Music Theory for the Twentieth-First Century: James Tenney's Meta-Hodos

by

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As composers in the early twentieth century began to burst the bounds of tonality, Western music entered a theoretical crisis, unable to elucidate contemporary practice. While this crisis acutely affected the works of composers such as Edgar Varèse or Anton Webern, even works by "conservative" composers such as Samuel Barber and Benjamin Britten fit awkwardly within the old paradigm. At the start of the twenty-first century, set theory and semiotic analysis have filled some of this gap, but no tool having both the sophistication and descriptive power of those available to tonal music—both traditional methods and more recent ones (such as those by Schenker, Lerdahl, and Tymoczko)—has gained significant traction. Thus, James Tenney's 1961 prognosis about theory for twentieth-century music still rings true today: "The problem is not really one of a lack of familiarity, but of a nearly complete hiatus between music theory and musical practice. Thus, even when the novelties of the various styles and techniques of 20th-century music have become thoroughly familiar, certain 'complexities' will still remain outside of our present conceptual framework" (*Meta-Hodos* 4).

Recognizing this challenge, Tenney developed his own sophisticated tool for musical analysis based on gestalt psychology. The foundation for much of Tenney's theoretical work is contained in his 1961 Master's thesis, entitled *Meta-Hodos*. Through its title— from the Greek roots of English word "method," *meta* meaning "after" and *hodos* meaning "way"—Tenney suggests the idea that he is presenting not only a new analytical strategy but also a way forward for theory generally. Later, Tenney would elaborate on his theory, most significantly in 1975 (in his formal outline *META Meta-Hodos*) and in 1980 (in his article "Temporal Gestalt Perception in Music," co-written with Larry Polansky).

While Meta-Hodos and its related works have attracted a small group of loyal admirers, it has so far failed to gain a foothold among larger musical community. This obscurity likely derives from two main sources: first, Tenney's indifference toward self-promotion, and second, the density and esoteric nature of Tenney's writing itself. Whatever the reason for its neglect, the theoretical framework that Tenney outlines should be more widely accepted because it not only provides a rich descriptive framework but also does so in an intuitive, musical way. In this essay, after explaining Tenney's theory of temporal gestalt analysis and applying it to the fourth movement of Webern's op. 5 String Quartet, I will then contextualize it within current analytical practices and propose some contexts for which it could be incorporated into broader use by the musical community.

#### Understanding Temporal Gestalts

At the heart of Tenney's theory is the postulate that time is hierarchical: "A piece of music does not consist merely of an inarticulate stream of elementary sounds, but a hierarchically ordered network of sounds, motives, phrases, passages, sections, movements, etc.—i.e., time-spans whose perceptual boundaries are largely determined by the nature of the sounds and sound-configurations occurring within them" ("Temporal Gestalt Perception in Music" 205).

These differentiated time-spans as they occur on various structural levels Tenney calls Temporal Gestalt Units (or TGs, see Figure 1). Superficially, this differentiation into various structural levels bears Piece resemblance to Heinrich Schenker's theory of tonal music. However, two

*Element*  $\approx$  a pitch or sound Clang  $\approx$  motive Sequence  $\approx$  phrase Segment  $\approx$  phrase group Section  $\approx$  section

*Figure 1. Approximate scale of temporal gestalt units* with reference to traditional analytical terms

significant features distinguish Tenney's conception from Schenker's. First, Tenney's theory works independent of specific materials (i.e., the tonality in Schenkerian analysis). Second, unlike Schenker's concept of fundamental line, any teleology observed through temporal gestalts springs from gestalt-forming factors (to be discussed later) rather than Tenney's interpretive lens.

Although many factors can contribute to the perception of a time-span as a temporal gestalt, Tenney suggests that each parameter—absolute pitch, register, rhythm, timbre, dynamics, etc.—be graphed independently as a function against time. The salient parameters vary from piece to piece and sometimes within a piece. As Tenney explains, "Whereas in earlier music the responsibility for the articulation of musical ideas was mainly given to the pitch parameter, the other parameters have begun to carry more and more of this responsibility, sometimes replacing the function of pitch altogether" (*Meta-Hodos* 18). With these parameters thus graphed, it becomes easier to determine the boundaries between TGs.

Without going into his arguments, Tenney proposes that TGs can be distinguished using factors similar to those used to distinguish visual gestalts (see *Meta-Hodos* §2). The two primary distinguishing factors for temporal gestalts are proximity and similarity. By proximity, Tenney

means that elements group themselves by their spatial distribution. In music, this distribution happens in pitch space and in time. By similarity, Tenney means that, given equal distribution, comparable elements will seem like independent groups. (See Figure 2.)

Proximity: 000 00 0000 00 00000 Similarity: 000###0000##

Figure 2. The TG-deterimining factors of proximity and similarity are quite easy to understand from their visual equivalents.

In addition to these two primary factors, Tenney identifies four additional ones influence TG perception: (1) *Intensity* is the relative position of a parameter with respect to time: e.g., rise

and fall of a melody, increase in dynamics or tempo, shift from a mellow to a harsh timbre, etc. Where these parameters vary widely, the intensity peaks become focal points and the starting point of TGs (*Meta-Hodos* 41). (2) *Repetition* of a parametric profile tends to divide a whole into parts defined by the repetition, whether exact or approximate. (3) *Objective set* refers to those expectations created internally by a work. Tenney cites hemiola as an example effect produced by objective set. (4) Lastly, *subjective set* refers to those expectations that listeners bring to a work from their life experience.

Because Tenney views time and temporal gestalts as hierarchical, these same factors that determine TG boundaries are the same that dictate form—form, being nothing more than temporal gestalts occurring on successively larger scales. According to Tenney, form in music comprises three distinct facets: shape, structure, and state. Shape refers to the parametric variation within a TG (a direct outcome of intensity); structure refers to its internal relationships; and state refers to its overall, statistical properties.

Because temporal gestalts are perceived because of their differences, it should be no surprise that Tenney also sees each of these aspects of form arising from contrast rather than unity (as it is often discussed, particularly in relation to the common practice repertoire): "It is the differences between the successive elements of a clang, (and between the successive clangs of a sequence), which determine the form of the clang (or sequence)—not the similarities, although the latter usually constitute the primary factor of cohesion" (*Meta-Hodos* 58–59).

Tenney also notes that, in determining form, "the formative parameter in a given configuration is generally distinct from the cohesive parameter in that same configuration" (*Meta-Hodos* 64). This conclusion is, of course, a consequence of the factor of similarity. If a group of TGs are related by the same factor, they will be enmesh into a larger scale TG, and thus, that cohesive factor cannot be the one by which they derive their form.

## Application to Webern op. 5, mvt. 4

With this overview in place, we're prepared to discuss Tenney's theory in application to a piece. I chose to analyze the fourth movement of Webern's op. 5, because it is a good example of twentieth-century repertoire for which traditional analytical paradigms reveal little. For instance, whereas set theory may describe the sonorities and their transformations in this movement, it does little to reveal the movement's shape and structure. In contrast, temporal gestalt analysis quickly reveals some pertinent and interesting features of the movement.

In the appendix, I have reproduced the score of the movement in its entirety and colorcoded the TGs at their various levels. This process reveals that, generally, Webern separates his clangs using the factor of proximity and his sequences using the factor of similarity. We see many of these factors in play in the first sequence of the piece (measures 1–2). The space between the tremolos in the violins separates them into separate clangs (proximity-factor); yet the similarity between them in register and timbre unites them into the same sequence. Likewise, because the following pizzicato chord also falls in the same register, it is perceived as part of that sequence. Because the cello E-flat exists in a different register and in a different temporal location, its lack of proximity makes it perceived as a separate clang. In addition, its unique timbre reinforces this perception (because of the similarity-factor). However, because these clangs flow continuously from one to the other until the downbeat of measure 3, they all are perceived as part of the same sequence by rhythmic proximity.

We see such primary factors of temporal gestalt perception happening later on in the movement at a larger scale temporal gestalt level. In the realm of segments, the third system becomes focal point of the movement because of the similarity factor: not only is it the longest sequence (twice as long as all the others), but it also contains the most stable texture (elsewhere in the movement, ideas are more fragmentary). Again, that this perception derives from the dissimilarity of this segment from the others reinforces Tenney's claim that form arises from contrast rather than unity.

This movement also contains good examples of the influence of secondary factors in TG perception. The primary temporal gestalt of measures 3–4 (primary because of its being the most rhythmically and timbrally intense), the descending eighth note figure, is perceived as a clang because of its repetition. (Each iteration is also distinguished by its shifting location in pitch space.) In the third system, the viola's pizzicato arpeggios also separate themselves into separate clangs because of the factor of repetition.

Regarding the formal shape of the movement, we can observe that the sequences progress from fragmentariness to near unity of the measures 11–12. While the uniqueness of the third system sets it apart from the rest of the movement, the intensity of measures 11–12 that help this section feel climactic. In these measures, Webern unites all the instruments in their highest registers and harshest timbres, in addition to fulfilling the process of coalescence.

As we explore the structure of the movement, more interesting relationships reveal themselves. First, at the largest formal scale, the movement is bounded by two pizzicato chords. Second, each section of the piece finishes with an upward run. Again, intensity factors into our perception of these clangs as they relate to the structure of the movement. For most of the movement, they sound separately as terminal markers. Only at the end of the movement do both ter-

minal markers appear, one after the other. Likewise, the intensity of the upward run with respect to rhythm also contributes to the movement's sense of closure. Initially, the upward run consists of even sixteenth notes (measure 6), with the slight modification of a ritardando. At its second appearance, not only does the run slow down in response to a ritardando but also because it is written in progressively slower values, triplet eighth notes becoming straight eighth notes. In its final appearance, however, the run is not only at its fastest (responding to no ritardando), it also speeds up, going from straight sixteenths to quintuplet sixteenths. (This effect of this variation in rhythm can also be seen as deriving from the objective set–factor.)

These structural formal features in turn reinforce the movement's morphological form. The gradual coalescence of the first four sequences is affirmed by the gradual slowing down of the first upward run, and the even greater coalescence of the sixth sequence is affirmed more emphatically by the even greater slowing down of the section upward run. At that point, Webern snaps back to his two-measure pace with the most intense sequence of the entire movement and follows this punctuation with both structural markers, the run this time speeding up, mirroring the increased pace and intensity of what just happened.

These observations were made with limited recourse to specific pitches; however, in this parameter, as well, temporal gestalt analysis reveals interesting structural observations. One of the important melodic motives in the piece is the movement from E to F-sharp to G. It first appears in the upper voice of Violin I and is soon transferred down two octaves to the Viola in measure 2. Just before measure 5, still in the viola, the motive finishes its progress, down another octave. At this point, its use is suspended until the climax of the piece at measure 11, where it occurs in its highest octave yet as harmonics in Violin I. Again, in this process we find an affirmation of the movement's morphological form—a gradual relaxing followed by a spike of intensity.

Clearly, further discussion could be had about the structure and morphology of the whole movement as well as its constituent TGs, but at this point, I want to emphasize how immediately transferrable these observations are to musical practice. By analyzing the movement in this way, members of a quartet would be able to understand their individual roles as they relate to the form of the movement, on all scales. The same way knowledge of sonata principles helps players shape their performance of common practice repertoire, an awareness of the TGs and their relationships in this movement would enable performers to "see the forest for the trees" and to highlight the gestures and their relationships in this work.

## Contextualization To Other Analytical Systems

In the context of other prevalent methodologies for analyzing twentieth-century music, the virtue of such depth and immediate applicability should be obvious. Set theory, for instance, (see Cook 124–151) may do a good job classifying the sonorities and their transformations in the Webern movement, but because most listeners (and many performers) will never be capable of hearing the intricate transformations Forte identifies, the usefulness of a comprehensive set theory analysis (i.e., beyond classifying the sonorities) is questionable. Furthermore, because set theory is solely focused on pitch, any formal guidance it offers would be tangential at best. In contrast, it would be possible to subsume a set theory analysis into an overall temporal gestalt analysis, using the identified sets as a way to further distinguish TGs.

Likewise, while semiotic analysis (see Cook 151–182) also deconstructs pieces into their component parts, it submerges larger scale hierarchies in favor of structural similarities on lower level ones. Consequently, though it gives a comprehensive sense of a work's factors, it obscures their formal integration. In addition, while the comprehensiveness may provide the virtue of

thoroughness, it makes the analytical process time intensive. In contrast, even a cursory temporal gestalt analysis can provide useful insights.

Most of these benefits of temporal gestalt analysis arise because of its relentless pursuit of its initial postulate, the hierarchical nature of time. While such a hierarchy may seem self-evident to most musicians, acknowledging this postulate is critical, because from it arise several key conclusions. First, if music is seen as a hierarchically ordered network of discrete components, then there must be a way, as Tenney implies, to identify their "perceptual boundaries" (which way has been previously described). Consequently, the exact nature of these components are irrelevant, and the analyst may proceed without recourse to stylistic assumptions, because the work's hierarchy will guide its own dissection. Likewise, because this network is hierarchical, components on a smaller hierarchical scale must subsume into those on a larger scale, from indivisible sounds up until the complete piece. Consequently, Tenney's initial postulate creates a framework that is not only stylistically neutral but also simultaneously accounts for both form and content.<sup>1</sup>

Finally, I should note that my application of temporal gestalt analysis differs somewhat from the late methods of Tenney and his collaborator Larry Polansky. In their 1980 paper, Tenney and Polansky use "a computer analysis program . . . to obtain hierarchical segmentations" (217). While such interdisciplinary excursions could be useful for musicologists and theorists, for the average musician, they perpetuate very rift between theory and practice that Tenney critisized in 1961. What could be more counterproductive for a theory whose goal is to reunite theory and practice, particularly one that succeeds in doing so, to then extend its reach well beyond the realm

<sup>&</sup>lt;sup>1</sup> While these consequences may lay the groundwork for a tremendously flexible analytical tool, it should be obvious that they favor the listener's conception of the piece over the composer's. Indeed, I feel that one of the most valid criticisms of twentieth-century music was that composers often failed to acknowledge this distinction in their compositional process. For instance, as Stockhausen discovered the hard way, you can't create "point music" without these points grouping themselves into unintended relationships—which groups arise for the reasons Tenney identifies.

of musical practice? Most musicians are neither programmers or statisticians, and even for those who are, these disciplines have practically no influence on performance and only limited influence on composition (an influence limited to those composers whose artistic interests require the use of such tools). Thus, I would rather promote the study and use of Tenney's ideas in ways that mirror common musical practice rather than those ways that extend beyond that practice.

## TG Analysis as a New Common Practice

By far the most compelling feature of Tenney's theory of temporal gestalt is its stylistic neutrality. What was clear in 1961 is even more obvious now: any sound can be used to create music, whether that sound is a diatonic scale or the barking of Brian Wilson's dogs.<sup>2</sup> Likewise, it's no longer unusual for musicians to flit between Classical, jazz, rock, electronic, and experimental music—or even to combine these genres. Indeed, this eclecticism is our new common practice. Thus, any new common practice theory *must* be style-blind. Though daunting as presented in Tenney's prose, Tenney's theory of temporal gestalts is the only contemporary music theory that not only has this kind of inclusive power but also is simple enough (after some careful explanation) for the average musician to use, thus placing it in prime position to take up the new common-practice mantle.

Still, at this point, temporal gestalt analysis is a nearly untapped resourse. Its potential uses are many and varied. On the analytical end, if there is any repertoire that screams for TG analysis, it would be electronic music, particularly *musique concrète*, and though Tenney wrote some electronic works from a temporal gestalt perspective (see Ames 456), no one has ever analyzed eletronic music using it. In addition, TG analysis could also be useful in examining tonal rep-

<sup>&</sup>lt;sup>2</sup> They appear at the end of "Caroline, No" on the Beach Boys' album *Pet Sounds*.

ertoires. In these repertoires, the harmonic aspects have, of course, recevied endless attention; however, their sonic aspects, such as texture and gesture, have languished in comparative neglect.<sup>3</sup> Such questions are precisely what TG analysis is good at. In addition, Tenney's conception of form arising from the contrast of TG units is a novel concept in tonal analysis and could provide new insights outside the purview of traditional and Schenkerian analysis.

Pedagogically, TG analysis also has much potential use in coaching twentieth-century music and in teaching composition. Of those first uses, TG analysis teaches players unfamiliar with twentieth-century styles how to parse the (seeming) jumble of notes into coherent musical phrases. This cognitive ability would do much to help young musicians hostile to new music change their attitude as it goes from being something harsh and incomprehensible to at least being harsh but ordered. Of the second use, TG analysis provides an excellent conceptual framework for young composers not only to grasp the interrelationships of form and content on different formal levels but also to unify disparate musical materials.

While all these applications hold great potential, they are all naively optimistic unless more groundwork is done to familiarize the musical community with Tenney's theory and demonstrate its usefulness. It is hoped that this paper is a step in that direction.

<sup>&</sup>lt;sup>3</sup> Among scholarly works devoted to the subject of texture specifically, some notable references include: (1) Berry, Wallace. *Structural Functions of Music*. New York: Prentice Hall, 1976.; (2) Tubb, Monte. "Textural Constructions in Music." *Journal of Music Theory Pedagogy* 1 (Fall 1987): 201–224; and (3) Trimmer, Maud Alice. "Texture and Sonata Form in the Late String Chamber Music of Haydn and Mozart." PhD Diss. City University of New York, 1981.



Appendix: Temporal Gestalt Analysis of Webern op. 5, mvt. 4

Yellow = clangs arising from proximity factor Green = clangs arising from repetition factor Red = clangs united by similarity factor Blue = key structural clangs Pink = melodic motive Purple = sequences

# Works Cited

Ames, Charles. "Reflections on James Tenney" *Perspectives of New Music* 25 (Winter-Summer 1987): 455–458.

Cook, Nicholas. A Guide to Musical Analysis. London: J. M. Dent and Sons Ltd, 1987.

- Tenney, James. Meta-Hodos and META Meta-Hodos. Lebanon, NH: Frog Peak Music, 2000.
- Tenney, James and Larry Polansky. "Temporal Gestalt Perception in Music." *Journal of Music Theory* 24 (Autumn 1980): 205–241.

Webern, Anton. Fünf Sätze für Streichquartett. Wein: Universal Edition, 1922.