Dissonant Proportions in Sofia Gubaidulina's *Meditation über den Choral "Vor deinen Thron tret ich hiermit" von J. S. Bach*

by Noah Kahrs

Sofia Gubaidulina's affinity for the Fibonacci series is well-documented, and she considers her uses of numerical series – "the rhythm of the form," in her terms – among her primary compositional achievements.[1] Despite the spiritual and formal importance of this technique to her music, however, it is not always clear how such proportions might relate to our experience of it as listeners. But intriguingly, Gubaidulina describes numerical series in musical terms, so that we might imagine hearing them. For example, she said in an interview with Vera Lukomsky:

> The farther we move away from the Fibonacci series, the less perfect is the proportion. This gives me reason to consider the Fibonacci series as a consonance, and, let's say, the fourth series as a dissonance.[2]

The dichotomy of consonance and dissonance is a particularly interesting connection to invoke, because her music is often described in terms of her distinctive characterization of dissonance, especially among the textures her music is noted for. Consider, for example, Philip Ewell's discussion of Gubaidulina's primary compositional technique of the 1970s, the parameter complex:

> Kholopova has shown that Gubaidulina usually groups together five types of expression parameters (hereafter EP: in Russian, *parametr ekspressii*): articulation and methods of sound production, melody, rhythm, texture, and compositional writing [precise or aleatoric]. Further, each of these parameters can function in one of two ways: as a consonant EP or a dissonant EP.[3]

This article is based on the article "Consonance, Dissonance, and Formal Proportions in Two Works by Sofia Gubaidulina," first published in *Music Theory Online* 26 (2020), no. 2 (www.mtosmt.org/issues/mto.20.26.2/toc.26.2.html; accessed 22 March 2021).

1 Vera Lukomsky, "Sofia Gubaidulina: 'My Desire Is Always to Rebel, to Swim against the Stream!'," *Perspectives of New Music*, 36 (1998), no. 1, pp. 5–41, esp. p. 10.

2 Vera Lukomsky, "'Hearing the Subconscious': Interview with Sofia Gubaidulina," *Tempo*, New Series, no. 209 (July 1999), pp. 27–31, esp. p. 28.

3 Philip A. Ewell, "The Parameter Complex in the Music of Sofia Gubaidulina," *Music Theory Online*, 20 (2014), no. 3, paragraph [1] (www.mtosmt.org/issues/mto.14.20.3/toc.20.3.html; accessed 22 March 2021).

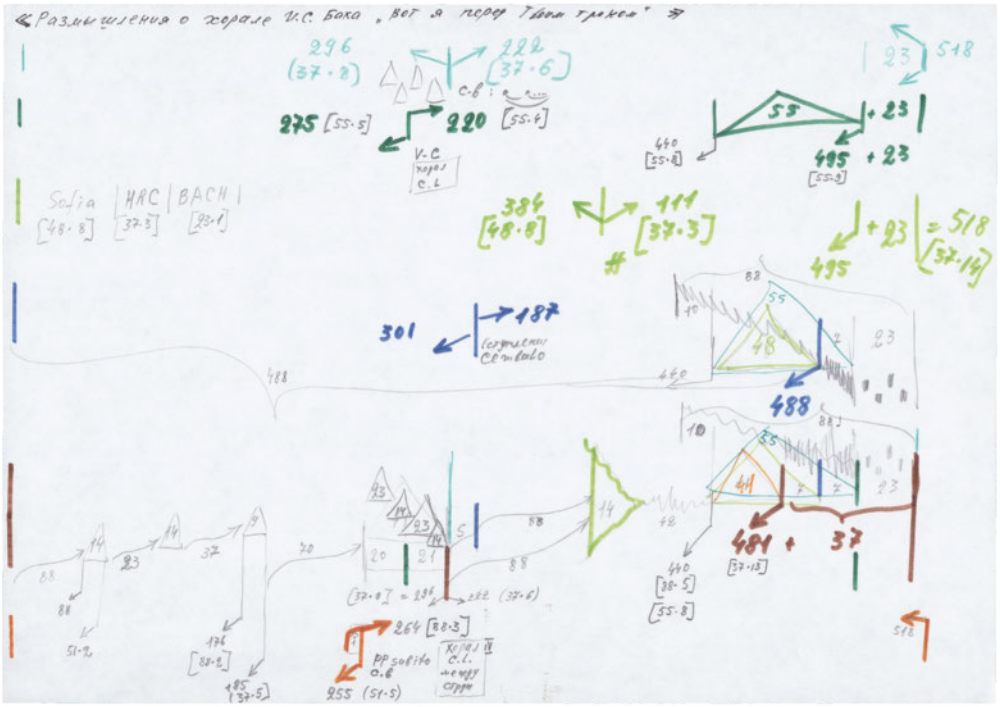

Plate 1: Sofia Gubaidulina, proportional diagram for *Meditation* (1993) (Sofia Gubaidulina Collection, PSS).

Gubaidulina's musical surface is thus described with the same language she uses to describe ratios.

Having seen the similar language used, we might wonder if dissonant ratios somehow yield dissonant sounds. Continuing her remarks from above, Gubaidulina addresses this problem directly:

> Such a proportion [1/7, very far from the Golden Section] will cause a terrible dissonance, which occurs between these two points (i.e., between the "almost perfect" and the "dissonant" Golden Sections […]). The extreme tension between these two points calls for extraordinary musical events that should happen in this area.[4]

To connect the two operative notions of dissonance, then, we need to see just where those "two points" might be. By consulting the Gubaidulina sketches at the Paul Sacher Foundation, one can locate those points musically and know just what ratios govern which sonic events. Indeed, as Tsenova notes, "only the drafts at the Basel archive give us concrete evidence" of Gubaidulina's use of numbers.[5] The sketch material for *Meditation*

4 Vera Lukomsky, "Hearing the Subconscious" (see note 2), pp. 28–29.

5 Valeria Tsenova, "Number and Proportion in the Music of Sofia Gubaidulina," *Mitteilungen der Paul Sacher Stiftung*, no. 14 (2001), pp. 23–28, esp. p. 23 (www.paul-

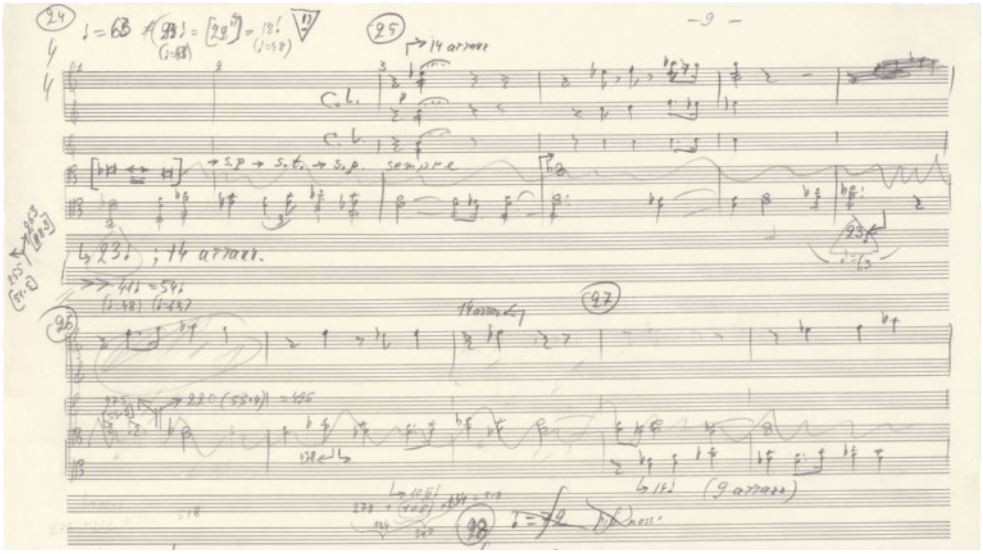

Plate 2: Sofia Gubaidulina, draft of *Meditation* (1993), p. 9, excerpt (Sofia Gubaidulina Collection, PSS).

über den Choral "Vor deinen Thron tret ich hiermit" von J. S. Bach (1993) for harpsichord, two violins, viola, violoncello, and double bass (henceforth *Meditation*) is particularly rich in both proportional and musical detail, and thus forms an ideal testing ground for such a connection.

Plate 1 reproduces Gubaidulina's large-scale formal planning for *Meditation*. Her sketch shows five distinct proportional divisions, each marked with a separate color along the left side (note that brown partially repeats that of light blue). Each of these divisions can be connected to some aspect of her numerology. In the center of the sketch, in dark blue, 301/187 corresponds to the golden section. Above are two competing divisions, whose nature as small-integer sequences is clear from bracketed factorizations: 296/222, with 37×2 factored out, is 4×3, and 275/220, with 55 factored out, is 5/4. Other proportions come from numerology: 384/111, in light green, comes from calculations in the "Number Alphabet" relating to Gubaidulina's name, Christ, and Bach, as implied by the factorizations at the left of the page, and the 255/264 division in orange at the bottom has similar origins.[6] We see, then, five proportions, of varying relative conso-

sacher-stiftung.ch/en/research-publications/publications/official-bulletin/nr-14-april-2001.html; accessed 22 March 2021).

6 The "number alphabet" is discussed at length, including in terms of sketch materials in *Meditation*, in Jennifer Denise Milne, "The Rhythm of Form: Compositional Processes in the Music of Sofia Gubaidulina" (PhD. Diss., University of Washington, 2007), pp. 158–64.

nance and dissonance, between which the conflict might be articulated by "dissonant" sounds.

To know what sounds are dissonant, then, it would be helpful to know where to look for these proportions in the score. Helpfully, the materials in the Sofia Gubaidulina Collection include not just the proportional diagrams and final sketches, but also a series of intermediate working sketches. *Plate 2* reproduces a particularly useful page, showing many aspects of Gubaidulina's calculations. At left, Gubaidulina obtains a 255/263 division from *Plate 1*'s orange 255/264 divison (the first large-scale division in the piece) by no longer double-counting a one-bar fermata. But what sorts of units are these numbers measured in? Earlier pages of the sketches make clear that these are quarter notes at the opening tempo, 48 beats per minute; this pulse serves as a common denominator.

The tempo mark at the top of *Plate 2* helps us count the units specified in *Plate 1*. As the tempo is now 63 beats per minute, we have to convert, and indeed Gubaidulina writes that 23 quarter notes at 63 bpm = 18 quarter notes at 48 bpm. (We can verify her math: $23 \times (48/63)$ is 17.52, which rounds up to 18.) A similar calculation takes place below the first system for a slightly larger phrase: $41 \times (63/48) = 53.8$, approximately 54; that is, 41 quarter notes at 48 bpm is nearly 54 quarter notes at 63 bpm. Additionally, the latter phrase length is instructive with respect to the larger-scale proportions: as this passage begins 255 units (quarter notes at 48 bpm) into the piece, 41 units later is 296, corresponding to the brown/light blue division in *Plate 1*. These 41 units correspond to the 20 + 21 units between the orange and brown/light blue divisions in *Plate 1*, in the second row from the bottom.

By collating such sketches across the piece, one can locate each of the proportions from *Plate 1* in the score. Although there are some differences between her working draft and final score, overall durations and their relations to rehearsal marks are generally unchanged. *Plate 3* summarizes the work's proportions and phrase divisions, using the same colors as in *Plate 1*. In terms of Gubaidulina's compositional theories, the golden section competes with other ratios from R24 up through R33; consequently, we would expect this passage to generally consist of dissonant sounds. The opening, at R24, corresponds to *Plate 2*; the circular bowing, tremolo, and *col legno* all correspond to dissonant parameters in Kholopova and Ewell's classification. Knowing where each proportion is, we can listen for the moments between them and thus for Gubaidulina's theories in *Meditation*'s dissonances.

Comparing *Plate 3* back to *Plate 1*, we can now consider some of Gubaidulina's other markings in the sketch. *Plate 1* had a number of triangles, especially towards the bottom left of the page, in the row beginning with the brown line. Each of these triangles corresponds to a statement of the titular chorale melody, and *Plate 3* helps us know where in the score

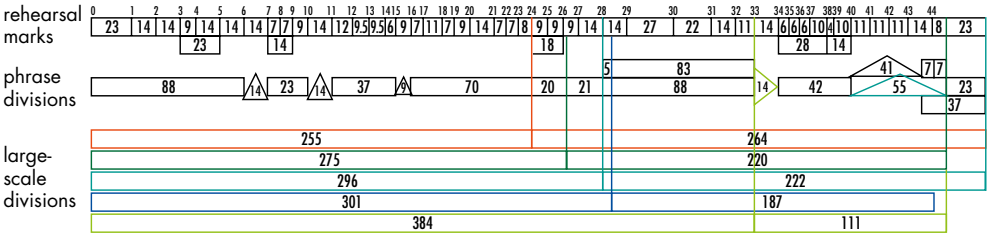

Plate 3: Schematic representation of formal proportions in *Meditation* (1993).

to look for each such statement. Gubaidulina drew these triangles with directional lines connecting them, leading upwards. Each chorale statement is indeed approached by an ascent in register and, although the statements do not get consistently higher in pitch-space, each one's key area is a fourth up from the last.

The direction of the lines additionally corresponds, however, to increases in dissonance, as marked by techniques from the work's middle section. Such dissonances, following the parameter complex, are marked both harmonically by clusters and timbrally with techniques such as *sul ponticello* and tremolo that obscure pitch clarity. Indeed, the passage following the first chorale quote, in addition to ascending from the cello's C string to the end of the violin's fingerboard, also increases in timbral dissonance: it begins with the strings playing slowly and *arco*, and it concludes with *sul ponticello* and tremolo. The chorale quotes themselves also increase in dissonance: the first presents the melody entirely as pure *arco* notes above a drone, whereas the last concludes with harpsichord clusters.

Dissonance, then, proves a fruitful way to hear the proportions that are so important to Gubaidulina. By interpreting these sketches in terms of her compositional theories, we learn not just something about how the piece was composed, but about what it might be to listen to it through Gubaidulina's ears.