only LH part of Piano style liberating as opposed to the more involved LH in Choral style. In this case, pianists with large hands may find the choral style easier to play compared with the dense texture of the piano style. What Wildman does not discuss is that usually in the long run (10 or 20 measures for example), the LH of

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9 Wildman, 113.

10 Ibid.
Piano Style turns into a highly distinct and dynamic melodic line of its own, whereas a typical Choral LH stays somewhat drab, within the limitation of statically written chordal progressions.

Contrary to their appearance on paper, Bach’s chorales are recognized to project a homophonic texture, not polyphonic. These pieces resemble Wildman’s Choral Style because of their four-part SATB format and the three bottom voices accompanying a top soprano melody driven from one or more religious hymns. But to what extent does the homophonic texture of the chorales contribute to a realization of the hands for the keyboardist? What about the notation of a four-part piece, such as the fugue that is explicitly polyphonic? For a piece that is originally written for a keyboard instrument it is not easy to determine whether it belongs to Choral or Piano style. However, we may be able to translate choral and pianistic to polyphonic and homophonic textures, respectively. Table 2.1 evaluates the Goldberg Variations in terms of texture. A similarity in texture can portrait a resemblance in style of notation.

Table 2.1. The Goldberg Variations in terms of texture

<table>
<thead>
<tr>
<th>Homophonic</th>
<th>Aria</th>
<th>1</th>
<th>13</th>
<th>19</th>
<th>25</th>
<th>26</th>
<th>27</th>
<th>28</th>
<th>29</th>
</tr>
</thead>
<tbody>
<tr>
<td>In between</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>11</td>
<td>14</td>
<td>16</td>
<td>17</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>Polyphonic</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>12</td>
<td>15</td>
<td>18</td>
</tr>
</tbody>
</table>

Noteworthy is the in-between category in relation to the concept of compound melody discussed in the Introduction chapter. An outstanding feature of these ‘hazy’ textures is their frequent melodic leaps. Such disjoint motions often project a sense of vocal division within a single line. This set of variations seems to be exposed to voice-crossing more than the other two sets. Table 4.2 of Chapter 4 further explains the Goldberg Variations’ ambiguous notation (notice the row labeled ‘clef swaps’).
In *partimento* or *thorough-bass* writing, chords in the top staff of the two-stave system are supported harmonically by a *figured bass* in the bottom, corresponding with Wildman’s Piano Style. Therefore, the chordal figuration is missing, unless the student-keyboardist *deciphers* it. The ‘realization’ of the figured-bass is assisted by the numbers provided at the top or bottom of each bass note. The number, or cypher, is in fact indicative of the nature of that particular chord (i.e. either root position or its inversions) occurring in time. Once realized, the entire progression (LH bass line together with its RH chordal realizations) is expected to be played at once, without taking time for writing in the figurations. About the principles of *partimento*, Sanguinetti declares:

> [I]t is not always easy to discern partimento rules from thoroughbass rules. Both are based on the same principles, but a real continuo treatise, such as Francesco Gasparini's *Larmonico pratico al cembalo* (1708), deals also with specific problems of accompaniment, such as the relations between the harpsichordist's right hand and the solo part, while partimento rules completely ignore such issues.¹¹

The author further informs:

> In general, one might say that if the simple realization of a partimento resembles a standard continuo realization, the decorated realization differs in the following features:

(a) The rhythmic activity of the right hand is usually faster than the harmonic rhythm.
(b) The right-hand line often consists of a "polyphonic" melody.
(c) The left hand may take part in the realization of inner voices.
(d) The realization follows the principle of complementary rhythms.¹²

Sanguinetti concludes:

> [T]here are very few surviving documents of realized partimenti, especially from the central period of the tradition – the eighteenth century. The reason is that partimenti were used for improvised performance, so there was little need for written-out realizations. At the beginning of the nineteenth century, however, the practice of improvisation declined, partimenti began to be realized in written form.¹³

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¹² Ibid. 71

¹³ Idem.
Two aspects of Sanguinetti’s substantiations are the idea of *polyphonic melody* and sight-reading. For the first concept, the author does not provide any further details. The autograph manuscript of Brandenburg Concerto No. 5 suggests that the *cembalo* part is a partimento, with figured bass indications at orchestral entrances.

We now explain how a complex notation such as the Goldberg Variations can affect the piano player, and why diversity of hand-distribution matters in performing the keyboard music of the Baroque. Williams looks at the issue of hand-distribution in keyboard music of Bach from a historical angle. He states:

> If the more robust or 'neutral' free-style movements played by the 17th-century German organist were notated in tablature, as they most often were, one imagines that 18th-century copyists who transcribed the music on to staff-notation would show only the traditional division, i.e. the left hand's notes on the lower staff, the right on the upper.  

The author then suggests that the composer scribed his musical ideas very quickly and codified the hand distribution by the stems, perhaps for lack of time. He expected the engraver/publisher to decode this and write it correctly distributed. Williams adds:

> Either way, since composers and copyists belonged to a similar context, the “authenticity” of any early hand-distribution is seldom a crucial problem, for what matters is that the composer did intend free passages to be played articulately, not in too regular or clockwork a manner.  

Williams considers hand-distribution as an ‘articulation or *manièrë*.’ Although this author does not mention *hidden polyphony*, many of his musical examples demonstrate the kind of distribution akin to a single line of melody, of a meandering nature, written within a single stave. He mentions two J. S. Bach excerpts, Prelude BWV 541 and Chorale BWV 739, for which he suggests hand-distributions from his own edition. The arrangements appear below in Figure 2.7. Williams’ rendition of these Bach selections seems to be very

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15 Ibid.
pragmatic. However, he does not provide a clear evidence of the type of criteria he employs to support his particular manner of articulation. Therefore, a key question is how to articulate the phrases in the hidden polyphony more efficiently.

Ex.9  J. S. Bach, Praeludium, bwv541: (a) as transmitted; (b) suggestions for hand distribution

Ex.10  J. S. Bach, Chorale: ‘Wie schön leuchtet der Morgenstern’, bwv739: (a) as transmitted; (b) amended

Figure 2.7. Williams suggest hand-distributions for two Bach pieces.

* Author’s annotations appear on top of each excerpt.¹⁶

This author considers hand-distributing the inner parts of contrapuntal music as a mere strategy towards a facilitated execution. In another place, he declares: “An original source showing no hand-distribution does not mean there was none, and today’s players can usefully consider, in every single example, what might have been

one way of dividing the lines.”

To this end, Williams directs his discussion into explaining a variety of touches and/or articulations, ranging from ‘marked figuration’ (i.e. marcato) to legato, to recognizing a distinction between playing equally sounding notes and notes inégales.

Williams’s main point of emphasis remains on the rhetoric of discontinuity. According to Williams, a ‘pianistic’ movement begun by C. P. E. Bach that is manifested in the right-hand adeptness in achieving connectedness, especially since the left hand became less elaborate contrapuntally and more an accompanying mechanism as polyphonic music was gradually overshadowed by homophony.

We now focus on spontaneous clef displacements in the last four measures of Variation no. 5 which none of the editions have fully addressed. In fact, this variation is a prime example of an incapacitating notation throughout the entire piece,\(^\text{18}\) in which melodic continuity of individual voices is frequently interrupted by clef swaps driven from hand-crossing in the form of three-hand effect (Figure 2.8 and 2.9). A major distinction between the three-hand effect and contrapuntal voice-crossing is that only the former includes leaps between the bass and soprano ranges on the piano: a bouncy character of a certain weightiness in LH. Although this may contribute to a static quality, a sense of dynamism in Variation 5 is caused by the RH middle voice, which often runs twice as fast as other voices, at times scalar and at times arpeggiated.

In contrast, in contrapuntal voice-crossing the motions of the two contributing voices are generally scalar, usually fast-paced, and necessarily towards opposite directions of each other. Var. 5 uniquely combines the overlapping counterpoint alongside echoing voices. Figures 2.8 and 2.9 compare measures 29 to 32 among different editions of Variation no. 5.

\(^{17}\) Ibid., 106.

\(^{18}\) Refer to Chapter 5 for seeing a complete list of problematic passages of the Goldberg Variations.
Figure 2.8. Variation no. 5, mm. 29 – 32.

Editions from top to bottom:
The Handexemplar, Schott, Henle, Breitkopf
Despite the discrepancy among the above editions, they have preserved frequent swapping of two clefs (three times in the Handexemplar, notice the C clef of m. 31) for the hand-crossing gesture. An exception is the Schirmer’s edition in which Kirkpatrick, in addition to showing the originally unorthodox notation as a reference, provides another rendition without the clef changes. For a piano player of today, this intervention is tremendously helpful because it brings back the treble and bass clefs to their familiar top and bottom staves. However, Kirkpatrick’s arrangement does not eliminate the notorious hand-crossing, but only demonstrates voice-distribution by following the melodic direction whenever the two voices entangle.

An exciting moment in Variation 5 from the Schirmer edition is the notation of the first beat of m. 31 and its entrance toward the first note of the second beat: To what extent is the voice-distribution and hand-distribution clearly shown? What do the beams of the first five notes of m. 31 tell us about the position of our
hands and fingers? For that, Busoni came up with a very decent solution. He not only stayed ‘consistent’ with notating the top stave in the bass clef, but rightfully made use of the treble clef at the most critical place to show that RH will play two big leaps, low and back high. Because the score is telling us “RH: big leap now” we would never question “is RH crossing LH?”; that RH crosses LH is implicit and happens automatically then.

A graphical representation of the physical altitude can be a useful aid for the pianist. Notice that Bischoff’s notation of the first beat of m. 30 suffers from a mal-depiction of altitude, something analogous to ‘cure being worse than disease.’ Another example of depicting altitude in the score is Bach’s effective use of C–clef for LH, in a passage where LH crosses over RH back and forth in distinct turns (Figure 2.3).

As another example of interfering hand-crossing and hand-distribution in the notation, we compare Wolff’s and Kirkpatrick’s editions from Figure 2.4 with Busoni’s in Figure 2.10 below:

- Schott (i.e. all modern editions) does not provide visual clues about altitude. Moreover, as the first measure shows, it is extremely misleading to give a vertical down – up (G – B – G) cue on paper for a leap that is executed as right – left on the piano.
• Schirmer shows altitude very well, but is silent on hand-distribution and leaves it totally possible for the pianist to play all contents of the top stave (middle voice + top BAGF# descending soprano line) with RH alone.

• Breitkopf does not surrender to any of the above problems. Thoughtfully, Busoni introduces the G clef right from the beginning, providing a fine visual aid for the distant leap (discussed above).

Towards hand-distributing, the following editions corroborate similar concerns:

Peters (1937) – Kurt Soldan:

Die Verteilung der Stimmen auf die beiden Systeme erfolgte nach den heute üblichen Grundsätzen, d.h. alle mit der rechten Hand zu spielenden Noten wurden dem oberen System, die mit der linken Hand zu spielenden dem unteren System, die mit der linken Hand zu spielenden dem unteren System zugeteilt. Nur in den Fällen, in denen sich dadurch Unklarheiten der Stimmführung ergeben hätten, ist die jeweilige Übernahme durch die andere Hand durch eine Klammer bezeichnet worden.¹⁹

My translation:

The distribution of the voices of the two systems took place according to today's principles, that is, all the notes to be played with the right hand were assigned to the upper system, the left hand to the lower system. Only in those cases where uncertainties about [voice-leading?] would have arisen, the respective takeover by the other hand is marked by a bracket.

Schirmer (1938) – Ralph Kirkpatrick:

For easier reference to realization of the ornaments, and the execution of the two-keyboard variations on the pianoforte, alternate versions have been given above the original text were desirable. The arrangements of the two-keyboards variations are designed principally as a means to facilitate sight-reading. A glance at the original versions below will serve to make them musically intelligible. The serious performer

observing simultaneously both versions, can easily work out his own fingering and division of notes between the hands to produce the clearest distinction between the voices.\textsuperscript{20, 21}

Schott/Universal (1996) – Huguette Dreyfus:

The fingerings are intended to help the performer to shape every aspect of the music: in particular, to achieve an appropriate style of articulation and phrasing. Thus, instead of using the fingerings in their natural sequence, the player can use the same finger on two successive notes, as a way of articulating the part in question. All fingerings are, of course, suggestions and not binding instructions, and each player should make allowances to sit the shape and size of his or her hand. In case of the variations for two manuals the fingerings are specified accordingly and cannot necessarily be adapted for performance on a single keyboard.\textsuperscript{22}

Kalmus (1947) – Bischoff:

Some of the variations are intended for two manuals. Several movements require two manuals in view of the contrasted dynamics in the melody and accompaniment, e.g. analogously to the slow movement from the Italian Concerto (compare Var. 13 and 24). Most of the variations intended for two manuals contain passages in which the hands cross. Such places can either be executed staccato, or they can be facilitated through a rearrangement of notes between the hands. We cite the latter instances in our annotations so as not to disturb the clarity of the counterpoint in the text proper.\textsuperscript{23}


\textsuperscript{21} As Kurt Soldan noted, the bracket (L shaped) symbol is meant to show hand-distribution. However, this sign is not exclusive to editions of Goldberg Variations as it exists as well in other piano publications in abundance. For BWV 988, Edition Peters of 1937 made use of it. But in 1938, the symbol disappeared from Schirmer’s. Ever since, the sign has been used sporadically but extensively in others. While it is unknown who first used it, composers themselves are among the probable contributors to this editorial tradition.


CHAPTER 3  REDISTRIBUTION:
STIGMATIC VS. PRAGMATIC

The present chapter demonstrates the technical benefit of hand-distributing the piano scores. The first part explains a controversy among musicians surrounding the practicality of redistribution. The second part presents some examples from various piano pieces about redistribution. Together, the two sections support the idea of redistributing the Goldberg Variations.

Redistribution: A controversial topic

Although not universally celebrated, redistribution\(^1\) has indeed been a topic of interest to a few authors. While debating the virtues of even-handedness, Smith declares a divergence of opinion among musicians based on whether or not redistributing material between the hands is cheating. Smith calls these two groups of musicians ‘divisionist’ and ‘anti-divisionist.’ He argues that in keyboard notation, composers do not necessarily specify the choice of hand. In his view, that in a piano score RH plays the top stave and LH the bottom is only a general assumption and not a strict rule. Smith informs:

One type of composition – the fugue – epitomizes the problem of dictating handing without special symbols…. Of course, a fugue is a special type of composition. But even piano music that is not overtly contrapuntal in texture still represents multiple voices on a single instrument. And this is why we should not expect the composer always to represent the division of hands on the page. He cannot, because the visual expositions of voice-leading and of handing are frequently irreconcilable. Therefore, I believe composers take it for granted that, in lieu of special pianistic effects, the player will tailor the handing to his or her needs, which must take into account the characteristics of their hands.\(^2\)

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1 Otherwise referred to as hand-separating, handing, handedness etc., emphasizing the two hands.

The author further suggests regardless of whether or not a composer indicates LH – RH solutions, performers must inevitably distribute the notes between their hands. Correspondingly, the author recommends piano players to evaluate their handing decisions very carefully and according to the context of music.

We infer from Smith that redistribution is a serious matter of both aesthetic and hermeneutic significance. Complementing Smith’s point is the fact that in either one of our two hands, we still distribute notes between our five fingers. Therefore, performers not only decide which hand to use for a passage during performance, but also choose the most functional fingering for themselves. Of course, an artful beauty and pleasure in the entire process lies in its variability within certain ‘limitations’: neither of our two hands nor our ten fingers are absolutely liberated at once.

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In a paragraph titled Hand Size and Faking It, McLachlan establishes his positive view on redistribution by stating that if the pianist is skilled enough the listener would never object to a fluent execution if it was done through redistribution and arrangements between the hands. However, the author emphasizes that these modifications should serve the music in a well-organized and competent way:

If a composer has written a Herculean flourish for one hand then it is totally unacceptable to make the passage sound easy when you rearrange it for two hands. Even your simplified arrangement should sound challenging and exhausting, if that was the composer’s intention.

Perhaps a point of argument about this statement is: since we can never know what a composer’s real intentions or motivations are, the only thing we can do is to first study and examine to see whether or not this ‘Herculean flourish,’ giant leap, or layered chord that – all physically demanding – is a metaphor for an inherent sense of struggle in the music. Then, we will be able to continue to perform the piece through organizing our bodily movements around this intrinsic ethos. For example, if the overall character of some music were

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mournful, we would want to pay special attention in transmitting any ‘sigh’ gesture (descending interval of a 2nd) that may come along in the score. Similarly, if we were to play a late Beethoven sonata in which the music is the ultimate speaker of the composer’s battle with unwelcome events in his life, we would try to show this struggle without degrading the sense of challenge inherent to the music. Such scenarios warn us that our changes - redistributing passages or any convenient gesture that we decide to make during performance - should all be in the service of music.

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Pipa examines José Vianna da Motta’s contribution towards a “better rendering” of Beethoven’s piano sonata Op. 31 No. 2. Through a concise but informative writing, Pipa discusses the ever-present controversy over ‘musical integrity’ versus redistribution: Some musicians claim that playing from a redistributed edition diminishes musical integrity, while others believe that the music will remain the same. In the end, paralleling Wirth’s viewpoint, Pipa favors redistribution for the simple purpose of technical facility.

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In his discussion about the functionality of redistribution, Wirth advocates that ‘hand-dividing’ is necessary as long as “the musical integrity” is maintained. However, he does not explain what that integrity really entails. He categorizes redistribution as a valid and practical means towards assisting pianists with small hands and performers seeking a shrewd convenience in their playing. Although Wirth’s two categories may appear to originate from different causes, both are pointed towards a single target: technical facility. For his first category, Wirth maintains: “For students with small hands, a lot of repertoire is often ruled out which students


5 Debate between purists and non-purists. The same issue has been pointed out to different degrees by other authors including Wirth and Smith.

could otherwise play very well using redistributions.”\(^7\) Figure A1.6 shows several examples that Wirth recruits to demonstrate cases of hand-division for small-handed piano players. The author then explains his second category: “The cases of judicious redistribution for technical facility are nearly ubiquitous.”\(^8\)

Bloomfield discusses situations in which the hands play in close proximity to one another, and provides strategies for untangling the passages and making them easier to play. Figure A1.8 shows how he classifies various instances of hand-division into the following categories:

1. Using intelligent fingering to avoid collision (a Scarlatti Sonata)
2. Avoiding collision when both hands must play the same key in quick succession (a Bach Invention)
3. Separating higher/lower hands to avoid collision (Debussy)
4. Isolating in/out hands in order to avoid collision (Ravel)\(^9\)
5. Redistributing notes to avoid collision (remaining examples)

Ironically, within his fifth category – the most resourceful among all of his examples – Bloomfield draws attention to an excerpt from a problematic episode in Variation 8 of the Goldberg Variations, thus unraveling its proper hand-division for the piano (this one appears as no. 28 of the author’s itemized examples in Figure A1.8).

**Redistribution: Survey of a practical strategy**

Alongside the fundamental principles of fingering,\(^10\) there are the so-called ‘strategies’ that serve an individual purpose and can assist pianists in challenging passages. For example, in a *backwards* fingering strategy, the pianist first finds the desirable fingering for the final note(s) of a problematic phrase, and then

\(^7\) Ibid.

\(^8\) Ibid., 32.

\(^9\) A similar idea has been applied to No. 29, mm. 1 – 3 of the Goldberg Variations. For more reading, see the Appendix chapter on fingering.

\(^{10}\) Such as ‘longs on blacks, shorts on whites’ or the conventional fingerings for scales and arpeggios etc.
works his way back to find the fingering for the other notes. Another strategy is fingering _consistency_: different passages of the exact same nature (i.e. matching in terms of individual intervals while being represented in different keys) will be better remembered if fingered identically.\(^{11}\) _Redistribution_ is considered as another expedient strategy that can assist pianists in determining their choice of hand in a particular passage. Naturally, changing the hand-assignment will likely change the fingering of that passage too.

The pieces surveyed in this section have the following characteristics in common:

- At fast speeds where a perplexing texture (homophonic or polyphonic) results in playing with an undesirable lagging of tempo, or unevenness in the rhythm.
- Tempo is fairly slow but the pianist is engaged in a large leap.
- Being occupied with many notes in a dense texture.
- Sometimes an excerpt appears to have been written for one hand only, leaving the opposite hand look awkwardly passive. In this case, it would make much more sense to share the notes between both hands instead of one. We usually encounter this scenario in scalar or arpeggiated passages that traverse along the keyboard in a rising and falling fashion.

In the above scenarios, it seems that only the hand involved with the challenge is experiencing difficulty. But in reality, the choreography of both hands is affected in a negative way. Regardless of the kind of problematic texture in the busy hand, the non-occupied hand ought to be close enough to be able to assist with stealth-playing one, two, or more notes from, and in favor of, its counterpart. For that matter, anew hand-distribution may facilitate performance by liberating the busier hand in certain challenging passages, or by circumventing a superfluous instance of hand-crossing. In the Goldberg Variations, the former cause is seldom encountered. However, the piece is in critical demand for rectifying the latter trait by means of redistributing notes between the hands.

\(^{11}\) _Sequential_ fingering is a specific approach in regards to successive passages that can shape an extended unit together. Whereas the consistency approach makes sense in much broader dimensions such as recurring themes in various musical forms. See _The Pianist’s Problems; a Modern Approach to Efficient Practice and Musicianly Performance_ (New York, Harper & Row [1974], 1974), 103–104.
In a section titled Pedagogical Strategies for Fingering, Deahl and Wrister write:

Be aware of individual differences in hand shapes. Just because something doesn't look like a stretch doesn't mean it doesn't feel like one… Re-finger to minimize hand stretches. For example, substitute 1-5 for 1-4 or 1-4 for 1-3 when appropriate. Fingerings can be broken into smaller units even if they necessitate more frequent shifts. Often, notes can be redistributed between the hands to eliminate tenths, to eliminate stretchy arpeggios or to eliminate leaps.12

These authors further enlighten the reader by showing a handful of redistribution examples from well-known pieces in the piano repertoire for the following purposes (Figure A1.3):

1. Executing long fortissimo octave passages (top)
2. Eliminating 10th s, stretchy arpeggios, or leaps (three examples)
3. Obviating stretches between interlocked hands (two examples)
4. Performing Trills more easily (bottom)13

Another author, Stannard, talks about two different strategies that a pianist can benefit from while learning a piece: Grouping and re-distributing. By showing numerous examples, Stannard unties the meaning of grouping (Figure A1.4). This pianist-writer summarizes his thoughts with an insightful statement “I call this process technical grouping, which is not to be confused with musical grouping,”14 a hint that in a way reflects the same practical concern of Smith’s. About comparing the performers’ choice with the composer’s original note distribution, Stannard provides a thought-provoking idea:15 “The score is the composer’s message to us; it


13 A similar approach towards a RH Trill has been applied for redistributing m. 17 of Variation No. 30. See Appendix 2 for further information.


15 Although there is no mention of the word ‘redistribution’ in his writing, Stannard simply compares original and altered scores by juxtaposing ‘as printed’ and ‘as practiced’ versions.
shows us what the music sounds like, not what it feels like in our hands.”\(^{16}\) In his concluding remarks, this author too, advocates that a freedom of choice in hand-distribution will support a freedom in execution to a great extent. Stannard’s redistribution solution for example Tchaikovsky and Schumann passages appears in Figure A1.5. Stannard concludes: “… I regard playing the piano as easy and not harmful.”\(^{17}\)

\(^{16}\) “PRACTICING,” 23.

\(^{17}\) Ibid., 24.
CHAPTER 4  HAND-DISTRIBUTING THE GOLDBERG VARIATIONS: A METHODOLOGY

In Chapter 2 (Challenges of Learning the Goldberg Variations), we discovered that pianists can encounter problems in executing and reading from Bach’s score. The execution problem requires hand and fingering redistribution. The fingering is discussed in a separate chapter that involves comparing different modern editions including our own recommendations. In this chapter, we discuss the following:

1. Explaining the methodology of spotting the troublesome passages throughout the piece.
2. Demonstrating the author’s notation for the redistributed excerpts of the Goldberg Variations.
4. Stating complementary questions and concerns.

We have two options for recognizing troublesome voice crossings: 1. Examining the score visually to find instances of voice-crossing or non-conventional clef swaps, and 2. Executing the piece on the piano, to find where the hands collide or cross each other. This is especially likely to occur in those variations that have an indication of ‘á 2 clav.’ This hint is directed by Bach to prompt the player of the bi-manual harpsichord to execute a particular variation on two keyboards with both hands laid upon each other. These variations include nos. 8, 11, 13, 14, 17, 20, 23, 25, 26, 27, 28. In addition, Bach left variations nos. 5, 7, 29 open to performance on either manual, or both manuals together: “á 1 o vero 2 clav.” (i.e. “on 1 or 2 keyboards”).

In the score, Variations nos. 1, 5, 8, 11, 14, 17, 20, 23, 26, 28, and 29 include several clef swaps unfamiliar to our eyes, while sight-reading. Among these, variation 5 extensively, and Vars. 1 and 14 occasionally, include a hand-crossing of the Scarlattian type known as the ‘three-hands’ effect. Since this special idiom is pleasing to play on the piano, we try to keep them in place without altering those specific segments. Among the two-manual variations listed above, only no. 27 is a Canon at the 9th. By looking at the score, we realize this specific Canon does not contain any voice-crossings or unorthodox swap of clefs.
Correspondingly, the 27th variations sounds similar to Bach’s two-part inventions. Nonetheless, the twisted melodic patterns in each hand is difficult to execute in this variation. The abrupt changes of direction in each hand is hard to execute, especially when we want to coordinate both hands to play together in an imitating manner. To this end, Var. 27 stays out of our plan of redistribution.

Drabkin states that J. S. Bach greatly contributed to the *invertible counterpoint* technique through his *Canons*.\(^1\) Thanks to Bach, the Canon become a new genre of its own in the repertoire of instrumental music. Alongside voice-crossing, the Canons of the Goldberg Variations can be seen as another instance of *contrapuntal artifice*, to use Newcomb’s terms. Bach considers the Canon as an archetypal part of the three-fold sequence of variations: nos. 3, 6, 9, 12, 15, 18, 21, 24, 27, 30. Virtually all of the Canons of the Goldberg Variations are difficult to execute, but for reasons different than those of other variations: some of them require advanced fingering solutions, and others are musically complex due to intertwining layers of voices. As a result, the pianist may face challenges in memorization, tone-coloring, melodic delineation, and finger dexterity in some that resemble études.

At the piano, we discover problem passages have a rare to null connection with the Canon. The only exception here is Variation no. 6: Canon at the 2nd, which is one of the densest in the entire Bach repertoire. Figure 4.1 below shows the Breitkopf edition compared to Schirmer’s: while Kirkpatrick (Schirmer) separated the two voices in the right hand for a better graphical representation of voices, Busoni (Breitkopf) re-wrote measure 9 for technical facilitation. Other editions including Schott and Henle have published their own understanding of this variation (Figure 4.2). While we can say that Wolff and Steglich correspond highly with each other, certain elements vary in their scores, such as the last few measures of the first section. Hence, among all of the Canons, Variation 6 remains an exception for us to add to our list of redistributable movements.

\(^1\) “Invertible Counterpoint,” *Grove Music Online* (n.d.).
Variatio 6. Canone alla Seconda. a 1 Clav.

Figure 4.1. Variation no. 6 from the Goldberg Variations.
Top: Schirmer – Kirkpatrick
Bottom: Breitkopf – Busoni
Variatio 6. Canone alla Seconda a 1 Clav.

Figure 4.2. Variation no. 6 ‘Canon at the 2nd’
Top: Schott edition
Bottom: Henle edition
Variations with an indication for an optional manual are nos. 5, 7 and 29: no. 5 is already added to our list, no. 7 is a quasi-homophonic piece and fairly easy to play on a single keyboard (not problematic), and no. 29 contains a a 1 ou vero 2 clav sign, but has troublesome treble-bass clef swaps. There is a high similarity between the texture and musical style of Vars. 2, 3, 6, 19, all of which accommodate two voices in RH accompanied by a third voice in LH. Among these, no. 19 stands out: Unlike the other two it is not a Canon, is fairly easy to play, and requires only minor adjustments not towards untangling voices. In this variation, a limited number of notes in one hand are re-written for the opposite hand. According to Table 2.1, Var. 3 displays an in-between texture not requiring any alteration. No. 2 is not problematic in execution, and no. 6 is already discussed above.

A tight similarity exists between the Aria and Vars. 13 and 25. Their most palpable resemblance is the singing melody in RH written against a broken-chord simple accompaniment in LH. Overall, the smooth homophonic texture of this group makes them technically easy to execute, and their soothing musical character deeply influences the pianist to easily identify and communicate with them. Table 4.2 summarizes the characteristics of variations discussed above.

Table 4.2. Identifying problematic variations.
[The asterisk symbol indicates those variations that are not redistributed due to reasons explained in the text.]

<table>
<thead>
<tr>
<th></th>
<th>8</th>
<th>11</th>
<th>13*</th>
<th>14</th>
<th>17</th>
<th>20</th>
<th>23</th>
<th>25*</th>
<th>26</th>
<th>27*</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 clav.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional</td>
<td>5</td>
<td>7*</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clef swaps</td>
<td>1*</td>
<td>5</td>
<td>8</td>
<td>11</td>
<td>14</td>
<td>17</td>
<td>20</td>
<td>23</td>
<td>26</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>Homophonic</td>
<td>Aria*</td>
<td>1*</td>
<td>13*</td>
<td>19</td>
<td>25*</td>
<td>26</td>
<td>27*</td>
<td>28</td>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canon</td>
<td>3*</td>
<td>6</td>
<td>9*</td>
<td>12*</td>
<td>15*</td>
<td>18*</td>
<td>21*</td>
<td>24*</td>
<td>27*</td>
<td>30*</td>
<td></td>
</tr>
<tr>
<td>Redistributes</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>11</td>
<td>14</td>
<td>17</td>
<td>19</td>
<td>20</td>
<td>23</td>
<td>26</td>
<td>29</td>
</tr>
</tbody>
</table>

Table 4.3 below shows the problematic measure ranges in variations that need redistribution. In this table, columns are variation numbers in Roman numerals and rows are measure ranges (both the beginning and ending measure numbers within each hyphenated range are included in our redistribution).
Table 4.3. Goldberg Variations, measures undergoing redistribution

<table>
<thead>
<tr>
<th>V</th>
<th>VI</th>
<th>VIII</th>
<th>XI</th>
<th>XIV</th>
<th>XVII</th>
<th>XIX</th>
<th>XX</th>
<th>XXIII</th>
<th>XXVI</th>
<th>XXVIII</th>
<th>XXIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-16</td>
<td>8-12</td>
<td>12-13</td>
<td>All</td>
<td>4-8</td>
<td>3-5</td>
<td>Minimal adjustments</td>
<td>1-8</td>
<td>1-3</td>
<td>3</td>
<td>9-12</td>
<td>25-26</td>
</tr>
<tr>
<td>25-26</td>
<td>15-16</td>
<td>19-21</td>
<td>14</td>
<td>9-13</td>
<td></td>
<td></td>
<td>14-16</td>
<td>6-8</td>
<td>14-16</td>
<td>19-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>23-29</td>
<td></td>
<td></td>
<td></td>
<td>23-24</td>
<td>18-21</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>27-32</td>
<td>27-31</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix 2 presents these redistributed measures, appearing in a vertical order below each variation number, starting with Var. 5 until Var. 29.²

The general methodology of suggesting a hand-distribution for the problematic passages of the Goldberg Variations is simple: at each occurrence of voice-crossing or clef swapping, we prefer to play the higher pitches with RH, and lower ones with LH. In order to apply this method in practice, we consider labeling splitting points in the score as an opening instant where the two voices cross each other. These split points occur when the thumbs meet to play either an identical key on the piano, or two different keys but in a crossed-hand position. In this case, recognizing and examining carefully one note before and one note after the problem pitch can be helpful. Once all these critical moments are detected and labeled, we proceed with keeping our labeled area open, until the two hands regain their normal (i.e. non-crossed) status where we close the section by placing a ‘close’ landmark on the score. We then reverse the roles of the two hands by re-arranging the notes of the entire section for opposite hands, contrary to the composer’s original hand assignment. Thus, as soon as the

² All of the excerpts that appear in Appendix 2 have been downloaded as a MIDI file format from the Open Goldberg Project. Score alterations and redistributions have been performed later on the computer, with the MuseScore software. See Werner Schweer, ed., *OpenGoldberg | MuseScore*, n.d., https://musescore.com/opengoldberg.
two thumbs meet during performance, the hands depart and play notes in opposite directions. In cases where there is a common note to be played with either hand, we notate that singular pitch for one of the hands only.
CONCLUSIONS

Written music (notation) serves two purposes: theoretical, dealing with the musical structure of a piece, and performance, dealing with practicalities of fingering and execution. Since the theoretic requirements supposedly takes precedence over the performance requirements, a composer may not redistribute directly in the written music if it hurts theoretical concerns such as separation of voices. Thus, for certain complicated pieces such as the Goldberg Variations, a second “performance” score may be needed.

We stated the problem of hand-crossing as a major concern in performing the Goldberg Variations on the piano, likely related to the unique nature of execution at the bi-manual harpsichord for which it has been written. We also explained that reading from the score of Goldberg Variations is troublesome for the pianist due to frequent displacement of treble and bass clefs, an unfamiliar pattern that hinders readability. A comparison of different editions of BWV 988 showed that the two problems have not been fully addressed in these publications. Consequently, and as an ultimate goal of this research project, we suggested a new score for the Goldberg Variations: a method of hand-redistribution for select measures capable of alleviating the said difficulties. A proof of practicality for this new score is the author’s Goldberg recital performed from this notation.

An outstanding question is why a facilitating performance edition of the Goldberg Variations has not yet been published officially. This might be related to the fact that the piece has been revived fairly recently, during 1950’s, by Glenn Gould. An unexplored idea is to use different colors for right and left hands in order to make complex parts of piano scores more legible. This issue needs further research in the future.

That the redistribution proposed in this thesis is capable of preserving all qualities of Bach’s original counterpoint requires further scrutiny. For example, what would happen to verticality of voices or their
identifiability if we change the order of hands in a counterpoint? These questions concern the acoustical effects of redistribution and their relationship with musical values.

We surveyed a broader application of redistribution as a technical strategy towards alleviating physical discomfort in performing challenging pieces. We explained that in executing challenging notations, a pianist with small hands is more vulnerable to demonstrating frailty compared to those with bigger hands. ‘Small’ interprets itself as non-stretchy, which produces much difficulty over big leaps especially when chunky chords of open-wide positions or distant vocal lines in contrapuntal textures are involved.

We also examined the possible effect of right-handedness on the hand-distribution choices of composers or performers. A major point of focus here was to determine ways that balance can be achieved in execution. Future research is needed to determine whether the following factors can achieve “evenness” in performance:

1. Playing equal number of notes in sequential hands over scalar passages.
2. Imagining similar amounts of stretch in each hand over SATB or chordal textures.
3. Totally disregarding the idea of ‘sameness’ in the first two categories, and taking advantage of our biological strength instead by means of using our ‘biased’ hand-distribution where RH occasionally helps LH by playing a few extra notes out of it.

In Appendix 4, we compared editorial fingerings among multiple editions of the Goldberg Variations including the present author’s. By using this approach for a wider database of piano pieces, differences and similarities in fingering can statistically be compared, which can illuminate guidelines for fingering and hand redistribution.
REFERENCES


Figure A1.1. Smith: Chopin Scherzo Op. 31.
Original notation (top) vs. redistributed between the hands (bottom)
Figure A1.2. Smith: Beethoven Sonata Op. 111 (Opening),
Original notation (top) vs. three altered versions (bottom)
Figure A1.3. Examples of redistribution by Deahl and Wrister
Liszt E-flat Concerto, finale – Grouping

Bach WTC I, Prelude in D major – Grouping; Hand Angle

Chopin Etude Op. 10 No. 12 – Grouping; Hand Angle

Figure A1.4. Stannard: various examples for musical grouping

Tchaikovsky Concerto Scherzo, mm. 44-45, As printed
The following examples are from Wirth. Pay attention to L-shaped and curved symbols drawn for expressing the nature of distribution addressed in each excerpt.
Mozart Concerto #23 in A major, K 488: 1st movement, mm. 95-98

Mozart Concerto #23 in A major, K 488: 1st movement, mm. 69--70

Mozart Concerto #23 in A major, K 488: 1st movement, mm. 108-109
Mozart Concerto #23 in A major, K 488: 1st movement, mm. 131-132

Mozart Concerto #23 in A major, K 488: 1st movement, mm. 158-160

Mozart Concerto #23 in A major, K 488: 1st movement, mm. 158-160

(Rewritten to reflect the redistributed fingering)
Mozart Concerto #23 in A major, K 488: 1st movement, m. 188

Mozart Concerto #23 in A major, K 488: 1st movement, mm. 207-208

Mozart Concerto #23 in A major, K 488: 1st movement, mm. 270-271
Mozart Concerto #23 in A major, K 488: 1st movement, m. 278

Mozart Concerto #23 in A major, K 488: 1st movement, mm. 281

Mozart Concerto #23 in A major, K 488: 1st movement, Cadenza m. 2

Figure A1.6. Wirth: examples of redistribution assisting small hands.
Chopin Polonaise in A-flat Major Op. 53, mm. 27-28

Chopin Etude in C-sharp Minor Op. 10 no. 4, mm. 29-30

Chopin Etude in C-sharp Minor Op. 10 no. 4, mm. 79-80
Chopin Prelude in D-flat Major Op. 28 no. 15 (the “Raindrop”), mm. 9-10

Chopin Ballade in G Minor Op. 23, mm. 158-161

Figure A1.7. Wirth: examples of redistribution serving technical facility.
1. Scarlatti, Sonata in D Minor, K. 9

5. Bach, Two-Part Invention in C Minor

8. Debussy, Ce qu'a vu le vent d'Ouest

9. Ravel, Noctuelles (from Miroirs)
10. Bach-Busoni, Chaconne

13. Schubert, Sonata in A Major, Op. 120, iii

14. Debussy, L’isle joyeuse

15. Prokofiev, Toccata
19. Franck, Sonata for Violin and Piano in A Major, ii

20. Franck, Sonata for Violin and Piano in A Major, iv
21. Debussy, Poissons d'or (from Images, Book II)

22. Debussy, Etude pour les “cinq doigts”

23. Chopin, Fantasie in F Minor, Op. 49

25. Brahms, Intermezzo in F Minor, Op. 118, No. 4


27. Ravel, Rigaudon (from Le Tombeau de Couperin)
Figure A1.8. Bloomfield: various instances of redistribution.
Beethoven Sonata Op. 31/2, first movement, bars 13-16 (hand-splitting possibility)

Beethoven Sonata Op. 31/2, first movement, bars 21-24 (Vianna da Motta’s hand-splitting)

Beethoven Sonata Op. 31/2, first movement, bars 165-166 (Second arpeggio sequence with Vianna da Motta’s hand-splitting)

Beethoven Sonata Op. 31/2, second movement, bars 51-52 (Vianna da Motta’s hand-splitting)
Figure A1.9. Vianna da Motta – Pipa: hand-distributing select measures of Beethoven’s Sonata Op.31 No. 2.
Here we summarize the redistributions of Table 4.3. The redistributed measures appear in sequence in a vertical order below each variation number, starting with Var. 5 until Var. 29. All of the excerpts that appear in this chapter have been downloaded as a MIDI file format from the Open Goldberg Project. Score alterations and redistributions have been performed later on the computer, with the MuseScore software. See Werner Schweer, ed., *OpenGoldberg | MuseScore*, n.d., https://musescore.com/opengoldberg.

**Variation No. 5**

![Musical notation for Variation No. 5]
VARIATION NO. 11
VARIATION NO. 19
VARIATION NO. 23
VARIATION NO. 26

3

14

15

16
Variation No. 28
Variation No. 29
The problem of authenticity

There is an ambiguity surrounding the date of composition, as well as the date for the first publication of the Goldberg Variations. Regarding the first publication, Edition Peters (Soldan) and Schirmer (Kirkpatrick) state the year of 1742. As the editor of three different publications, Neue Bach Ausgabe (Bärenreiter – 1977), Schott – 1966, and in collaboration with Ragna Schirmer (Bärenreiter – 2014), Christoph Wolff mentions various dates of first publication in each edition: 1741/42, 1741, and again 1741/2, respectively. The remaining major editions have chosen not to clarify a date at all. These include: Dover (reprint of Becker’s – 1853), Henle (Steglich, Skoda, Theopold – 1978), Beitkopf (Busoni – 1937), and Kalmus (Bischoff – 1947). The exact date the work was composed is also uncertain. As Wolff has publicized, “[T]he work was composed only shortly before its publication: in other words, in about 1740.”

Bach’s autograph manuscript of the Goldberg Variations has not survived. Fortunately, however, a significant score of BWV 988 – universally known as ‘source A’ – has survived that has Balthasar Schmid’s (Bach’s first publisher) name on it. This source is produced by Schmid himself, by means of transferring the notation from Bach’s original manuscript: he engraved – supposedly on paper – the Goldberg Variations from his own (i.e. Schmid’s) handwriting on copper plates. This procedure is a printing system customary at that time.


Today, we have access to nineteen different extant copies that were made directly from the above-mentioned first edition, either during the lifetime of the composer or within just a few years after his death. All of these historical documents are being kept at prominent music libraries across the globe, and are labeled from A1 through A19 (each one being a reprint of A). Among these sources, only seven are considered to be ‘corrected’ versions: A1, 2, 3, 5, 6, 8, 11. Corrections are musically oriented, and are done in either pencil or ink. We do not know for sure who made these corrections: Bach, his students, contemporary musicians, or a mixture of all. As a result, scholars have given these handwritten sources the general title of “Handexemplar” (Ger.). The only exception is the source A1, which was discovered by Olivier Alain in 1974. Alain was able to identify the individual responsible for editing A1.

Widely known as The Handexemplar, A1 incorporates Bach’s several corrections including diversified ornamentations that he himself had made in red ink to one of Schmid’s prints. Importantly, A1 also includes an extra fourteen Canons that Bach added as an appendix at the end of the main work. Bach derived these Canons from the ground bass of his own Aria (the Goldberg Variations’ theme). Today, source A1 is being kept in Bibliothèque Nationale de France – Paris, under catalog number ‘MS. 17669.’ In addition to the A-series there is a list of B, C, and D sources that diminish in authenticity from A to D, possibly because their creators become more distant from the composer in place and time.

It is difficult to understand the sources that different editions have used by reading their critical commentaries. Here are some issues:

- The only editions that clearly mention their source are Kalmus and Schott.

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3. Alain received it from Franz Stockhausen though its previous owner was Paul Blumenroeder.
The critical commentary of the Schott edition lists all of the A-sources in great detail. On the other hand, every time the editor of Kalmus publications calls for ‘A’, it seems he is using that letter reference as a generic idea. Correspondingly, in his occasional footnotes that appear throughout the variations (especially ones that address single notes), Bischoff fails to clarify which variant of A he used. An example for this particular scenario occurs in Var. 16, m. 21: about the last 16th note in the alto voice (RH) Bischoff explains the following as a footnote on the same page of the Kalmus print: “In A the e was subsequently corrected to read f sharp. The e in our text appears in C, D, and E.”4 However, unlike what Bischoff claimed, neither A nor A1 has an F# sharp in the middle voice. In fact, both sources show an E as the last Alto note of m. 21. In this particular scenario, only K. Soldan from Edition Peters matches Bichoff in printing the F#. All of the other editions have printed an E (corresponding with both A and A1). Therefore we understand from this comparison that Bischoff and Soldan have used the same source(s) to include that F#, That source can be anything excluding Schmid’s and the Handexemplar. Schott, in particular, provides the following elucidation: “Last printed note e”, corrected to f” in A 2, 5, 6, 8, 11.”5

Another incongruity exists between Kalmus and Schott: in Kalmus, Bischoff introduces a source ‘E’, of which there is no mention in Schott’s critical commentary.

Shared between Schott, Kalmus, Peters and Henle editions, there is a parallel system of labeling the sources: P - numbers. It is not clear whether P is a reference to the engraver’s plate, or whether it is meant to signify call numbers for each source item kept in the library. Kalmus introduces P. 214 as an alternative label for source E on the same page, for instance.

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4 *Aria with 30 Variations, Entitled The Goldberg Variations*, 23 (Footnote 1).

5 *Klavierübung IV*, 62.
As far as the described limitations allow, a few of the modern editions can be categorized as follows in terms of the main sources they referred to:

- Peters [1937]: A3, possibly A6, P 212, P 225 (i.e. B1, which seems to be wrongfully addressed to date back in 1722 instead of 1725).
- Kalmus [1947]: A, B (P 225), C (P 203), D (P 212), and E (P 214).
- Bärenreiter [1977]: “…all available sources” including “Bach’s personal copy of the original print.”
- Henle [1978]: In 1973 Steglich used A, B1, and P 203 (the latter source is referred to as ‘C’ in Kalmus) for constructing their Goldberg Variations score. After the passing of Steglich in 1976 the publication company began to cooperate with P. B. Skoda in place of their then deceased editor. In their Revised Edition of 1978, Henle Verlag incorrectly state 1975 as the discovery date of A1.
- Schott [1996]: A 1, 2, 3, 5, 6 (whose facsimile appears on the first page), 8, 11.

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After the Handexemplar was found in 1974, renowned editor Christoph Wolff and his music publishing corporation, Bärenreiter, began to construct their own Goldberg score using Alain’s discovery and the then older Bach-Gesellschaft Ausgabe (BGA). They eventually published a new score for the Goldberg Variations in 1977. This edition is a part of a comprehensive collection of Bach’s works, which is otherwise referred to as

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6 While keeping in mind this brief summary: Schmid (A), Bach’s Handexemplar (A1), other handwritten copies: A2 - 19, Bs, Cs, and Ds.

7 Source B1 is a handwritten version of BWV 988’s Aria that is situated in between the pages of the 1725 Piano Book for Anna Magdalena. It is unknown whose manuscript B1 incorporates.


9 Ibid.

10 As a part of this collection BWV 988 had been edited by Carl Ferdinand Becker and published by Breitkopf & Hartel in 1853.

We learn from Wolff’s critical introduction to Bach’s Handexemplar that there are a few landmarks to pay attention to when we look at any modern edition of the Goldberg Variations. For example, Bach added the phrase \textit{al tempo di Giga} to the beginning of Variation 7, which suggests a joyful and animated musical character. Another instance is an \textit{Adagio} that Bach inserted between the two staves of the opening measure of Variation 25. This is indicative of the amount of care that Bach took towards reflecting the spirit of this variation to those who appreciate his music.

In 1990 Erich Schwandt criticized Wolff heavily, condemning his edition of the Goldberg Variations in the NBA of being inaccurate. He considered BGA very problematic, and disapproved of Wolff for using it as a basis in his work. According to Schwandt, Wolff carried Carl Ferdinand Becker’s mistakes from BGA and added to them some more of his own. Schwandt’s criteria for recognizing Wolff’s mistakes and typos were the first edition of the Goldberg Variations (Schmid’s), as well as Bischoff’s and Kirkpatrick’s editions\textsuperscript{12} (whom he praised in his writing). He also published a table of \textit{errata} containing scrupulous commentaries to familiarize his readers with each erratum. This scholarly incident shows the degree of controversy that exists over authenticity of music.

By looking at this pattern of “editorial mistakes” in retrospect, we understand the numerous discrepancies that took place initially between Schmid’s version of the BWV 988 score and the Handexemplar. In this case, although it seems that Schmid maintained the quintessence of the music, Bach’s handwritten

\textsuperscript{11} This publication is double-titled on its cover page: Wiener Urtext Edition – Schott/Universal Edition

\textsuperscript{12} Kalmus (1947) and Schirmer (1938), respectively.
corrections tell us that he had failed to transmit all of the details to his engravings, such as many of the *accidentals* and a few *slur* markings.

In the section titled Text Revision from the Schirmer edition we read\textsuperscript{13}:

The text followed here is that of the original engraved edition published in Nuremberg by Balthasar Schmid. It might be remarked that this text is not as obscure as a few mistaken comments of Dannreuther would imply, nor does it give reason to suspect the mistakes of which Forkel complains: ‘Yet it must be remarked that in the engraved edition of these variations are to be found several important mistakes, which the writer has carefully collected in his copy.’ The slightly inconsistent orthography of Trills and Mordents has been reduced to [upper mordent] and [lower mordent], the system of Couperin, thereby correcting the mistakes of the Bach-gesellschaft edition, but in no way altering the original meaning.\textsuperscript{14}

However, immediately on the next page in the Editor’s Note section, Kirkpatrick maintains:

In view of the fact that even the clear, ‘unedited’ Bach-gesellschaft version of the Goldberg Variations and its imitations contain mistakes in the ornamentation, a desire to establish at least one completely objective, accurate edition has led me to relegate to the preface, one after the other, the various categories of suggestions for performance.\textsuperscript{15}

It seems that Kirkpatrick did not wholeheartedly agree with Dannreuther and Forkel who had conveyed there are mistakes in Schmid’s. The above two notes suggest that the editor of Schirmer used the first edition as his only reference. He apparently compared the BGA edition against Schmid’s to discover mistakes, particularly around its slightly flawed ornamentations. This conclusion also supports Schwandt's idea that Becker did make mistakes in issuing his 1853 edition of the Goldberg Variations. In 1938 Kirkpatrick could not have accessed the Handexemplar to be able to construct an authentic score beyond the version he ultimately published.

\textsuperscript{13} It is not clear who wrote this section. One assumption can be that Kirkpatrick himself did it.


\textsuperscript{15} Ibid., 83.
Is the bi-manual harpsichord Bach’s intended instrument for the Goldberg Variations?

As a consequence of the issues discussed, we cannot ascertain that Schmid’s version of the score be a perfect authentic reflection of all of Bach’s notations, markings, and indications. Importantly, can the Clavicimbal mit 2 Manualen indication in the title page of the first edition be Schmid's personal impression of the composer’s intended instrument, as another possible mistake that he may have made? We believe this is unlikely for two reasons. First, Bach has indeed used a similar indication in a few other pieces to indicate a bi-manual keyboard as his target instrument (see below). Second, the complexity of voice overlaps in the Goldberg Variations is well suited for a two-keyboard instrument that prevents hand collision.

Besides the Goldberg Variations, there are three pieces that catches attention about their possible instrument of target: The Art of Fugue, BWV 1080, the Italian Concerto, BWV 971, and the Overture in the French Style, BWV 831. The first piece appears in its first edition (first published shortly after Bach’s death) by the title Die Kunst der Fuge, which is different from Die Kunst der Fuga scribed on the composer’s autograph manuscript. The autograph manuscript does not contain any indication of two manuals to guide the ‘supposed’ performers about how they ought to execute Bach’s Contrapuncti, whereas other editions (including the first) project ‘a 2 clav’ over select movements of the piece (Figure A3.1 below).

Furthermore, the Art of Fugue is notated in a four-part vocal (Soprano, Alto, Tenor, Bass) format and not in the conventional Grand Staff (i.e. keyboard) style. However, modern editions – Peters for example – have published a piano transcription for BWV 1080. Williams asserts: “… á 2 Clav specifies two manuals when (i) the hands constantly cross, (ii) there is a melody above an accompaniment or (iii) the hands alternate.”\(^\text{16}\) As to the question of instrument, David declares: “Bach calls for the harpsichord as a performing instrument in works for a two-keyboard instrument, in ensemble works, and in works with French titles (where he writes

Figure A3.1. Á 2 clav. indication over two movements from the Art of Fugue – First edition. Notice, contrary to the above edition, there is no indication of two manuals in the entire autograph manuscript of this piece.
Concerned with the score of the Art of Fugue, the same author states: “This is music to be performed… by any appropriate instruments available, keyboard or ensemble.” Nevertheless, the Art of Fugue remains to be ambiguous in terms of its target instrument.

The other two pieces, Italian Concerto and French Overture, were published for the first time in 1735, within almost five years prior to the creation of the Goldberg Variations. These two works together outline the second Clavier-Übung, and are clearer about their intended instrument. The first edition of this collection was engraved by Schmid and Ziegler in collaboration (Figure A3.2, left image). What is striking about the first edition is the clear specification of “Clavicymbel mit Zweyen Manualen” on its title page. Another validating source belongs to Anna Magdalena’s manuscript of the French Overture that embraces two distinct titles that both appear on its cover page (Figure A3.2, right image). Apparently, this source also includes some corrections made by Bach. The French title, which appears at the top of the page and somewhat right-justified reads: pour le Clavecin à 2 clav. However, the second title which is situated at the bottom of the page – centralized and parenthesized – reflects an intricate adjustment in German: Fur ein Clavecin mit 2 Manualen.

Due to an unknown reason, in translation from French to German the word Clavecin has remained intact. Although the word Cembalo (It.) is the alternative name for Harpsichord (En.), we must not forget that it was widely used across German-speaking countries during Bach’s time. It is possible that the term Manualen may have been a subtle correction that Bach made to Anna Magdalena’s choice of word for specifying his intended instrument. Further intriguing is that 2 Manualen directly addresses ‘two hands’: at the bi-manual harpsichord, only one of the functions of the two hands is engaging at playing music and depressing the keys of two keyboards. Integral to the workings of this instrument, during performance the hands also get

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18 Ibid., 466.
involved with the unique mechanism of changing registers constantly by moving back and forth the so-called *stop levers* that are designed particularly for transposition.

Figure A3.2. Different cover pages for the French Overture, BWV 831.
Left: the first edition (includes the Italian Concert, BWV 971) – Schmid & Ziegler, engravers — Christoph Weigel, publisher. Notice *Clavicymbel mit Zweyen Manualen*.
Right: Anna Magdalena’s autograph on the cover page of the French Overture, BWV 831.
Once I began to learn the Goldberg Variations from my own redistribution, I ceased wrestling with an impossible score. In addition, I did not have to deal with the awkwardness of bi-manual harpsichord hand-crossing anymore. However, as soon as I engaged in learning the piece from my piano-friendly score, I realized select measures required more specific fingering solutions. Due to the incredible resourcefulness of this piece about the pianoforte fingering, I am inclined to call the Goldberg Variations a standalone school of fingering.

I developed my fingerings to be ergonomic, movement-specific, and targeted towards the pianist’s technical facility, while also serving the context of music. In this chapter, I also compare the fingerings of a few modern editions and explore the degree of consensus among them and the possible rationale behind each fingering choice.

In Goldberg Variations, fingering can be categorized into the following types:

- **Symmetrical**: While occurring very frequently, these patterns are often derived from counterpoint, as in CDEFG in RH vs. GFEDC in LH. This particular technique of composition – otherwise known as the *contrary motion* – mirror reflects (or ‘inverts’) a group of notes of one hand written in its relevant clef, onto the opposite hand in the other clef. Although some counterpoints may not be perfect reflections of their points\(^1\), the overall direction of the two arrays is reflective enough to invite a symmetrical fingering scheme. This first category is the most prevalent one in the Goldberg Variations.

- **Sequential**: This is repeated patterns or motifs that require sequences of identical fingerings. A sequential fingering strategy is one of the most commonly talked about in scholarly texts.

\(^1\) Point, or *cantus firmus.*
Finger-over-finger (FOF) and Finger-under-finger (FUF): This manner of executing notes by using fingers crossed over each other is outdated in today’s piano performance practice, however they are still applicable in rare spots throughout the Goldberg Variations. It is important to note that not all instances of FOFs and FUFs are necessarily comfortable to execute at all times. Therefore, alternative fingerings are suggested for the readers in this case, to compare and decide for themselves which one they would rather use eventually.

Sliding (Chopinesque): This method simply employs the same finger for playing two adjacent piano keys.  

There are four different editions used for the purpose of making fingering comparisons in this chapter:

1. **Peters (1938):** Fingered by C. Czerny, F. C. Griepenkerl and F. Roitzsch.  
2. **Kalmus (1947):** Fingered by H. Bischoff  
4. **Schott (1996):** Edited by C. Wolff, Fingering provided by H. Dreyfus.

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2 Swinkin exclusively talks about ‘sliding or repeating one finger across multiple keys’ as one of Chopin’s strategic techniques. Though Bellman asserts that Carezzando was a technique in which the pianist ‘caresses’ a single key gently by means of sliding one finger across the same key. Bellman declares that this particular touch was one of Chopin’s preferred practices. Nevertheless, the author concludes that the ‘slide’ mechanism is one that Chopin had learned from the 18th century composers, and most significantly from J. S. Bach. See “Keyboard Fingering and Interpretation: A Comparison of Historical and Modern Approaches,” *Performance Practice Review* 12, no. 1 (January 1, 2007): 11, http://scholarship.claremont.edu/ppr/vol12/iss1/1. And, “Frederic Chopin, Antoine de Kontski and the Carrezzando Touch,” *Early Music* 29, no. 3 (August 2001): 398–407. Kosovske studies the slide-fingering as a harpsichord technique: *Historical Harpsichord Technique* (Indiana University Press, 2011), 129.

3 Fingering of some scalar patterns are also talked about in this chapter.

4 Although it is said that the old Peters edition features Czerny's name, but it is in fact fingered by Roitzsch. For more information, see Walter Schenkman, “The Establishment of Tempo in Bach’s ‘Goldberg Variations,’” *Bach* 6, no. 3 (1975): 3–4.

5 As double-titled on its cover page: Wiener Urtext Edition, Schott/Universal Edition
The Goldberg Variations as printed in Dover publications (reprint of the Bach-Gesellschaft Ausgabe) and Schirmer – edited respectively by C. F. Becker and R. Kirkpatrick – are not reviewed because they do not contain any editorial fingerings. Figures shown for each variation follow consistently this order of presentation from top to bottom: Czerny, Bischoff, Theopold, Dreyfus, Hadipour.  

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**Variation 9** entails an interesting melodic, outline in measures 14 through 16: a wave-like scalar contour in LH (Figure A4.1). Here, it is worth comparing an idea of a different G-major scale fingering\(^7\) with the ones cultivated by Czerny, Bischoff, Theopold and Dreyfus. In general, the main points of concern here are:

1. Whether or not to assign the 3\(^{rd}\) finger to recurring F#'s 2. To see if there is room to accommodate the index finger to the first pitch of the last measure, namely C\(^8\). As a result of the latter concern, a backwards fingering strategy can be beneficial. Therefore, the note before C (i.e. the last D of m. 15) must be played with the thumb. Except for Czerny, all editors observe and tackle this problem by assigning the thumb to D. Czerny, on the contrary, prefers to play the E with the thumb instead. This manner of fingering results in playing the D with index, and the *mordent*-like – *lower neighbor*- CBC with 343. Then the little finger is immediately forced to play the A, thus the ‘weaker’ side of the hand is already involved in playing many notes; not to mention that in Czerny’s fingering an extra adjustment of the hand is required in order for the thumb (and not index) to play the D of measure 16 second beat.

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6 The four editions are followed by the author’s suggestions for alternative fingerings as a fifth reference.

7 This topic has been stressed in the introduction chapter.

8 Notice that playing the C with the 2\(^{nd}\) will automatically embrace the following notes with very appropriate finger assignments – in a single position of the hand – until and including the G of the third beat in the last measure.
Figure A4.1. Variation 9, mm. 14 – 16.
But as far as the first point is concerned, not all editors display a unanimous approach. First of all, Dreyfus is the only one to instruct clearly how to begin the whole sequence: he starts by playing D-E with 5-3. As a consequence of such an initial solution, he seems to be interested in using a third-over-thumb and thumb-under-third kind of finger crossings in abundance. However, the way the penultimate D of measure 14 is fingered by all editors including Dreyfus indicates that all of them are interested in playing the first B of measure 15 with the 3rd. The present author’s fingering for this excerpt deviates from the other editors’ in a few aspects. We choose to play all of the F#s here with our 3rd; this brings about stability and balance to our hand throughout the passage. We also make use of a combination of 1-5 motion, right at the downbeat of measure 15. This particular solution is a great example where the thumb can really contract the hand, and then turn it inwards by leaning under the palm and allowing the 3rd to prepare for its stroke the next B (last 16th note of the first beat) at the right moment. Notice that the 3-5 solution is not capable of nurturing such an intricate flexibility.

A contrasting virtue in the 1-5 solution is that it encourages the hand to move forward (to ascend in this case), whereas the 3-5 feels reasonably static. Further, Hadipour’s fingering solution also supports an advantage of playing the last three-note gesture well-articulated from its preceding cadence in G, in one grasp of the hand. This allows for taking a short breath and separating from the G, to then echo the G-effect within the last three notes at a higher or even lower dynamic level. All editors except Bischoff are strict about grouping and presenting all four notes (GBDG) together in a single gesture in this case. All different editions including Hadipour’s appear in Figure A2.1.

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I came up with an effective symmetrical fingering solution in measures 7 through 9 of Variation 12, which embeds a contrary motion for the most part. Here, by drawing a dotted line in the score we separate certain notes of the middle voice that are supposed to be played with the left and. A point to pay attention to here is that neither all of the notes and intervals nor the direction of melodic contours in one hand is perfectly mirrored over a horizontal axis onto the other. However, a symmetry in the fingering that the present author
provides turns out to be very efficient. In comparison, none of the editors completely agree with the symmetrical solution hidden in the entire passage: Czerny does not care about symmetry, and Bischoff, Theopold and Dreyfus are interested in the contrary motion of the last beat of measure 8 only. Figure A4.2 shows the above-mentioned versions. Notice that we try to make use of a 1-3 fingering for the first beat of measure 9 as well, although LH and RH inherit different rhythms.
In Variation 15, a problematic RH segment is apparent at the second beat of m. 21. An actual challenge is in executing the two upper voices entrapped and crossed over each other, especially where the Bb is held through until the next 16th note, D. Here the fingering of F and Eb are stationary: 4-13. Czerny and Theopold choose to force a stretch between their index and middle fingers by applying them to Bb and Eb, which is not
specially a necessary movement. Furthermore, by a 2-3 stretch they are leaving the RH thumb out for no particular purpose. Therefore, what should be the object of focus here really is the following D and C. Interestingly, all editors prove consensus over utilizing an FUF technique: 4 under 3 for D-under-Eb. In this situation, there is no valid reason for performing such a tangibly awkward transition.

I propose that there are other solutions available here: for D and C one might want to try 3-2 respectively, or even 2-1 (thumb is totally capable of holding that Bb, hold it over the next D, and then invisibly quick stroke the C). As to the former solution, a sliding manner of execution (3rd, from Eb to D) would work perfectly fine. This sliding-finger technique of smoothly slithering one’s finger across two adjacent piano keys bears the names of both Chopin and Bach. Sliding of finger is easier from a black key to its adjoining white. However, in some spots of the Goldberg Variations as well as other pieces in the piano repertoire, we may find examples where it links two adjacent white keys. The present author’s fingering (and its alternatives) along with the ones provided by the other editors appear in Figure A4.3.
There is one more place in Variation 15 where an FOF is recommended by all of the editors in consensus: in soprano voice of measure 26, while thumb holds down the Eb of the middle voice in the upper line, the 4th finger passes over the pinkie (D to Eb). Of course, this one is not as absurd as that of measure 21 since holding down an Eb octave with fingers 1 and 4 should not create a major obstacle against playing the D with 5 (given that pinkie is naturally shorter than the ring finger, and in this scenario, there is enough room under the 4th to subtly accommodate the 5th). Nevertheless, we can argue that there exist at least two other options that prove to be perfectly functional as well: a Chopinesque sliding approach towards Eb and E-natural, and a wide stretch between thumb and index fingers, which also facilitates the stroking of C-D-Eb-E easy with a consecutive 2-3-4-5 fingering. We also try to be consistent with using the same approach towards previous measures. Therefore, a comprehensive fingering solution for the entire measures 24 through 26 is provided. The present author’s solutions and their alternatives can be compared against those of other editors at Figure A4.4.
Figure A4.4. Variation 15, mm. 24 – 26.

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**Variation 16** – the French Overture – and variation 23 are emblematic of scalar motions. In the opening of Var. 16, a question-response occurs in an exchange between RH and LH. A mentality for an efficient
fingering here would be one that departs from the low pitch but supports the points of arrival, high G and D in mm. 1 and 2, with a robust finger, because the rocketing ascending scales demand it. Another issue to consider is the formerly discussed F# in a G-major scale. Among the four different solutions that have been suggested for both hands, the one that is written above RH notes requires individual consideration. Although the 4th finger is weaker compared to other fingers, here two factors prepare the 4th to stroke the high G with much force behind it: the balancing effect of the 3rd which comes immediately before the 4th (bearing in mind the fast-paced and exuberant character of the French Overture), and the influence of the whole arm movement in throwing the hand beyond a distant interval (an octave in this case).

Half-step intervals such as adjacent F# and G keys can be played with adjacent 3-4 fingers because the key topography matches the fingers’ length. The stability of the 3rd finger is due to its alignment with the wrist and the forearm and its lateral weight-adjustment of the palm.

Consequently, the pianist may either try the F# as point of arrival instead of the G, or preparing for a two-octave scale instead of one in order to mentally exaggerating the intervallic – and more importantly, physical – distance of the initial octave. In either circumstance, the forceful throw of the arm that engages the shoulder, elbow, wrist, and certainly finger joints would be an indispensable mechanism. Notice that even if the 4th finger strokes the G at a lower dynamic level than the F#, the resulting upward scale will still sound ‘rocketing’ because a dynamic deficit between two adjacent pitches is likely inaudible at that speed. Furthermore, the overall rising power in the body movement influences the roaring effect more compared to the loudness or softness of individual notes.

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In measure 11 of Variation 16, a variant of a four-note gruppetto in the LH attracts attention (Figure A4.5). Probable pitfalls here are either to presume that the long-held E of the downbeat is part of the said motion, or that the four-note gesture itself (CBAG#) is supposed to be played with a respective sequence of fingers in order. The former possibility captivates Czerny (2345, which is awkward in that he puts the pinkie to
the G#), and the latter absorbs Bischoff and Theopold (1234, which is not a bad solution but can still be improved in order to avoid stroking the G# with the weak 4th). We propose three different solutions to the four-note gesture of measure 11 that allow the performer to select among either of 2nd, 3rd, or 4th fingers to depress G#. This is another example of the point of arrival determining an optimal fingering for a passage by working backwards through the notes.

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Another observation in Variation 16 concerns mm. 18 and 19; a six-note gesticulation that is captivating from two standpoints: its wobbly melodic shape and its resultant fingering, and its progressive compositional quality emergent in the forthcoming Variation 17. Shaky gestures of the type written in measure 18 are usually exemplary candidates for a forearm rotation technique.
This pattern may have originated from the RH ascending three notes of the very first measure of the Aria (G-A-B). As shown in Figure A4.6, the imitative fugal gesture in RH and LH of mm. 18 and 12 can be fingered by either using all five fingers (thus inevitably engaging the weak side of the hand), or repeating the thumb and index fingers (which belong to the strong half of the palm). The LH of measure 19 is important in particular because of its reappearance in lengthy sequences in Var. 17. Notice that these six notes can take on a variety of fingerings in permutations such as 53-42-31, 42-31-42, 31-42-31, and so on.

Some authors endorse the use of identical fingerings in recurring sections of music towards a fixed fingering organization in a formal context⁹. Here, one particular resolution that serves towards both a physical strength in execution, as well as systematic consistency is 42-31-21 (LH). The relationship between this specific fingering and the next variation will be examined in the paragraph that discusses the sequential series of Var. 17.

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Figure A4.6. Variation 16, mm. 16 – 21.
Variation 17 encompasses sequencing patterns in excess. The most blatant of such sequences occurs simultaneously in RH and LH of the opening measures, and in contrary path to each other. The RH segments rise and fall, but their overall direction is descending. The LH sequences sound as if they have happened before – occurring in retrospect and towards Var. 16 – but are also escalating and transcending towards a point in the future. This is reminiscent of the sublime Bachian character that is intrinsic to his pulse-provoking, minimalistic rhythms. Looking at the LH staff, one notices that a rising sequence continues for three full measures. However, the way accidentals are placed throughout the passage imposes a segregation between the first two measures and the third. Then, mm. 1 and 2 themselves become a distinctive issue for further analysis due to their C#s and F#s and a manner these accidentals postulate a unique topographical framework at the keyboard.

An appropriate question to ask is whether a 42-31-21 fingering that was a subject of interest in mm. 18-19 of Var. 16 may work towards mm. 1-3 in here as well. It surfaces that the same resolution does not work in mm. 1 – 2, but perfectly does so in measure 3. However, a sequential fingering that matches LH of the first two measures is 4231 – 4231… continuing until measure 3. Then again, at measure 3 because of the particular way that the F# and the two C#s are juxtaposed alongside other white keys, a change of fingering would be necessary. In this case, the 42-31-21 would not only be pragmatic, but also incredibly satisfying to execute at the piano. An exactly identical context occurs later in LH of mm. 25-26 where a 42-31-21 system of fingering delights the hand in the most perfect fashion conceivable for four consecutive times (Figure A4.7). Czerny and Bischoff have left this segment completely blank, whereas Theopold instructs 4 over the second half of every beat (and conveys a sense of automatically applying 3 to the first) for two beats of the first measure only, and leaves the following measure to the pianist to imitate the same elucidation. Dreyfus is the only editor that explicitly endorses an intriguing 34-34-etc. arrangement for the complete segment, which seems to be a decent solution.
But Variation 17 offers us much more than what was just discussed. In mm. 17-19 two different techniques are embedded in the LH voice: a sliding fingering and a sequential one. Surprisingly none of the editors recognize the sequencing nature of the line. They instruct 4 and 2 at irregular places, something that results in both inconsistency and awkward groupings of 21-21-21. The only editor who does distinguish a sequence-like pattern is Dreyfus. Nonetheless, he is not stable with his fingerings either: he initiates a sliding thumb to link the first and second beats, but then goes on to manipulate the successive sequences with the same sliding thumb instruction; something that is too sophisticated and confusing for such a ‘simple’ line of melody.
A methodology here is to envision special points of articulation that can contribute to grouping the notes in such a way that enables the listener to hear departure and arrival landmarks. Based on what we infer from the melodic line, we segregate the first five notes from the entire system, and apply a sliding thumb to C#–D of this first segment. What remains is groupings of ten pitches in succession. Therefore, here a $5 + 10 + 10 + 10$ grouping would better serve both the musical purpose and our fingers. Accordingly, each group of 10 becomes a sequence that begins with the 4th (Figure A4.8). To play the entire passage with an even more polished fingering, the 10-note groups can be broken into $6 + 4$. Then one would still be able to stroke all initial notes of each smaller group with 4th (with the exception of measure 20 where the music shifts its tonal center and transitions from the new V [B-major 7th] to I [E-minor]).
Figure A4.8. Variation 17, mm. 17 – 19.
An enigmatic transitory passage then connects the E-minor section to the already discussed sequences of measure 25 onward. One admires Bach specially in measure 24 – the said transition – because he brings to life a pattern that can be symmetrical in terms of fingering (Figure A4.9). Here, using 5–3–2–1–3–2–1 delightfully unravels a complicated point-counterpoint progression in the two hands. Furthermore, the topography of E to its adjacent F# in LH delivers a supreme setting for fingers 5 and 3 to engage: the middle finger plays the raised key as it is naturally desirable, and the vulnerable 4th remains relaxed and intact in the secure space between E and F#, that is over F. Notice that in order for the 4th finger to begin the aforementioned sequence at the downbeat of measure 25, one must play the last B of measure 24 with the 5th immediately after 1st (D), an idiomatic solution. All of the editors are unaware of this symmetry as they collectively provide an obstinate fingering idiom of 1–2–1.

A final instance of a symmetrical type of fingering in variation 17 takes place at the last measure. Figure A4.10 exhibits how the author and the other editors proceed with unwinding it. Czerny’s RH are left blank as he offers a solution for the LH only. Bischoff’s is identical to Hadipour’s in this case. Dreyfus’s is a bit ambiguous in that his RH solution does not show how the rest of the notes after the first G and F# (1-2) should be played (12121 or 12323?). Finally, Theopold’s answer divorces itself from everyone else by remaining totally asymmetrical.
Figure A4.9. Variation 17, m. 24.
There are four instances in **Variation 18** that match each other in a one-to-one fashion alongside the binary structure of the movement: compare mm. 8-10 from the A section against mm. 22 – 24 of the B, and mm. 12 – 15 of A as opposed to mm. 28 – 31 of B. The general tactic here is to benefit from a 3 – 2 – 1 antidote, not only because they are strong and articulate fingers but also because a grasping motion towards the thumb generates a *blossoming* effect, one that faultlessly matches the three-note rhythm of 8\(^{\text{th}}\) – 8\(^{\text{th}}\) – quarter. A minor exception here would be the B – C\# of measure 23, where we assign 5 – 3 fingers for the same reason discussed for measure 24 of Var. 17. Surprisingly, other editors miss the advantage of *sequential fingering* (Figures A4.11 & A4.12). Also, whenever possible, we try to avoid the awkwardness of putting 4-2 on two adjacent keys. In this case, mm. 14-15 fail to provide room for a better fingering for F\#-G. But mm. 30-31 are facilitated by 1-3 for B-C (an identical scenario about the LH of mm. 15-16 in Var. 9 was discussed before). Here, a creative fingering for unknotting mm. 14 that also helps with reaching for the G of m. 15 with the index finger proves to be 4-3-2-1-2-3 for G\#-A\#-B-A-G-F\#.
Figure A4.11. Variation 18, mm. 8 – 10 compared against mm. 22 – 24.
As stated earlier, **Variation 23** is an emblem for crisp and elegant rising and falling scales, either in parallel or in opposite motions in the two hands. Our mentality for mm. 1-5 is one that supports the third finger as much as possible. Therefore, we use the 3\textsuperscript{rd} towards F#s and C#s in order to execute these raised keys with a robust finger, and whenever feasible, to avoid the 4\textsuperscript{th} (especially in transitioning from white to black keys) by replacing 3-4 with 2-3. As far as the 4\textsuperscript{th} problem is concerned, Czerny hastily commits it twice at the very first measure in the LH. Theopold and Dreyfus surrender to it sporadically in mm. 2-3 (LH). Bischoff seems to be the most vigilant among all; he intelligently carries along either 2-3 or 1-2 (LH) whenever an instance of G-F# or D-C# arises in measures 1 and 3. Nevertheless, the latter editor does give in to both occurrences of G-F# in measure 2. See Figure A4.13 for looking at all the different versions.
Figure A4.13. Variation 23, mm. 1 – 5.
Furthermore, we can take advantage of eliminating a physical obstacle in playing the LH of measure 4. As clearly shown in Hadipour’s suggestion, the first C and B have been redistributed towards the right hand instead of the left (Figure A4.13). This technical intervention delivers a few advantages: First, it liberates the LH from the inconvenience of a two-fold movement: Thumb would have laterally tunneled under the 2nd and 3rd fingers to play an A, then index and middle ‘hovered’ over the thumb to re-adjust themselves onto stroking the following G-F#. But now, as a result of this redistribution, the two-fold movement minimizes to a single, rather ergonomic gesticulation in the RH: By depressing and holding down the first D, the thumb prepares a solid ground for the middle and index fingers to revolve around it and stroke C and B successively. The explained movement, accompanied by an agile abduction-adduction of index and middle fingers together from their knuckle joints (metacarpophalangeal ‘MCP’ joints), is tremendously smooth and natural to the hand in performance10. Lastly, LH due to its liberation from the first two notes can now execute the remaining five notes (A-G-F#-E-D) at one organic and rapid grasp of the hand (1-2-3-4-5) while supinating.

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Measures 21 through 23 of Variation 23 expose prodigious opportunities for both symmetrical and creative approaches. All of the editors have disregarded all but one of Bach’s thoughtfully-inserted arrays of notes in each of these measures. The exception is their unchanging symmetrical instruction for the first measure (m. 21). This is actually where the whole series of mirror-reflected contours begin: D# of RH against A of LH. Here, Czerny, Bischoff, Theopold and Dreyfus are in company: 234-1235 (Figure A4.14), while Hadipour has proposed an alternative 123-12345. But what follows in measure 22 and in the RH of measure 23 is disorienting in the said editions. The contrary motion of the two hands starting D (RH) against G# (LH) could simply reiterate 321-4321 in the two hands. Nonetheless, none of the other fingerings are capable of perfectly coordinating two hands together; in particular, the embossed topography of C-C#-D#-E keys with 4-3-2-1 fingers (LH). Until we reach the downbeat of measure 23, where we redistribute the RH D# to the left, so to

10 Not to ignore an infinitesimal lateral (to the left) AND vertical (up-down) movements at the wrist joint.
beautifully execute D#-F# with 4-2 with the exact same technique shown about the redistributed C-B in the previous paragraph\textsuperscript{11}. Remember that in this instance, a redistribution not only provides LH with a genuine hand-finger movement, but also sets the RH free of its leap, and injects ample time for it to prepare over the D-natural ornament.

What follows the 32\textsuperscript{nd} rest in RH of measure 23 is worth focusing on. Here, two distinct groups should be emphasized: E-F#-G, and F#-\textit{trilling} E-D#. Figure A4.14 clearly demonstrates how the other editors show their fingerings for the two segments. Earlier we explained a situation where a 5-3 fingering best matched the topology of F-Eb type for RH. We further indicated that in such a circumstance, the 4\textsuperscript{th} would rather relax and rest in-between the other two fingers, not stroking any key but remaining in position over E. Same scenario pertains to B-C# (to extend the example to LH for a better visualizing). Back to measure 23, the exact same approach yields two reasonable outcomes: 1-3-4 play E-F#-G while index finger relaxes over F-natural; and as a result of such fingering, the following F# is stroke by 3\textsuperscript{rd}, trills 3-2, and the final D# is played by the thumb\textsuperscript{12}. Considering the tempo of this variation, fingers 3 and 2 would be the best candidates for executing a fast-paced trill in such a finger-jammed context., There is a collective stigma in all of the editions about using the thumb over a raised key, outstandingly so in Bischoff’s and Theopold’s. Dreyfus does not provide fingerings for this segment. Czerny does provide a fingering for the first half, but then remains silent about the trill and the last note.

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\textsuperscript{11} Quick raise and free-fall of fingers from the \textit{Metacarpophalangeal} joint.

\textsuperscript{12} For the Trill, Peters and Henle copy the brief m-shaped figure from Bach’s ‘Table of ornaments for Wilhelm Friedman.’ However, Kalmus and Schott provide a slightly different, and lengthier ornamental symbol.
Figure A4.14. Variation 23, mm. 21 – 13.
Variation 24 is one of the many variations that showcases Bach’s obsession with the gruppetto figure.\(^{13}\)

The opening five pitches in RH of the first measure (motif ‘a’) are a gruppetto in effect, with manipulated note values. Here, the G-F#-G-A-B scheme is a mirror-inverted account of a conceivable B – A – G – F# – G original. In comparison, look at measure 1 of Variation 12: another pattern of the exact same nature, albeit with some degree of distortion in its rhythm. A difference between these two variations is the following motif ‘b’ that complements motif ‘a’ to shape a meaningful entity: Var. 24 has a lower-neighbor of D — C# — D, and Var. 12 the descending C-B-A-G. In the former, the two motivic groups assist each other in shaping a forward-moving and overall flourishing progression. In the latter example, the fluctuating wave-like combination of the two motifs contribute to the development of the whole variation into cascading contrary motions.

What is interesting about gruppetto is the idea of “movement”; one that is incredibly vernacular to piano performance. Earlier in this chapter, we recognized this to be equally important as its musical function\(^{14}\). In Variation 24, we focus more on the idiomatic contribution of the Turn (gruppetto). One characteristic of the Turn is that it is hand-centered in execution. Measure 5-7 contain embedded series of turns in the RH. Here, the performance mechanism dictates a certain manner of articulation: As shown in Figure A4.15, starting the high D of measure 5 every five notes join together within a single unit. As Hadipour’s fingerings indicate each group can be smoothly executed by 5-4-3-2-1 in concession. Here, a helpful hint for the pianist would be to prepare the thumb in advance, and keep it somewhat flexed towards the palm somewhere under the second or middle finger. Otherwise, the thumb alone can turn this passage into a struggle, for it will play around – outside and inside of the palm in arbitrary lateral motion – aiming to hit the right key. In general, one should be able to perform the Turn by an ergonomic finger assignment, which in most cases includes the thumb. Notice that a minute vertical motion of the wrist enormously helps towards a crystal-clear execution.

\(^{13}\) Aria, and Vars. 7, 13, 16, 24, 25, and 27. Captivatingly, many of the variations accommodate immediately identifiable, and written-out Gruppetti. It is possible that the extremely blatant presence of this gesture in Bach’s music be due to the idiomatic/ergonomic property of it in execution.

\(^{14}\) We recognized the notion of Gruppetto as a device that appears to be idiomatic to the piano, as well as melodically expressive.
Figure A4.15. Variation 24, mm. 5 – 7.
One interesting aspect of engaging the thumb is in the convenience that it creates for the entire Gruppetto gesture: the feeling in the hand and the fingers should not change in playing FEDC (4321) as opposed to AGF#G (also 4321), given that we have prepared the thumb under our palm in advance at the latter sequence. In other words, and to further extend this principle to Var. 24 mm. 5-7, in case of a five-note Turn we would need to sense our fingers as if we were to play G-F-E-D-C (five adjacent notes on white keys); that is, in one grasp of the hand. Therefore, we use the same homogenous fingering for mm. 5-7. Notice that other fingerings such as 43212 or 32123 should work fine in this excerpt. However, whether such alternatives feel as natural as 54321 (Figure A4.15) is debatable. At the penultimate unit, measure 6 A-G-F#-E-D into downbeat of measure 7, Bach purposefully interrupts the entire sequence to refresh the tune by providing a brief transition (m.7) into yet another series of Gruppetti at measure 8. Here we close the sequence by considering 43215: by assigning the pinky to the D of measure 7 we mean to play the middle voice with RH. As a result, we play the G with 2nd, F# with the thumb, and then use a sliding technique to sneak our thumb through F# onto the G octave. Other editors demonstrate to be minimal in their instructions about Gruppetto figures as they appear to be concerned only about one or two notes throughout the entire passage.

The notation of measure 7 adds a confusion about the intended hand-distribution in all of the versions including Hadipour’s. Here, Czerny and Bischoff are ambiguous: the former editor fails to provide any fingerings to this important section, and the latter does not clearly state whether by 1-2 he means RH or LH. However, Bischoff’s 4th assignment for the D of the downbeat of measure 7 suggests a turn-over-thumb, which may convey that he means to play the middle voice with RH. Theopold’s measure 6 has a 2 over the last F# to settle that the following notes (G-A-G-F#-E) must be played by 3-4-3-2-1 respectively. Then he turns his 4th over the thumb, though immediately instructs a vertical 4-1 underneath the bottom staff to promote a LH distribution, suggesting that the entire 4-over-1 movement is useless. Theopold then immediately inserts an L-shaped symbol before the F# to stipulate a RH recipe henceforth. Among all, Dreyfus is the most

15 All instances pertain to the right hand.
straightforward in this case: 54321 for A-G-F#-E-D, then a lower-neighborhood 41-52-41 all by LH alone, and finally an efficient L-symbol that redistributes the B to RH henceforth.

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Measures 17-22 of **Variation 24** demands closer examination. Certain points of articulation have been clarified by placing them inside a rectangle (Figure A4.16). At measure 17, we divorce the *arpeggiated* D-major chord from the rest. This manner of articulating has a strong affiliation with executing what follows as two Gruppetto gestures, each decorated by 12341 in LH. Therefore, a juxtaposition of 1’s in this case is *not* meant to suggest the *sliding* technique. It may take the pianist a while to survey various combinations of fingers for realizing the most efficient fingering for measure 19. That is mainly due to RH being pre-occupied with *trilling* in the upper voice. Meanwhile, LH is playing the middle voice along with occasional *pizzicato* style bass notes on downbeats.

Here, because each of the five-note patterns require a rapid movement of fingers in succession, reposing on a double-note in between every group can be particularly challenging. In other words, the double-notes create a sort of interruption to a natural flow of fingers over piano keys. A 4-2 approach for the said *thirds* would transport steadiness to our LH at those transitory pauses\(^{16}\). Therefore, by means of studying the setting in reverse direction, we aim at realizing the most efficient way of playing the 16th patterns after we established the thirds. As a result, 1-2-3-1 not only delivers sturdiness of execution in the 16th s, but the thumb proves to be the only finger (among 1, 3, and 5) to be capable of setting the other four fingers free before each ensuing third.

\(^{16}\) If you hold down two white keys at an interval of a third with your index and ring fingers at the same time and relax your hand, you notice that the weight of your palm disseminates equally over these two fingers. In other words, the two fingers turn out to be the best to distribute the weight of the dome-shaped natural curve of the hand. The same weight-transfer can as well be attained by means of a 1-5 fingering, in which case the latter solution would not be as practical, due to impeding F# and D# raised keys.
Czerny remains unelaborated for the fingering of measure 17. Theopold and Dreyfus, both identical, are inconsistent over each pattern. Bischoff is only partially instructive. For measure 19 however, Czerny begins with 4-2 on C—E, but then continues to employ uncooperative idioms of 1212 for the 16ths and 5-3 for the Thirds all the way through the entire passage. Bischoff duplicates the exact same fingering as Czerny. Theopold uses 4-2 only for the first Third, employs 2312 for the 16ths (which is a great solution), but as a consequence his fingering for the 16ths gives in to playing the rest of the Thirds with 5-3 (which causes the same physical inconvenience in executing the same gesture according to other editors). Finally, Dreyfus is no different than others in his overall approach to measure 19, with his only minor change being in the fingering of the first downbeat (3-1), which is very stable in the hand but incapable of realizing a robust fingering for the subsequent notes in the measure. Furthermore, the Gruppetto symbol embellishing the E of measure 20 in the middle voice is worthy of attention.
There are two consecutive Gruppetti in LH of measure 21 that need special treatment because of the engagement of the single bass on the 2\textsuperscript{nd} and 3\textsuperscript{rd} beats. That these bass pizzicati must be played with the 5\textsuperscript{th} finger is self-evident. Therefore, here a challenge is in the quick stretch of the hand between the bass note and the 16\textsuperscript{th} that comes immediately after it, not to mention that we still expect a brittle execution of the Turns. In this case, Czerny and Theopold commonly attain some problematic positions: For the stretch, they assign fingers 5 and 2, which are painstakingly troublesome unless the pianist engages some delicate pedalings. For the Gruppetti, they clarify the first two notes with 2 and 1, but then leave the rest to the pianist’s imagination (2-1 or 3-2?). Either way, as a result of such fingering, the entire passage becomes uneasy to maintain. Bischoff and Dreyfus, however, approach this passage similar to Hadipour: each Gruppetto scheme starts and ends with the thumb; a plot that is not only supportive of the 7\textsuperscript{th} stretch, but devoted to a much more solid execution of the Gruppetti as well.

What remains in LH of measure 22 splits between two different problems: A – A# – B motion in the bass, and two five-note Gruppetti. Since the distance between A# and G is too large for a small hand, we have an option to support it with an easier 5-1 fingering. Since it is clear that the pinky should play the first A, the
only issue appears to link A# to B, for which we can use the *sliding 5th*. Other editors unanimously apply a 4–5 to A#–B, which is reminiscent of an incongruous *FUF* technique. A way of avoiding that is to consider the 8th notes (A# inclusive) together in one separate group, and then isolate the A# of the first beat from the following beat (B) in articulation. Finally, for the five – note *turns* a suggestion would be 12341 and not 12343, because a 3-4-3 lower-neighbor in the LH is an obstacle that can be easily tackled by replacing it with 3-4-1.

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 Among all of the Goldbergs, **Variation 27** is the only one that has the most number of Gruppetto symbols explicitly inserted by Bach in various spaces. Here, Bach embellishes sporadic notes for a total of eight times, equally spread as 4 + 4 in the two sections of the *binary form*. But aside from the topic of Gruppetto, there are other things in this variation that draw attention. For the transition from E to F# in the second measure, all editors except Dreyfus instruct a 3-4 fingering. This is an undesirable fingering, because it does not match keyboard topography (the longer 3rd finger plays the white key while the shorter 4th plays the black key), the weak 4th is unsuitable for a raised black key, and raising the 4th is limited because of its common tendon with the 3rd.

Therefore, starting from A of the first beat towards F# of second beat, we proceed firmly with 1-2-3-1-2-3 so to fill the physical distance between E and F# with our 2nd and 3rd. Considering that in this variation hands – voices – musically imitate each other, we find 3-2-1-3-2-1 (G through E) for LH in measure 1 to be both functional and robust. As shown in Figure A4.17, other editors have created minor difficulties in both measures by disregarding the issues explained above. Another point of *symmetrical* division between the hands in

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17 This variation is a reminiscent of a two-part *inventio*.

18 Eight Gruppetti only; not taking into account other embellishments (*mordents* and *trills*) in the same variation

19 This concept has been explained in the introductory chapter.
measure 29 is also disregarded by other editors. A more appropriate fingering for that contrary motion is shown below.

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In Variation 28 as well, symmetries continue to please the pianist. In fact, measures 16, 31 and 32 are great examples to show the benefits a symmetrical fingering approach (Figure A4.18). Therefore, why not “celebrate [this] anatomical and pianistic symmetry!”\(^\text{20}\) As in previous similar occasions, this useful mechanism is not fully appreciated by other editors. Especially in such places as mm. 31-32 there seems to be a prevalent phobia about stroking keys with the thumb. Hadipour’s fingering for these two measures would not only contribute to symmetry, but it encourages benefitting from an FOF solution (3\(^{\text{rd}}\) over 4\(^{\text{th}}, three times in a row) in LH.

Figure A4.17. Variation 27, mm. 1 – 3.
Alongside taking the topology of the piano into consideration, we could think of fingerings that correspond to particular registers on the keyboard. This is a notion that has a direct relationship with the pianist’s body position relative to the piano. For example, depending on which extreme of the piano the LH has to play and assuming the pianist is sitting at the center of the instrument, we naturally take two different positions: while our forearm stays within an acute angle to the keyboard at both positions, the treble extreme leaves the thumb outside of the keys, and the bass extreme prevents the 5th from playing efficiently. Here we discuss some examples of such occurrences in Var. 29 to determine if the thumb(s) should be involved in the playing.\(^\text{22}\).
In certain places in Variation 29 we can eliminate our thumb by not getting it involved in our playing. Measures 1-3 entail a dense chordal texture. Unlike the ‘problematic’ variations in which the hands entangle because of contrapuntal voice-crossings, here the two hands play isolated chords one at a time in rapid exchanges; chords that are only half-step distant from each other. This kind of condense ambience mandates the hands to co-exist in a tight space, while one hand is positioned over the other. For the hand that is on the top (LH) it is ideal to actively engage its thumb in playing raised keys because otherwise a passively fallen thumb would get in RH’s way.

Contrastingly, for the RH that is always laid underneath LH an ideal position is to play without its thumb since a liberated hand that is striking white keys could stipulate much more room to the overall physical margin. Notice that the hand automatically turns from curved (or fisted) into somewhat flat-shaped when we exclude the thumb. Based on this explanation, the crucial chords with appropriate finger numbers in the first three measures are labeled. Other editors do recognize the significance of dismissing the thumb at the first chord (G-major first inversion), but all of them avoid striking the first F# of the LH with the thumb, probably due to an aforementioned stigma\(^23\). We retain a 5-4-1 fingering for LH in this case. For more details, see Figure A4.19.

\(^{23}\) The rejection of touching the black keys with the thumb. This topic was also mentioned in explaining a similar situation in Var 23.
Measures 12-16 of the same Variation 29 demonstrate a characteristic effect of the wrist-forearm angle on the thumb when RH plays around the low register of the piano. Here, both hands play distinctive groups of three notes in subsequent exchanges. Starting at measure 9, the said gestures rise more and more to meet their highest point at the F# in RH, but then hands begin to descend together in a torrent-like motion towards the bass
register to hit the low C# of downbeat measure 15. In the entire progression, LH plays without impediment and in a comfortable space towards the center or leftwards of the body. However, the RH gradually gets out of its comfort zone, i.e., from the space in the right side of the body to the left. As far as fingerings for these three-note groups in RH is concerned, three feasible solutions can be imagined: 321, 431, or 542.

As mentioned earlier, it is natural for RH to keep its thumb inside the keys only if it were to play the high register. In such a scenario, the 321 type of fingering would best fit the hand and fingers, and more importantly, keeps the wrist aligned with the forearm. As RH moves down the piano, the 321 fingering forces the wrist to gradually deviate towards the medial bone of the forearm (ulnar deviation)\(^\text{24}\) to keep the thumb on the keys. Such a deviation is pathologically detrimental to the hand. As a result, an \textit{ergonomic} approach in fingering the entire segment would be one that \textit{does} involve the thumb at high register (321), possibly makes use of 431 in the middle range, and \textit{does not} engage the thumb throughout the low register of the piano (542). Bischoff, Theopold, and Dreyfus have left the entire passage clueless. Czerny, however, has taken the moderate position in assigning 431 throughout the whole segment. As explained, Hadipour’s takes advantage of a different but “healthy” fingering (Figure A4.20). Notice that a closely similar passage shows up one more time during mm. 19-20 of Variation 29 (Figure A4.21).

\[\text{\textsuperscript{24} With the forearm pronated during playing, the ulna bone will be in the external side of the forearm.}\]
Figure A4.20. Variation 29, mm. 12 – 16.
A first occurrence of a tricky pattern in **Variation 30** is in measure 11. This is basically a progression that begins with D# in the upper voice and directs towards the A of the last beat of the measure. Three things to consider here are: 1. We are required to hold down the C of the alto voice with our thumb 2. There are five
pitches in this sequence, whereas we are only left with four fingers to proceed with as a result of a depressed first finger, and 3. We want to avoid the 4th (tendon problem) over the E-to-F# motion. Therefore, in this scenario we cannot employ just any fingering as our choices become extremely limited, especially after taking the third restriction into account. For that, the present author proposes 3-4-3-4-5 consecutively for D#-E-F#-G-A. Notice that our fingering for this segment incorporates an FOF (3rd over 4th) mechanism, which works perfectly fine as it fits very well the juxtaposed white-black topography, and supports the connectedness of the rising passage (Figure A4.22). Here, Czerny’s elaboration appears to suffer from the tied tendon (between 3rd and 4th) problem mentioned before. Czerny also connects the final G to A by means of an FOF (4th over 5th), although we can take advantage of 4th-over-5th resolution if the RH was to play a chromatic ‘flat-to-raised’ motion, and only at the high register of the piano (from C to C# for example). Bischoff and Theopold progress with 2-4-3-4-5, which is a very efficient elucidation in not striking the 3rd finger twice. Dreyfus’s fingering here is identical to Hadipour’s.
In measure 12 of Variation 30 we make a case for a creative fingering approach. Here, we benefit from the strategy of redistribution in order to set our LH free from the big leap from the last note of the first beat to the second (from F# to B-octave). Figure A4.23 shows the expounded condition out of Schott’s and Dreyfus’s fingering for the passage. As Figure A4.23 explains, we strike the aforesaid F# with the thumb of our RH. This
redistribution not only provides the LH with ample time to prepare over the B octave after playing E (in the tenor voice), but also complements the two upper voices with a smooth execution in the RH. Concerning the LH leap, all editions together announce a 2\textsuperscript{nd} for the F#, although at least one more fingering is still manageable: thumb on F#\textsuperscript{25}. Nonetheless, regardless of summoning either thumb or index finger, the leap will distort an otherwise convenient performance. As a concluding reflection on measure 12, notice that the F#-G motion on the third beat is neatly fingered as 2-2 (sliding/Chopinesque technique) in all editions except for Peters. However, Czerny’s 2-3 fingering here necessitates an awkward stretch between a held-down E of the soprano line (5) and the G of the alto (3) over the interval of a 6\textsuperscript{th}.

\textsuperscript{25} In Henle, Theopold proceeds with instructing an $FUF$ (5 under 4) solution in RH for the second half of the first beat.
Similarly, measure 14 of Variation 30 can benefit from creativity in fingering based on the demands of the musical texture. In Figure A4.24 notice the segment inside the rectangle: 1. The overall progression in all but one of the voices is in a rising direction. 2. The only voice that is coming down in a contrary motion is soprano, and it is ornamented by a trill over the F# of the third beat. Regarding the former cause, we need a robust fingering that reinforces the ascending spirit of the music. For the latter purpose (the fast Trill between G
and F#) we prefer to liberate the *soprano* voice from its *alto* ‘counter-melody’ so that we can then execute the Trill and its ensuing notes – especially the swift E - F# - D – with ease and confidence.

Therefore, we first redistribute that segment to allow LH to embrace both A and G from the *alto* line. What remains the for the LH to play is a sequence of *thirds*, except for the penultimate *triad* D-F#-A. Here, according to Czerny (Figure A4.24) it is impossible to play the alto voice with the LH, for his fingering already exhausts all fingers in playing parallel Thirds of bass and tenor lines (from the bottom-up: 53-42-31). Consequently, Czerny leaves the performer with the struggle of holding down A while trilling in the top voice. Other editors (Bischoff, Theopold, and Dreyfus) however introduce a fair resolution, though only for the parallel thirds: 53-41-32. Here, it is not clear whether these editors intended to strike the alto pitches with the LH thumb. This obscurity is most noticeable in Henle and Schott editions as it is impossible to determine if Theopold and Dreyfus hold down the G of the Tenor voice with their RH, after their apparent 2-3 fingerings for B-D in the top two lines. Hadipour's fingerings for this troublesome segment has the following advantages: Firstly, we distinguish a firm solution for the Thirds as well as the Triad: 42-31-532-31. Secondly, we play a sturdy 3-2 Trill for G-F# 3. Lastly, for the ensuing E-F#-D we pose an ergonomic 1-4-2 solution\(^\text{26}\).

\[\text{\footnotesize{26} Given the Trill is being played with 2\textsuperscript{nd} and 3\textsuperscript{rd}, putting 4\textsuperscript{th} to F# avoids repeating the same note with a same finger. Further, assigning the index finger to D prevents us from striking it with the thumb twice. A true ergonomic virtue of 1-3-2 lies in that thumb independently initiates to prepare a solid ground for presenting an extremely sturdy infrastructure for the hand (i.e. 4-2). Footnote 17 addresses a similar concern, and curved movement of fingers over the thumb is discussed in Variation 23.}\]
Figure A4.24. Variation 30, m. 14
The ensuing score of Bach’s Goldberg Variations contains the author’s redistribution of the notes between the two hands to facilitate performance on the piano. The presented fingerings and hand redistributions are suggestions only, as different passages may take on multiple solutions. Also note that more detailed fingering discussions occur in Appendix 4. For sharing and exchanging music related thoughts, please feel free to contact me at the email address: kia.hadipour@gmail.com.
Goldberg Variations

Johann Sebastian Bach
(BWV 988)
Revised by Kia Hadipour

Aria
Variation 1
Variation 2
Variation 3
Variation 5
Variation 8
Variation 9
Variation 10
Variation 11
Variation 13
Variation 16
Variation 17
Variation 19
Variation 21
Variation 23
Variation 27
Variation 29
Variation 30
VITA

Kia Hadipour has earned his Bachelor’s degree in Piano Performance from the University of the Arts in Tehran. He has taken piano lessons from internationally acclaimed virtuosi such as Gottlieb Wallisch from Austria, and Edward Auer at Indiana University. As an active musician in Iran, Kia has performed numerous solo and chamber recitals alongside teaching private and class piano lessons to students of various ages, especially kids between 5 to 12. Kia received his Master’s degree from the University of Nevada, to continue his education as a Doctor of Musical Arts degree candidate at Louisiana State University. As a piano major at LSU, Kia Hadipour anticipates his graduation in August 2017 while having accomplished a minor degree in Theory of Music.