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# The D Major Fugue Subject from WTCII: Spatial Saturation?

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ABSTRACT: In what ways does the Subject of Bach's fugue in D major from Book II of the WTC define a structure "in D"? To what degree is there something "missing" in the Subject (e.g. a C-or-C-sharp)? To what degree does the Subject "saturate" a hexachordal space? In what ways is the Answer required, to define a tonality?

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[1] **Example 1** shows the Subject and beginning of the Answer.

[2] For many years I wanted to hear the Subject in G major, to the extent that I would as often as not think of and even refer to the piece as "the G major fugue from Book II," and have to correct myself. The following brief essay pursues several lines of thought that have radiated from my misapprehension.

[3] Before undertaking this exercise, I had believed that a Bach fugue subject, among other things, exposes the tonality of its piece in some way. The Subject of Example 1 demonstrates that the belief is not exact. For this fugue, the Subject itself is ambiguous as regards a common-practice D major or G major key. Here the key is determined by subject *plus answer*. The key of D major is specifically determined when we hear the beginning of a real answer on the note A. Were the fugue to proceed from its Subject in the key of G major, a tonal answer would be normative: G G G D E A D C B (G).(1)

[4] Now as regards the Subject in its own context, one reason that it appears tonally ambiguous to our ears is that it contains neither a C-natural nor a C-sharp. When I first thought about that, I expressed the idea by thinking that a C-or-C♯ was "missing."(2) Behind my thought lay a covert assumption, that traditional "Tonality" is expressed by exposing a complete diatonic gamut.(3) In my provisional thoughts I regarded the real Answer as "solving" the issue "raised" by the Subject, when the Answer provides the "missing" C-or-C♯. By providing C♯, the Answer (finally) determines the tonality as D major.

[5] The covert assumption above caused me to hear "something missing" in the Subject's pitch material, and that had a decided influence upon the sort of character I attributed to the theme. But I am no longer so satisfied with this way of listening. For one thing—as pointed out in [3] above—our psychological recognition of D major occurs with the *first* note of the Answer, its incipit A; we do not have to wait for the C♯ that is its penultimate note, to ascertain a tonality of D. The incipit of the Answer determines our perception as a matter of *rhetoric*, not a matter of pitch-class saturation (or the lack thereof).

[6] The issues can be pointed even more sharply by observing that Bach has the total chromatic available to him in the WTC. Why not say that this fugue subject—like most others in the WTC—is "missing" quite a few notes of the total chromatic? Why not presume that we are "waiting" to hear those notes?

[7] Well, for some fugues that might be an interesting trail to pursue—for example the E-minor fugue in Book I, where F-natural (or E-sharp), G-sharp, and A, and only those pitch-classes, are "missing" from the subject.[(4)] However, for the fugue of Figure 1, and for the more diatonic fugues in general, the issue of chromatic saturation seems pretty well beside the point. Should we really focus our ears on the fact that the Subject in Figure 1 is "missing" A-flat, B-flat, C, D-flat, E-flat, and F? Who cares?

[8] Nevertheless, one can be struck (as I was) when one hears how the missing notes of the total chromatic form a diatonic hexachord. Returning from that outer space to the real world of the fugue at hand, one will then hear (as I did) how the pitch content of the fugue's Subject in fact *does* sound "complete" if one regards it as projecting a diatonic *hexachord*, rather than as projecting six notes from an incomplete diatonic scale, the seventh tone being "missing." In the hexachordal context the Subject *does* saturate its pitch-space, and that gives it a very different character, from the major-scale subject that "fails" to provide a C-or-C♯.

[9] Since the diatonic hexachord at issue has the tone D as its "UT," the hexachordal hearing provides a rationale for perceiving the Subject as some sort of structure "in D." Namely, the Subject projects the (complete) D hexachord. The point is aurally clear if one could sing the subject as UT UT UT FA - LA - - RE SOL FA MI - (UT). No mutation would be required.

[10] In what sense might it be legitimate for us to sing the subject as above? This, as it turns out, is an interesting and complicated historical question. I am fortunate to have had a perspicacious reader for this article who alerted me to pertinent issues, and I am fortunate to have Christoph Wolff as a colleague with whom I can confer.

[11] First of all, we should ask: was Bach accustomed to Guidonian solmization in the context of his work, and of the WTC in particular? Yes, responds Professor Wolff, without doubt.[(5)]

[12] Next: would Bach have solmized the Subject as in [9] above? Or would he not, rather, have mutated, taking his cue from the *high* D with which the Subject begins, thus: SOL SOL SOL UT/FA - LA - - RE SOL FA MI - (UT)? Or thus: SOL SOL SOL UT - MI/LA - - RE SOL FA MI - (UT)? Let us call these productions the versions of the Subject "with mutation," as opposed to the "unmutated" version of [9] above: UT UT UT FA - LA - - RE SOL FA MI - (UT). The question we are currently considering can then be put: could Bach have heard (or sung) the unmutated version of [9]? Or would he have heard (or sung) one of the mutated versions above?

[13] My reader brought up this salient issue, without professing a definitive answer for the question. When I consulted with Professor Wolff, he also could not provide a definitive answer, and was much engaged by the question. As of this publication, he is still researching the issue.

[14] One could put the crux of the matter as follows. Was "UT" a pitch *class* for Bach, in the way that "DO" is for us in modern solfege? Or would Bach have heard his hexachords positioned in register along an extended gamut—in which case there could be no such thing as a *high* "UT"?

[15] All this taken into account, the fact remains that even the mutated versions of the Subject do reference the entire natural D hexachord—taking the final low "(UT)" into account—and they do not reference the *entire* soft G hexachord, no matter where one mutates. In that sense, the Subject, regarded as a hexachordal structure, *does* saturate a tonal space. The weight of the Subject as a whole definitively goes on the D hexachord, as opposed to the G hexachord. This is in decided contrast to the ambivalent structure of the Subject as a production of common-practice tonality, where we can equally well hear the theme proceeding I–V in G major, or IV–I in D major.

[16] To sum up: I am (at present) happy to hear the Subject by itself "in D," when I understand the "D" at issue to be the UT of a pertinent hexachord, rather than the tonic note of a common-practice tonality. And then, so far as such tonality is

concerned, I hear the fugue's continuation "in the key of D" as a matter of rhetoric—not pitch content—when I hear the Answer come in on the note A. (The rhetoric of the real Answer in this connection was discussed toward the end of [5] above.) The idea that the Subject is "missing" some C-or-C♯ now seems to me relatively tangential.

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## Footnotes

1. Of course this tonal answer could not enter during the F♯ of the Subject. I suspect the point is relevant to the stretto character of the fugue.

Christoph Wolff points out that Friedrich Wilhelm Marpurg, soon after Bach's death, had already observed the features of this fugue so far discussed. In an essay entitled *Analysen von Bachschen Fugenthemen, Fugen und Kanons* (Berlin, 1753–54), Marpurg points out that "the leap down a fifth, which the octave above the tonic note makes here, was prohibited by older authorities, on the grounds that it renders the tonality uncertain" ("Der Sprung, den hier die Oktave der Hauptnote in die Unterquint thut, wurde bey den Alten verboten, weil er die Tonart ungewiss macht."). Some seven years later, in an essay entitled *Themenbeantwortung und Durchfuehrung in einigen Fugen des Wohltemperierten Klaviers* (Berlin, 1760), Marpurg repeats the above sentence and elaborates it with the following continuation: "Indeed, the Subject at issue here does not proclaim the key of D major, but much more G major; and one does not know where one is at home tonally, until the entrance of the Answer" ("In der That zeigt der hier vorhandene Fuehrer nicht die Tonart d dur, sondern vielmehr g dur an; und man merkt es erst bey dem Eintritt des Gefaehrten, wo man zu Hause ist."). Marpurg recognizes the problematic character of this phenomenon, but does not pursue it farther from a theoretical point of view, contenting himself with pedagogical advice: "Such exceptions to the rules can be ventured only by Masters, and beginners will do well to cleave to the rule that requires a fugue theme to indicate the key unambiguously" ("Dergleichen Ausnahmen von der Regel koennen nur von Meistern vorgenommen werden, und Anfaenger thun wohl bey der Regel zu bleiben, welche einen deutlichen und die Tonart gehoerig anzeigenden Fugensatz erfordert.").

The Marpurg passages are reproduced in *Bach-Dokumente*, ed. Bach-Archiv Leipzig, Volume III: *Dokumente zum Nachwirken Johann Sebastian Bachs 1750–1800*, ed. Hans-Joachim Schulze (Leipzig and Kassel, 1972). The quote from 1753 appears on page 28, and the quote from 1760 on page 156.
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2. Since the Subject contains neither a C nor a C♯, it contains no tritone-dyad. Related issues in musical cognition are discussed by Richmond Browne in "The Tonal Implications of the Diatonic Set," *In Theory Only* 5.6–7 (1981), 3–21; also by Helen Brown and David Butler in "Diatonic Trichords as Minimal Tonal Cue Cells," *In Theory Only* 5.6–7 (1981), 37–55.
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3. "A tonality is expressed by the exclusive use of all its tones." Arnold Schoenberg, *Structural Functions of Harmony* (New York: W.W. Norton & Company, Inc., 1954), page 11. The sentence leads off a section entitled "Establishment of Tonality."
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4. The phenomenon is suggestive as regards the end of the answer. Since the end of the subject in this fugue modulates from E minor to B minor, the end of the answer should normatively modulate back from B minor to E minor, requiring adjustment of the melody accordingly. Instead Bach gives a real answer, modulating from B minor to F♯ minor. One hears how the tones missing from the subject—E♯, G♯, and A—play a characteristic role over the second half of the answer, during the modulation to F♯ minor.

No doubt the chromatic closure is subordinate to other aspects of the real answer. Since the fugue has only two voices, the exposition is complete at the end of the answer, and Bach seems eager to move on tonally at once, rather than returning to E minor. Still, the chromatic closure has a certain effect, not least in that very connection.
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5. Lewis Lockwood recalls an analysis course taught by Edward Lowinsky at Queens College, in which Lowinsky approached Book I as a whole by stressing the completely hexachordal nature of the subject for the first fugue in the Book, and the completely chromatic nature of the subject for the last fugue.
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