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Concepts of Time and Form in Stockhausen's *Klavierstück IX*

Multiple writers, this one included, agree on the basic formal principles of Karlheinz Stockhausen's *Klavierstück IX* (hereafter *KsIX*; premiered 1962).¹ The piece begins with the exposition of two materials distinct in pitch and time content: a four-pitch chord, lasting one eighth-note in duration and repeated continuously throughout each of the first two bars at $\text{♩} = 160$, and a melodic treatment of the rising chromatic scale presented in bar three at $\text{♩} = 60$. In the bulk of the music that follows, these two initial materials are juxtaposed and transformed toward a kind of synthesis. The piece ends with a final, shorter section (bars 117-153) marked by trills and grace notes in the upper register of the piano with a tempo of $\text{♩} = 120$.²

The writers cited above also agree that time proportions in the piece—particularly time signatures and note durations—are organized using the Fibonacci series and a derivative series created by using successive Fibonacci numbers as the differences between its members, yielding 0, 1, 3, 6, 11, 19, 32, 53, etc. As the use of these series in *KsIX* has been discussed by other writers, I will only point out some of the clearest ways these series are used to confirm their presence and identify their relationship to Stockhausen's general musical thinking of the 1950s and early 1960s.

In the ascending chromatic melody in bar three, non-grace-note durations take the form of eighth-note multiples of Fibonacci numbers (3, 8, 5, 13, 5, 8).³ In Stockhausen's seminal article "...*how time passes*...", initially published in 1957, he argues that when comparing durations, we

¹ Stockhausen, Karlheinz. *Klavierstück IX*, (London: Universal, 1967)

² Clarke, Eric F. and Carol L. Krumhansl, "Perceiving Musical Time," *Music Perception* Vol. 7 No. 3 (1990): 222; Kramer, Jonathan, "The Fibonacci Series in Twentieth-Century Music," *Journal of Music Theory* Vol. 17 No. 1 (1973): 123

³ Kramer, 124

hear proportions rather than differences.⁴ Given this statement about perception, it makes sense that he would choose a number series that provides a limited yet rich set of proportions to structure durations in *KsIX*. A similar use of the series occurs in bars 17-34, where Fibonacci numbers govern the durations between new sound events in the form of time signatures—the numerator of each time signature is a Fibonacci number, and new events occur exclusively on downbeats. In *...how time passes...* Stockhausen defines the metric unit as the “fundamental phase,” or a time-container of a given duration to be related proportionally to other meters and filled with notes of proportionally related values.⁵ He applies elements of this theory in *KsIX*, where time signatures rarely repeat periodically, but are nearly always proportionally related to adjacent bars via Fibonacci or Fibonacci-derived numbers. Finally, the Fibonacci-derived series described above can be found in the final section, which is divided into subsections containing 53, 19, 6, 1, 3, 11, 32, and 87 eighth notes respectively.⁶

Given the above, it might be tempting to try to explain all parameters of *KsIX* via Fibonacci numbers. However, I do not think this method would explain how one perceives the manipulation of time on the surface of the work, nor do I think Stockhausen’s decision-making methods are confined to number series alone, despite his obsession with unity. Which leads to a question: what is the nature of Stockhausen’s serialism, and what analytical method can best approach it?

Jonathan Harvey addresses these issues in his analysis of other *Klavierstücke*. He argues that one should not attempt to track a series through a Stockhausen work, as the composer cares more about mediating between the extremes of a spectrum than cycling through an ordered set:

What matters is that we are aware of a scale between two extremes being used in an artistically varied way...Stockhausen is as interested in using a mode, or repertoire, of graded possibilities...as he is in making clear a repeated ordering of that repertoire.⁷

⁴ Stockhausen, Karlheinz, “...How Time Passes...,” Trans. Cornelius Cardew. *Die Reihe* 3 (1959): 11

⁵ Stockhausen, “How Time Passes,” 16

⁶ Kramer, 124

⁷ Harvey, Jonathan, *The Music of Stockhausen* (London: Faber & Faber, 1975), 41

Alcedo Coenen seems to concur but takes the point further, stating that for Stockhausen, serialism is a “method of thinking” which can be summarized as follows:

- 1) Take or create a dualism as a starting point
- 2) Create a scale between the two extremes of the dualism
- 3) Consider the created scale as a starting point for a new dualism⁸

A few observations on this formula: first, it defines Stockhausen’s serialism as an essentially dialectic enterprise. Second, applied broadly, it can adequately describe the entire form of *KsIX*. The majority of the piece is concerned with integrating, or creating a scale of levels of integration between, the dualistic materials presented in the first three bars, while the final section provide contrast to the preceding process (at least superficially), creating a new dualism.

The process of integrating the two initial materials of *KsIX* is complex and proceeds differently within the many parameters at play in the piece (these include traditional serial parameters like dynamics and pitch, but also other, piece-specific meta-parameters, such as the formal continuum from periodic repetition to pointillism). Thus I propose to identify some continua between extremes in *KsIX* that audibly affect one’s perception of time in the work and particularly reflect Stockhausen’s concerns, then show how various steps along these continua are deployed.

A continuum of vital formal importance to the piece can be found in the extremes of how the opening chord is used in time. The initial presentation of this chord (C#3, G#3, G3, C4) is defined by periodic repetition – it is repeated 140 times in bar one and 87 times in bar 2 at a constant rate; these repetitions occur within a large-scale decrescendo across each bar. As the piece continues, the chord recurs often, but its periodic repetitions are destabilized in many ways until its role in the music becomes that of *punkte*, which I will define here (after Coenen) as a single iteration with a unique definition in all basic parameters – “pitch, duration, dynamics, color, and place.”⁹

⁸ Coenen, Alcedo, “Stockhausen’s Paradigm: A Survey of His Theories,” *Perspectives of New Music*, Vol 32 No. 2 (1994), 210

⁹ Coenen, 211

Stockhausen writes of his desire for an instrument that would allow gradual transition between periodic sounds and noise; here, without such an instrument to use, he creates a continuum between periodic pulse and isolated point (which can then be combined with other events to form gestures.)¹⁰

Interruptions of the opening chord's periodic pulse occur already at the end of bar one and in bar three, when contrasting material is presented, but the first major stage of destabilizing the periodic repetitions of the opening chord takes place in bars 4-16, when bars of chord repetitions alternate with bars of rest in which only the resonance caused by the right pedal can be heard. Here the chord's F# breaks away to become a grace note, causing an oscillation of short-long durations to enter the profile of the repeated figure. In bar 16, the last bar in which the chord will occur for some time, the three adjacent iterations are given unique articulations and dynamics—*punkte* characteristics, yet still in the context of periodic repetition.

It is important to note that the continuum of uses in time for the opening chord is not presented linearly—when we next hear the chord, it is as a point in bar 37. Stockhausen thus presents the extremes of the periodic-repetition-to-point scale early on, inviting us to discover the intermediate stages of its transformation. Between bars 45 and 63, periodic repetition of the chord is destabilized in numerous ways. In bars 45 and 46, this repetition is interrupted by rests, which recall bars 4-16. In bar 51, the lowest two notes of the chord are gradually separated into grace notes, bringing back the short-long oscillating rhythm. In bar 53, the chord is presented with three different durations, the first of which is separated into a grace-note dyad and primary-duration dyad. In bar 55, the nine iterations of the chord display two different rhythmic values that syncopate its position within the bar; the first three and last iterations are separated into grace-note and primary duration dyads. In bar 58, the repetitions are written as constant eighth-notes, but are modulated by a brief *accelerando* and *ritardando*. Bar 59 is in 5/16, forcing the third iteration of the chord to be cut

¹⁰ Stockhausen, "How Time Passes," 39

short; bar 61 sees the chord repeated only twice, in different durations, as part of a gesture that ends with a trichord in the upper register and increases in dynamic. Finally, the last two appearances of the chord in this section complete the transformation: Bar 62 opens with the chord used once as part of a gesture that again ends with a trichord and increases in dynamic. In bar 63, the chord is used once as a point; it also participates in a gesture, as it triggers the release of the right pedal. The net result of all these details is audible: the periodicity of repetition we have come to expect from the chord is progressively destabilized, and ultimately dismantled.

On top of the progression toward fewer consecutive chord iterations and less periodicity, Stockhausen introduces trills and increases his use of grace notes throughout this section. These ornamental elements, often appearing simultaneously with the initial chord, promote the increasing perception of duration in general as locally relative and irregular. Standing outside of duration as explicitly governed by meter and tempo, trills and grace notes bring into play Stockhausen's parameter of durational freedom, measured by the "field-size," or degree of divergence from a standard value that a given note may display in performance.¹¹ Here, the durations of the trill oscillations and grace notes are somewhat regulated by their appearance in a texture with other notes of fixed duration that force the overall tempo to remain steady. However, in the final section of the piece, the parameter of durational freedom (or the "field-size" of individual notes) is brought to an extreme through filling bars with essentially nothing but grace notes, spatially dispersed, with the instruction to play "irregularly" but also "as fast as possible."

Although more details regarding the ongoing transformation and integration of the opening chord with the second initial material can be traced in the score, for the moment I will turn to another formal spectrum at play in *KsIX*. Returning to Stockhausen's definition of meter as the "fundamental phase," one can observe a spectrum of ways in which he makes the durations of

¹¹ Stockhausen, "How Time Passes," 30

fundamental phases (bars) audible—in other words, how he fills the metric container. One extreme of this scale is found in the first two bars, where downbeats are punctuated by loud dynamics and internal beats are articulated by periodic repetitions of the opening chord. The other extreme is bars that are defined negatively—they contain rests; no new events occur. In-between stages appear non-linearly; examples include bars 17-34, where new sonic events occur on downbeats but may be held over the barline; bars 90-108, in which events occur on each downbeat but may be cut off before the bar ends; and the final section (bars 117-end), where each bar is defined by a group of notes, but the duration of those notes and the spaces that follow them are undefined. It is up to the performer's instinct and his or her physical limitations to determine the exact durations with which the metric container is filled—a scenario Stockhausen describes almost exactly in “...*how time passes*...”¹²

The interrelation of pitch and time is an important element of Stockhausen's musical thinking, and thus a few connections between pitch and time organization in *KsIX* conclude this analysis. Stockhausen sees both spheres of musical information as deriving from periodically recurring time-units (or “phases”), with infinite possible durations. Along this duration-spectrum one finds various perceptual boundaries, such as the audio threshold, where phases move from one category of information (duration) to another (pitch).¹³ Although a solo piano does not allow Stockhausen to glide across these perceptual boundaries as he does in the electronic medium, conceptual connections can still be found between the organization of pitch and time in *KsIX*.

Symmetry unifies pitch and time elements on various levels in the piece. The underlying row used for pitch organization comprises two all-interval hexachords, the second of which is the transposed retrograde of the first; their interval contents are thus mirror images of each other.¹⁴ The opening chord is constructed from two dyads that are taken from symmetrical points in the two

¹² Stockhausen, “How Time Passes,” 34

¹³ Stockhausen, “How Time Passes,” 10

¹⁴ Maconie, Robin, *Other Planets: The Music Of Karlheinz Stockhausen*, (Scarecrow Press, 2005), cited in Wikipedia, http://en.wikipedia.org/wiki/Klavierst%C3%BCcke_%28Stockhausen%29#Klavierst.C3.BCck_IX, accessed 10/27/12.

hexachords and define their vertical boundaries. Symmetry around a central axis can also be found on a larger structural level in the time organization of the piece. On a basic and eminently audible level, the bookending of the developmental interior of the piece with shorter sections of relatively stable material provides formal symmetry. On a deeper level, sub-sections of music defined in length by numbers from the Fibonacci-derived series can be found in the final section, as discussed earlier, and in the first two bars, whose time signature numerators (142, 87) are both terms in this series. While Jonathan Kramer dismisses this connection as inaudible, it seems to be a manifestation of the more metaphysical or spiritual elements of Stockhausen's thinking.¹⁵ Coenen refers to the image of the spiral (consisting of both "the circle and the arrow") as seminal to the composer's spiritual worldview; connecting the beginning and end of the piece with a similarly derived set of time proportions seems consistent with the image, evocative of reincarnation, of simultaneously circling back and moving forward.¹⁶

Finally, the proportional relationships between the three tempi used in *KsIX* reflect both Stockhausen's use of Fibonacci numbers for time organization in this piece and his tendency to correlate of pitch and time by means of ratios. 160 and 60, the tempi used throughout most of the piece, have an 8:3 ratio, consistent with Fibonacci proportions. 120, the tempo of the final section, relates to 60 in a 2:1 ratio—or as Stockhausen would say, "a time-octave"—which is also found in the Fibonacci series.¹⁷ However, the ratio between 120 and 160 is 3:4, which is not a Fibonacci ratio. However, Stockhausen might call this ratio a "time-perfect-fourth": in other words, a massive transposition of perhaps the most important pitch interval in the piece—the primary interval from which the opening chord is constructed.

¹⁵ Kramer, 147

¹⁶ Coenen, 208

¹⁷ Stockhausen, "How Time Passes," 11