Saturday, October 24, 2009, 8pm
Hertz Hall

Davitt Moroney, *harpsichord*

harpsichord by John Phillips (Berkeley, 1995),
after the historical instrument in the Musée instrumental, Citée de la Musique, Paris,
built by Andreas Ruckers (Antwerp, 1646),
rebuilt by François-Étienne Blanchet (Paris, 1756) and Pascal Taskin (Paris, 1780)

PROGRAM

Johann Sebastian Bach (1685–1750)

Das Wolhtemperirte Clavier
("The Well-Tempered Clavier"), BWV 846–893

Book 1 (1722)

1. Prelude and Fugue in C major, BWV 846
2. Prelude and Fugue in C minor, BWV 847
3. Prelude and Fugue in C-sharp major, BWV 848
4. Prelude and Fugue in C-sharp minor, BWV 849

5. Prelude and Fugue in D major, BWV 850
6. Prelude and Fugue in D minor, BWV 851
7. Prelude and Fugue in E-flat major, BWV 852
8. Prelude in E-flat minor and Fugue in D-sharp minor, BWV 853

9. Prelude and Fugue in E major, BWV 854
10. Prelude and Fugue in E minor, BWV 855
11. Prelude and Fugue in F major, BWV 856
12. Prelude and Fugue in F minor, BWV 857

INTERMISSION

13. Prelude and Fugue in F-sharp major, BWV 858
14. Prelude and Fugue in F-sharp minor, BWV 859
15. Prelude and Fugue in G major, BWV 860
16. Prelude and Fugue in G minor, BWV 861

17. Prelude and Fugue in A-flat major, BWV 862
18. Prelude and Fugue in G-sharp minor, BWV 863
19. Prelude and Fugue in A major, BWV 864
20. Prelude and Fugue in A minor, BWV 865

21. Prelude and Fugue in B-flat major, BWV 866
22. Prelude and Fugue in B-flat minor, BWV 867
23. Prelude and Fugue in B major, BWV 868
24. Prelude and Fugue in B minor, BWV 869

Cal Performances' 2009–2010 season is sponsored by Wells Fargo.

Sightlines

Davitt Moroney, *The Well-Tempered Clavier*
Saturday, October 24, 3–4pm, Hertz Hall

A talk by Professor Davitt Moroney, UC Berkeley Department of Music.

This *Sightlines* event is free to all concert ticket holders.

Sunday, October 25, 2009, 3pm
Hertz Hall

Davitt Moroney, *harpsichord*

harpsichord by John Phillips (Berkeley, 1995),
after the historical instrument in the Musée instrumental, Citée de la Musique, Paris,
built by Andreas Ruckers (Antwerp, 1646),
rebuilt by François-Étienne Blanchet (Paris, 1756) and Pascal Taskin (Paris, 1780)

PROGRAM

Johann Sebastian Bach (1685–1750)

Das Wolhtemperirte Clavier
("The Well-Tempered Clavier"), BWV 846–893

Book II (1742)

1. Prelude and Fugue in C major, BWV 870
2. Prelude and Fugue in C minor, BWV 871
3. Prelude and Fugue in C-sharp major, BWV 872
4. Prelude and Fugue in C-sharp minor, BWV 873
5. Prelude and Fugue in D major, BWV 874
6. Prelude and Fugue in D minor, BWV 875

PAUSE

7. Prelude and Fugue in E-flat major, BWV 876
8. Prelude and Fugue in D-sharp minor, BWV 877
9. Prelude and Fugue in E major, BWV 878
10. Prelude and Fugue in E minor, BWV 879
11. Prelude and Fugue in F major, BWV 880
12. Prelude and Fugue in F minor, BWV 881

INTERMISSION

Please note that this afternoon's intermission will last for 90 minutes.

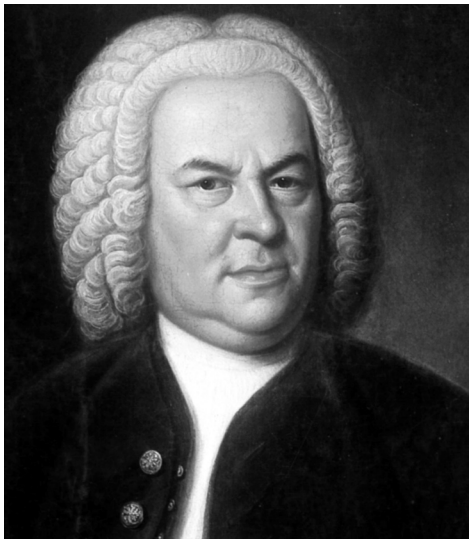
13. Prelude an1d Fugue in F-sharp major, BWV 882
14. Prelude and Fugue in F-sharp minor, BWV 883
15. Prelude and Fugue in G major, BWV 884
16. Prelude and Fugue in G minor, BWV 885
17. Prelude and Fugue in A-flat major, BWV 886
18. Prelude and Fugue in G-sharp minor, BWV 887

PAUSE

19. Prelude and Fugue in A major, BWV 888
20. Prelude and Fugue in A minor, BWV 889
21. Prelude and Fugue in B-flat major, BWV 890
22. Prelude and Fugue in B-flat minor, BWV 891
23. Prelude and Fugue in B major, BWV 892
24. Prelude and Fugue in B minor, BWV 893

Cal Performances' 2009–2010 season is sponsored by Wells Fargo.

Listening To and Playing *The Well-Tempered Clavier*



Elias Gottlob Haußmann, *Portrait of J. S. Bach* [detail] (1746/1748)

"If ever a composer has shown polyphony in all its strength, it was surely Bach.... Nobody has shown as much as he, in works which normally seem so dry, as much imagination and originality of thought.... His melodies were indeed unusual, but they were always varied, rich in invention, and they are not at all like those of other composers. His serious temperament drew him privately towards elaborate music which was grave and profound."

"It was only his personal reflections which make him, right from his youth, a composer of pure and powerful fugues."

These two comments were made by Johann Sebastian Bach's second son, Carl Philipp Emanuel Bach (1714–1788). He wrote the first in 1754, four years after Bach's death, and the other in 1775, towards the end of his own life. They are a rare tribute from the son who in his day was considered an even more eminent composer. An astonishing array of qualities is praised in a few phrases: strength, imagination, originality, variety, richness of invention, seriousness, gravity, profundity, purity, power. It would be hard to find more apt words to sum up the two volumes of *Das Wohltemperirte Clavier* (*WTC*).

I. Bach's aims

The title page to the first volume is dated 1722, and on it Bach explains that these "preludes and fugues through all the tones and semitones" were composed "for the use and profit of musical youth desirous of learning, as well as for the pastime of those already skilled in this study." The title pages of two other volumes he compiled around the same time give us a more complete view of the purposes he had in mind. The *Orgelbüchlein* (c.1713–1715), of which less than a third of Bach's planned cycle was ever composed, was designed to instruct organists "in developing a Chorale tune in many diverse ways, and at the same time in acquiring facility in the study of the pedal." His aim here included the teaching of composition as well as playing since the phrase "developing a Chorale" must refer specifically to this. The other collection—the 15 two-part *Inventions* and 15 three-part *Symphonies* (1723)—has an even higher stated purpose, defined in more precise wording: these deceptively simple pieces were not only intended to provide all "lovers of the harpsichord, and especially those desirous of learning" with "Upright instruction" for playing in two and three parts; they were also designed to teach "not only how to invent good musical ideas, but also how to develop them well, and above all how to achieve a singing [*cantabile*] style of playing, and at the same time to acquire a strong foretaste of composition."

The rather grandiloquent phrases on these three title pages turned out to be prophetic. For more than 250 years, these collections have all helped and delighted musicians, young and old, training both minds and fingers; but none more so than the two volumes of the *WTC*. For nearly 300 years, they have provided constantly refreshing guidance for those "desirous of learning," offered concise models of compositional skill to aspiring composers, trained the fingers of players, and given immeasurable pleasure to those "already skilled" and to audiences of music lovers.

Bach completed the first volume of the *WTC* by the time he was 37, and it marks the end of an important period in his development. Here for the first time in his harpsichord music we can see the evidence of the fertile imagination, the large-scale organizational power and the superior intellectual grasp which are so evident in his subsequent works. The second volume was put together some 20 years later; it sums up in a similar way the more highly charged musical language of his maturity.

In Bach's manuscripts, only Book I carries the title *Das Wohltemperirte Clavier*. Book II has no title page and therefore no title, but a host of secondary copies made by his students and other musicians confirm that the title for the first volume should be extended to the second and that the two volumes are indeed a linked pair.

Since the composition of the two volumes spans much of Bach's professional life—the earliest pieces having probably been written when he was in his twenties and the last ones when he was almost 60—these preludes and fugues offer a striking insight into a lifetime's work by one of the clearest thinkers and most imaginative creators in the history of Western music. They provide an unusual insight into the way his mind worked at different periods of his highly productive life. How extraordinarily varied is the achievement of Book I! It outlines in an intoxicating way his inimitable methods of weaving strong pieces out of highly original, pithy musical ideas. And how much more relaxed and unsystematic are the fugues of Book II! Their intellectual control is greater, but no longer needs to be self-assertive so the composer's imagination runs more freely and expansively. (Book II is 50% longer than Book I: the two books contain two hours and three hours of music, respectively.)

Close attention to Bach's changing preoccupations over the decades makes it easier to identify what he considered important in composition. The qualities praised by Carl Philipp Emanuel can paradoxically be more appreciated in a uniform repertory such as these 48 preludes and fugues: comparing like with like is more revealing than would be comparing pieces for different instrumental forces, or in other styles (such as the dances that make up keyboard suites). This is one of the principal reasons for giving (and listening to) a marathon performance involving all 96 pieces within a 24-hour span.

II. On musical marathons

The composer Heinrich Nicolaus Gerber (1702–1775) studied with Bach between 1724 and 1727, and his son left an account of those studies. When they first met, Bach "promised to teach him, and asked at that time if he had worked very much at playing fugues. Right from the start he gave him his *Inventions*. When Bach was satisfied that he had studied these sufficiently, he made him work on a set of suites, and then gave him the *temperirte Clavier*. Bach played this last work in front of him on three occasions, with his inimitable artistry, and my father counted among the happiest hours of his life the times when Bach, on the pretext that he didn't feel like teaching, sat at one of his wonderful harpsichords and in this way transformed hours into minutes."

If Bach played to one of his more minor students the complete *WTC* (or at least the first book) on three occasions, how many other times must he have done so for all his other students? Gerber's story, incidentally, provides a satisfying response to those people who maintain that Bach never intended anyone to sit down and listen to a complete volume of the *WTC* in one concert....

Bach marathons are special and I do them quite often, whether it's the complete *WTC*, the complete six French Suites, or the complete Art of Fugue. I like them, and I do them because I have found that audiences also like them. Such musical marathons offer a strong sense of our having completed a remarkable journey together. In no work is the sense of journey more profound than in the *WTC*; musically, it's a round-the-world trip. This is because of the gentle yet inexorable progression in each of the two books through all the 24 major and minor keys of the Western harmonic tradition, starting from C major. When we reach the end of the final B minor fugue, we know that C major is just round the corner and that we've completed the exploration. The long journey is perhaps tiring, but uniquely rich; and it's good to be home with the sense of "I did it!"

Many people have a deep-seated understanding that this music is not only beautiful but also important within the history of Western music. I hope that this marathon of experiencing the complete set will allow listeners time to settle into Bach's language and become fully relaxed with it; and that they then start noticing the enormous variety there is, and the fertility of his imagination. My main reason for undertaking this marathon is to help listeners appreciate Bach's language in a deeper way.

III. The influence of the *WTC*

Over the centuries, the "48" (as the *WTC* is known in many English-speaking countries) have probably exerted a greater beneficial influence on performers and composers than any other comparable repertory. Mozart discovered these pieces with joy in his early twenties. Beethoven already played them all by the time he was 13. (Both composers therefore knew them before they had been published, discovering them in manuscripts handed down by Bach's pupils and their pupils.) The musical pleasure to be found here is generally appreciated more than ever today and the concision and inventiveness of these pieces still help, in the 21st century, to mold the judgment of those who seek to understand the complex relationship between formal discipline and creative freedom.

The idea of compiling a set of pieces in all the major and minor keys—"through all the tone and semitones"—was not new since other composers had more or less done it before Bach, notably Johann Caspar Ferdinand Fischer (*Ariadne musica neo-organoedum*, 1702; containing preludes and fugues in 20 keys). Several others would do it afterwards, in homage to him: Bernhard Christian Weber (*Das Wohltemperirte Clavier*; probably dating from the 1740s); Gottlob Nicolai (*ABC*, comprising 24 sonatas in all the keys); August Alexander Klengel (two volumes, each one containing 24 canons and fugues in all the keys, composed in a post-Bachian style in the 1820s but published only posthumously, in 1854); and Fryderyk Chopin (24 *Preludes*, Op. 28, 1839; these are in all the keys, albeit organized differently).

Bach's *WTC* has seemed to all subsequent generations to sum up the style of an epoch and to represent Baroque keyboard writing at its highest peak. I would add to the list of qualities mentioned by C.P.E. Bach, cited earlier, four further points: the perfect suitability to the keyboard of the musical ideas and their development; the consistently high musical standard; the extraordinary technical demands; and the encyclopedic display of the known compositional styles for the keyboard. For all these many reasons, along with the immediate expressive beauty of the pieces themselves, the *WTC* remains not only one of the important monuments of Western music but also one of the most remarkable products of the human mind, taking its place among the finest achievements of Western civilization during the 18th century.

The *WTC* has always astonished by the fact that no two of the 96 movements are similar, and it is these differences that most clearly point up Bach's development. In this, the *WTC* is comparable to Beethoven's piano sonatas or Byrd's pavans and galliards, two other remarkable repertoires of keyboard music wherein a composer's lifelong attachment to a particular musical medium offers a crystallized insight into his inner development. Bach's first biographer, Forkel, attempted to describe the uniqueness of Bach's music, in 1802. He wrote with the fervor of a convert, saddened to have known only disciples without ever having met the master himself. Yet few of those who knew Bach personally wrote with such perspicacity and it was Forkel who first proclaimed the absolute and universal nature of Bach's genius. He noted that Bach's melodies are marked with such a strong personality that they cry out to the world "I am Bach"! Bach's musical language is certainly complex, and sometimes strange, but it is also intensely compelling and deeply emotional.

The *WTC* has never been considered "easy"—neither for the fingers nor for the mind. It is comforting to know that Bach's sons had to struggle to master them. Carl Philipp Emanuel, long after his father's death, showed the English historian Charles Burney "two manuscript books of his father's composition…containing pieces with a fugue, in all the twenty-four keys, extremely difficult…at which he had laboured for the first years of his life, without remission." Forkel also reported that when students found pieces difficult Bach simply used to smile and tell them to work harder, reminding them that they had five fingers on each hand, just as he had! His students were required to work very hard, apparently, but the most important element in their musical training was the fact that Bach taught primarily by example, as is shown by the story of his playing the *WTC* to Gerber on three occasions.

IV. Did Bach finish the *WTC*?

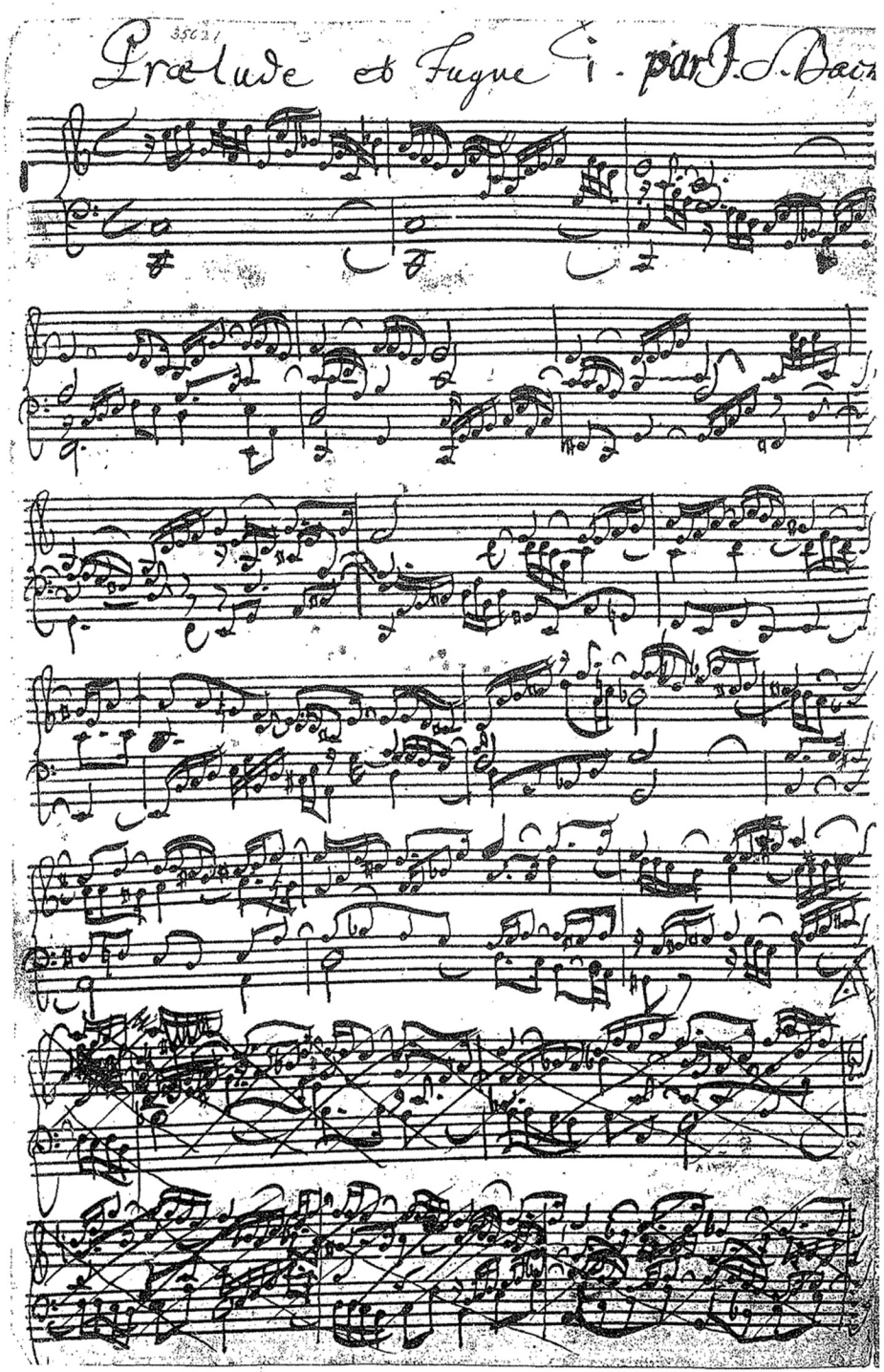
It comes as a surprise to many music lovers to learn that Bach never really finished the *WTC*. Only Book I reached a state that he considered sufficiently finished to be copied by him (in 1722) into a single volume, an autograph manuscript now in Berlin. Even after this, he still went on improving and correcting it; the date of one of these rounds of corrections is noted at the end of the book: 1731. But the corrections continued for over 25 years. The "finalized" text, as far as we can now know it, dates from the late 1740s.

Book II, on the other hand, never even reached the stage of being carefully copied into a nicely bound volume, let alone being systematically revised over more than two decades; it remained as a sheaf of unbound single sheets, three of which have since disappeared. A few of the surviving sheets are heavily overwritten with a first (and occasionally a second) round of significant corrections and modifications: the replacement of 10 or so measures; the insertion of 11 extra measures, etc. (This manuscript is in London and is the most important Bach autograph outside Germany.) If Bach had lived long enough, he would no doubt have finished this work of revision and perhaps even prepared the two volumes for publication, but what we have is in some ways still "work in progress" that Bach never quite completed.

Most of his changes are tiny incremental improvements at the micro level: a slight modification to a rhythm; the displacement of a pitch by one 16th note; adjustments to accidentals. Most listeners would normally not even hear them, but these emendations do definitely improve the music, raising the level of consonant euphony at the smallest level. It is touching to find that among Bach's last round of revisions to both volumes are some nervous changes, corrections he made to eliminate a few small but real errors, forbidden by the most basic rules of counterpoint: consecutive fifths and consecutive octaves in parallel parts! These little blemishes had been overlooked by Bach (as well as, apparently, all commentators and players since then).

One striking "correction" occurs in the first fugue of Book I (=I/1)where Bach corrected a passage involving an unprepared dissonance in the bass that was licentious even for him (measure 15), and this "error" is found in almost all modern editions. In his old age he altered the passage, but the only way out of his impasse was to sacrifice the rhythmic integrity of his fugal theme in the bass, a solution *in extremis* that was hardly necessary. Yet I am happy to follow Bach's scrupulous late correction because the new result is musically exciting.

Occasionally, his corrections really seem overzealous, Some even look suspiciously like panic attacks ("Oh, no! Did I, Johann Sebastian Bach, really write consecutive fifths there? How could I have not seen them?"). Right at the end of his life, he noticed (or some bright student pointed out to him) a case of consecutive fifths in measure 63 of fugue II/16, an error that is again present in almost all modern editions. He must have been mortified because his correction is a case of anxiety that has gotten out of hand. The supposed "error" offends only the eye; the ear absolutely does not hear it, even when it knows it is there. These illicit fifths are what Brahms would have called "beautiful fifths." (Over a 30-year period Brahms assembled a tally of nearly 150 such slips in the works of the great composers, from Clemens non Papa to Bizet, and annotated them with his value judgments.) To borrow one of his positive judgments, I find Bach's original mistake in fugue II/16 to be "exuberant and idiomatic" and think his correction weakens the passage. So I prefer to leave the inaudible contrapuntal "error" in place and thus allow Homer to nod. The Roman poet Horace rightly noted in his *Art of Poetry* that authors may be allowed a few momentary lapses in epic works, on a large scale. (*Quandoque bonus dormitat Homerus / Verum opere*



Bach's autograph manuscript for the Prelude in C major from Book II showing his multiple layers of revisions [London, British Library].

in longo fas est obrepere somnum; or as Ben Jonson put it in his 1640 translation, "Sometime I heard good Homer snore; / But I confess that in a long work, sleep / May, with some right, upon an author creep.")

Yes, Bach made mistakes! Even in his corrections! A famous case occurs in the *Brandenburg* Concertos, where he first wrote a forbidden series of five consecutive octaves, but then compounded the problem by too hastily changing them into consecutive fifths! Many corrections are also found in his last keyboard work, *The Art of Fugue*, although his revisions did managed to eliminate almost all of the contrapuntal lapses; only one escaped him!

V. Which editions?

A result of this curious state of affairs is that, despite the iconic status of the *WTC* in Western music, the text of a basic standard edition has never been firmly established, and for Book II it probably never will be. There are many passages where we simply do not know what notes Bach, at the end of his life, wanted us to play. The above examples show that players today still have some crucial decisions to make. Is this note sharp or natural? Is this pitch A or G? Is this rhythm dotted or not? We cannot blindly rely on an edition, no matter how eminent the musicologist or respected the publisher.

A great deal of scholarship on the *WTC* has come to fruition in recent years, resulting in two important new editions. This research has produced a fair number of new notes and rhythms in well-loved pieces. Source studies and edition making, two disciplines rather out of fashion in modern American musicology, still have plenty of fundamental work to do, even with Bach's music. Critical insights can be altered by the shifting sands of a shifting text; new notes, altered rhythms and differently inflected accidentals—along with the reasons behind such changes—indicate a great deal about what Bach was doing (or at least trying to do). Looking closely at a changed note or a changed rhythm usually reveals what it was that Bach considered slightly weaker in the earlier version. Speaking personally, it has helped me see more clearly how the most refined part of his revision process worked and has taught me a lot about the inner workings of his mind; it has also fundamentally altered my way of thinking about the nature of Bach's achievement and my approach to playing his music.

The edition by Richard Jones (London: Associated Board of the Royal Schools of Music, 1994) is particularly useful, being inexpensive and containing the only satisfactory discussion generally available in English of the history of the work, its sources and the many problems associated with individual pieces; Jones's excellent new text for Book 2 contains many striking variants that will be unfamiliar to players and listeners who are used to the older, less critical editions.

The new official text by Alfred Dürr for the standard complete edition of all Bach's works, the *Neue Bach Ausgabe* (Kassel: Bärenreiter, 1989 and 1995), contains some of the same new readings given by Jones, but often presents quite different conclusions. It is also available in an inexpensive reprint from Bärenreiter, but concerned pianists and harpsichordists need to consult the full edition in the *Neue Bach Ausgabe* if at all possible, since each of the two books of the *WTC* are there presented in two complete versions: an earlier stage derived from Bach's (not always revised) autograph manuscripts, and a later revised stage derived from the (sometimes inaccurate) manuscripts of his pupils. This way of presenting two versions of the text is particularly misleading. The "earlier stage" is by no means the earliest, but is already a fairly sophisticated version; and the "later stage" is often only one of several that can be gleaned from the manuscripts of Bach's late pupils. Bach's process of composition and revision was long and finally interrupted by his death; the two versions presented in the *NBA* volumes are simply two stages selected from somewhat "earlier" (having the authority of a particular surviving manuscript by Bach himself) and somewhat "later" (depending on a tradition of anonymous copyists and Bach's students, a tradition that was in constant flux). On the whole, I am less satisfied with Dürr's *NBA* edition, which (as so often in this series) shirks important editorial responsibilities by hiding behind a presumed scholarly objectivity. By washing its hands of any attempt to guide players, it is hardly helpful.

Anyone wishing to undertake serious study of the *WTC* needs to use both these new editions (especially for Book II), and use them side by side. Neither provides definitive answers to the plethora of questions in many pieces about precisely which notes we should play today. If forced to choose, I would recommend Richard Jones's 1994 ABRSM volumes as a standard modern English-language edition for players and teachers.

Readers wanting to know everything about Bach will need to own Christoph Wolff's comprehensive *Johann Sebastian Bach, the Learned Musician* (New York: W. W. Norton, 2000); a shorter introduction is my own volume, *Bach, An Extraordinary Life* (London: ABRSM, 2000). For specific writings about the *WTC*, the prefaces and notes to Richard Jones's edition are now essential reading, drawing attention to the main textual issues players need to be aware of for each piece. It also has the bonus of including D. F. Tovey's excellent commentaries (dating from 1924); they remain constantly helpful. For understanding Bach's keyboard fugues in general, an excellent introduction is Joseph Kerman's elegantly personal *The Art of Fugue: Bach Fugues for Keyboard, 1715–1750* (Berkeley: University of California Press, 2005). Despite the title, this book is not about the work called *The Art of Fugue*. It is about Bach's art of writing fugues and contains illuminating commentaries on 16 selected fugues, nine of which come from the *WTC*.

VI. On tempo and notation

Bach rarely marked his keyboard scores with tempo markings such as *Allegro* or *Andante*. (The manuscripts copied by his pupils contain a few additional tempo indications—occasionally clearly wrong-headed ones, such as fugue II/22: *Adagio*.) The fact that he did not need to write in such explicit indications does not imply he would have thought his pupils had much personal liberty in the matter; rather, he would probably have felt that he had written sufficiently clear implicit instructions in the score, visible to any player who took the trouble to understand the messages contained in the notation and in the style of the piece. In other words, writing a tempo indication was usually unnecessary for Bach because no educated player would make a mistake. Modern players, less attuned to the differences of notation and to the stylistic references, can easily miss these "instructions" from Bach that are found in the score.

As Bernard D. Sherman has shown, a number of Bach's important German contemporaries explained that time signatures often imply something specific about the tempo; these writers include Mattheson, Heinichen, Walther and Quantz (all personally known to Bach), as well as his direct student, Kirnberger. Performers who wish to play Bach's music with some awareness of these matters (even if they ultimately decide not to adopt them) need to know something about the 18th-century concept of "normal tempo." Handel and many other composers (but not Bach) called it "ordinary tempo," or *tempo ordinario*; in Germany it was known as the *schlechte Tact*. It is normally notated with a **C** time signature, and most of the notes are 16th notes; but despite being in small note values, these 16th notes are usually not to be played fast. Whenever the style approaches that of a French *allemande grave* (as is the case with several preludes in the *WTC*) the tempo is definitely slower. As soon as the tempo begins to feel fast, it's too fast; as soon as it begins to feel slow, it's too slow. Some sources describe *tempo ordinario* as "dignified." It was usually said to be somewhere around 60–75 beats per minute; maybe this feels "ordinary," normal and unremarkable to us because it is close to the standard human heartbeat.

Only seven of the 96 pieces in *WTC* have any explicit instructions, and they are almost all in cases when the notation, without such clarifications, would lead players to perform at a different speed.

- Prelude I/2: a *Presto/Adagio/Allegro* at mm. 28–35 (whose interpretation remains ambiguous);
- Prelude I/21: a dubious *Adagio* at m. 11 (whose authenticity is not certain);
- Prelude I/24: *Andante* (to stop players performing too slowly);
- Fugue I/24: *Largo* (to stop the player performing too fast);
- Prelude II/3: *Allegro* at m. 25 (to stop players performing too slowly);
- Prelude II/16: *Largo* (to stop players performing too fast);
- Prelude II/24: *Allegro* (to stop players performing too slowly).

It is all a question of discourse, like speech. When people speak too fast we notice it; when they speak too slowly we notice it; when the tempo is in the middle, we don't even notice it but listen more attentively to what is being said. The exact speed of this clear discourse can vary depending on the building, the acoustic and the voice of the speaker; the important points are the effect and the clarity of the discourse.

Tempo ordinario is not quite the same thing as what many composers (from Frescobaldi to Stravinsky) called "the right tempo" (*tempo giusto*). Beethoven's well known comment "We can hardly have *tempi ordinari* any longer, since we must fall in line with the ideas of unfettered genius" (letter to his publisher Schott, 18 December 1826) tends to confirm that a 19th-century approach to tempo as something related to personal inspiration would probably have been viewed as misguided by Bach and his contemporaries, and if we view the *WTC* through a 19th-century lens we run the risk of distorting it and missing something Bach and his pupils would have taken for granted. Similar comments can be made about many of the standard time signatures. (3/4, for example, also had normative implications of a steady pulse.)

During the 18th century, there developed a distinction between *ordinario* and *giusto*. According to one English writer in 1800, *tempo ordinario* "varies with the fashion of the age" whereas *tempo giusto* varies "with the fancy or judgement of the performers" (William Crotch, writing in the *Monthly Magazine*). The distinction is important. For Bach players who like to imagine themselves in the shoes of Bach's pupils and to imagine what kind of comments he might have made about their playing, an important aim is to try and understand what elements of the "fashion of the age" he might have taken for granted, before allowing for the personal elements of "fancy or judgement of the performers." Both are needed when playing any music, of course, but an understanding of the stylistic parameters of *tempi ordinari* provides a framework and context that can define the normative limitations that act as checks and balances against the less predictable sense of personal *tempo giusto*.

VII. On style

One main way in which Baroque composers such as Bach implicitly indicated tempo in was by reference to standard dance styles. The main French court dances of the time (allemande, courante, sarabande, gigue, minuet, gavotte, passepied, passacaille, bourrée, loure, etc.) in effect covered all the bases: slow, medium, fast (even very fast) in duple time, triple time and quadruple time (as well as the more complex compound times such as 6/8 and 9/8). A standard speed for the dances was generally understood, although these could change from generation to generation and from place to place.

Consensus is by definition limiting to individuality, and I see no problem here. On the contrary, it is reassuring to know that Bach did have a clear idea about the tempo of his pieces. Bach wrote one piece, for example, that is not a minuet yet he marks it *Tempo di Minuetto* (in the fifth harpsichord Partita), and another that is not a gavotte but is marked *Tempo di Gavotta* (sixth partita). An interesting case occurs in the Goldberg Variations at Variation 7, which harpsichordists have always understood to be a French-style gigue, but pianists have tended to see as a siciliano (and have therefore usually played more slowly). The discovery in 1984 of Bach's own copy of the Goldbergs, with his added hand-written indication *al Tempo di Giga*, answered the question by confirming the stylistic reference Bach intended; it also highlighted his use of such words in ambiguous cases. All these indications could only mean something if he thought there was a clear consensus about the appropriate tempo (or range of tempos) for a minuet, a gavotte, or a gigue. In this area, players have rather little freedom, because if we play a minuet, gavotte or gigue too slowly or too fast, it is no longer a minuet, gavotte or gigue but becomes something else.

Usually the stylistic references would have been so clear to any musician of the period that Bach did not need to write them in. Fugue II/13 is

evidently *tempo di gavotta*, because the fugue shares many of the rhythmic characteristics and gestures of gavottes. Fugue II/4 must be *tempo di giga*, because it shares many of the specific structural, notational, and rhythmic features of Bach's gigues. Other pieces in the *WTC* equally clearly evoke allemandes, sarabandes, minuets, passepieds. Players who are aware of these stylistic evocations immediately have access to a layer of implicit indications that Bach no doubt thought were perfectly visible in his score, indications that tell something specific about speed and character; however they can be far from visible to modern players who remain unaware of these stylistic references.

Another problem of reading the notation stems from the fact that Bach, like many composers of the period, also uses two different parallel notational levels in his pieces. Some *tempo ordinario* pieces are written with a **C** time signature and quarter-note main beats and the faster moving notes in 16th notes; these 16th notes are definitely not meant to be fast. But he also quite often notates his music at a different level (as it were in a different gear), with half-note main beats and the faster moving notes in eighth notes. He used both approaches in his lifetime, but towards the end favored the second. At the end of his life, in *The Art of Fugue*, for example, he made a conscious decision to use a consistent level of notation (half note beats, with moving eighth notes); he therefore renotated several pieces. He probably did this because he was preparing a publication and wished to tidy up the notation to prevent it from misleading players.

The *WTC*, on the other hand, was never finalized for publication and the revision work on it was never finished. Yet there is evidence he was doing exactly the same thing here, especially in Book II. I suspect he would have also changed the notation of several pieces in Book I, had he lived longer and published the two volumes. For cases that we know about, the pieces had been written at one notational level (usually in **C** time with 16 16th-notes to a measure, meaning each measure lasted a whole note, or contained a semibreve's worth of note values); he rewrote them in the "cut-**C**" time signature, in eighth notes; this is known as "allabreve" notation, since the largest beat value was not the semibreve (whole note) but the breve (equivalent to two measures, and in many cases Bach uses these double-length 4/2 measures (but modern editions sometimes eliminate them). Many of the fugues in *allabreve* notation are in a deliberately old style, relating to the ricercar, a serious contrapuntal form much in use in the 17th century whose melodic lines are closer to vocal lines; by contrast, Bach's fugues in the instrumental style of the keyboard canzona or capriccio, with less singable lines, are usually notated in the shorter note values, so it may be that he intended a stylistic reference in the level of notation chosen. We know he did this doubling of note values to at least two of the *WTC* pieces that are in ricercar style. The notation of some others, as they have survived, may already reflect this change; but it is almost certain that—if his notational plans for the *WTC* in the late 1740s were similar to those we know about for *The Art of Fugue* in the same years—several more pieces were still waiting for the treatment. In the case of *The Art of Fugue* we know that Bach did not write out these new copies himself, but relied on one of his teenage sons, Johann Christoph Friedrich Bach, to do the copying work.

This means the notations of the *WTC* should be read with this inconsistent feature in mind, recognizing that some of the pieces in blacker ("faster") notation are not intrinsically fast, and those in whiter (slower) notation are not intrinsically slow. They are two different forms of notational measurement that in effect mean the same thing. (A 12-inch ruler is not shorter than one that is 30.48 centimeters long; 40 degrees Celsius is not colder than 104 degrees Fahrenheit. Sixteenth notes in *tempo ordinario* are not faster than eighth notes in *allabreve* notation. To put it another way, some pieces with quite different notations can fall into the same large pool of pieces in the basic "ordinary tempo."

This central stability of tempo can stop modern performers playing certain pieces too slowly (not just those obviously in *allabreve* notation but those not obviously in the same family, such as fugue II/6. Equally critically, it can help players avoid the error of being misled by pervasive 16th notes into playing too fast (preludes I/5, I/14 and I/23, II/8, and fugue I/17, etc.). At least 37 of the 96 pieces in the *WTC*, despite presenting varied notational faces to the player's eyes, fit comfortably into the range allowed within basic *tempi ordinari*. They can be accommodated without violence, with more or less the same pulsation (allowing for the natural minor ebb and flow that music-making requires): preludes I/1, I/5, I/6, I/7, I/14, I/16 (left hand!), I/23, II/1, II/3, II/8, II/18, II/22 (*allabreve*) and II/23, and fugues I/1, I/4 (*allabreve*), I/5, I/8, I/9, I/12, I/17, I/18, I/20, I/22 (*allabreve*), I/23, II/2, II/3, II/5 (*allabreve*), II/7, II/8, II/9, II/10 (*allabreve*), II/13, II/14, II/17, II/19, II/20, II/23 (*allabreve*).

An awareness of the notational features and of the stylistic context of other pieces in similar styles rarely leaves much room for doubt about the stylistic reference or the range of appropriate tempo for any movement. The combination of style and notation usually provides the information needed to deduce a considerable amount of information about what Bach had in mind. The notation and the stylistic references built into the musical language are the among first parameters to digest when deciding on tempo and interpretation. They are no more limiting to personal freedom than when Beethoven puts *Allegro* or *Adagio* at the start of a movement. Far from limiting personal inspiration, they provide an appropriate framework within which the performer's own personality can be expressed with comfort and assurance.

An illuminating comment—deliberately provocative—by the great Dutch harpsichordist Gustav Leonhardt can be found in the last section of his little book on Bach's *The Art of Fugue* (1952), and I will always be grateful to the late Laurette Goldberg for having drawn my attention to it. Leonhardt widens this distinction by pointing out that it is not only the liberty of performers that is framed contextually by the style of a period, but also the liberty of composers themselves to imagine creatively: "Contrary to the widely spread opinion claiming Bach to be the individual genius, in constant struggle with his surroundings, unrecognized, overcoming his epoch, we want to emphasise that Bach was necessarily a so-called 'child of his time.' … Style is something greater and stronger than any genius."

VIII. In praise of counterpoint

Bach wrote counterpoint. In almost every piece he wrote there is more than one melody, and these melodies combine together to make harmony. The two-part *Inventions* are in two-part counterpoint, always based on two ideas being tossed between the hands. In what is called "two-part invertible counterpoint" almost every melodic fragment found in one hand will appear somewhere in the other one, when the counterpoint is "inverted." Any melody can suddenly become the accompaniment, and any accompaniment can become principal melody. (See the musical examples below for preludes II/2, II/15 and II/20, where exactly this happens in the first few measures of the work.) But the concepts of "principal melody" and "accompaniment" are fundamentally misleading. There is no hierarchical distinction between melody and accompaniment. The whole point is their essential equality. Only one of the 48 *WTC* fugues is in two parts (I/10) but over a dozen of the preludes are in effect two-part inventions (give or take a few liberties): preludes I/2, I/3, I/11, I/13, I/15, II/2, II/6, II/8, II/10, II/13, II/15, II/20 and II/24. Studying the *Inventions* before playing these preludes is highly instructive.

In practice, however, Bach is at his happiest when combining not two, but three thematic elements, in triple counterpoint. Although one theme is announced at the start of a fugue (and is generally referred to as the "subject") it is not necessarily the most important melodic element in the work. Usually he combines the layers rapidly, by immediately adding a second theme in counterpoint, and then a third, so that after about six measures all three are already in play. Only then does his musical fun really begin, as he juggles with them in endlessly inventive ways.

His counterpoint is usually composed within the particularly playful discipline called "triple invertible counterpoint." As its name implies, this depends on there being at least three melodic lines (called "voices") in play for most of a piece. "Triple" because there are three melodic elements; "invertible" because any of these three lines can be on the top, on the bottom, or in the middle. This makes it sound easy, but in fact is very difficult to do convincingly. Without this invertible counterpoint,

Bach would not be Bach; it is the musical language that he speaks most comfortably, the contrapuntal air that he breathes and dreams. Bach usually reinforces the independence of the lines by making sure that they all have different rhythmic profiles, different speeds and different starting moments (not on the same beat).

Double invertible counterpoint can invert into only one different position, since either theme 1 is on top and theme 2 underneath, or 2 is on top and 1 is underneath. Bach uses this technique inventively, however, by placing the different statements of the two versions in different keys and in different registers of the instrument, thereby transforming them each time.

The reason triple invertible counterpoint is so exciting is that the three themes can occur at the same time in not two but six different ways because they can be superimposed vertically in six positions. Anyone with an elementary understanding of factorials, permutations and combinatorics will understand. Three factorial—or 3! to mathematicians; that is, 3x2x1 = 6—implies the six possibilities: 1/2/3, 1/3/2, 2/1/3, 2/3/1, 3/1/2 and 3/2/1. So four measures of good triple invertible counterpoint can provide Bach, as he rings the changes, with 24 measures of excellent music, but because he also inverts the positions and changes the keys (dominant, subdominant, relative major or minor, etc), not only do the harmonies sound quite different but the different versions are placed in different parts of the keyboard in new relationships with each other.

Although Bach generally likes to introduce his three melodic elements right at the start and move into the combinations as quickly as possible, in some remarkable fugues he introduces them in distinct sections, at a considerable distance from each. After several long paragraphs dealing with the first theme (during which other melodic fragments are tossed around in chatty invertible counterpoint), a second theme is formally introduced. The purpose of such a scheme is to create a third section bringing together two themes which, until then, have not met. These works are "double fugues." They remind me of non parallel lines. They start in different places, and at different angles, but we know from the start that they will certainly intersect. Part of the musical pleasure comes from finding out when and how this happens, and the fact that we are made to wait for it.

Some such fugues even have three or (very rarely) four separate themes, introduced at a considerable time distance from each other; these are all large-scale, majestic structures, but the purpose is the same. Once theme 2 has been introduced, it will be combined with 1; and after 3 has been introduced it will be combined with 1 and 2. There is something magnificently inexorable about these works. And of course Bach's compositional process in such cases can only have started with the combinations destined to appear at the end. From them he unravels the strands, and weaves pages of extraordinary music from each thread, before allowing the grand combination to crown the edifice. These works with three themes are nowadays called "triple fugues." (Anyone with a taste for this kind of thing will enjoy Bach's Cantata 150, *Nun ist das Heil und die Kraft*; it is a stupendous sextuple invertible counterpoint set into unstoppable combinatory motion. To hear it you would never know. It sounds joyful, playful, strongly assertive and thrilling. Bach must have had fun with it, and of course he does not use anywhere near all the 720 possibilities offered by the 6! combinations.)

The next logical question at this point is, are the four-part fugues in quadruple invertible counterpoint? (4! = 4 x 3 x 2 x 1; that is, 24 possible positions of the themes....) The answer is no, because such works, if treated in any way systematically with 24 repetitions of the material, would get too long and repetitive, possible even boring, no matter how artfully Bach juggled it. What makes the four-part fugues so special is the fact that most of them are built with any three of the voices at any given time based on triple invertible counterpoint, meaning there is always a free voice. Freely created new melody is the best contrapuntal icing on the carefully structured layer cake. Writing in four parts using triple invertible counterpoint allows Bach always to be inventive and to add more ample and individualized musical flesh to the skeletal combinations with new melodic elements each time. (He also does this sometimes in the three-part fugues, basing them on double invertible counterpoint, with only two themes, in order to leave a third voice always free to add fresh material each time the combinations are heard.)

Understanding this combinatorial principle and learning to listen to more than one melody at a time is certainly the most important way of learning to appreciate Bach's music. But other features can also be helpful. They tend to be rather jargon-heavy, which is unfortunate, and can be somewhat inhibiting. But the ideas themselves are in fact rather simple to understand and not difficult to hear.

Bach's *WTC* fugues also often use another device known as "stretto," a term close to the word Italians use for a dense coffee with not too much water in it, *ristretto*. And in Bach's music it means much the same thing, and certainly has a kick to it. In a stretto the main melody is heard playing against itself in another voice, so you hear the theme twice at the same time, but with one starting just after the other. In other words, the theme harmonizes with itself in a sort of short canon. Many of the *WTC* fugues are stretto fugues in that the laying out of the various stretto statements provides the ground plan for the work's structure. In some cases, the multiplicity and variety of the stretto treatment is astounding (fugue II/1, a short piece with half a dozen different stretto passages; fugue II/22, with 10 different stretto sections).

Another important part of Bach's language is the idea of turning a theme or melodic fragment upside down (known as "inversion"). The intervals are inverted (usually, but not always, pivoting around the third degree of the scale). What went up, comes down instead. So a theme that sounded the notes A, B, C, A, E will invert (pivoting around the C) to E, D, C, E, A. Bach quite frequently does this to his principal themes, and far more frequently to his little melodic fragments that make up his counterpoints. Although the melody thus created has new pitches, the ear can usually recognize that it is related to the old one because the rhythm has not been altered, only the pitches. A normal version and its inversion will have identical rhythms. Even the intervals have not been altered, so a leap remains a leap, and stepwise motion remains stepwise. Less audibly, but more frequently, he derives his free counterpoints from little melodic fragments that can work in either direction, up or down. Much of this need not be heard by listeners, but it certainly helps if the player has noticed when it happens.

The main point of this combinatorial part of his compositional process is to present his three equal melodic partners, and present them equally. There can be few approaches more certainly destined to kill young musicians' appreciation of the nature of Bach's counterpoint than to encourage them to "bring out the theme" by playing it louder. The famous 19th-century musical analyst Hugo Riemann wrote (in his *Catechism of Fugal Composition*, 1890) that Bach's fugal writing made "possible the constructing of longer pieces of compelling logic using only a single theme." A more blind (and deaf) view of Bach would be hard to imagine, and in fact Riemann's own understanding of Bachian counterpoint was more sophisticated than his statement implies; but not everyone's is, especially today.

This misguided stress on logic and monothematic construction is at the basis of most of the bad fugue playing heard today. Each generation sees and hears in Bach what it wishes to see and hear. The obscurantism of Riemann's reductive formulation almost willfully obliterates the essence of Bach's counterpoint. Virtually none of Bach's fugues are based on developments of single themes. Even stretto fugues such as I/1 and II/22, ostensibly based on single themes, are full to the brim with other fragmentary melodic ideas that get thrown around in various combinations.

Bach juggles with all this in his contrapuntal combinations so that these potentially rather intellectual works can avoid (and this is apparently his own image) being like "dry sticks." He wanted them to have "fire" in them. He always develops them whenever the main theme is not being sounded, in what English-speaking musicians call "episodes," but I prefer to use the French concept, *divertissements*; that word correctly implies that Bach, the player, and the listeners are having fun. These free counterpoints, in their playful interludes, add not only fire but warmth to the music.

Bach likened themes alone to cold, dry sticks, and his free counterpoints to the warm fire. The way fugues are often played, I feel that the themes being "brought out" are a bit like the skeletal bones

showing on an emaciated body. The counterpoints are the beautiful, warm, living flesh; they are what can give the most sensual pleasures to players and listeners. Another point follows from this. Since the theme in a Bach fugue is precisely what never changes, "bringing it out" is simply drawing attention to what is static in the work. Bach's free counterpoint around the themes, his flesh around the bones, is infinitely more attractive and seductive, and is constantly changing. I prefer to concentrate on that, and to try and draw the attention of listeners to the most changing and imaginative part of a fugue, not to its bony skeleton.

IX. "Soul," discourse and musical prose

Some writers in the late 17th century noted that, by comparison with the highly expressive lute, the harpsichord could seem dead and mechanical when played by bad players. The same is true today (and for the organ), just as the piano played by bad pianists can be uninspiring.

The best players in the second half of the 17th century, notably French harpsichordists, discovered how to "give the harpsichord a soul" (to borrow François Couperin's well-known phrase). They did this by developing a complex system of subtle touch that was perfectly suited to both the harpsichord and the organ. Much of this art of keyboard declamation was lost during the 19th century and has had to be rediscovered (and reinvented for our own times). Today, competent players have many such expressive devices in their arsenal.

In addition, and most important of all, when a harpsichord is well quilled in high quality bird quill, a small difference of volume produced by finger touch is indeed possible. The quills that pluck the strings on the John Phillips harpsichord I play today come from a raven's feathers, the most favored choice in the 17th and 18th centuries. Although modern harpsichord builders have spent several decades trying to find modern plastic materials to replace the organic quill, they have in effect been trying to reinvent the wheel. Genuine organic raven's quill is the best material, for its instantly responsive nature, its lightness and rapid snappiness, and its ability to transmit minute differences of touch through to the strings, and produce nuances of sound and attack. Once mastered, it produces enough difference of volume and attack to distinguish one note clearly from its neighbor in terms of slightly louder and softer. (And technically, also it emphasizes different harmonics on the string, creating a different color and character for the note.)

Good quill is the harpsichordist's secret weapon. These differences are hardly perceived as loud or soft by the listener, although they can appear to be bright or mellow. They establish a hierarchy of notes on which the instrument's expressive discourse is built. These little differences are as much of mood as of volume. When combined with the air let into the texture before important notes, they provide the expressive means of distinguishing between more important notes and less important ones, somewhat similar to an up-bow and a down-bow on a violin (and especially a baroque violin bow, for which these distinctions are much greater). If a beautiful piano is full of vivid colors, the harpsichord is essentially in black and white, like a fine Ansel Adams photograph. There are no reds, blues or yellows; just a thousand shades of gray and infinite suggestions of light and dark. When I look at an Ansel Adams image, I don't sense there are any missing colors.

These subtle "mechanics of fingers on the harpsichord" are described in some detail by two of the greatest players of all time, François Couperin (*L'Art de toucher le clavecin*, 1716) and Jean-Philippe Rameau (*De la mechanique des doigts sur le clavessin*, 1724). They allow the player to give each phrase a center of gravity, essential to the projection of phrasing. To use another parallel, they provide a difference to the attack of each note that is comparable to the difference in spoken discourse between the various consonants. These are accentuated by using tiny silences before important notes or (a different idea) by slightly delaying notes so that they arrive late.

If the differences in attack, produced by the rapidity of the finger action and the responsiveness of the quill, as well as the exact timing of the sounding of an important note, all combine to provide the equivalent of consonants in the musical speech, what about vowels? Notes that are sustained after being first sounded are somewhat comparable to vowels (which is why singers can only hold notes on vowels, but rely on consonants for their "diction"). The nature of the resonance heard as the note is held, when combined with the considerable variety of attack, provides something comparable to vowels and consonants. Note length is given variety by very slightly lengthening important notes and shortening unimportant ones, all within a solid large pulse that is regular. This system was codified by French players into the system of "unequal notes" (*notes inégales*) whose purpose was to give the music grace. Couperin pushed the parallels with language even further by introducing punctuation signs such as the comma into his scores, to give little breathing points, adding that, "although they are almost imperceptible, their absence will be felt by people of taste."

In other words, these techniques, and this approach to discourse and punctuation, provide the player with an arsenal of sufficiently differentiated sounds to provide shading, relief, phrasing and a sense of direction and meaning.

The parallel with words and language is just that, a parallel, but it is telling. Poetic discourse is built on subtle combinations of strong and weak syllables. My *Oxford American Dictionary* defines "tonic accent" in phonetics as "denoting or relating to the syllable within a tone group that has greatest prominence, because it carries the main change of pitch." But other languages do not do this in the same way, using pitch primarily for stress. In French and Latin, for example, these accents are expressed more in terms of longer and shorter syllables and much of the special quality of spoken rhetoric depends primarily on this rhythmic manipulation of the language. (We do this also in English, but in a less generalized way, as a kind of second and more emphatic layer of rhetoric.) In Patricia Ranum's succinct formulation, "French words are not emphasized by increased volume, as they are in English. True, 17th- and 18th-century authors allude to the force that characterizes theatrical declamation, but this 'forceful' accentuation primarily involved lengthening the vowel, emphasizing the initial consonant and raising or lowering the pitch of emphasized syllables." ("Harmonious Vowels" in *The Harmonic Orator*, Pendragon, 2001, p. 99.) My point here is not that performers should "pronounce" Bach's music in the French manner, but that language as a whole uses more means of communication than just those we are familiar with from the English language. When trying to understand something about the ways musical language works on instruments, it can be useful to draw on features found in more than one language.

It is not surprising, therefore, that it was the French who first really transformed the skills of finely expressive harpsichord playing and (to take Couperin's phrase) gave the instrument its soul; it was they who turned keyboard touch into an art, *L'Art de toucher le Clavecin* (to take Couperin's famous title). Their own French language gave them the clue to making the harpsichord (and organ) expressive.

It remains to make the link with Bach. I have already argued elsewhere, in various articles, that Bach's approach to the technical aspects of playing the harpsichord must have been essentially within the French tradition, for many reasons. His training suggests it, his musical contacts in his youth, the style of his youthful compositions, his comments and admiration for certain eminent French players, and the implicit position of his students, such as Marpurg, who write about the matter.

So if these ways of playing, of quilling, of touching, help provide the musical discourse and rhetoric, what kind of speech is needed for these preludes and fugues? Two main categories of speech are prose and poetry. Each has its own subcategories, ranging from the improvised prose of casual everyday speech to the formal literary prose of Milton or Henry James; and from the free verse of e. e. cummings to the sublimely artificial rhyming verse of Shakespeare.

François Couperin, in a powerful text about preludes, noted that music has its prose and its verse, and specifically referred to preludes as prose. The regular phrases of the standard court dances, such as sarabandes, gavottes and minuets, would have all been equivalents of various different verse forms, with the regular four-measure phrases being the equivalent of poetic lines, and the regular cadences the equivalent of rhymes. Couperin hardly wrote any fugues, but he would certainly have considered fugues to be the most carefully constructed

form of high-style musical prose. His comment is a reminder not only that Bach's French Suites, English Suites, Partitas, etc, are all in various forms of musical "verse," but also that the whole of the *WTC* is in musical "prose"; the fugues are the most formally constructed movements in this style, as careful as an expository lecture by a Nobel prize-winner. There is a long tradition of viewing such contrapuntal pieces as structured discourse within the rhetorical tradition of orators.

The concept of "musical prose" explains a lot about fugues. Fugues have several "voices" speaking at the same time, in a highly civilized sort of democratic conversation. Bach's *WTC* fugues range from the one two-voice fugue (I/10) to the five-voice fugues (I/4 and I/22); but 45 of the 48 fugues are in three or four voices (in fact, the whole of Book II is). Book I has 11 three-part fugues and 10 four-part ones. Book II has 15 three-part fugues and 9 four-part ones. In other words, exactly half the 48 fugues, 24 of them, are in three voices. There is an obvious reason for this. The reason is the triple invertible counterpoint that is Bach's essential musical language.

When everything is said about discourse and techniques, the "words" and the "phrases" and the tone of the discourse remain to be constructed by the player for a given instrument in a given hall in front of a given audience. As with all good playing, the rhythms of the phrases and the points of slight stress and repose constitute the essential personal voice of each individual player.

X. What does *Wohltemperirt* mean?

The German word *Wohltemperirt* is a slippery concept to grasp; it is certainly not a scientifically precise term, and we do not know exactly what Bach meant by it. A good translation would perhaps be "correctly tempered," rather than "well tempered"—but this is still vague. Bach's title, when taken in conjunction with the fact that there are pieces in every key, major and minor, led to the traditional assumption (so reassuring and validating to 19th-century musicians) that his primary purpose was to "popularize" the system of tuning the keyboard in "equal temperament." This method of tuning, despite being well known in the 16th century and rejected then as being ugly and unmusical, became accepted as a standard system from the later 18th century onwards and reigned supreme until recent years. It is a pity that the *wohltemperirt* aspect of this work—the rather dry, theoretical question of tuning and temperament—has for so long predominated discussion of the *WTC*, to the detriment of more essential musical matters. It is really a rather incidental, minor issue that pales by comparison with Bach's other declared priorities, discussed above.

We do not know how Bach tuned his harpsichords, and it is quite likely that his views on the matter were not static, but evolved in the 20 years between Books I and II. The one firm piece of information about his own system of tuning comes from his pupil Kirnberger (reported a generation after Bach's death). Kirnberger stated categorically that Bach wanted all the major thirds to be slightly sharp. This is a specific characteristic of equal temperament, but it is also a characteristic of several unequally tempered Baroque systems of tuning (although not, ironically, a beautiful one that now bears Kirnberger's own name and is much used today). A recent claim by Dr. Brad Lehmann to have "discovered" Bach's own "secret" mathematical formula for tuning, "hidden" in decorative squiggles found on the top of the title page of Book 1 (see the illustration on page 35), cannot be taken seriously. (It joins many other such claims to have discovered Bach's "true intentions.") It seems to me to be based on faulty premises and does not hold water intellectually. (The proposed temperament is quite a pretty one; however, I believe it to be irrelevant, unnecessary and misguided for the *WTC*.)

Too much discussion of matters of tuning and temperament obscures one of the primary benefits of Bach's encyclopedic inclusion of every tonality: he undoubtedly saw this as a way to train reluctant fingers to feel at home in unwonted corners of the keyboard. But this is only part of the story. Since he almost certainly trained his better pupils to transpose at sight their fingers would already have been trained to play in strange keys. Yet transposing at sight, while a special skill, leaves unsolved the problem of training the eyes to read notation in these difficult, highly transposed keys. For example, when modulations take the music into the exotic keys of E-sharp major, B-sharp major and G double-sharp major, these are not at all difficult for the fingers; they are just the same physically as F major, C major and G major; but for the eyes and the brain they are indeed difficult. The *WTC* brilliantly develops any player's notational versatility in this respect.

The matter of tuning should not be brushed aside, however. We shall never know precisely what Bach meant by *wohltemperirt*, but his contemporary Andreas Werckmeister did describe (in 1691) a particular method of tuning as being *wohltemperirt*. This was definitely not the same as equal temperament. One of its features—as with the majority of the principal baroque systems of elegantly and harmoniously tuning organs and harpsichords—was that each tonality sounded slightly different and therefore had a particular character.

Owing to the coincidence between Werckmeister's description and the title of Bach's work, it has recently become fashionable to counter the traditional explanation and claim that Bach intended the *WTC* to be played on a harpsichord tuned not in equal temperament but rather in Werckmeister's quite different system, or at least in some other comparable kind of *unequal* temperament that a good 18th-century tuner could have qualified as "correctly tuned," meaning all the keys were usable. It is thus argued that we cannot be certain that Bach wanted equal temperament since in the early 18th century this was not necessarily synonymous with the "well" or "correctly" tempered keyboard (*das wohltemperirte Clavier*); and the point of composing such varied pieces in all the keys was precisely to exploit the difference of sonorities and character provided by a good Baroque unequal temperament that makes all the keys usable (sometimes called a "circulating temperament"). This idea appears to be revolutionary: the use of all the keys is not, it is said, to exploit equal temperament, but exactly the opposite, to exploit an unequal temperament of the "circulating" variety, in which all keys are possible, and therefore to display the affective differences between the keys.

However, having with this seductive argument apparently dented one of the standard views about the *WTC* (that it was "composed to promote equal temperament"), I must now admit that I can't accept the argument that Bach might have composed pieces in all the keys precisely because he wished to exploit the varying tonal characteristics of an *unequal* temperament. It does not resist close scrutiny. Surviving earlier versions of a few pieces confirm that he certainly transposed several pieces from "simple" keys (those most in tune in unequal temperaments) to "difficult" ones (those less in tune).

- II/3, Prelude and Fugue in C-sharp major: both transposed from C major (up a half step).
- II/7, Fugue in E-flat major: transposed from D major (up a half step).
- II/17, Fugue in A-flat major: transposed from F major (up a minor third).

Several other pieces where there is no source evidence in the form of early versions also show distinct telltale signs (in their keyboard ranges, in little manipulations Bach made to his counterpoint at the keyboard extremities, and in chromatic ambiguities) that they were transposed, usually upwards, from tonally "normal" keys into more "difficult" keys.

- I/3, Prelude and Fugue in C-sharp major: both probably transposed from C major (up a half step).
- I/8, Prelude in E-flat minor: usually said to have been transposed from E minor (down a half step), although this idea is in conflict with the work's keyboard range, which in m. 11 reaches high c′′′, the top note of Bach's keyboard range; suggesting he transposed the piece downwards implies the original version went off the top of his keyboard.
- I/8, Fugue in D-sharp minor: almost certainly transposed from D minor (up a half step).
- I/13, Prelude in F-sharp major: probably transposed from F major (up a half step).
- I/18, Prelude and Fugue in G-sharp minor: both probably transposed from G minor (up a half step).

- I/22, Prelude and Fugue in B-flat minor: both probably transposed from A minor (up a half step).
- I/24, Prelude and Fugue in B minor: both possibly transposed from A minor (up a whole step).
- II/4, Prelude and Fugue in C-sharp minor: both possibly transposed from C minor (up a half step).
- II/8, Prelude and Fugue in D-sharp minor: both probably transposed from D minor (up a half step).
- II/13, Prelude and Fugue in F sharp major: both probably transposed from F major (up a half step).
- II/18, Prelude and Fugue in G-sharp minor: both probably transposed from G minor (up a half step).
- II/22, Prelude and Fugue in B-flat minor: both possibly transposed from A minor (up a half step).

Also, outside of the *WTC*, there is also the case of the French *Ouverture* (BWV 831) composed in C minor in about 1720; in 1735 Bach published it a half step lower, in B minor.

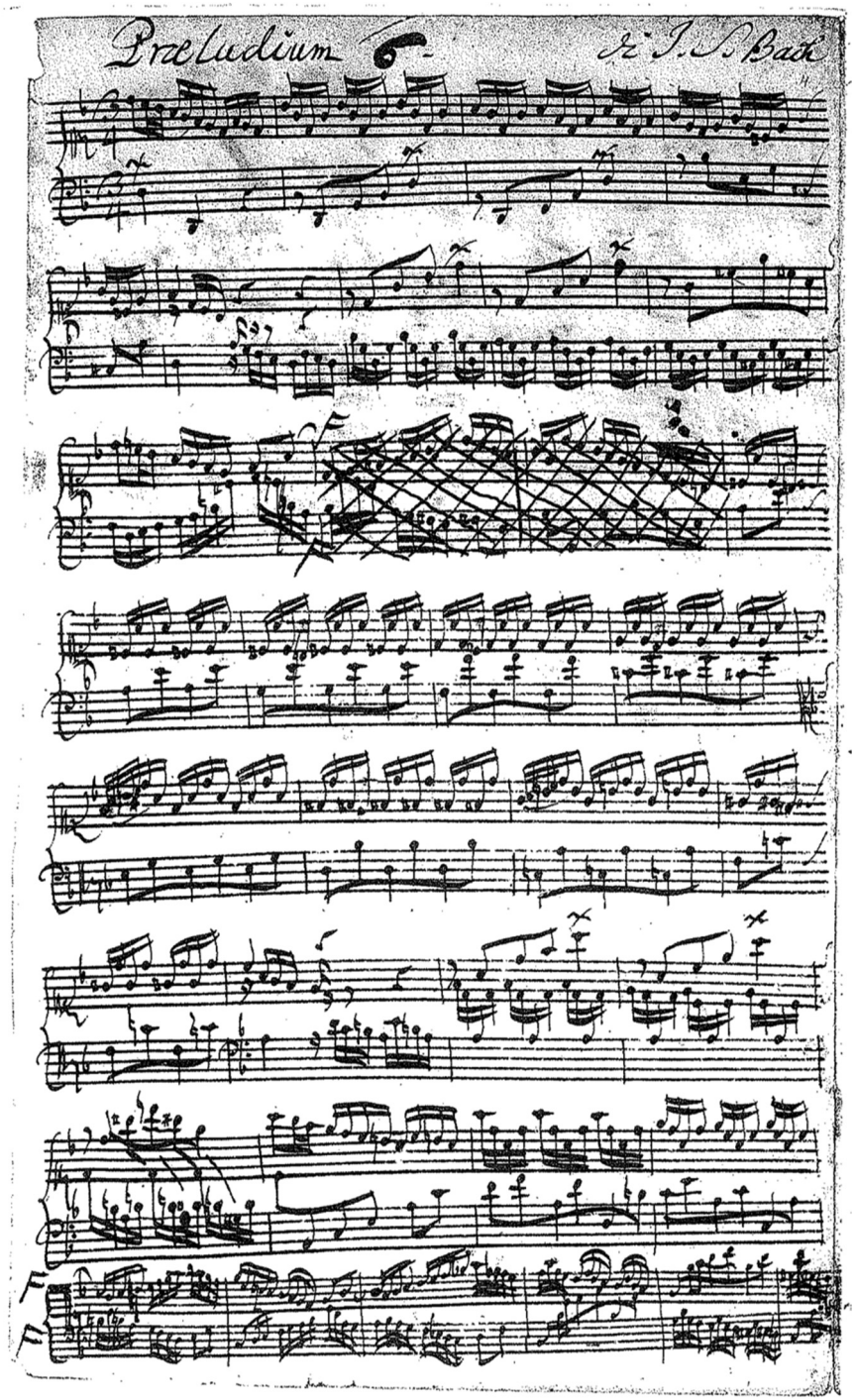
All these certain and probable transpositions argue strongly against Bach having composed with particular key characteristics in mind since the transpositions never improve the character of the music in unequal temperament; they always slightly alter, even destroy, any key character that he might have exploited in an unequal temperament. This is inconceivable. Can we imagine Bach composing in a way that beautifully exploits C minor, and then transposing the piece to B minor, thereby destroying the very thing he had exploited? Or composing for a key that sounded nicely in tune, and then transposing it to one where the music actually sounded less in tune in his temperament (as from C major to C-sharp major)? I can't believe this.

These transpositions seem, rather, to have simply resulted from external structural considerations. Bach needed works in keys he had not yet covered in order to complete his grand twofold tonal scheme incorporating all the major and minor keys, and to this end he seems to have transposed about a quarter of the pieces in the *WTC*. So while it is not certain that he compiled the *WTC* especially for equal temperament, it is not certain that he did not do so. But it is sure that his transpositions indicate that whatever *wohltemperirt* system of tuning he used, it must have been—at the least—fairly close to equal temperament. I can only conclude that whenever he "sat at one of his wonderful instruments" (to use his pupil Gerber's phrase) to play the *WTC* to his students "with his inimitable artistry," there was not much difference between the sound of C major and of C sharp major. If there was a small difference, Bach was not interested in it.

XI. What did *Clavier* mean in Bach's day?

Bach played the organ, harpsichord, clavichord and all the other keyboard instruments of his day. At the end of his life he was even the agent in Leipzig for selling early German fortepianos. The surviving evidence suggests that he loved and understood the organ and the harpsichord, that he had a particular affinity for the clavichord, but that he did not much appreciate the pianos of his day (except as a means of supplementing his meager income, by taking a commission on their sale).

If any special temperament was needed before playing the *WTC*, it was only practical to do this on a harpsichord or clavichord. Tuning church organs is expensive, cannot be done by one person, and takes a long time. Although many pieces in the *WTC* are playable on the organ and a few even suit it quite well, the instruments to which all 96 movements are most naturally and most comfortably suited are the harpsichord and the clavichord. Of these, the clavichord may well be some players' private choice for domestic pleasure among a few close friends (and was said to be Bach's own favorite source of private keyboard pleasure). But for modern concert halls the obvious practical choice is the harpsichord. A great many of the more energetic movements in the *WTC* spring to life on this instrument in a way that is impossible in a large room on a clavichord. Although *Clavier* is a generic word meaning keyboard, it was also the most common German word for the harpsichord in Bach's time. And Bach knew what he was doing when he wrote for it.



Bach's autograph manuscript for the Prelude in D minor from Book II showing his replacement of two measures by a longer, new passage at the bottom of the page A [London, British Library].

XII. …and today?

I would never maintain that modern pianists should not play Bach! They should, of course! And so should organists, singers, violinists, cellists, recorder players, guitarists, marimba players and drummers. Anyone deprived of intimate contact through their own fingers with this wonderful music is simply loosing out. Bach's stated aims of having written these pieces "for the use and profit of musical youth desirous of learning, as well as for the pastime of those already skilled in this study" is as valid today as it was 300 years ago. Anyone interested in perceiving how one particularly intelligent musical mind within the Western tradition consciously thought about what makes for "good composition" (and in the process deeply influenced generations of important composers) is bound to benefit from the closest contact with all these pieces.

I like the piano, as I have a genuine soft spot for almost any keyboard instrument. And I have too many good friends who are wonderful pianists (I have a soft spot for them, also). So nothing that follows is intended in any way as being "against the piano." Quite the contrary. It is a meditation on the questions that playing Bach on the piano raise for me, written from a position of love of the piano's inherent qualities (which are rarely present in harpsichords) and love of the harpsichord's inherent qualities (which are rarely present in pianos).

I do maintain that the harpsichord is the best medium for presenting the *WTC*. I do so for several objective reasons (and a few subjective ones). Having over the years taught many Bach masterclasses to organists, harpsichordists and pianists, I have noticed that the pianists who seem to me to communicate Bach's music most effectively are those who have understood, and appreciate, what it is that a good harpsichord can do naturally that a piano cannot do so easily. Only seeing the things that a piano can do but a harpsichord cannot (such as concentrating on the ability to do a crescendo or diminuendo, and a harpsichord's inability to do so) creates an insurmountable stumbling block to communicating this music. A harpsichord may be an inadequate piano, but the best modern piano is an inadequate harpsichord.

First, a disclaimer: it is because of this music that I became a harpsichordist. Having started when I was a teenager as a pianist (and then an organist) who wanted to play Bach, I rapidly became frustrated at what I perceived to be the piano's discomfort when I tried to do certain things with this music. Right from the start I knew that when I, for example, played Bach's organ music on the piano something was missing. Yet the notes were there, and the "music" objectively was the same. So when, at the age of 17, I turned to the harpsichord and found that my fingers instantly and easily made the music come to life, I sensed that something was going on. Why was Bach easier on the harpsichord than on the piano? What was this "ease" telling me? Instead of encountering problems when playing Bach, I found solutions. Since my approach here is a problem-solving one, let's first define some problems to solve. Anyone who does not share my questions need not share my solutions. I am not really talking about Bach, or about the piano and the harpsichord, I am, of course, talking about myself.

One good place to start thinking about this is keyboard range. Bach wrote all of *WTC* I (and most of *WTC* II) within the span of a four-octave range, from two octaves below middle C to two octaves above it. There is clear evidence that at the end of his life, while he was still reworking pieces from Book II, he may have been deliberately reducing the range of some of them to restrain them within the same four-octave span as Book I. So the slightly wider range of Book II may not be the result of its later date or of his by then having newer, more up-to-date instruments with a wider range, but may instead be an indication of his still unfinished process of revising and trimming the *WTC*.

With Bach's greatest harpsichord works I get a visceral sense of the instrument stretched to its maximum tautness, near the point of explosion. (The Goldberg Variations are on the brink of this paroxysm.) When he writes passages that go up to the top note of his harpsichord, or down to the bottom note, they sound extreme because those notes make the very edge of the instrument's soundboard vibrate. There is a musical tension that comes from the instrument itself, as well as from the changes of tone color that are audible in these extremities.

One of the most exciting effects of good instrumental music is not only the obvious fact that the instrument plays the music, but also the less obvious one that well-written music "plays the instrument," in the sense of exploiting what it does well and making it sound good. I understood as a teenager that although a piano can certainly play a lot of Bach's organ music (especially if a friend helps out by playing the pedal line), nevertheless part of the excitement is lost because Bach's organ music plays the organ extremely well, creating sounds that are uniquely "organish." The same seems true of Bach's solo violin music, where I sense that he exploits the possibilities of the violin's four strings to the extreme limit; if he asked any more of the violin, it would implode.

From this perspective, I have been asking myself for over 40 years how well his harpsichord music fits on a piano. The modern piano has a seven-octave range, comparable to the physical size of a player's arms outstretched to the utmost; it is also more or less the range of the most extreme sonorities found in the 19th-century orchestra, from the lowest contrabass note to the highest piccolo note (whereas the harpsichord's four octaves more or less mirror the range of human voices). So the piano is certainly more than equipped to play all of Bach without a problem, physically.

Yet if I turn the question round, the situation is somewhat different. Thinking of how Bach's organ music plays the organ and his violin music plays the violin, how does his keyboard music play the piano? Since the extreme notes in Bach's scores—the ones that he used for shaping the important climaxes of phrases—remain unavoidably in the middle of the piano's range, much of the tension that Bach exploits in his compositions disappears. (Many players seem not even to notice them for what they are.) The piano, a wonderful instrument for piano music, usually strikes me as somewhat frustrated in Bach's music, since it never gets to enjoy the sonorities that are so natural a characteristic of its much wider keyboard range. It is nowhere near stretched to full tautness, or full capacity. Only half the notes are used! It never gives the exciting sense of an instrument functioning at its limits, because it isn't. So I feel that Bach's music rarely allows the piano's identity to express itself deeply and fully in a way that is natural for it and to it.

Keyboard range is not the only issue. Deriving directly from it is the important question of the colors of the higher and lower registers of the keyboard. My sense here is that because the piano has a seven-octave range, and its repertoire is generally less polyphonic, the stringing and voicing tends to produce color changes that morph gradually over about two octaves, creating four main different basic colors. (Of course, the players fingers can control this infinitely; but that is an additional requirement.) A piano's lowest notes and highest notes have special qualities and colors (just as a harpsichord's do); and in the middle, the normal range for the right hand has a different sound quality from the normal range for the left hand.

Although Bach's harpsichords basically had only four octaves (his bigger ones had four and a half, due to a couple of extra notes at either extremity; but as I have mentioned, he deliberately eschewed them for the *WTC*), such instruments are not more limited in terms of the keyboard colors. The way the stringing is devised (with red brass strings in the bass, yellow brass in the tenor and iron of many different gauges above that), plus the shape of the instrument and the unique design of its soundboard, all produce as many colors over the instrument's four octaves as a piano naturally has (leaving aside what a player's fingers can do by touch) over seven. There are four essentially different sonorities within four octaves, naturally jumping out of the instrument without any help from the player's fingers. These colors comfortably fit the common language of four-part polyphonic harmony found in Bach's music. On such an instrument, in polyphony with three or four voices, each voice is provided with a slightly different color by the instrument itself; the player does not need to do this either artfully or artificially. So this aspect of the playing, distinguishing the different melodies in the musical texture, is much easier on a harpsichord; it requires more art and artifice on a piano. In other words, although the harpsichord lacks certain qualities that the piano has, the harpsichord is a more naturally polyphonic instrument.

It seems to me that a piano can certainly play the *WTC*, but that the *WTC* plays the piano less

successfully. I love the piano too much to subject it to this frustration, when the perfect instrument for projecting Bach's music is in fact to hand. If I were a pianist devoted to playing the piano because my main attraction was to my instrument, I would of course happily play Bach on the piano. But I am not; faced with a self-imposed choice between giving precedence to the instrument or the composer, I choose the composer. I define myself a Bach player, and therefore I play his music on the perfect instrument for which he wrote perfectly, an instrument that is itself exalted by his notes, coming alive with all that Bachian energy in an easy and natural way.

These considerations lead me to two conclusions: (a) the ways of making good harpsichords expressive are in complete harmony with the nature of the music written for them, but these expressive means are fundamentally different from the ways of making good pianos expressive; and (b) the magnificent possibilities offered by the modern piano, including the kind of "volume-by-touch," exist essentially in a beautiful parallel world that is largely irrelevant when playing Bach. When you think about it, triple invertible counterpoint is a particularly curious kind of musical style to try and play on the piano, an instrument whose nature is fundamentally antithetical to the procedure. To make such counterpoint sound convincing, the piano has to give up much of what makes it a piano.

XIII. On (baroque) keyboards

There are two common keyboard instruments that, by their nature, will always present simultaneously combined contrapuntal themes in full equality: the organ and the harpsichord, because the player's fingers cannot destroy or falsify the essential balance needed to present such counterpoint. Bach's keyboard counterpoint, with its constantly changing multiple combinations in every measure, grows from and depends on the fundamental nature of these two instruments.

At first, they seem to be poles apart: the organ has pipes and is a wind instrument where the notes do not decay towards silence as long as the finger is playing the note, whereas the harpsichord has strings that are plucked and do decay relatively rapidly once the finger has played the note. Nevertheless, several texts by great players of Bach's time insist that the finger technique for the two instruments is identical. Jean-Philippe Rameau leaves no room for doubt on this point: in his important and subtle text about the mechanical aspects of harpsichord technique (1724), he states, "everything I have said about [the mechanics of fingers on] the harpsichord must also be done in the same way on the organ."

This is because one of the main characteristic of both instruments is that finger pressure cannot alter the volume of the note when it is sounded. Hence organs and harpsichords will always present at equal volume any three combined themes in a passage of triple invertible counterpoint (such as is almost always at the heart of Bach's organ music as well). If played badly, this can be boring and inexpressive. When the specifically baroque techniques based on the "mechanics of fingers on the keyboard" are used, they help make the counterpoint interesting.

The key word here is "expressive." The fact that Bach chose to write so much of his highly expressive contrapuntal music for keyboard instruments that cannot "bring out notes" by playing them louder (rather than for violins and flutes, for example) implies he was not at all bothered by the absence of this feature. Since all his other music is highly expressive and emotional, I conclude that his way of playing these two objectively "less expressive" instruments must also have been highly expressive; but it can only have been so in a way that was radically different from the kind of playing which a piano's orientation makes most natural for it.

The period during which the finest contrapuntal music for keyboard was composed was the period when the harpsichord and organ were the two principal keyboard instruments, so there is a chicken and egg situation. Did harpsichords and organs develop in the way they did in the 16th and 17th centuries because the music that composers were writing was essentially polyphonic? Or did composers develop their compositional styles because the instruments they had under their fingers responded in they way they did? The answer is that both are true. The organ traces its roots back many centuries; as a sophisticated instrument with keyboards well adapted to the fingers, it dates back to at least the 15th century. That is also the time harpsichords first developed in forms recognizably comparable to the ones we know, if smaller and strung differently.

By Bach's time, these instruments had already had the benefit of a longer period of development and a gradual process of perfection that had lasted for longer than the entire history of the piano until today. In other words, whatever relation the finest modern concert grand piano has to the early pianos sold by Bach in the 1740s, that was more or less the relationship that Bach's harpsichords and organs had to the earliest known such instruments. There was nothing remotely primitive about Bach's instruments, or his way of playing them. By his time they had, for over 300 years, been developed by wonderful craftsmen for superb keyboard players; they had been improved, in order to make them perfect for playing the particular kinds of music that composers wrote. That music was essentially polyphonic and contrapuntal.

XIV. Some aesthetic questions

Finally, I would like also to comment here on a point that is often made: that Bach's uniquely clear linear counterpoint transcends any instrument and therefore can be perfectly well presented on any instrument. Of course, it can. But this argument, in my view, starts from a problematic premise.

Since the 19th century, there has been a tendency to concentrate on the intellectual structure of Bach's music and its virtues as "pure music." This is convenient because it allows people to ignore the matter of the instrument, opening the door for the assumption that if Bach's counterpoint is abstract it can be well presented by almost any instrument. There is a certain truth in this, and it is due to the nature of counterpoint itself. No matter how you dress it up, good counterpoint is virtually indestructible. But this truth is partial. Even if it can be presented by any instrument, the question of which instruments naturally present counterpoint very well remains valid. If there are some, might they not be on the inside lane on this particular track?

This aesthetic approach to Bach's counterpoint as abstract, pure music, an embodiment of intellectual musical thought, is flawed for several reasons, but it remains pervasively insidious. If Bach's counterpoint can be praised in the strictly abstract sense, then the instrument on which it is played would have no effect on its musical "meaning." This view essentially derives from medieval scholasticism, and beyond that from Plato and Aristotle. Like Plato's famous cave (in *The Republic*), where the shadows on the wall are but transient reflections of more permanent but invisible truths outside the cave, so with "pure music" the notes we actually hear are (in this view) merely transient reminders and physical evocations of a more permanent but inaudible, disembodied musical truth. Aristotle discussed these ideas in his *Metaphysics*, where he argued that form is "substantive"; over a thousand years later, and following his terminology, Thomas Aquinas (in his *Commentary* on Aristotle's *Metaphysics*) argued that the "substance" (in our context, this would be the underlying inner essence of the musical thought) was more significant than the "accidents" (in our context, the superficial qualities of the specific instrumental sounds). Interestingly, this Thomist thinking is behind the origins of our use of the word "accidental" for a sharp or a flat raising or lowering a note. An A-sharp and an A-flat are still in substance a kind of A; their chromatic alteration (by adding an accidental) is accidental in the Aristotelian sense.

Aquinas summed up the superiority of substance and thought: "Matter alone seems necessarily to be substance." Proponents of "pure music" have for a long time seen musical thought as matter. (Thomas Tomkins described his master William Byrd's works as being "good for matter," and he was not wrong.) In this same perspective, Bach's "abstract" counterpoint is seen as one of the highest manifestations of pure musical matter, and of course it is. The problem arises when we take the next step and assume that the corollary is that any instrumental realization is a mere shadow on the wall by comparison with the unattainable purity of the essential matter of musical thought. If this were so, then whether I play Bach on the harpsichord or

the piano would be irrelevant. (Curiously, I have never heard this argument invoked by pianists as a justification for playing Bach on the harpsichord; it is always invoked as a reason why the piano is better, although logically the argument should work both ways.)

The methods of formal analysis of music that once held sway in universities and conservatories (and still do in some unregenerate places) relied on similarly Thomist assumptions that formal "purity" of thought could, at its best, transcend the humdrum instrumental medium. The exclusiveness of this kind of approach to many different kinds of music—not just "classical"—was summed up with irony by the 20th-century American composer Norman Cazden: "'music lovers' who wish to partake of the exalted life of the spirit may gain a reserved entry by subjecting themselves to the study of 'music appreciation.'" (Music appreciation, more or less, has always been taught on the Berkeley campus as "Music 27," although we try not to teach it in that way!) Cazden continued: "This study is made to consist in an introduction to the approved literature of 'pure music,' a properly intoned commentary upon its sheer formal beauty, a learning of names and of an extensive jargon to be used in describing this music, and a ritual of formal 'analysis.' By dint of repetition this ritual produces in the novice a heady sense of elevation.... "

I believe (as did Cazden) that musically this is dangerous nonsense, the result of a false dichotomy. Bach's fugues are not played in a cave, but on a concert stage for real audiences.

A folksy antidote to Plato's, Aristotle's and Aquinas's theoretizing is found in Marshall McLuhan's eminently practical phrase "The medium is the message." All great instrumental music can have profound thought, at the intellectual level, while also having a inalienable connection with the specific instrument for which it was written, with its possibilities and its most intimate sonorities. In music, the instrumental medium is indeed part of the artistic message and if the instrumental medium is altered, the message is changed. Can one seriously imagine Chopin's *Nocturnes*, Brahms's *Intermezzi* or Rachmaninoff's *Preludes* on any other instrument than the piano? To reframe the idea within the Aristotelian terms, we can say that the individual character of an instrument is part of its substance, its essence.

It is unmusical to brush aside the physical sounds of a specific instrument for which a composer deliberately wrote (the Aristotelian "accidents") in favor of some sort of abstract purity of "the notes" (the "substance") and argue this supposed purity can survive any transformation or arrangement. This is a founding principle of the so-called "early music movement" and the underlying philosophical reason for playing nowadays on original instruments or modern copies of old ones. The development of the modern early music movement dates from the same time as Marshall McLuhan's famous formulation, the 1960s, so with a certain amount of perspective provided by the passing years we can now see it in the context of a larger cultural movement.

Old ideas change slowly (essentially, perhaps, because people who hold them die and younger people with new ideas come along). I am genuinely surprised how often I find myself—even in the Bay Area, a world center for harpsichord building and playing—facing a kind of polite "tolerance" from people who are genuinely convinced that the piano is obviously more "right." The philosophical trends of the 1960s have given way to the trends of the 21st century, and we adapt and adjust our perspectives and our ways of talking about things. Nowadays, I usually like to be provocative about all this when called upon yet again to defend the harpsichord; so I defend it as a minority instrument, through the lens of modern discourses over minority rights, identity politics, race, feminism and LGBT identities. If we view the piano and the harpsichord as being two instruments of different orientations, the issues take on a rather different light (especially when viewed through the lens of tolerance and prejudice). Why should each one want to behave like the other? It doesn't work and denies the inner nature of each instrument. In this perspective, harpsichords (and those who love them) have had to come out, and no longer need to pretend they are something else.

Such terminology smoothly brings me back to jargon, especially fugal and contrapuntal jargon. When trying to approach the *WTC*, players and listeners alike are often confounded by a plethora of jargon: "subject," "countersubject," "exposition," "episode," "stretto," "inversion," "temperament," "invertible counterpoint" (triple by preference), "diminution" and "augmentation," not forgetting "*wohltemperirt*" and "*Clavier*." But does all this jargon explain why the music is beautiful? Despite Plato's claim that "Beauty is Form made visible," literature, sculpture, painting, music, theater, photography and cinema are always beautiful not so much because of *what* is happening but largely because of *how* it is happening. In the case of a Bach fugue, with its exposition and its use of stretto and inversion, etc., an inferior composer could easily make the identical things happen in much less exciting and expressive ways.

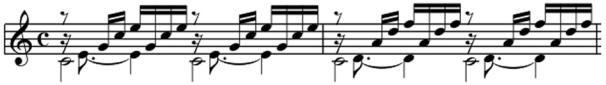
And yet a fuller understanding of *what* is happening is useful; the medieval scholastics, with their Latin derived from Cicero, would have termed it the *quid*. It is a prerequisite for understanding the *how* (which they would have called the *quomodo*), and is not negligible. So perhaps the jargon helps a little, as long as we recognize that it serves the dangerous double purposes of both excluding and including: it unjustly excludes those who have never had the chance to learn that these terms as used by musicians are just short-cuts, handy words for simple concepts that help the ear listen; and it unwisely includes those who have made the small effort required to understand, by granting them an existential sense of belonging to a confraternity. "I augment in stretto, therefore I am."

Notes on Individual Pieces

BOOK I

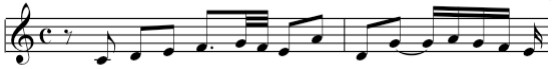
I/1: C major, BWV 846

Prelude: the notation implies *tempo ordinario*.



This prelude is composed in five harmonic voices, disguised and spread out unassumingly in arpeggiated figures. An earlier version exists, shorter and in simplified notation, in the notebook of Bach's son, Wilhelm Friedemann Bach (1720).

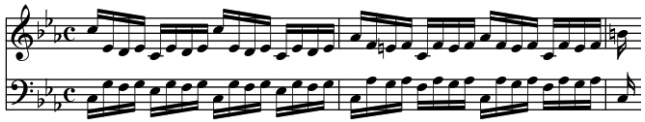
Fugue: a stretto fugue in four voices, based on one principal theme.



It is implicitly in *tempo ordinario*.

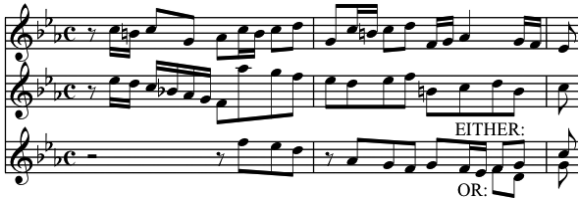
I/2: C minor, BWV 847

Prelude: composed in two parts, like a two-part Invention, but conceived in six harmonic parts, giving this piece an even richer sonority than the first prelude.

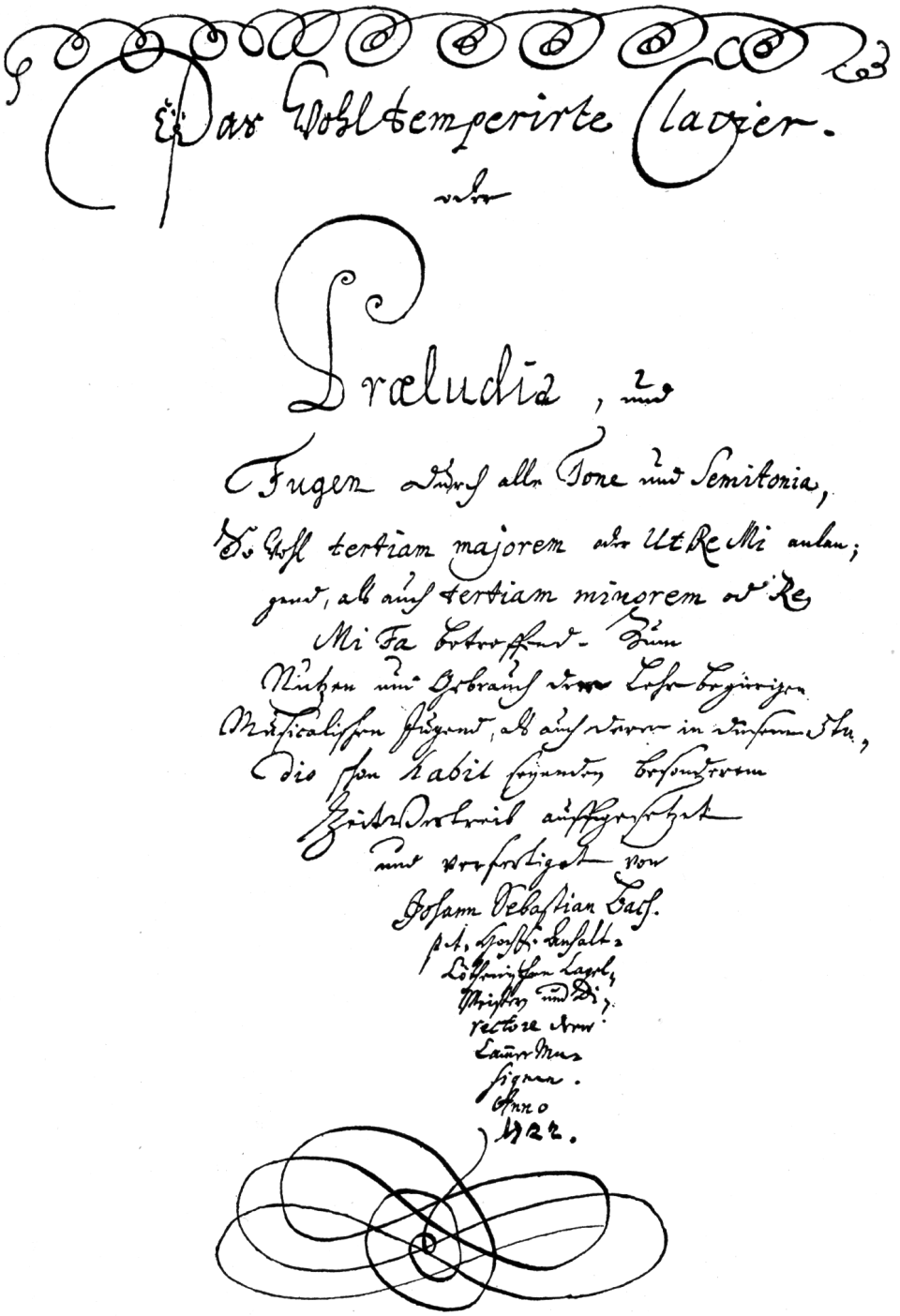


As with the first prelude, the figuration for each harmony is given twice. The tempo markings *Presto/Adagio/Allegro* found towards the end are unusual. An earlier version exists in the notebook of W. F. Bach.

Fugue: in three voices, based on three principal themes treated in triple invertible counterpoint.



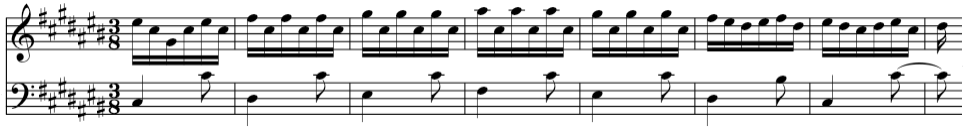
This fugue is in canzona style.



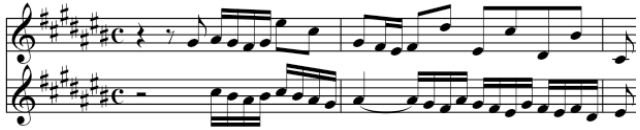
Title page of Bach's autograph manuscript for Book I (1722).

I/3: C-sharp major, BWV 848

Prelude: Essentially in two voices, like a two-part Invention, but written in a bravura style. This prelude is based on two ideas presented together from the start that are then treated in double invertible counterpoint:



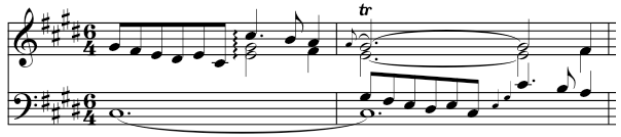
Fugue: in three voices, based on two principal themes treated in double invertible counterpoint.



Since there is always a third voice providing new free counterpoints, a capricious sense of variety is predominant throughout. This capriccio-style fugue was probably transposed by Bach from C major (up a half step) for inclusion in the *WTC*.

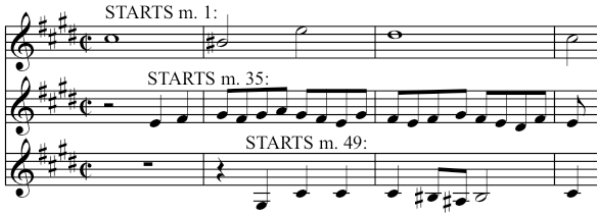
I/4: C-sharp minor, BWV 849

Prelude: a meditative dialogue between the two hands.



An earlier version exists in the notebook of W. F. Bach.

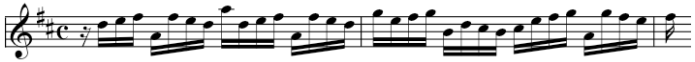
Fugue: one of only two fugues in the *WTC* that is in five voices (the other is I/22). It is based on three principal themes introduced separately, in measures 1, 35 and 49; triple invertible counterpoint (often with two free parts) is used throughout, based on this combination:



This fugue is implicitly in *tempo ordinario* (but in *allabreve* notation), and is written in ricercar style.

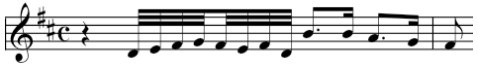
I/5: D major, BWV 850

Prelude:



There are two voices, yet it is hardly a two-part Invention since it does not use double invertible counterpoint: the right hand remains true to its material throughout, with the left hand providing only the simplest of light accompaniments (until the end, when it breaks free with a vengeance). Stylistically, it is more like a solo flute movement with a simple bass line, and this relationship (along with its *tempo ordinario* character) should guard against the unjustified tendency to play it too fast. An earlier version exists in the notebook of W. F. Bach.

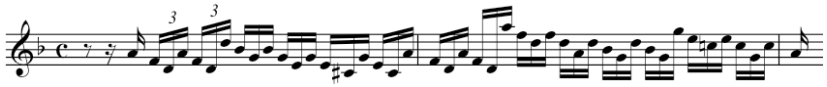
Fugue: in four voices, based entirely on one principal theme.



This fugue is implicitly in *tempo ordinario* and is written in capriccio style. (The theme unceremoniously disappears half way through the piece, at measure 15, never to return!)

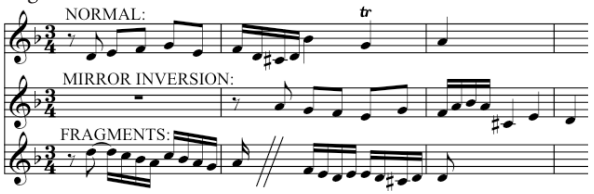
I/6: D minor, BWV 851

Prelude:



Like the previous prelude, this is essentially in two voices, but is hardly an Invention, since it is not in double invertible counterpoint: each hand remains faithful to its own music. If the previous prelude was more flute-like, this one is more violin-like, with a fairly simple bass line, and that is a good guide for its *tempo ordinario* character. An earlier version exists in the notebook of W. F. Bach.

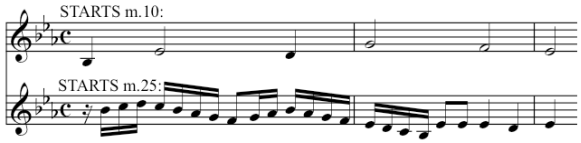
Fugue: in three voices, based on one principal theme and its mirror inversion, plus two important melodic fragments.



It is written in canzona style.

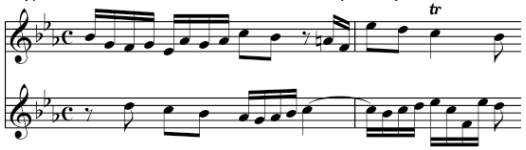
I/7: E-flat major, BWV 852

Prelude: in four voices. This in effect starts with a short improvisatory prelude before leading into a strict double fugue based on two principal themes.



They are introduced separately, in measures 10 and 25, and are treated in double invertible counterpoint throughout, often with two free parts. This fugue is implicitly in *tempo ordinario*.

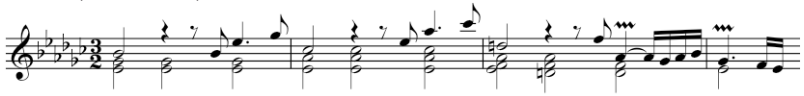
Fugue: in three voices, based on two principal themes treated in double invertible counterpoint.



This is a fugue in a particularly playful capriccio style.

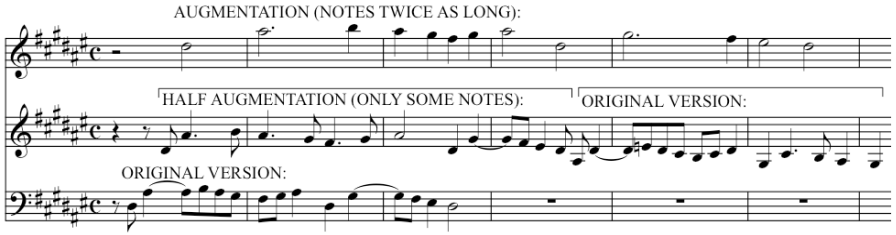
I/8: E-flat minor and D-sharp minor, BWV 853

Prelude (E-flat minor):



An earlier version exists in the notebook of W. F. Bach. This piece is sometimes said by commentators to relate to sarabande style, but it isn't really a sarabande. And if it is to be played in *tempo di sarabanda*, it would have to be the tempo of the slow French *sarabande grave*. Due to the unusually elaborate indications of rolled or arpeggiated chords, I feel its kinship with some other works with elaborately indicated arpeggio figures, such as those in the harpsichord works of Geminiani, and above all the three well known pieces in this style in Forqueray's harpsichord book: the two sarabandes *La D'Aubonne* and *La Léon*, and *La Sylva*.

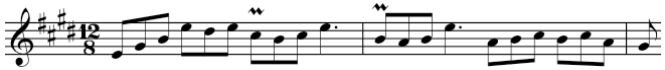
Fugue (D-sharp minor): it was probably transposed by Bach from D minor (up a half step) for inclusion in the *WTC*. This is a stretto fugue in three voices based on three different rhythmic versions of one theme.



It is implicitly in *tempo ordinario* (in *allabreve* notation), and is written in ricercar style. The theme is also treated extensively in mirror inversion.

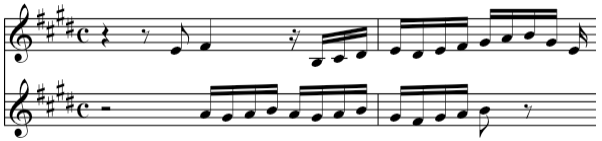
I/9: E major, BWV 854

Prelude:



An earlier version exists in the notebook of W. F. Bach. Although it looks rather like a gigue, its unusually strong *cantabile* style suggest it should be slower.

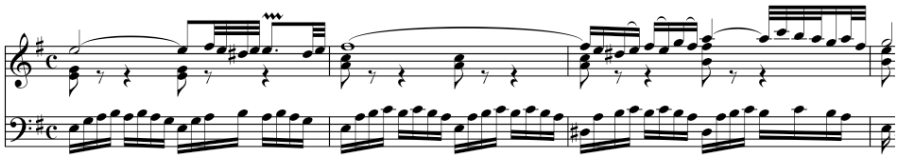
Fugue: in three voices, based on two principal themes treated in double invertible counterpoint.



This fugue, implicitly in *tempo ordinario*, is written in capriccio style. The two opening notes are a joke, being left stranded on their own. (He takes this joke one step further in fugue I/19, reducing the gesture to a single note left high and dry.) Much of the episodic material—not the main thematic statements—is in triple invertible counterpoint (again underlining why concentrating only on thematic statements can be misleading in Bach fugues). This material involves three different versions of the amusing opening pair of notes, one running along chattily in 16th notes (ascending and descending, derived from the second part of the theme and the secondary theme), one in sprightly eighth notes (also rising and descending, derived from the opening pair of notes), and one in languishing tied quarter notes that hang in suspensions (descending only). The fugue is all about adjacent pairs of notes.

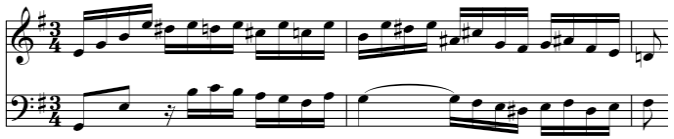
I/10: E minor, BWV 855

Prelude:



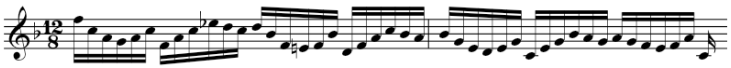
This is in two sections, neither of which is repeated. The first is written as a keyboard version of an orchestral *Sinfonia*; it evokes a string orchestra, with a slow bass (two notes per measure), a solo cello line (in 16th notes), pizzicato chords from the upper strings, and an oboe solo singing on top of it all. An earlier and shorter version (without the fast second section) exists in the notebook of W. F. Bach, but curiously without any trace of the solo ("oboe") melody on top (just bass and the left-hand solo); as such it looks like a boring figured bass exercise. The idea and structure was all there, but the stroke of genius was lacking.

Fugue: this is the only fugue in the *WTC* in two voices. It is based on two principal themes treated in the strictest of double invertible counterpoint.



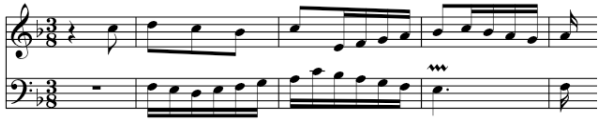
The whole second half (measures 20–38) is essentially the first half (measure 1–18) inverted: the right hand becomes the left hand; the left hand becomes the right hand. The stylistic reference is borrowed from Vivaldi's concerto allegros so this capricious fugue is closely related to fast Italian string works.

I/11: F major, BWV 856
Prelude: stylistically, this is a two-part Invention, with material passing back and forth between the two hands.



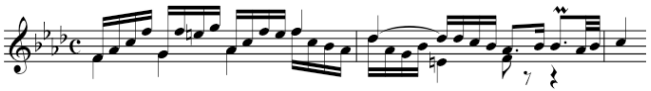
An earlier version exists in the notebook of W. F. Bach.

Fugue: in three voices, based on three principal themes treated in double invertible counterpoint.



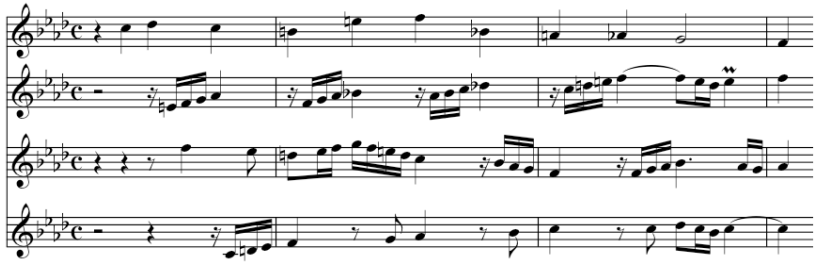
Rhythmically, the piece relates to the passepied.

I/12: F minor, BWV 857
Prelude: implicitly in *tempo ordinario*.



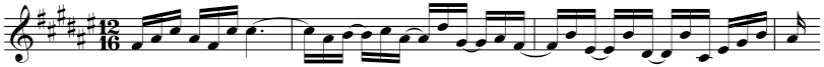
An earlier version exists in the notebook of W. F. Bach.

Fugue: in four voices, based on four principal themes, treated in sporadic quadruple invertible counterpoint:



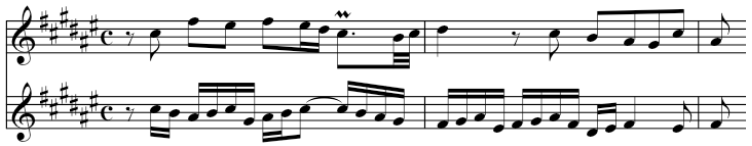
This wonderful fugue is in ricercar style and implicitly in *tempo ordinario*. Its complexity and solemnity seem to be designed to mark the halfway point in Book I.

I/13: F-sharp major, BWV 858
Prelude:



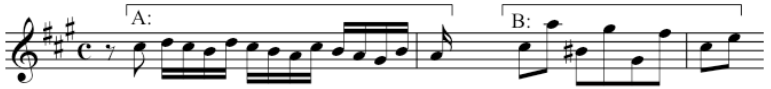
Stylistically, although this prelude is in two parts it is not quite an Invention, since the material does not systematically exchange parts very much. It was probably transposed by Bach from F major (up a half step) for inclusion in the *WTC*.

Fugue: in three voices, based on two principal themes.



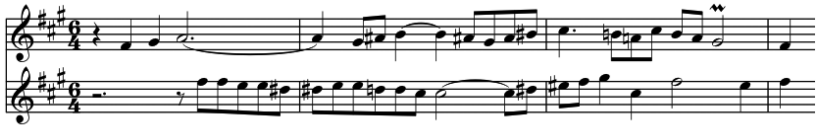
This capriccio-style fugue is missing from Bach's autograph manuscript.

I/14: F-sharp minor, BWV 859
Prelude: this uses double invertible counterpoint based on the combination of two ideas.

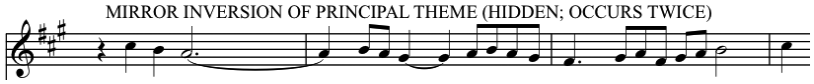


It is implicitly in *tempo ordinario*. Largely written as a two-part Invention, with liberties. The opening is missing in Bach's autograph manuscript.

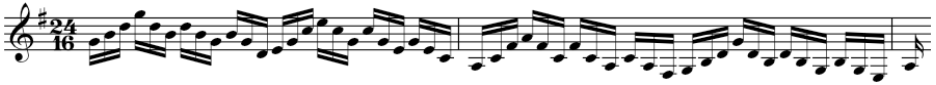
Fugue: in four voices, written in ricercar style and based on two principal themes:



Hidden in the middle and near the end are statments of the first theme upside down:

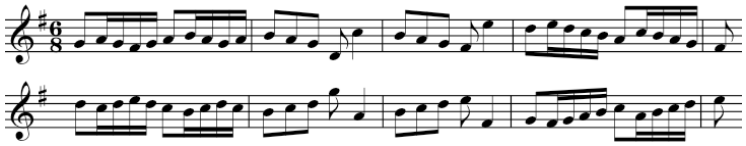


I/15: G major, BWV 860
Prelude:



Stylistically, this prelude is a brief toccata-like whirlwind. Nevertheless, it is written in two-part Invention style; the left hand at the start clearly suggests that *tempo ordinario* controls the pulse.

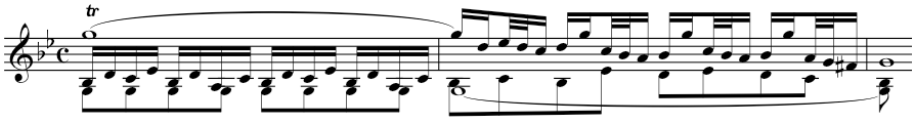
Fugue: in three voices, based on one principal theme and its melodic inversion.



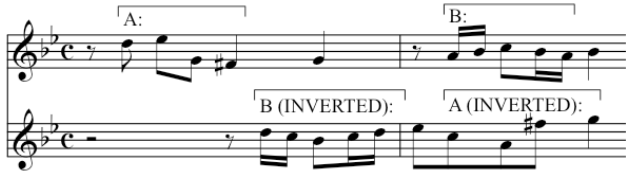
Stylistically, it is written in capriccio style.

I/16: G minor, BWV 861

Prelude: implicitly in *tempo ordinario*.

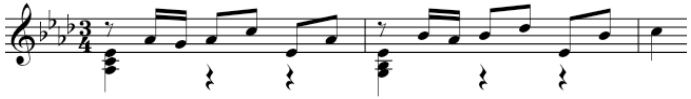


Fugue: in four voices, based on two principal themes. (The second one presents the two units of the first theme, but in reverse order and in inversion; Bach must have been pleased when he wrote that....)

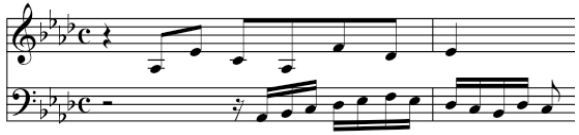


I/17: A-flat major, BWV 862

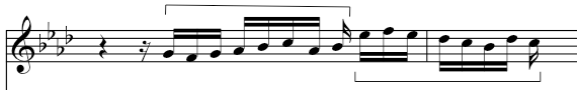
Prelude:



Fugue: in four voices, based on two principal themes.



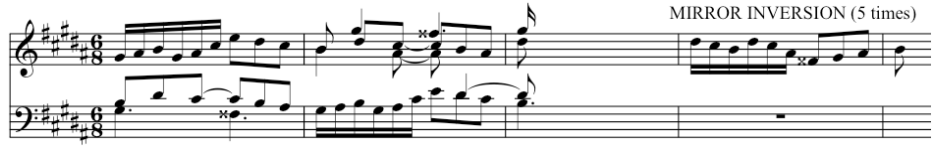
The secondary theme provides a melodic fragment that is used extensively both upside down and in the regular way.



Following the magnificent meanderings of these 16th notes is more enjoyable than just listening to the statements of the principal theme (although Bach does give a surprising twist to the main theme in two statements in measures 23 and 24). This ricercar-style fugue is implicitly in *tempo ordinario*.

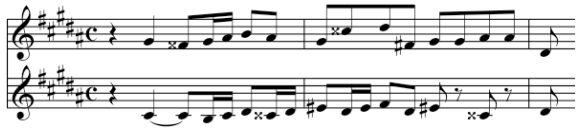
I/18: G-sharp minor, BWV 863

Prelude: written as a three-part Invention, in which all the melodic material occurs in normal form and in mirror inversion, and migrates through all the voices.



This prelude was probably transposed by Bach from G minor (up a half step) for inclusion in the *WTC*.

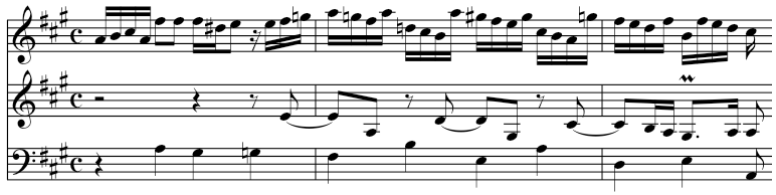
Fugue: in four voices, based on two principal themes.



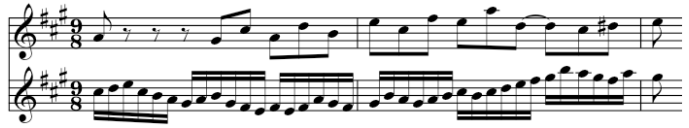
This fugue is in ricercar style and implicitly in *tempo ordinario*. It was probably transposed by Bach from G minor (up a half step) for inclusion in the *WTC*.

I/19: A major, BWV 864

Prelude: in effect a fugue or three-part Invention, based on three themes, treated in triple invertible counterpoint. (Only four of the six possible combinations are used!)



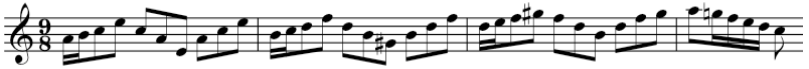
Fugue: a double fugue in three voices, based on two principal themes that are introduced separately in different sections.



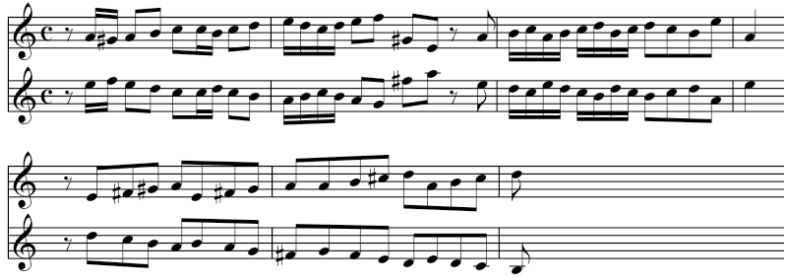
Here is another joke subject, with its first note that sounds surprised to be all alone. (See above, fugue I/9.) But since this is a double fugue, the jerky, rhythmically regular eighth notes of the first theme later become submerged under the rentless waves of smoothly flowing 16th notes of the second theme.

I/20: A minor, BWV 865

Prelude:



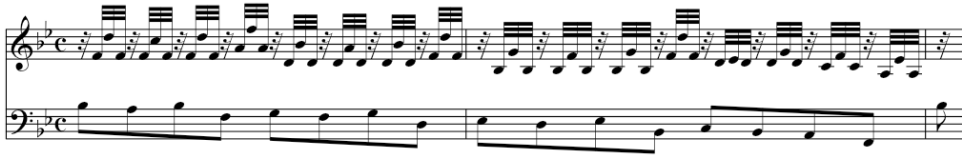
Fugue: in four voices, based on two principal themes and their melodic inversions.



These grind away against each other in a gritty, dissonant way, creating the effect of inexorable forward motion. This grand fugue in ricercar style is implicitly in *tempo ordinario*. It has had something of a bad press for being so long and so exhaustive (as well as exhausting); but I like it and feel it has tremendous force.

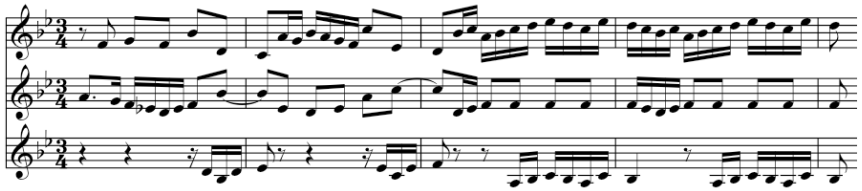
I/21: B-flat major, BWV 866

Prelude:



Stylistically this is a toccata in the "fantastic style"; the brilliant finger work is interrupt by a sudden change of style (indicated by the tempo marking *Adagio*, whose authenticity is now not accepted).

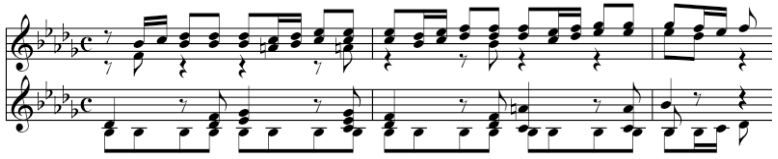
Fugue: in three voices, based on three principal themes treated in triple invertible counterpoint.



It is in capriccio style.

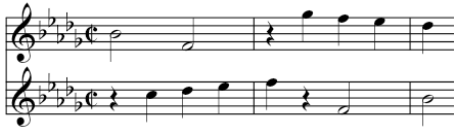
I/22: B-flat minor, BWV 867

Prelude:



This prelude was possibly transposed by Bach from A minor (up a half step) for inclusion in the *WTC*. This appears to be a meditative piece, but the chords (including up to nine parts in measure 22) suggests he might have intended it to be a more forceful work. Its stylistic reference is to the harpsichord preludes composed by Johann Caspar Ferdinand Fischer.

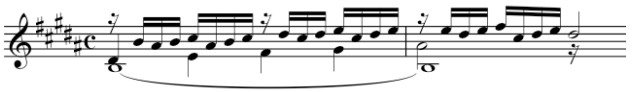
Fugue: one of only two fugues in the *WTC* in five voices (the other is I/4). It is based on two principal themes, the second of which is essentially the first in retrograde:



This fugue in ricercar style is implicitly in *tempo ordinario* (in *allabreve* notation). It was possibly transposed by Bach from A minor (up a half step) for inclusion in the *WTC*.

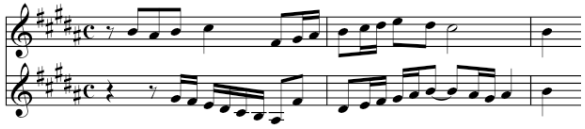
I/23: B major, BWV 868

Prelude:

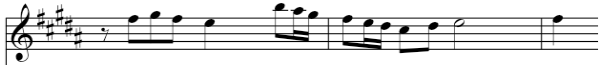


This is implicitly in *tempo ordinario*. The prelude is in three strict parts throughout, until the closing measures, when a fourth part is added (and finally a fifth and sixth at the very end).

Fugue: in four voices, based on two principal themes:



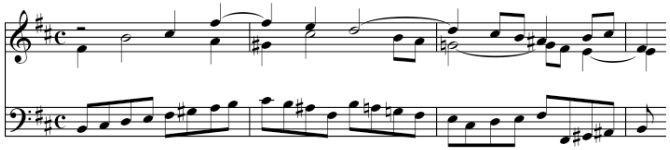
Note: two beautiful appearances of the theme in melodic mirror inversion:



This gentle *cantabile* fugue in ricercar style is implicitly in *tempo ordinario*.

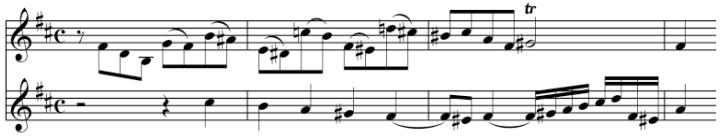
I/24: B minor, BWV 869

Prelude:



Stylistically, this is a Corellian trio sonata. Bach marked it *Andante*, probably to stop performers from playing too slowly in this movement where *tempo ordinario* in **C** time would normally imply a slower tempo. This prelude was possibly transposed by Bach from A minor (up a whole step) for inclusion in the *WTC*.

Fugue: in four voices, based on two principal themes.

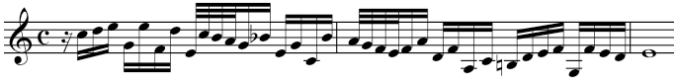


There are also several other important melodic fragments. All these themes are treated in mostly double and triple invertible counterpoint. Bach gave this fugue one of his rare tempo indications, *Largo*, no doubt partly to stop the player from trying to play the eighth notes at the same speed as the eighth notes of the prelude. So *Andante* in the prelude and *Largo* in the fugue need to be seen in relation to each other. It was possibly transposed by Bach from A minor (up a whole step) for inclusion in the *WTC*. The highly chromatic subject (as has often been noted) contains all 12 notes of the chromatic scale, making it a highly apt closing work to the first volume of the *WTC*. It is certainly is one of Bach's most extraordinary compositions, even greater than the sublime F minor fugue (I/12) that closed the first half of the book.

BOOK II

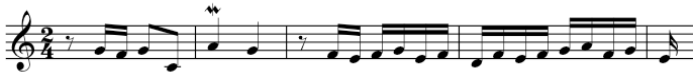
II/1: C major, BWV 870

Prelude:



Stylistically this is a toccata, and implicitly in *tempo ordinario*. Thematically it is musically related Bach's so-called "little" organ prelude in C major BWV 545, in which Bach shows wonderfully what you can do with the same ideas if you can also use your feet on the pedals. But the organ work is much earlier, originally dating from Bach's Muhlhausen years; it was probably composed before 1708 and then revised in Weimar between 1712 and 1717. He took a lot of trouble over revising the harpsichord version for the *WTC*, as the extensive corrections on the autograph manuscript show. (See the illustration on page 14.)

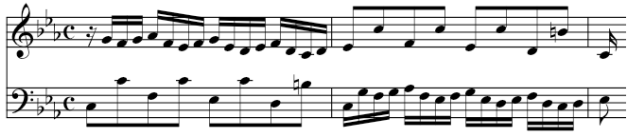
Fugue: in three voices, based on one principal theme.



It is a fugue in capriccio style.

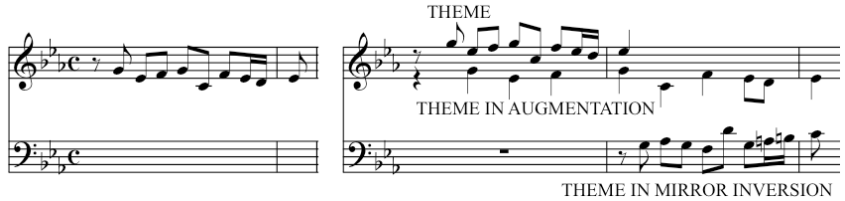
II/2: C minor, BWV 871

Prelude: essentially a two-part Invention, using double invertible counterpoint throughout.



It is in two sections, each of which is repeated.

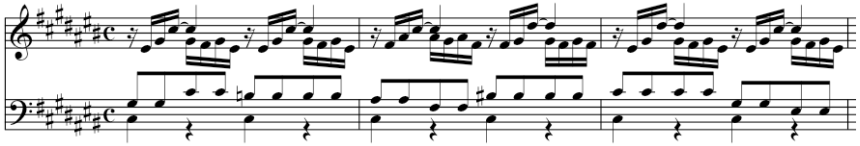
Fugue: starts in three voices, but expands to four voices in second half.



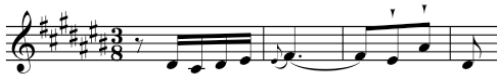
Uses stretto by augmentation, with inversions of theme. It is implicitly in *tempo ordinario* and is composed in ricercar style.

II/3: C-sharp major, BWV 872

Prelude:

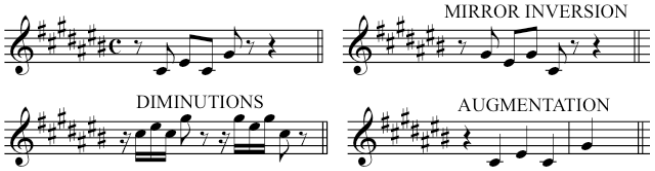


This is in effect a meditative prelude conceived implicitly in five harmonic parts spread out in arpeggiated figures, and thus has a kinship with preludes I/1 and I/2 (and perhaps I/6); it is in *tempo ordinario*. The second part of the prelude is a short integrated fughetta, a little capriccio-style fugue, marked *Allegro* by Bach.



This prelude was transposed by Bach from C major (up a half step) for inclusion in the *WTC*.

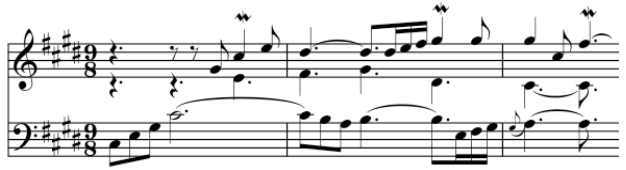
Fugue: in three voices, based on one principal theme presented in three forms: normal, diminution and (twice) augmentation, with the theme omnipresent in its mirror inversion.



Every measure is filled with some version of the theme, treated in stretto in double and triple invertible counterpoint. It is implicitly in *tempo ordinario*. The joke here is that it is a capriccio fugue, but using the techniques of ricercar fugues, and that the subject is a joke, being just a chord. The work was transposed by Bach from C major (up a half step) for inclusion in the *WTC*.

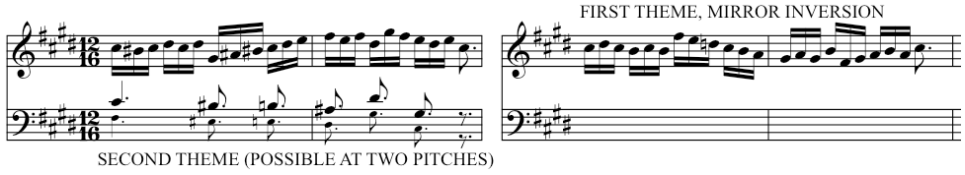
II/4: C-sharp minor, BWV 873

Prelude:



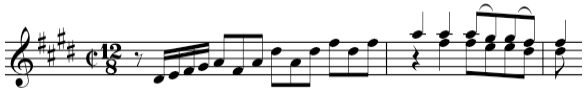
Stylistically this is a trio sonata movement, but considerably removed from the Corellian one heard in prelude I/24. This is the Bach of the finest duets in the great cantatas and Passions, and the slow movements from his trio sonatas for organ, composed about the same time; and that is presumably the main stylistic reference. This movement was possibly transposed by Bach from C minor (up a half step) for inclusion in the *WTC*.

Fugue: in four voices, based on two principal themes (the second of which can occur at two possible pitches; this is double invertible counterpoint at the interval of the 12th). The theme is also treated in its mirror inversion.



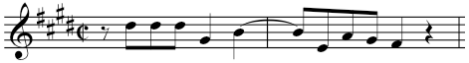
Stylistically, this relates to gigues (and includes some of the most salient technical features associated with German gigues since Froberger, such as the use of the melodic mirror inversion in the second half), so is to be understood as *tempo di giga*. It was possibly transposed by Bach from C minor (up a half step) for inclusion in the *WTC*.

II/5: D major, BWV 874
Prelude:



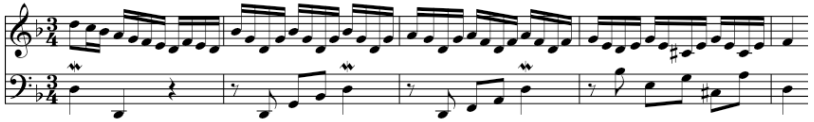
Stylistically, this movement is a large-scale keyboard evocation of an orchestral *Sinfonia* (with trumpets and drums!). It is in two sections, each of which is repeated.

Fugue: in three voices, based on one principal theme.



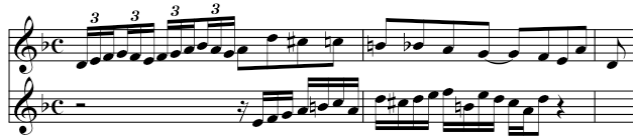
An exceptionally tightly organized stretto fugue, in canzona style. It is implicitly in *tempo ordinario* (in *allabreve* notation).

II/6: D minor, BWV 875
Prelude: a toccata-like two-part Invention, using double invertible counterpoint based on these two ideas:



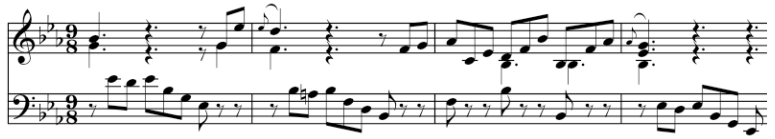
It is astonishing how full the harmony sounds; it comes as a shock at the end to remember that at any time there were only ever two notes sounding, at most! This is probably one of the earlier pieces in *WTC*/II.

Fugue: in three voices, based on two principal themes, treated in double invertible counterpoint.



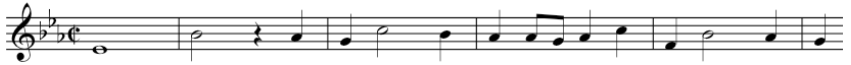
This wayward fugue is capricious in many ways.

II/7: E-flat major, BWV 876
Prelude:



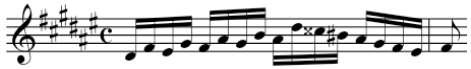
An improvisatory prelude, akin to lute pieces (and not dissimilar to Bach's prelude in the *Prelude, Fugue and Allegro,* BWV 998, also composed in E flat major, which was written for "lute or harpsichord"; it may have been written for one of Bach's *Lautenwerk* harpsichords, which had gut strings. In any event, it is an evocation of baroque lute style.

Fugue: in four voices, based on one principal theme, and with extensive stretto treatment.



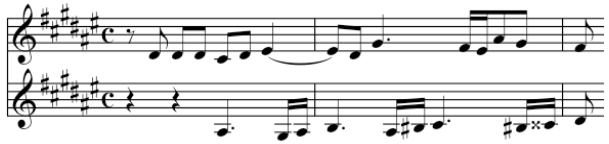
It is implicitly in *tempo ordinario* (in *allabreve* notation), and is composed in ricercar style. It was transposed by Bach from D major (up a half step) for inclusion in the *WTC*.

II/8: D-sharp minor, BWV 877
Prelude:



In effect a two-part Invention and stylistically in allemande style; implicitly in *tempo ordinario*. It is in two sections, each of which is repeated. It was probably transposed by Bach from D minor (up a half step) for inclusion in the *WTC*.

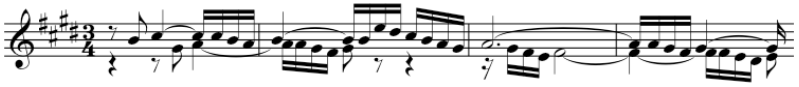
Fugue: in four voices, based on two principal themes, treated in double invertible counterpoint.



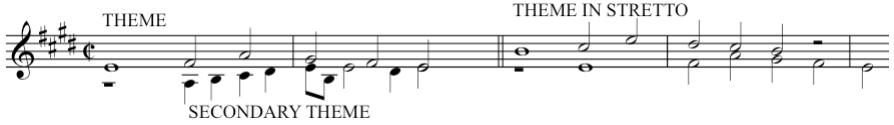
(In the last few measures, the theme also appears in mirror inversion, hidden in the middle of the texture.) It is implicitly in *tempo ordinario*. It is composed in ricercar style, and was probably transposed by Bach from D minor (up a half step) for inclusion in the *WTC*.

II/9: E major, BWV 878

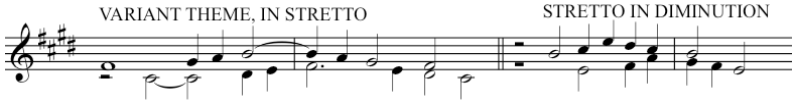
Prelude: stylistically, a trio in two sections, each of which is repeated.



Fugue: in four voices, based on two principal themes, the second of which disappears for much of the work, during which stretto treatment takes over and in effect pushes it out of the way.



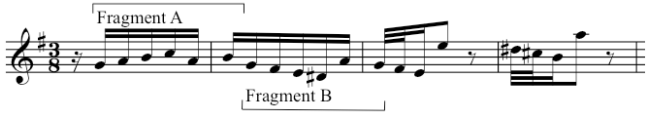
Note the following:



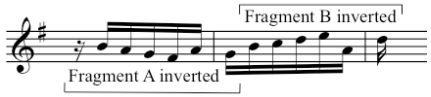
The theme returns along with the main theme in diminution (also treated in stretto). The whole piece uses double and triple invertible counterpoint. It is implicitly in *tempo ordinario* (in *allabreve* notation) and is written in ricercar style.

II/10: E minor, BWV 879

Prelude: in effect an unusually extended two-part Invention, in double invertible counterpoint. The theme starts with a fragment (A) that immediately become inverted (fragment B).

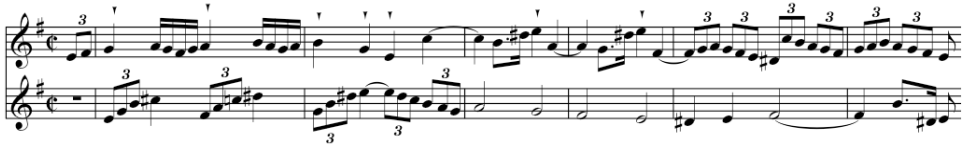


In the second part much of the melodic material is treated in mirror inversion.



It is in two sections, each of which is repeated.

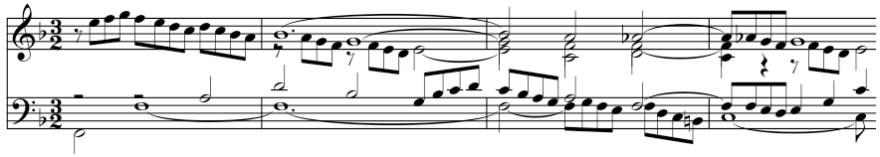
Fugue: in three voices, based on two principal themes that are of unusual length.



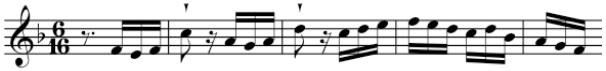
It is implicitly in *tempo ordinario* (in *allabreve* notation) and stylistically is a capriccio fugue.

II/11: F major, BWV 880

Prelude: A expansive wash of five-part fantasia-like harmony.



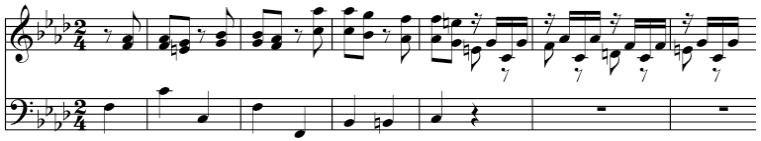
Fugue: in three voices, based on one principal theme.



Although in strict three-part writing, Bach playfully lets the material wander until it seems to be quite at sea; he throws in some surprisingly violent and briefly stormy chords near the end, before virtuoso right-hand flourishes steer the whole fugal enterprise safely into port.

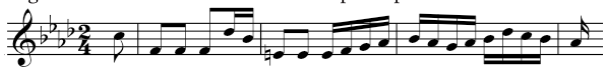
II/12: F minor, BWV 881

Prelude:



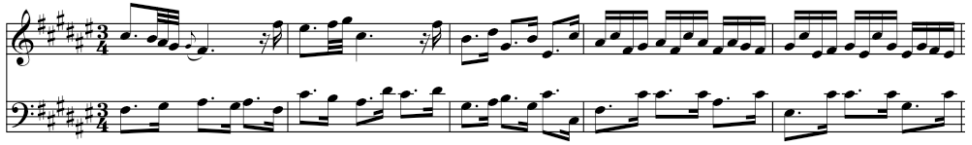
This prelude is in two sections, each of which is repeated.

Fugue: in three voices, based on one principal theme.



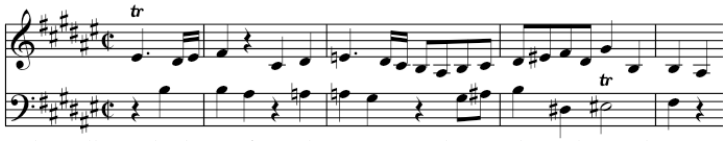
II/13: F-sharp major, BWV 882

Prelude:



Stylistically, this is an expansive keyboard evocation of an orchestral *Sinfonia* for strings, despite being written in what looks like a two-part Invention style. It was probably transposed by Bach from F major (up a half step) for inclusion in the *WTC*.

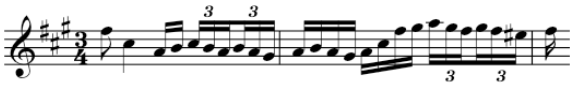
Fugue: in three voices, based on two principal themes.



Stylistically, its rhythms refer to the gavotte, so this is to be understood as *tempo di gavotta*. It is implicitly in *tempo ordinario* (in *allabreve* notation), and written in canzona style. It was probably transposed by Bach from F major (up a half step) for inclusion in the *WTC*.

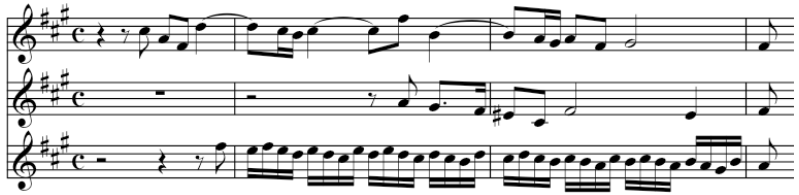
II/14: F-sharp minor, BWV 883

Prelude:



A freewheeling prose discourse in exceptionally long paragraphs, held together by a striking harmonic structure.

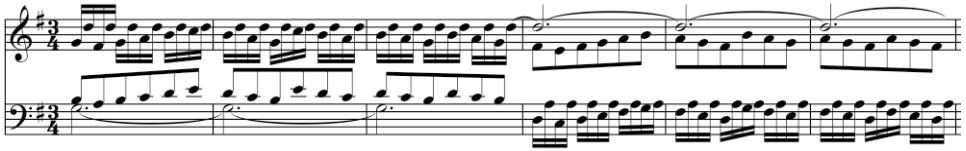
Fugue: in three voices, based on three principal themes; they only appear progressively throughout the piece in this triple fugue.



These are treated in triple invertible counterpoint, with the combination of all three themes arriving at the end. It is implicitly in *tempo ordinario*, and written in ricercar style.

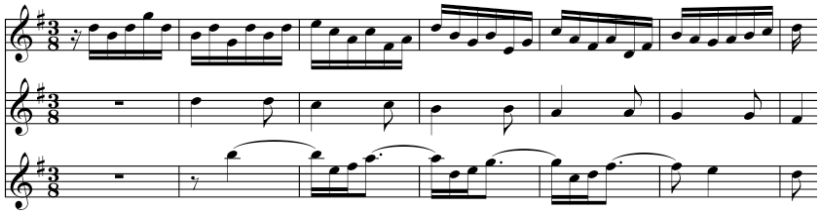
II/15: G major, BWV 884

Prelude:



Stylistically this prelude is a brilliant toccata, but treating its two main ideas in double invertible counterpoint. Much of the work is written in a style related to the two-part Inventions. It is in two sections, each of which is repeated.

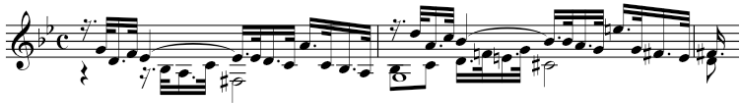
Fugue: in three voices based on three principal themes, treated in triple invertible counterpoint.



A piece in capriccio style. It is one of the least singable of Bach fugal themes, but is similar in style to themes he gives to the violin; it nevertheless falls beautifully under the fingers—which are finally let loose and get the better of the themes at the end.

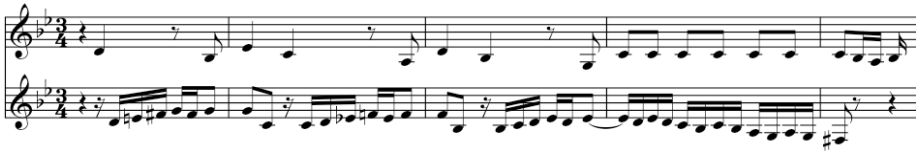
II/16: G minor, BWV 885

Prelude:

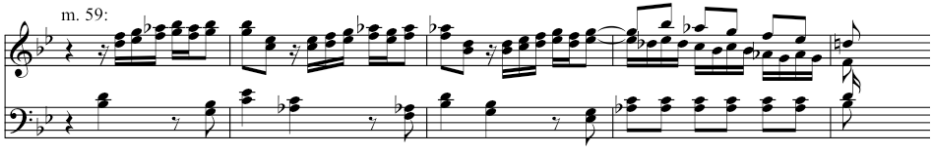


Stylistically this prelude relates to the French *Allemande grave* and is marked by Bach *Largo*, but is not actually an allemande. (The dotted rhythms may therefore simply be a reference to French *notes inégales*.)

Fugue: in four voices based on two principal themes; treated in double invertible counterpoint.

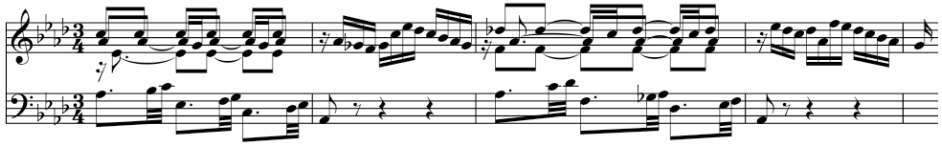


Both themes can be doubled at the third, creating an extremely rare (and wonderful) example of double invertible counterpoint at the octave (the original relationship, now between Alto and Tenor), the tenth (between Soprano and Tenor; and between Alto and Bass) and at the 12th (between Soprano and Bass, creating new dissonances). The combinations are developed progressively and the full combination, with all its harmonic richness, arrives near the end.



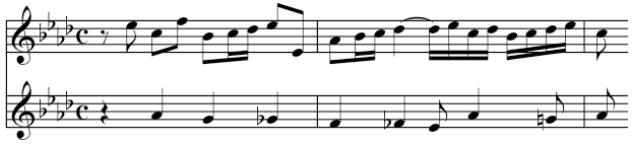
II/17: A-flat major, BWV 886

Prelude:



Stylistically, this is another keyboard evocation of an orchestral *Sinfonia*, despite being mostly written in two parts. As with prelude II/5, if we close our eyes we can almost hear the trumpets playing with the orchestra.

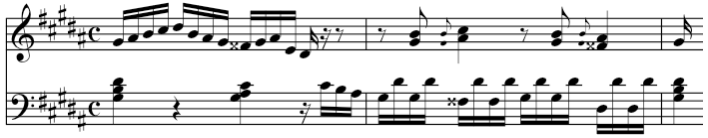
Fugue: in four voices based on two principal themes.



These themes are heard, along with extra recurrent melodic fragments. This is a capriccio fugue, and implicitly in *tempo ordinario*. It was transposed by Bach from F major (up a minor third) for inclusion in the *WTC*, and was also doubled in length. The original is in three voices, closing in four; the longer version considerably expands the passage in four voices, and closes in five and even six parts. Near the end, it includes a rare but particularly satisfying example of a fugal entry *per arsin et thesin* (where the theme is displaced across the beats, so that weak beats become strong, and strong beats become weak). It sounds as if the theme has come in in the wrong place, and is presumably a deliberate joke.

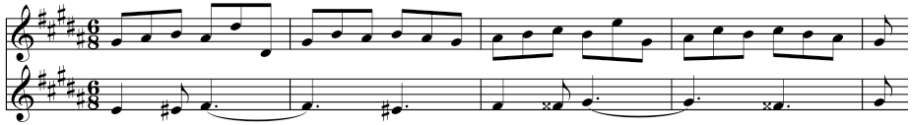
II/18: G-sharp minor, BWV 887

Prelude:

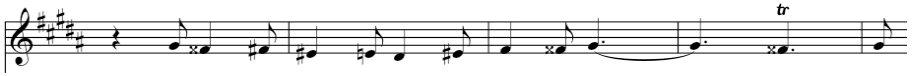


This prelude, implicitly in *tempo ordinario*, is in two sections, each of which is repeated. It was probably transposed by Bach from G minor (up a half step) for inclusion in the *WTC*.

Fugue: a double fugue in three voices based on two principal themes. The first enters with a different secondary theme:



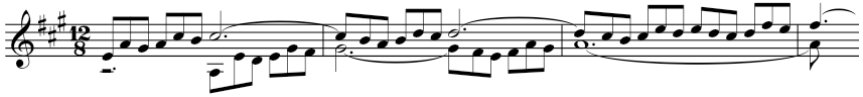
Each of the main themes is introduced in a separate section. Half way through, the second principal theme emerges, and we understand this is going to be a double fugue.



The various combinations of the two main themes arrive in the third and last section. The work was probably transposed by Bach from G minor (up a half step) for inclusion in the *WTC*.

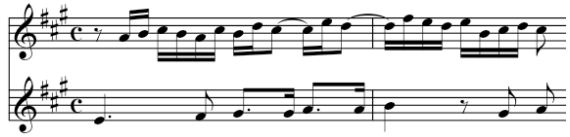
II/19: A major, BWV 888

Prelude:



An unusually broad trio setting that would work beautifully for two violins and basso continuo. At first sight it appears to relate to the gigue, but the busy harmonic movement contradicts this, and imposes a slower tempo.

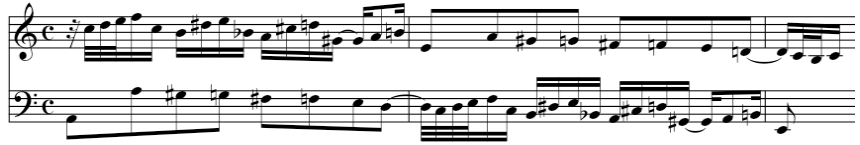
Fugue: in three voices based on two principal themes, treated in double invertible counterpoint.



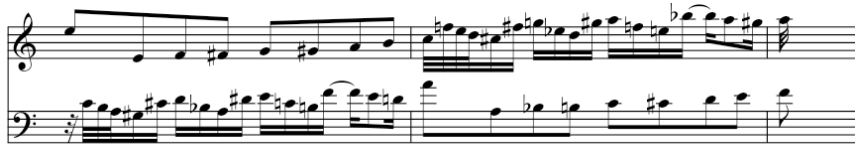
A busy little fugue in capriccio style, and implicitly in *tempo ordinario*.

II/20: A minor, BWV 889

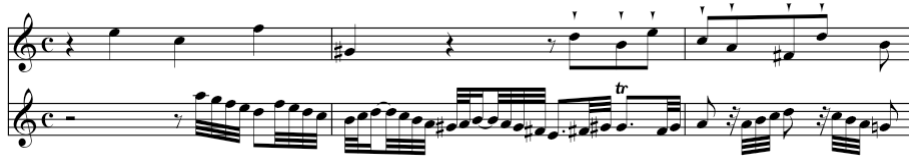
Prelude: a two-part Invention in double invertible counterpoint.



It is in two sections, each of which is repeated. At the start of the second half, the counterpoint not only inverts (with the left-hand material going into the right hand, and the right-hand material going into the left hand); it is also presented in melodic mirror inversion (what went down now goes up, etc.):



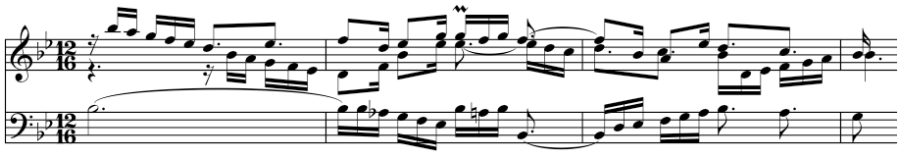
Fugue: in three voices based on two principal themes, treated in double invertible counterpoint and implicitly in *tempo ordinario*.



Although there is no evidence to support it, I cannot help thinking here of Jonathan Swift's *Gulliver's Travels* (first published in 1726). The fantastic and grotesque first theme is like one of the Brobdingnagian giants, and the even more fantastic secondary theme is like tiny Lilliputians. *Gulliver's Travels* had been

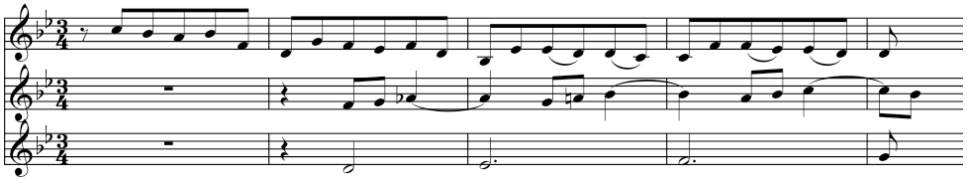
translated into German in 1728, by Johann Heinrich Liebers (as *Gullivers Reisen*) and the composer Georg Philipp Telemann, a close friend of Bach, had immediately published a Lilliputian Suite for two violins in the same year, in which the Brobdingnagians are represented by breves and the Lilliputians by 64th notes. Bach could certainly have known Telemann's piece.

II/21: B-flat major, BWV 890
Prelude:

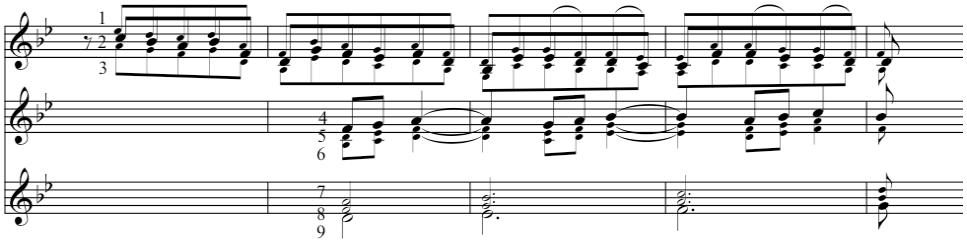


A particularly unhurried and expansive trio, of deceptively calm character. It is in two sections, each of which is repeated.

Fugue: in three voices based on three principal themes, treated in triple invertible counterpoint.

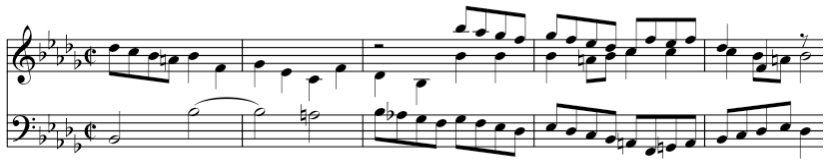


Since Bach explores the possibility of adjusting the relationships at different intervals, every appearance of the three themes creates new harmonies, based on triple invertible counterpoint at the 10th, 12th and 14th (this last is a very rare species of counterpoint). Bach's working model probably looked something like the following, from which the combintion found in the previous example was probably extracted.



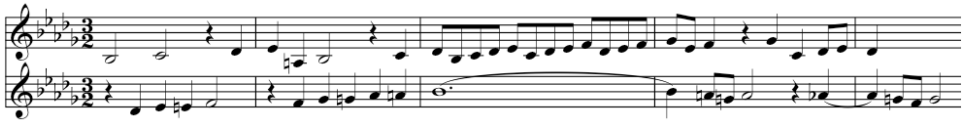
The top voice is the middle one (2) of its three possible positions; the middle voice is the top one (4) of its three possible positions; and the bottom voice is the bottom one (9) of its three possible positions. But other selections from these sets are possible. Bach extracted from this purely theoretical nexus his extraordinary combinations, never using the same one twice

II/22: B-flat minor, BWV 891
Prelude:

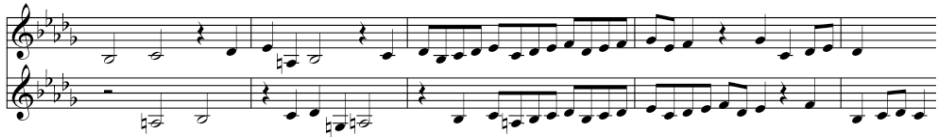


Stylistically, this is a trio, implicitly in *tempo ordinario* (but in *allabreve* notation). It was probably transposed by Bach from A minor (up a half step) for inclusion in the *WTC*.

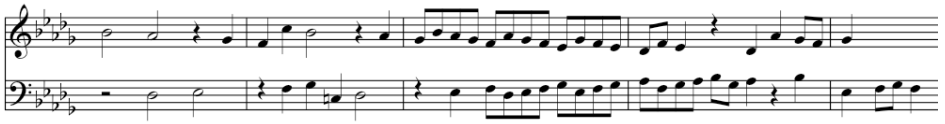
Fugue: a highly organized stretto fugue in four voices based on two principal themes, treated in various kinds of double invertible counterpoint.



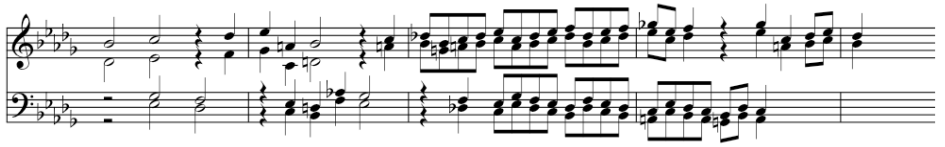
In the second section the theme appears in stretto treatment against itself, at the highly unusual intervals of the seventh and the ninth.



Other stretto sections, remarkably, use the theme against its mirror inversion at the tenth.



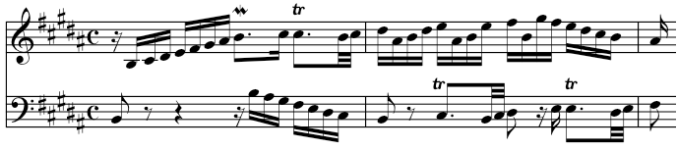
These lead to a climax with the theme doubled in thirds and sixths, against itself in mirror inversion:



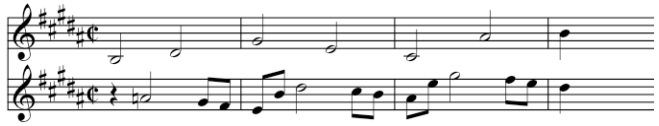
The character of this astonishing fugue is somewhat aggressive, or at least headstrong. It was probably transposed by Bach from A minor (up a half step) for inclusion in the *WTC*.

II/23: B major, BWV 892

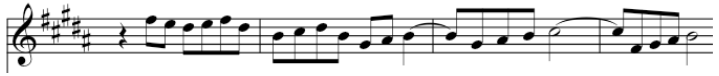
Prelude: implicitly in *tempo ordinario*.



Fugue: in four voices based on two principal themes, treated in double invertible counterpoint;



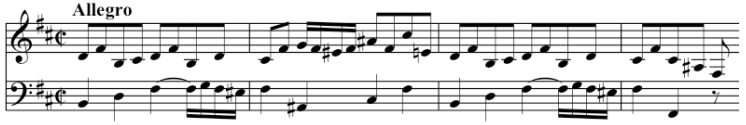
In the second section, a new theme appears:



This ricercar fugue is implicitly in *tempo ordinario* (in *allabreve* notation). For the climax the theme appears in the highest register of the keyboard. It is a particularly sublime Bach fugue.

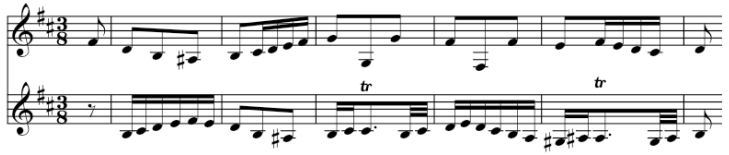
II/24: B minor, BWV 893

Prelude: an energetic two-part Invention.

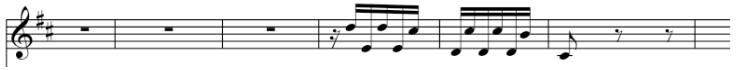


The rare tempo marking, *Allegro*, was no doubt added by Bach to stop the player performing in *tempo ordinario* (and therefore too slowly).

Fugue: in three voices based on two principal themes, treated in double invertible counterpoint.



In the second half a new element is thrown into this mix, combining with measures three and four of the two themes above:



Stylistically, the second volume of the *WTC* closes with a light-hearted evocation of the dance rhythms of the French passepied. And so the great journey ends.

Davitt Moroney was born in England in 1950. He studied organ with Susi Jeans and harpsichord with Kenneth Gilbert and Gustav Leonhardt. He has played as a soloist in many countries all over the world, and is particularly known for his performances of Bach. In recent years, he has given organ and harpsichord master classes at the Paris Conservatoire, the Moscow Tchaikovsky Conservatoire, The Juilliard School and Oberlin Conservatory, as well as in South Korea, Finland, Belgium and Switzerland. He is regularly invited as a jury member for international organ and harpsichord competitions. Other recent concerts have included recitals in Germany, Holland, Italy, England and Scotland.

He has always pursued a double musical career as both performer and scholar (and, more recently, also as teacher). He has performance and teaching diplomas in harpsichord from both of London's principal conservatoires, the Royal College of Music and the Royal Academy of Music. His academic training was undertaken first at the University of London, King's College (1968–1975), under the direction of Thurston Dart; he moved to Berkeley for his Ph.D. in 1975, completing a doctorate in 1980 with a dissertation under Joseph Kerman on the music for the English Reformation by the Renaissance composers Thomas Tallis and William Byrd. For more than 20 years, he was then based in Paris, working primarily as a freelance recitalist in many countries, making recordings and appearing regularly on the BBC and French radio. In 2001, he returned to California as a faculty member at UC Berkeley, where he is now Professor of Music, University Organist and Director of the University Baroque Ensemble.

His many scholarly editions of harpsichord music include Bach's *The Art of Fugue* with his own completion of the final unfinished fugue (Munich: Henle, 1989), the complete harpsichord works of Louis Couperin (1985) and of Louis Marchand (1987), as well as of Purcell's recently discovered collection of pieces, now known as the "Purcell Manuscript" (1999). His monograph *Bach, An Extraordinary Life*—a short introduction to the composer's life and works—was published by ABRSM Publishing, London, in 2000 and has since been translated into French, Portuguese, Italian, Polish, Romanian and Dutch.

In 2005, after tracking it down for 18 years, he rediscovered one of the lost masterpieces of the Italian Renaissance, Alessandro Striggio's Mass in 40 and 60 Parts, dating from 1565–1566, the score for which had not been seen since 1724. He conducted the first modern performance of this massive work at London's Royal Albert Hall in July 2007 (to an audience of 7,500 people, and a live radio audience of over seven million listeners) and conducted two further performances at the Berkeley Early Music Festival in June 2008. (Another performance is planned in Berkeley during the 2010–2011 season.) His recently published research articles have been studies of the music of Alessandro Striggio (in the *Journal of the American Musicological Society*) and of François Couperin. In spring 2009, he was visiting director of a research seminar in Paris at the Sorbonne's *École pratique des hautes études*.

As a performer he has made over 60 commercial CDs, especially of music by Bach, Byrd and various members of the Couperin family. Many of his solo recordings feature historic organs and harpsichords dating from the 17th and 18th centuries. He has recorded Bach's *The Well-Tempered Clavier* (four CDs, Harmonia Mundi), *French Suites* (two CDs, Virgin), the *Musical Offering* (with Janet See and John Holloway; Harmonia Mundi), the complete Bach sonatas for flute and harpsichord (with Janet See; Harmonia Mundi) and for violin and harpsichord (with John Holloway; Virgin) as well as *The Art of Fugue* (a work he has recorded twice). Recently he participated in a recording of all of Bach's harpsichord concertos, for one, two, three and four harpsichord (for Plectra, 2008), recording six of the concertos. Among his other substantial recordings are William Byrd's complete keyboard works (127 pieces, on seven CDs, using six instruments, for Hyperion), as well as the complete harpsichord and organ music of Louis Couperin (over 200 pieces, on seven CDs, using four historic instruments). His recently published recordings comprise the complete harpsichord works of Louis Marchand and Louis-Nicolas Clérambault (Plectra, 2007) on the magnificent 1707 Nicolas Dumont harpsichord, and a two-CD album of pieces from "The Borel Manuscript" (Plectra, 2008), comprising pieces from a recently discovered manuscript of French harpsichord music acquired by UC Berkeley's Hargrove Music Library in 2004. He is currently recording the complete harpsichord works of François Couperin (nearly 250 pieces) for Plectra; three of the planned 10 CDs have been recorded and will be issued next year.

His recordings have been awarded the French *Grand Prix du Disque* (1996), the German *Preis der Deutschen Schallplatenkritik* (2000), and three British *Gramophone* Awards (1986, 1991, 2000). For his services to music, in 1987 he was named *Chevalier dans l'Ordre du mérite culturel* by Prince Rainier of Monaco and, in 2000, *Officier des arts et des lettres* by the French government.

ABOUT THE ARTISTS