

On the Subject of
Strategic Method



COGNITION *vs.* INFORMATION
IN MUSIC

The Riddles and The Meaning of J.S. Bach's *The Art of the Fugue*

by Prof. Yelena Vyazkova

Greetings to the participants in the conference, in the name of the Gnesin Academy of Music in Russia. My presentation resonates to Mr. LaRouche's ideas about the saving role of culture, art, and creativity, for the future of our civilization and our planet, and about the special role of Classical music in this regard.

My area of scientific interest is the creative process—more precisely, the strategy of creativity. My research began with deciphering the sketchbooks of Beethoven, a composer who expressed on paper almost the entire process of creation of a work (with all the initial forays, probes, different versions, and doubts). I continued, researching the sketches of other

composers, which made it possible to observe a certain typology of creative processes. I intend to develop that theme in a seminar setting, while my topic today is a different one.

This year, the world marks the 250th anniversary of the death of the great German composer Johann Sebastian Bach. Coinciding with this anniversary, is the anniversary of his most remarkable last work, the cycle *Die Kunst der Fugue* (*The Art of the Fugue*). This date, the Bach Year, prompted my choice of topic for this conference.

There are certain works in the history of music, whose lot it is to

remain unsurpassed peaks, for long centuries. J.S. Bach's cycle, *The Art of the Fugue*, is such a rare work. Infinite, endlessly profound, this work becomes accessible to the understanding gradually, allowing penetration into previously uncomprehended depths, upon each contact with it. The philosophical comprehension of earthly and, perhaps, cosmic being; a grasping and reflection of the laws of the universe—this could best be called the “theme” of this amazing work, revealed in the language of music.

There is a halo of mystery around the cycle: It remained unfinished,

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FIGURE 1. *Opening of Fugue II from Part 2 of J.S. Bach's "Well-Tempered Clavier."*



FIGURE 2. “Frère Jacques,” a simple round or canon.

The image displays a musical score for the song "Frère Jacques" in a simple round or canon form. It consists of two systems of four staves each, representing four different voices. The music is written in common time (C) and features a simple, repetitive melody. The lyrics are in French and are repeated across the staves, with some variations in phrasing to accommodate the canon structure. The first system shows the initial entry of the melody in each voice, while the second system shows the voices overlapping and repeating the melody. The lyrics include: "Frère Jacques, Frère Jacques, dor-mez vous, dor-mez vous? Son-nez le ma-ti - ne, son-nez le ma-ti - ne, din, dan, don, din, dan, don!"

and the final fugue breaks off literally in mid-measure. In the autograph, at that point there is a notation by Bach's son: "[Working] on this fugue, where the name BACH enters in the countersubject, the composer died." Although this phrase is not accurate—Bach died almost eight months later—the impression made by this unfinished character, remains literally stunning: Death, unexpected and inexorable, interrupts the life and creative work of the great musical thinker and artist. . . .

If people could hear, understand, and take into themselves, what the great Bach said in his final work, the world would be a better and more perfect place—of that, I am absolutely convinced.

The Art of the Fugue is a cycle of fugues and canons, written on a single theme. As you know, a fugue is a polyphonic composition, in which

the main theme is introduced repeatedly in all the voices. All the voices are equal in weight. For example, see Figure 1. There, the theme has entered three times, in the various voices.

A canon is a more complex musical form, in which all the voices sing the same melody at once, but they enter in turn, with a certain delay. Here, for example, is the well-known children's song, "Frère Jacques" [SEE Figure 2]. This is, of course, a more complex musical technique than a melody with accompaniment [SEE Figure 3].

Let us turn to the cycle. Its main theme sounds very serious [SEE Figure 4].

All of the fugues and canons are written in the same key.

This theme is characterized in the literature, with language ranging from "profoundly expressive" to

"colorless." Albert Schweitzer characterized it in the following strange and almost inaccurate way: "Really, this theme cannot be called interesting; it seems not to have been born of some intuitive genius, but rather invented for the sake of its subsequent thorough development and inversion. And yet, it transfixes the attention of anyone who hears it. A quiet world opens before us, a serious world, desert-like, deathly cold, colorless, gloomily without motion, it does not gladden or entertain. And yet, we cannot tear ourselves away from the theme."¹

The only thing that can be called accurate here, are the following words: "And yet, it transfixes the attention of anyone who hears it." "And yet, we cannot tear ourselves away from the theme."

It seems to me, that this theme *was* born of intuitive genius, and that

there is profound meaning in its content (about which I shall speak, later).

Throughout the cycle, the theme is varied: Here is the form it takes in inversion (where the melody becomes like a mirror reflection: what went upwards, now goes downwards, and vice versa) [SEE Figure 5]. Please pay particular attention to this, because it is an important element to understand for some of the ideas I shall be developing.

There are also more complex melodic variations [SEE Figure 6].

It is known, that Bach took part in preparing the cycle for publication: He even produced (recopied, in calligraphy) some of the pages. One part of the cycle (Nos. 1-11) was numbered by him, while the other (from No. 12 to the Final Fugue) remained unnumbered. Nonetheless, I have found indirect evidence that Bach gave instructions for this part, as well. It is also evident, however, that at the last moment the publishers were left without his guidance, and then they included in the first, Original Edition (O.E.), all the material that Bach had left, related to this cycle, without regard for the order conceived by Bach.

This decision by the publishers had its pluses and its minuses. It is good, that in this way all the precious pages of Bach's music were preserved. It is bad, because total disorder arose in the sequencing of pieces in the second half of the cycle, violating the author's conception.

Ever since then, publishers and performers have been arbitrarily changing the order of the fugues and canons, while researchers attempt to restore the sequence as Bach conceived it. (How many versions have been proposed! Several pages in the multi-volume book by Walter Kolneder are devoted just to enumerating them.)

FIGURE 3. Simple melody and accompaniment: "La donna è mobile" from Giuseppe Verdi's "Rigoletto."

FIGURE 4. Main theme of J.S. Bach's "The Art of the Fugue."

FIGURE 5. Inversion of main theme of J.S. Bach's "The Art of the Fugue."

FIGURE 6. Variations of main theme of J.S. Bach's "The Art of the Fugue."

TABLE I. Ordering of pieces in "The Art of the Fugue."

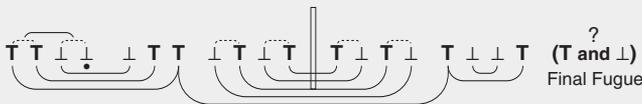
No.	Part I (follows Original Edition)		No.	Part II		Orig. Ed.
1	The Simple Fugues	T	12/1	4-part Mirror Fugue (rectus)	T	12/2 ↑
2		T	12/2	4-part Mirror Fugue (inversus)	⊥	12/1 ↓
3		⊥□	13/1	3-part Mirror and Counterfugue (rectus)	T	
4		⊥	13/2	3-part Mirror and Counterfugue (inversus)	⊥	
				<i>Variants of Fugue No. 10</i> ----->		
5	The Counter- fugues	⊥□	14	CANONS in Augmentation and Inversion at the Octave at the Tenth at the Twelfth	T	same
6		T	15		⊥□	
7		T	16		⊥	
			17		T	
				<i>Two Fugues for 2 Claviers— variants of Fugues No. 13, 1 & 2</i> ----->		
8	Triple Fugue Double Fugue Double Fugue Triple Fugue	⊥□	18	Unfinished (Quadruple) Final Fugue	T	
9		T			⊥□	
10		⊥□			(?)	
11		T				

T = theme in normal form ⊥ = theme in inverted form

Non-repetition of the combination "T" and "⊥" within the same fugue group:



Main symmetry of the theme forms:



T ⊥ ⊥ T is the mirror form of the symmetry T ⊥ ⊥ T — so-called "portable symmetry" (A – A')

This question of the correct sequence, is identified in the literature as one of the most important. In order to imagine how important it is, consider an analogy: In a novel with a dense plot, would it be possible to change the order of the chapters? Could a work like *The Four Seasons* be performed in a different order, with summer coming directly after winter, and then spring, or with May being followed by December, and then August? Of course not. *The Art of the Fugue*, as Bach conceived it, has a remarkable dramatic composition: Bach leads the listener, logically, consistently, step-by-step developing

his thought. If Bach's ordering is violated, the cycle loses its wonderful organization, and becomes a free assemblage of pieces, which are beautiful, but not arranged into a single organism. A truly perfect dramatist such as Bach, could never permit such a thing.

I have been studying this amazing cycle for around thirty years. As a result of my research, I can substantiate solutions for all of the controversial questions "around" this cycle: the number of pieces, their ordering, and the significance of the concluding, unfinished fugue (which some authors do not even

consider to be a part of this cycle).

I have made a detailed analysis of the text of *The Art of the Fugue*, of its manuscript (which was, happily, published in Germany by H. Hoke), both from the standpoint of someone observing the creative process of the composer, and from the standpoint of a specialist in polyphony (counterpoint). The manuscript makes it possible to imagine, that you are as if present with the composer in his creative process, at the moment of creation. You see how he writes, and then corrects what he has written; it seems that the composition is finished, but then suddenly he adds two measures. This is an extremely engrossing task—to understand, why he did it this way, and not some other way, or what a new version gives, by comparison with the first draft, or why the fugues are ordered in the autograph, differently from their order in the finished cycle, even in the first part, which Bach sanctioned. Why are some of them written out in a strange way, not in succession, but one under the other?

I was very interested in trying to answer all of these questions, and it seems to me that, in the course of thirty years, I have managed to understand something. It is striking, that Bach's text contains answers to all the questions: It is necessary only to study it very closely.

For example, the unusual names of the fugues help to answer the question of the ordering: Bach does not call them fugues, but "counterpoints." This means that it is necessary to research the species of counterpoint, and to understand the logic of their succession. After the works of the Russian composer and scholar S.I. Taneyev, this is not difficult to do: It is quite possible to avoid the type of subjective factor, which played a role in the judgment of previous researchers. In other cases, and

even certain mistakes during publication, suggest answers to controversial questions.

I won't exhaust you with the details of this analysis, but will just show you in this table [SEE Table I] what I have observed, namely, that only slight changes are required in the Original Edition, in order to turn it into a cycle, corresponding to Bach's conception. (I should explain, that the majority of scholars are of another opinion. They consider the second half of the cycle to be totally wrong—they put the canons before the mirror fugues, and distort the ordering within the groups.) I have been able to find indirect evidence, that while preparing the cycle for publication, Bach was giving instructions to his assistants almost until the last moment. Therefore, any rearrangement is a violation of the will of the author.

There are six groups of fugues in the cycle. The sixth "group" consists of the unfinished, Final Fugue, which would have been a very big fugue. I should say that this "six" is not just picked out of a hat. With Bach, no number is devoid of meaning.

In the table, you can see the errors in the second half of the cycle. There is an extra fugue, which is a variation of the tenth fugue. The fugue for two claviers is also interpolated, with repeats of fugues 13/1 and 13/2. The table reproduces the ordering of the pieces in the Original Edition, but I have numbered only those that ought to be included in the cycle, leaving unnumbered those, which in one form or another repeat pieces that are already present in the cycle, and which should therefore be removed from the cycle. For a long time, the conventional practice has been to put these in an appendix to the cycle (they are indicated with arrows), while the ordering of the rest of the

TABLE II. *Corrected ordering of pieces in "The Art of the Fugue."*

No.	Part I (follows Original Edition)		No.	Part II	Orig. Ed.	
1	Simple Single-theme Fugues	T	12/1	4-part Mirror Fugue (rectus)	T	12/2
2		T	12/2	4-part Mirror Fugue (inversus)	⊥	12/1
3		⊥	13/1	3-part Mirror and Counterfugue (rectus)	T	
4		⊥	13/2	3-part Mirror and Counterfugue (inversus)	⊥	
5	Counterfugues (with counter- subject in inversion)	⊥	14	Canon in Augmentation and Inversion	T	→ same
6		T	15	Canon at the Octave	⊥	
7		T	16	Canon at the Tenth	⊥□	
			17	Canon at the Twelfth	T	
8	Triple Fugue Double Fugue Double Fugue Triple Fugue	⊥□	18	Concluding fugue (unfinished, quadruple)		→
9		T				
10		⊥				
11		T				

T = theme in normal form ⊥ = theme in inverted form

pieces has constantly been violated by editors, publishers, and performers down to the present day.

The resulting version is shown in [SEE Table II]. With the one additional change indicated, namely, to reverse the order of fugues 12/1 and 12/2, which are mirror inversions of each other, I believe this shows the correct order.

Even a non-musician can see in the table, that Bach deliberately thinks through the ordering of his use of the theme in its direct and mirror-inverted forms (grouping the fugues, he never repeats the way they are combined) [SEE Table I, bottom section]. The "T" symbol is the direct form of the fugue. The inverted "T" is in inversion.

When we write out, horizontally, all the themes—marking whether they are the direct form of the main theme, or its inversion—we see a remarkable symmetry. First there is symmetry on the left side, then a symmetry, pivoted on the center of the cycle, and then another symmetry at the end. It is unknown, what would have been on the far right, since the Final Fugue remained unfinished. Symmetry, of course, is a

fundamental principle of nature, and Bach's use of it is a highly significant hint, for determining the organization of the cycle.

Bach's mastery can be seen in these diagrams, of course, but it is even more noticeable when the music of this marvellous cycle is played.

I shall now discuss another extremely important problem: the idea and meaning of this mysterious work, and the problem of its ending. Essentially, this will be a discussion about the meaning of the musical information. Music is always "informative"—what's important, being what it conveys. What ideas, does this work of Bach convey?

The amazing unity and dramatic wholeness of this cycle, have naturally prompted attempts to search out the hidden thought-content of the conception. The version suggested by the Romantic notation of C.P.E. Bach at the end of the autograph became logically connected with the idea of the finiteness of human life (although, as I mentioned, it does not correspond to what actually happened).

Erich Schwabach made the next

chorales: the Christmas chorale, “Wie schön leuchtet der Morgenstern” (“How beautifully shines the morning star”), except that the chorale is in the major mode instead of minor [SEE Figure 9].

You may know the theme of the A^b major fugue from *The Well-Tempered Clavier*, which is also a variation of this theme [SEE Figure 10]. It is in major, but a minor version of the theme is later introduced.

The second element, is from the Easter cantata “Christ lag in Todesbanden” (“Christ Lay in Death’s Bands”). Combined together, it is as if they denote the extremal points of life—birth and death—as if concentrating the entirety of a life into the minute of the theme’s sounding. In each fugue, the theme receives new life, a new form, while preserving unchanged a certain constant essence: It is born and, having sounded, dies, only to be born again in the next fugue. The cycle becomes an expression of the idea of the infinite life of the soul, which is repeatedly born, and continues to exist after death in some other world, the expression of which is the theme in inversion.

In effect, the idea of the immortality of the soul, the idea of reincarnation, is expressed in this way. This originally Eastern idea, which was adopted by Pythagoras and Plato, was originally interpreted in the works of Leibniz (whom Bach knew personally, and Leibniz’s books were in Bach’s library): Although Leibniz himself wrote about the “metamorphoses” of the soul, not about its reincarnations, his teaching did potentially contain this idea, and his followers necessarily came to this idea. (The Russian philosopher N. Lossky’s studied this problem.) It is not to be excluded, that among these followers was Johann Sebastian Bach.

FIGURE 10. *Opening of Fugue XVII from J.S. Bach’s “Well-Tempered Clavier.”*



FIGURE 11. *Comparison of “The Art of the Fugue” with chorale “Was willst du dich, o meine Seele,” and a work by Palestrina.*



FIGURE 12. *Comparison of chorale “Aus tiefer Not schrei ich zu Dir” with Final Fugue of J.S. Bach’s “The Art of the Fugue.”*



In this context, the gradual increase in complexity of the work with the theme in this cycle, reflects the gradual development and perfection of the soul. Its final stage—the return to its divine source—remains a mystery for humanity: It is at this moment, when the invisible, eternal depths are revealed, that the Final Fugue stops. Therefore, the cycle is *deliberately* unfinished. It is an expression of those invisible depths, before which man is powerless.

Not only the main version of the theme, but also its variations and the other themes, allow us to see a certain logic of associations, going in the same direction. Thus, the second variation of the theme may be connected with the theme of the chorale,

“Was willst du dich, o meine Seele” (“What wilt thou, o my soul”) [SEE Figure 11]. This theme, incidentally, perhaps not by accident, echoes the theme of the Sanctus in one of the masses by the Sixteenth-century composer Palestrina.

These associations, of course, are not accidental.

The theme of the Final Fugue evokes the following associated images: The first theme evokes the chorale, “Aus tiefer Not schrei ich zu Dir” (“Out of the depths I have cried to Thee”) [SEE Figure 12].

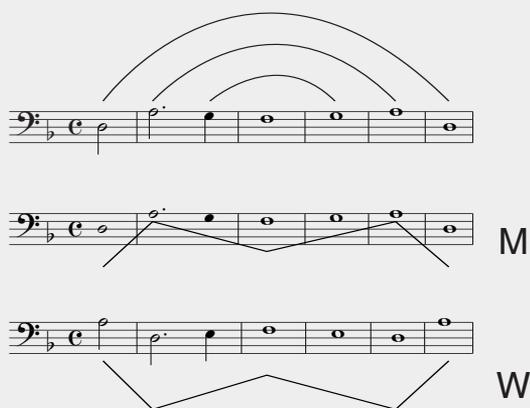
The German musicologist Wilhelm Keller showed the resemblance of the main theme of *The Art of the Fugue* taken in inversion [Figure 5], with this chorale, as well.

The second theme of the Final

FIGURE 13. “Hallelujah” ending of chorale “Christ lag in Todesbanden” and opening of chorale “Schwing dich auf zu deinem Gott,” compared to second theme of Final Fugue.



FIGURE 14. Symmetrical properties of the Final Fugue.



Fugue, it seems to me, also is comprised of elements of two chorales: the ending of the chorale “Christ lag in Todesbanden,” and the opening of the chorale “Schwing dich auf zu deinem Gott” (“Lift thyself up unto thy God”) [SEE Figure 13].

There is one additional idea in the theme itself of the Final Fugue. It is symmetrical; it reads the same, backwards and forwards, left to right or right to left. Its graphic representation (the theme in direct and inverted form) gives mutually reflected pictures of the letters “W” and “M”; “W”=*Welt* (world), and by the mystical relationship of Russian and German orthography, the same word, in Russian, begins with the letter “M”

(*mir*). You don’t have to be a musician, to see this in the notes [SEE Figure 14].

These associations are not accidental. The symbolic language of the epoch should be borne in mind, in order correctly to interpret the ideas of Bach’s works.

Music often reflects universal laws, before science discovers them. It is possible that *The Art of the Fugue* is a philosophical conceptualization of the laws of the universe, expressed by means of music. And perhaps, in this connection, the numerical symbology of the main theme of the cycle is also no accident. It contains 12 tones (12 is a holy number: the number of the Church, the 12 apostles;

adding across, $12=1+2=“3,”$ which is the number of the Trinity). The alpha-numerical symbology of the theme [D is the fourth letter, therefore “4,” A is “1,” F is “6,” and the “numbers” of the notes in the theme may be added across] includes the concepts of “law” (10) and “God,” “wholeness,” “being” (1). Thus it symbolizes the idea of the laws of the world and of existence, laws, given to us by God: Evidently, this is how Bach elucidates the circle of ideas in his composition.

This interpretation of the content of the cycle (the concept of the infinite development, unity, and mutual reflection of worlds) is hypothetical, of course, but quite lawful: In the last years of his life, Bach said that only now had he comprehended the internal spirit of music, and that he wanted to investigate it anew. *The Art of the Fugue*, most likely, is this study.

It is also not accidental, that Schumann said about Bach, that “he knew a million times more, than we can imagine.”

In any event, the cycle occasioned the remark by one German musicologist, Ernst Meier: “Here Bach, the ‘Prometheus Unbound’ of thinking, acts in a truly revolutionary way. He is a true enlightener, who, together with the natural science and philosophy of his time, opens a new future: the victory of active, investigating thought, over dogma.”

The Art of the Fugue is a work of genius, a bequest to posterity, infinite in its depth of thought, and each generation of people, with the development of knowledge and consciousness, will discover in it more and more new ideas.

1. In Albert Schweitzer, *Johann Sebastian Bach, 1685-1750* (Leipzig: Breitkopf and Härtel VEB, 1969), p. 316.
2. In musical notation, German uses the letter H where English uses B♭.