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Reconsidering Organicism in Milton Babbitt's Music and Thought

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Abstract

RECONSIDERING ORGANICISM IN MILTON BABBITT'S MUSIC AND THOUGHT

by

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This dissertation makes two related but distinct claims. The first explores the influence of organicism, particularly in the hierarchical formulation developed by Heinrich Schenker, on Milton Babbitt's thought. This influence is shown to inform Babbitt's writings on a range of issues, guiding his analyses, his view of music cognition, and his understanding of the tonal and twelve-tone systems, including his own compositional twelve-tone techniques. Analysis of Babbitt's compositions, however, reveals several complications with the organicist model: there are a number of pieces and situations that conflict with the expectations of hierarchical organicism. As a result, this dissertation advocates for a more limited and nuanced view of the role of organicism in Babbitt's music, situating it as one concern among many. Various non-systematic aspects of Babbitt's music, artistic concerns that have little to do with the twelve-tone system, are illuminated by this approach. This dissertation is informed throughout by the newly available Milton Babbitt Collection of the Library of Congress.

Acknowledgments

Let me start with the easy ones. CUNY supported my work with an Enhanced Chancellor's Fellowship and a Dissertation-Year Fellowship. At the Library of Congress, Steve Yusko and Loras Schissel helped me access the Milton Babbitt Collection. Earlier versions of this material were presented at meetings of the Legacy of Milton Babbitt Colloquium, the Music Theory Society of the Mid-Atlantic, the Music Theory Society of New York State, the Society for Music Theory, the Society for American Music, the Eighth Biennial Conference on Music Since 1900, and the European Music Analysis Conference, as well as at the CUNY Graduate Center, The University of Alabama, Florida State University, and Eastman School of Music. Some ideas contained herein have also appeared in *Music Theory Online* and *Theory and Practice*. I am grateful to these societies, schools, and journals for the chance to air out my ideas, and grateful for the commentary each of these opportunities provided.

Of the many CUNY faculty members I've had the honor to work with, Jeff Nichols, Bill Rothstein, and Joe Straus deserve particular thanks. I originally came to CUNY to study with Jeff, and his humane, calm, and wise presence over the past seven years has been a source of confidence when I most needed it. Jeff also has a kind of guts quite rare in academia, and which has been inspirational to me: the guts to not solve a problem, when one can learn more by not solving it. Bill's exacting standards taught me, as they have so many others, hard lessons about the en dash and em dash. He has also exemplified a standard of excellence to which I continue to aspire. Joe has been a steady guide throughout this whole process: generous, patient, and always encouraging. His

wizardry—and, again, incredible generosity—with professional development meant that, in the end, this dissertation had a much-needed deadline.

A turning point in my studies was a seminar on Babbitt co-taught by Joe Straus and Jeff Nichols. Joe and Jeff granted me extraordinary latitude in that class, and if I sometimes look back with embarrassment at my vocal attempts to steer the class toward my own preoccupations, I'm deeply grateful for having had the opportunity to try to articulate ideas that, if not quite inchoate, were certainly unwashed. The brutal schedule of weekly papers meant that I had to constantly work up new ideas. Not all of the ideas were good, and some needed substantial refining, but the point is: I had a lot of them. Much of this dissertation originated in those weekly assignments.

Over the years—during the research and writing, but also during the seven or eight years preceding, as the set of concerns addressed in this dissertation gradually caught my attention—conversations with a number of people have been helpful. I owe thanks to Scott Gleason, Alison Maggart, Josh Mailman, Ed Klorman, Bruce Quaglia, Steve Peles, Bob Morris, Andy Mead, Joe Dubiel, and, above all, Dan Colson, who has been a fellow traveler with me since the summer of 2005, in Berlin, when he would occasionally disappear to go read a book I didn't yet know anything about: *The Collected Essays of Milton Babbitt*.

My parents have provided unwavering support as I proceeded through what must have seemed a baffling series of career choices. Loretta deserves more thanks than I can give her here.

Finally, I must thank the man at the center of all of this: Milton Babbitt himself. I briefly studied with Milton in 2007 and the winter of 2008. He didn't tell me a thing about his music: if readers of this dissertation are looking for the inside story, prepare for

disappointment. But as to what he represented to me, the knowledge and perseverance and (yes, although it was expressed a little grumpily) passion he embodied, and for the kindness and enthusiasm in my work that he extended to me, my gratitude is unbounded. This dissertation is probably not something he'd be interested in reading—indeed, I'm quite sure he would have wished I'd spent my time composing. He is not my "hypothetical other." But the basic idea that thinking about music was something both difficult enough and rewarding enough to consider dedicating one's life to, I learned from him. I am so lucky to have met him.

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INTRODUCTION

The late writings of Milton Babbitt sing with nostalgia. Gifted with long life and a steel-trap memory, thrilled to have come of age in the vertiginous turbulence of the 1930s, proud of his acquaintance with a long list of musical giants, and well-aware that the story of his development was central to the story of the development of American music and musical thought, Babbitt wrote and spoke again and again in his later years about his own musical and intellectual formation. In these reminiscences, the galvanizing event that made the man was not the hearing of any particular composition, the reading of any particular book, or the meeting of any particular inspiring personage—although music, books, and people certainly do figure in these stories—but his arrival in New York City in 1934. Drawn to New York by the discovery of a volume—Marion Bauer's *Twentieth Century Music*—that offered tantalizing glimpses of recent European music still so-little heard in the United States, and that suggested to the young musician, flush with "curiosity and appetite for contemporary music," that New York was the place to encounter this music, Babbitt discovered not only music, but an intellectual environment that he scarcely could have predicted.[1]

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[1] Babbitt ([1991b] 2003, 439). Babbitt recounted the story of his early years in New York dozens of times in his last several decades; the fullest treatments are Babbitt ([1991b] 2003) and Babbitt ([1999] 2003). For a much more extensive look at the music-theoretical ferment of the New York City of Babbitt's youth, see Girard (2007, 111–84).

The rise of Nazi Germany had already loosed a trickle of what would soon become a flood of refugees. New York City would be the arrival point, and often permanent home, of a vast number of European musicians and scholars of every stripe. Arnold Schoenberg, among the first of these musical exiles, arrived in New York just three months before Babbitt.[2] Although arriving at different times and via different routes, the remnants of old intellectual circles were quick to find each other and by the late '30s, the Manhattan apartment and the faculty lounge replacing the European café, had reconstituted to a substantial degree. With broad talents and broader interests, Babbitt moved easily among these groups, coming into contact—at a very early age, his late teens and early twenties—with first-rank intellectuals from an exceptional variety of disciplines and subdisciplines.[3] While he may have been on the "fringes" of the circles formed by acolytes of Schoenberg and Heinrich Schenker, as Aaron Robert Girard has it, he moved among the fringes of many groups.[4] The heterogeneous thought with which he surrounded himself in those early, formative years would mark him for life. Although his reflections on those years express full awareness of the tragedies of the 1930s and '40s—the tragedies that brought European intellectuals to New York and that kept so many of them in poverty and humiliating anonymity—they crackle with delight for his having been a witness to the "jagged edges of abruption"[5] of a transforming world.[6]

In Babbitt's telling, his primary influences from those years—or, at least, those whose influence would have the longest effects—were Viennese, by choice if not by birth.

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[2] Babbitt ([1991b] 2003, 439).
[3] Stanley Cavell (2010, 297) recollects that Babbitt in 1952 "seemed to know every musician in the world and every writer or painter in New York." On the political circles with which Babbitt was involved in the '30s and '40s, see Brody (1993).
[4] Girard (2007, 170).
[5] This lovely phrase appears in Babbitt ([1960] 2003, 55).
[6] See, e.g., Babbitt ([1999] 2003, 483–84).

In a geometric quip on the Vienna Circle of logical positivists, Babbitt later referred to these influences as his "Vienna Triangle." It was a shape whose vertices included Schoenberg, Schenker, and the logical-positivist philosopher Rudolf Carnap.[7] It is, in many respects, an odd sort of shape: Schoenberg, Schenker, and Carnap shared a birthday in the late nineteenth century and, at some point in their lives, an address within the *Ringstrasse*, and very little else.[8] Nonetheless, the influence of all three of these figures seeps out of nearly every page of Babbitt's writings and even, as we will see, out of his compositions. Rather than adopting any of their philosophies in full, Babbitt's thought can be characterized as an idiosyncratic selection of various aspects of each of these thinkers' work, chosen and refined in service of Babbitt's own ends.

The name of Schenker is ubiquitous in Babbitt's writings. Nonetheless, in many ways the influences of Schoenberg and the tradition of analytic philosophy of which Carnap is a part are more salient in Babbitt's work than the influence of Schenker, and the scholarly literature reflects this. Babbitt is typically introduced as one who "extended" Schoenberg's twelve-tone technique,[9] perhaps even as a "disciple" of Schoenberg himself.[10] While explicit discussions of the philosophical sources of Babbitt's thought have been somewhat less frequent, at least until recently,[11] Babbitt's Carnapian concern with a verificationist—for Babbitt, "scientific"[12]—understanding of meaning and discourse has

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[7] Babbitt ([1999] 2003), Babbitt ([1991b] 2003), and Babbitt (1987, 17). The membership of the triangle changes somewhat in its different tellings: two of the vertices are always Schenker and Schoenberg; the third is sometimes the Vienna Circle as a whole and sometimes just Carnap, Babbitt's favorite philosopher from that school.
[8] This is noted, unsympathetically, in Taruskin (2009, 277).
[9] E.g., Morris ([2000] 2010, 5).
[10] E.g., Harker (2008, 347).
[11] See Brackett (2003), Peles (2012), and Gleason (2013) for three recent discussions. An earlier, much less successful, effort can be found in Davis (1995).
[12] Babbitt ([1961a] 2003, 78).

been much remarked upon.[13] These are, certainly, profoundly important aspects of Babbitt's thought, and the fact that they will play a secondary role in this dissertation should not be taken as suggesting otherwise.

But if Schenker is, at first sight, harder to account for in Babbitt's Vienna Triangle than Schoenberg or Carnap, I contend that he is no less central. Babbitt himself admitted as much: "No influence has caused a greater transformation of our thinking about music than Schenker's, be it in reaction to or in reaction with."[14] Schenker's influence can be seen in Babbitt's views on a whole range of issues, including his understanding of the tonal and twelve-tone systems, his analyses of the work of a number of quite distinct composers, his view of musical perception, and even his use of metaphor in analytical prose. Most importantly, Babbitt's compositional technique is based to a significant extent on his reading of Schenker. Given the depth of this influence, I believe that to understand Babbitt one must come to terms with the ways in which he is, indeed, a Schenkerian, although an idiosyncratic one.

Furthermore, Babbitt's absorption of the hierarchical organicism Schenker propounded defines an ideological and aesthetic frame within which his other influences may be understood. The influence of analytic philosophy, for instance, manifests most visibly in Babbitt's concerns about music-theoretical discourse, but also led him, as will be seen below, to appropriate the logic of axiomatic deductive systems toward the understanding of Schenker and, thus, toward the creation of new Schenker-inspired

[13] See Rahn (1976), Guck (1994), and Parkhurst (2013) for interesting commentary on Babbitt's discursive and methodological demands. Peles (2012, 23) clarifies Babbitt's understanding of the term "scientific."
[14] Babbitt (1991a, 129).

musical hierarchies.[15] Although Babbitt borrows the twelve-tone system from Schoenberg, both his descriptions of it and his compositional handling of it are deeply indebted to Schenker—significant aspects of his compositional practice can be roughly characterized as the insertion of Schoenbergian technology into Schenkerian ideology. Therefore, given the centrality of Schenker in Babbitt's thought, an examination focused on that particular influence is revealing about other facets of his thought as well.

Chapter 1 of this dissertation will excavate this influence both in Babbitt's writings and his compositional procedures. Chapter 2 will focus on a particular episode in Babbitt's compositional development—a set of transformations in his compositional style that took place around the year 1960—that has been relatively unexplored by earlier commentators and reveals how Babbitt's underlying interest in organicism intersects with other, practical compositional concerns. Despite the importance of hierarchical organicism in Babbitt's writings and compositional systems, however, analysis of a number of his works has demonstrated complications with the organicist model—pieces or situations that, in one way or another, contest the expectations engendered by hierarchical organicism. Each of the later chapters will explore these complications in turn. The picture that emerges will suggest a more limited and nuanced view of the role of organicism in Babbitt's music.

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[15] Although Babbitt's criticisms of much music-theoretical methodology and language are often explicitly linked to his reading in analytic philosophy (Babbitt [(1961a) 2003] and Babbitt [(1972) 2003] provide clear examples), as noted in Cook (1995, 91), there are strong resonances between Babbitt's complaints and Schenker's polemics against hermeneutic critics such as Hermann Kretzschmar. While Babbitt may have found some of his acid tongue in Schenker, one need not impute direct influence in this regard. Among other things, Babbitt also found much of Schenker's methodology lacking, complaining, for instance, about Schenker's invocation of the overtone system and the metaphysical significance he attributed to the number five (Babbitt [(1961a) 2003, 80–81]). More likely, both Babbitt and Schenker are responding to the general air of what Peles (2012, 22) describes as the "broader Austrian project of *Sprachkritik*."

GOETHE, SCHENKER, AND HIERARCHICAL ORGANICISM

The notion that a piece of art might be profitably described as having characteristics of a living organism has deep roots in Romantic and even pre-Romantic aesthetics. Depending on how one defines the term "organicism," one can find it stretching back deep into the eighteenth century or even earlier.[16] Although it reached full bloom in German Romanticism, it was not an exclusively German phenomenon: M. H. Abrams, in a classic history of literary organicism, focuses largely on England.[17] But the touchstone organicist for many of the musicians who drew inspiration from the concept, including Babbitt's primary musical influences, was Goethe.[18] Goethe's scientific writings, and particularly his writings on the development and typology of plants—although intended as naturalistic science—furnished an aesthetic paradigm in which a piece of music can be understood as organic—as representing or embodying, in an idealized form, characteristics of a living being. "The linear progression," Schenker writes

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[16] The term "organicism" also commonly denotes an outlook on metaphysics—the belief that the universe, or constituent substances of it, has properties of an organism (e.g., properties of mind). This belief long predates organicist aesthetics. As Babbitt did not share this metaphysical outlook, it will not be discussed here, but many organicist music theorists, including Schenker, also subscribed to organicist metaphysics, and in fact presented their aesthetics as of a piece with their metaphysics. Schenker's metaphysics are complex to say the least, but Pastille (1995) provides a striking introduction.

[17] Abrams (1953, 156–225).

[18] On Schoenberg and Goethe, see Neff (1993). On Webern and Goethe, see Webern (1960) and Cox (2004). Schenker's organicism and its antecedents have received much discussion in recent years, including in Solie (1980), Pastille (1984), Cherlin (1988), Keiler (1989), Pastille (1990), Hubbs (1991), Korsyn (1993), Snarrenberg (1994), Tarasti (2002, 91–93), Duerksen (2008), Morgan (2014), and Parkhurst (2014, 70–201). The complex debates regarding what organicism meant for Schenker, what aspects of his thought it impinges on, how it intersects with his many other influences, how or whether the concept developed for him over the course of his career, and from whom he got the idea are well beyond the scope of this dissertation. As Peles (2001, 187) points out, it would be a mistake to reduce Schenker to a "cartoonish . . . cultural throwback to a Goethean *Naturphilosophie*," even if Goethe is unquestionably one of his influences.

of the essential contrapuntal prolongation of his mature theory, "shows the eternal shape of life—birth to death. The linear progression begins, lives its own existence in the passing tones, ceases when it has reached its goal—all as organic as life itself."[19]

One of the essential insights of Goethean organicism regards the relation of parts and wholes. Goethe describes, "From first to last, the plant is nothing but leaf, which is so inseparable from the future germ that one cannot think of one without the other."[20] The original conception—the leaf—grows outward, "repeating, recreating / In infinite variety" as "each leaf elaborates upon the last," until "at length attaining preordained fulfillment."[21] As the original leaf develops into infinite variety, it takes on the characteristics of the many distinct organs of a mature plant. But the original conception remains: "the various plant parts developed in sequence are intrinsically identical despite their manifold differences in outer form."[22] A significant aesthetic consequence for the musicians and music theorists who subscribed to organicist views was therefore a conception of the interrelatedness of the whole composition and its parts: a search for an explanation of what Goethe calls "the harmony of the organic whole,"[23] or its realization in music.[24]

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[19] Schenker (1979, 44). "Prolongation," for Schenker, is a synonym of "voice-leading transformation."
[20] Goethe (1962, 366).
[21] Goethe (2009, 2).
[22] Ibid., 56.
[23] Qtd. and translated in Pastille (1990, 32).
[24] For certain authors, Schenker very much included, organicism is linked to a theory of genius. As Kevin Korsyn (1993, 103) writes, "The faith in genius as the mediator between mind and nature sustains the organicist project, since genius is the guarantee of privileged access to nature." Or, in Schenker's (1996b, 119) words, "Genius alone creates from the background . . ." Babbitt did not share this conception of genius or its attendant appeal to nature.

The plot here involves not only a finished whole composed of self-similar parts, but a story about how the whole developed. As self-evident as this temporal aspect may be in a theory of plant formation, when translated into the realm of music it means that an organicist account of a piece is to a significant degree an ontology: a reconstruction of how a piece came to be; conceptually, if not actually.[25] Furthermore, there are ascriptions of agency here: the initial impulse is not "repeated and recreated," it is actively recreating itself. It contains characteristics that motivate its own development.

Musical organicism involves the identification of an originary impulse that can stand in for Goethe's leaf. For many authors—including a number of authors significant to Babbitt, such as Schoenberg,[26] Anton Webern,[27] Robert Handke, and Reinhard Oppel[28]—the organic source is a theme or a motive.[29] The theme or motive is generally

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[25] Monahan (2013, 364n.74) points out the agency ascribed to a "fictional composer" in much Schenkerian analytical prose. Babbitt's analytical writing also frequently relies on this device. For a vivid example, see Babbitt (1987, 137–43).

[26] Neff (1993, 414–18).

[27] Webern (1960) cites Goethe repeatedly, linking his organicist theories not only to general thematic or motivic conceptions, but also to the twelve-tone series specifically (see 40–41 and 53).

[28] In Babbitt (1991a, 125–27), Babbitt describes his first encounter with analytical prose, an accidental stumble across Handke (1909) that led him shortly to Oppel (1921). These articles "changed the course of his life": "We became convinced that the coherence of [new, atonal music] was very sensitive to, and dependent on, its initial conditions. And what in traditional terms is a more explicit statement of initial conditions than a fugue subject? This view is exactly what Handke and Oppel were adumbrating in very restricting and restrictive terms" (Babbitt [1991a, 125]). The first sentence of Oppel (1921) demonstrates the thematic organicism of these articles: "Das Lebensfähigkeit einer Fuge ist von der Gestalt ihres Themas abhängig" (10). ("A fugue's ability to live depends on the shape of its subject"—translation my own.) Handke's focus on the "linear principle" ("Das Linearprinzip") is especially interesting in light of Babbitt's later interest in Schenker: Handke uses this (vaguely defined) principle to describe not only thematic development but also harmonic succession and the organization of subject entries. Babbitt does not give a date for his reading of Handke (1909), but given that he arrived in New York in 1934 and found Handke (1909) in the New York Public Library apparently sometime before being introduced to Schenker's work in 1935, the gap between these early encounters could not have been long.

introduced early in a piece, and the remainder of the piece can thus be understood as the theme or motive's unfurling. This version of organicism can also be found in Schenker's earlier writings. In *Harmony*, for instance, he proposes an equation: "In Nature: procreative urge → repetition → individual kind; in music, analogously: procreative urge → repetition → individual motif."[30] Although motivic association was generally not granted the same prominence in Schenker's later writings as it received in *Harmony*, it would continue to be critically important to his analytical technique for the rest of his life. As will be discussed below, Babbitt was not immune to motivic organicism: he uses the framework to discuss motivically based music such as that of Béla Bartók and Edgard Varèse.

But the dominant organicist paradigm of Schenker's last decade—the theory of *Free Composition*; the theory that influenced Babbitt's compositional technique—was not the temporal development of an unfolding motive but the hierarchical development of a source through successive elaborations. A piece of music is said to begin with an initial tone and its *Naturklang*—the "chord of nature" defined by the tone and its first five harmonic partials. The *Naturklang* unfolds into one of the three forms of the *Ursatz* and from there, through a long sequence of nested voice-leading transformations, the piece gradually comes into view. In this version of organicism, the temporal and agential metaphors remain. "Earlier" levels appear earlier in the presumed hierarchical process—closer to the *Naturklang* and the *Ursatz*—while "later" levels appear relatively shortly

[29] This thematic conception of organicism proved remarkably durable. Reti (1951) is a prominent, extended example.
[30] Schenker (1954, 6–7).

before the realization (*Ausführung*) of the completed composition.[31] Later levels are described as motivated by earlier levels: as Carl Schachter describes, "Schenker often writes about the levels as if they were animated by kinetic impulses that travel from one level to another; thus the foreground contains the 'goals' to which the earlier levels lead."[32] The result, in Schenker's formulation, is that "Originating in the background, marching forward through the middleground, the strata of composing-out multiply all the way to the diminutions of the lower orders of the foreground."[33]

In addition to the hierarchical reorientation, a critical difference between Schenker's understanding of organicism and that of the aforementioned thematic organicists is the source of the initiating organic impulse. Schenker's hierarchy begins with a natural given—which is to say, with the universal and, therefore, the generic. All pieces share the *Naturklang*, and most share one of two common *Ursätze*. For a thematic organicist, the organic impulse is composed and is therefore a distinguishing aspect of the piece of which it is a part. Roger Sessions, writing during a time in which he was actively mentoring Babbitt, criticized Schenker's concept of a generic *Ursatz*, finding that "the interest of these or any other works begins precisely at the point where their individual

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[31] Many modern Schenkerians replace the temporal metaphors with spatial metaphors: levels closer to the *Ursatz* are not "earlier," they are "higher" or "deeper," farther from the "surface." Snarrenberg (1994, 45–49) discusses these and other "architectural" metaphors in American Schenkerian discourse. Babbitt uses temporal metaphors in his discussion of Schenkerian hierarchy and other, analogous hierarchies more frequently than most American commentators, although he does use the term "surface" to refer to the completed composition and the more immediately available relationships contained within it. This usage of "surface" will be retained below.

[32] Schachter (1981, 122); see also Schenker (1979, 5). I agree with Schachter's rueful continuation: "It is unfortunate that Schenker did not explain exactly what he meant by this metaphor." Sometimes, such as in cases in which later levels obscure parallel fifths or direct chromatic successions that appear in earlier levels, there are clear syntactical motivations for the elaborative process to continue, but often there are not.

[33] Schenker (1996a, 18).

qualities begin to appear and to grow in an inevitable manner. It is only at this point that organic life may be said to begin . . .”[34] Babbitt also criticized an aspect of this model: he passionately rejected Schenker’s appeal to nature.[35] But Babbitt, unlike Sessions, could support a generic hierarchical source, such as an *Ursatz* or a twelve-tone series, that can be construed as the earliest layer of any number of different compositions.

Before diving into the organicist claims in Babbitt’s own writings, a point about the meaning of those claims should be clarified. For Babbitt, as for most Americans who have adopted organicist rhetoric, organicist claims about temporal development, agency, holistic unity, and coherence are metaphors. For Schenker, they conceivably are not. Bryan Parkhurst has recently argued provocatively that Schenker’s organicism reflects “the view that the structure of musical works can be grasped by using the same form of judgment”—namely, Kantian teleological judgment—“that is employed in grasping the structure of biological entities,” and therefore Schenker’s organicism is “methodological rather than rhetorical.”[36] Put bluntly, Babbitt’s writings do not reflect Schenker’s concern with Kantian judgment. But to label his organic rhetoric metaphorical is not to thereby diminish it. In the age of George Lakoff and Mark Johnson,[37] Kendall L. Walton,[38] and Marion A. Guck,[39] it would be foolish to dismiss metaphors on account of their metaphorical status. Furthermore, because Babbitt’s Schenkerian metaphors are of a piece with distinctly non-rhetorical borrowings from Schenker—such as the construction

[34] Sessions ([1938] 1979, 258).
[35] E.g., Babbitt ([1961a] 2003, 80–81).
[36] Parkhurst (2014, 101–2).
[37] Lakoff and Johnson (1980).
[38] See particularly Walton ([1993] 2015).
[39] See, e.g., Guck (1997).

of serial arrays on the model of Schenker's vision of tonality—taking Babbitt's metaphors seriously provides a way toward understanding these other facets of Schenker's influence.

BABBITT AND SCHENKER

Babbitt appears to have first encountered Schenker's work in 1935, at the age of nineteen, in his first composition lesson with Roger Sessions. They examined the analysis of Beethoven's Sonata in F Minor, Op. 2, No. 1 in *Der Tonwille*.[40] As the decade wore on, the emigration of many of Schenker's pupils and disciples—particularly Ernst Oster and Oswald Jonas—gave Babbitt further contact with the Schenkerian tradition.[41] By the time of Babbitt's first published musical essays, from the late '40s and '50s, the influence of Schenkerian thought is fully in evidence. Babbitt's 1952 review of Felix Salzer's *Structural Hearing* provides Babbitt's most explicit early discussion of his appraisal of Schenker's achievement. The following passage is indicative of his approach at the time:

> Schenker's analysis originated in aural experience, and the *Urlinie* is, at least indirectly, of empirical origins. On the other hand, it is (and this is merely an additional merit) completely acceptable as an axiomatic statement (not necessarily *the* axiomatic statement) of the dynamic nature of structural tonality. Stated in such terms it becomes the assertion that the triadic principle must be realized linearly as well as vertically; that the points of structural origin and eventuation must be stabilized by a form of, or a representation of, the sole element of both structural and functional stability: the tonic triad. It asserts that melodic motion is, triadically, purely diatonic (of necessity, since any other triadic motion is, at least relatively, triad defining, and thus establishes multiple levels of linear motion,

[40] Babbitt ([1985] 2003, 391). Although this seems to have been Babbitt's first direct encounter with Schenker, his interest had already been piqued by Sessions ([1935] 1979), as mentioned in Babbitt ([1985] 2003, 391), and Citkowitz ([1933] 1985) and Weisse ([1935] 1985), as mentioned in Babbitt ([1999] 2003, 476). Schenker's analysis of Beethoven's Op. 2, No. 1 appears in translation in Schenker (2004).

[41] Oster and Jonas both emigrated shortly after the *Anschluss*. Babbitt discusses his contact with Oster and Jonas in a number of his writings; see particularly Babbitt ([1999] 2003, 478–80).

> rather than a single directed motion); that a work of music ends organically, not merely temporally . . .[42]

Both Robert Snarrenberg[43] and Michiel Schuijer[44] cite this statement as representing the vast gulf between Babbitt and Schenker's philosophical orientations, and it certainly does that. The definition of the *Urlinie* as an axiom in a logical system—rather than the natural or even spiritual ideal Schenker intended it to be—is a stark difference indeed. It is reflective of Babbitt's general theoretical project at the time, which was in large part concerned with the rational reconstruction of another musical system; namely, the twelve-tone system, as will be discussed below. It is a signal that Babbitt intends to bring the explanatory power of philosophical logic to Schenkerian theory. But this statement also represents more than that: it reveals a deeper continuity underlying the new rhetoric.

Notable among the extended list of "assertions" of the *Urlinie*-axiom is the claim that "a work of music ends organically, not merely temporally." This claim is distinct from the rhetoric of axiomatic logic, but it is by no means an outlier in Babbitt's discourse. Direct references to "organisms," "kernels," and other traditional organicist substantives appear only occasionally in Babbitt's writings, but the general metaphoric concepts underlying those characterizations—most notably, an attribution of agency to initial musical assumptions that has determining force over later developments—remain. What has changed is the source of the initial assumptions. By de-naturalizing the source of the *Urlinie*—by making it a chosen axiom rather than a natural given—Babbitt opens the way for this model to be transferred to systems besides tonality.

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[42] Babbitt ([1952] 2003, 23).
[43] Snarrenberg (1994, 50).
[44] Schuijer (2008, 252).

Stripped down, the basic model that Babbitt borrows from Schenker is that a complete, unified, and coherent piece of music arises as a result of the progressive hierarchical development of an initial "assumption." In a tonal piece, that initial assumption is, following Schenker, the *Urlinie*, and the means by which the *Urlinie* develops are, for the most part, the various transformations of Schenkerian hierarchy—the most significant emendation Babbitt wished to make to a Schenkerian vision of tonality was an increased attention to motivic and pitch-class association.[45] But Babbitt applies this model to a wide variety of music—tonal, atonal, and twelve-tone. Consider the following passages from Babbitt's 1949 essay on Bartók's string quartets. He lauds "Bartók's concern for the total composition, and the resultant evolution of the maximum structure from a minimum assumption . . ."[46] The initiating kernel in Bartók's String Quartet no. 4 (1928) is not any sort of tonal *Urlinie*: Babbitt calls it a "thematic assumption"; essentially, it is a motive. And, "From this thematic assumption arises Bartók's polyphony . . ."[47] The total composition is thus described as the result of "successive elaborations" of the original thematic assumption. Echoing Schenker's claims that large-scale formal patterns arise from tonal transformations ("all [forms] have their origin in, and derive from, the background"[48]), Babbitt continues, "Bartók's formal conception emerges as the ultimate statement of relationships embodied in successive phases of musical growth."[49]

During the course of this "evolution" or "growth"—note the retention of these characteristically Schenkerian metaphors—various pitches may become "central tones"

[45] Babbitt (1987, 137–43) and Babbitt ([1999] 2003, 479–80).
[46] Babbitt ([1949] 2003, 2).
[47] Ibid., 3.
[48] Schenker (1979, 130).
[49] Babbitt ([1949] 2003, 7).

within their surrounding context; this can result in the sense of polytonality. But Babbitt rejects the term "polytonality," finding it "self-contradictory."[50] Although he does not expand on why he finds it self-contradictory, it appears to be that, for him, and again reflecting a Schenkerian orientation, the term "tonality" denotes a strict hierarchy built around a single tonic. Therefore, polytonality is impossible: a piece could not be a unified, whole piece of music and have multiple tonics. It is also, he finds, mistakenly applied to Bartòk: the sense of polytonality comes not from the genuine coincidence of multiple tonal hierarchies but as an outgrowth of motivic development. This line of reasoning is later echoed in Babbitt's critique of Salzer: Salzer's prolongational readings of Bartòk are "disappointing" because Salzer did not realize that "in Bartòk's music the motivic is structural and serves to project the essential structural motion."[51]

This sort of analytical method underlies all of Babbitt's analyses of works that he terms "contextual"[52]—that is, neither tonal nor serial. In each, including analyses of not just Bartók, but Varèse,[53] Igor Stravinsky,[54] middle-period Schoenberg,[55] and others, some initial assumption—often a motive, but occasionally a sonority or even simply an interval[56]—is shown to develop, usually hierarchically. The term "contextual" itself is interesting: Babbitt draws attention to the degree to which these pieces define their own,

[50] Ibid., 3.
[51] Babbitt ([1952] 2003, 29).
[52] The term "contextual" is explicitly discussed in Babbitt (1987, 9 and *passim*), but occurs throughout his writing.
[53] Babbitt ([1966] 2003).
[54] Babbitt ([1964], 2003).
[55] Babbitt (1987, 157–62).
[56] See, for instance, Babbitt's ([1964] 2003, 150) discussion of the minor third in Stravinsky's *Symphony of Psalms* (1930).

individual, assumptions and develop these initial assumptions in individual ways.[57] But the basic model for Babbitt's description of contextual compositions is in fact quite stable across these discussions of highly divergent composers and throughout Babbitt's long career.

Unsurprisingly, given his compositional interests, it is in Babbitt's writings about the twelve-tone system that we see his fullest description of any musical system. A more comprehensive look at Babbitt's compositional techniques will be given below; for now, let us simply observe a few ways in which Babbitt conceived of the twelve-tone system in Schenkerian terms. That he viewed the twelve-tone system as essentially analogous to Schenker's vision of the tonal system is evident in his earliest descriptions of it. Although much of his writing on the twelve-tone system is concerned with outlining various technical possibilities of mod-12 pitch-class space—combinatoriality, for instance—a great deal of his description of the system and, even more, the potential compositional applications of the system have evidently been guided by Schenkerian thought.

Consider his description of the three forms of the *Urlinie* as "the first manifestations of the extension of the triadic principle, [which] serve as the framework within which the unique aspects of the individual composition assume shape and significance during the unfolding from the *Ursatz* background through the phases of the

[57] I suspect the term "contextual" is borrowed from the technique of literary analysis called "contextual criticism," as demonstrated in the work of Eliseo Vivas and Murray Krieger (see Krieger [1956]): the denotation of the term "contextual" for Babbitt and the literary contextual critics is nearly identical, signifying in both cases a focus on the immanent, self-referential characteristics of a work. Contextual criticism was a technique practiced by the literary movement known as New Criticism, which is broadly aligned with Babbitt's analytical approach. W. K. Wimsatt, Jr. and M. C. Beardsley (1946), prominent New Critics, developed the concept of the "intentional fallacy" that Babbitt frequently cited (e.g., in Babbitt [(1952) 2003, 24] and Babbitt [(1970) 2003, 238]).

middleground to the foreground."[58] Compare that with his description of the choice of a twelve-tone series, the "unique compositional stage represented by the fact of the set, the element with regard to which the generalized operations of the system achieve meaning, and from which the progressive levels of the composition, from detail to totality, can derive."[59] That is, just as Schenker's genealogy of a tonal composition originates with the *Ursatz* and unfolds therefrom, so Babbitt's genealogy of a twelve-tone composition begins with the series. Later developments in a piece are shaped by the possibilities inherent within the chosen series. Just as Schenker proposes that "the origin of every life . . . becomes its destiny"[60]—and thus the conceptual origin of music determines its ultimate development—so for Babbitt, "set structure"— the conceptual origin, in his telling, of a twelve-tone composition—"is a compositional determinant."[61]

The word "determinant" deserves explication, to combat certain widely circulating myths if nothing else. In Babbitt's own music, the path from the series to the composition is neither direct nor specified in any particulars by the operations of the twelve-tone system. The fact that two pieces share a series does not imply that they have much more in common than, for instance, two pieces with a 3-line *Urlinie,* and Babbitt frequently reused series in pieces that are otherwise completely distinct. Once, on discussing the idea of a piece's "form" "aris[ing] out of the specific implications of the set," Babbitt explained, "Naturally, this does not mean to say that a given set uniquely implies a given composition, but rather that a given set defines, in these terms, certain

[58] Babbitt ([1952] 2003, 23–24).
[59] Babbitt ([1955] 2003, 44–45). "Set" is Babbitt's term for what is now generally called a "series" or "row."
[60] Schenker (1979, 3).
[61] Babbitt ([1961b] 2003).

general possibilities which are uniquely associated with this set."[62] The idea, in other words, is more one of construal than cause. A piece can, and should in this telling, be understood as determined by its series because of the explanatory, and perhaps aesthetic, benefits of such an understanding, even though this determination is not compositionally binding. In this respect, Babbitt's claims about determination are like other causal organicist claims (presuming one understands organicism metaphorically). To speak of Y as "arising from X," "originating in X," "generated by X," "derived from X," "determined by X," and so forth, is not to make a factual claim about Y's origins, but to suggest that it is fruitful to imagine a causal relationship between X and Y. A composer—perhaps through sensitivity to "set structure" and perhaps for the sake of creating convincing hierarchy—might create a relationship about which such a causal attribution is plausible.[63]

The specific means by which a series might be taken as implying further development will be discussed below, and the many ways in which Babbitt's music simultaneously resists this sort of hierarchical explanation will be discussed at length in Chapters 3, 4, and 5. But Babbitt continued to view the twelve-tone system as an analogue to Schenker's vision of tonality as late as 1997: "[the twelve-tone system] is formulable at a fairly general and deep level as the replacement of the analytical and synthetic notion of prolongational parallelism ("Schichten") by that of transformational parallelism . . ."[64]

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[62] Babbitt ([1955] 2003, 47n.28).
[63] Dubiel (1997, 40) interprets Babbitt's usage of "determinant" somewhat differently.
[64] Babbitt (1997, 132). This sentiment is reiterated in Babbitt and Wuorinen (1998, 29–30). While Babbitt drew attention to similarities between tonality and twelve-tone music in the terms described here, he was also—particularly early in his career—quick to note differences between the systems; see Babbitt ([1960] 2003, 55–56).

SCHENKER, HIERARCHY, AND MEMORY

As we have been observing, in the first few decades of his career, Babbitt viewed Schenkerian hierarchy—within tonal music and also within the "contextual" and twelve-tone music he discussed analogously—as a sort of deductive formal system. This philosophical view appears to have remained relatively stable throughout Babbitt's career. But Babbitt's language about musical systems came to be significantly supplemented by another, quite different source: beginning in the '60s, and increasingly in later decades, Babbitt came to describe Schenkerian and related accounts of music in terms of cognitive science. Babbitt had always viewed analysis as an essentially cognitive activity—he lauded, for instance, the "ever-increasing aural awareness" that led Schenker to his late theory.[65] But the casting of this activity in the language of modern cognitive science was new. It may have been a result of Babbitt's experiments with electronic synthesis: as will be discussed further in Chapter 2, Babbitt quickly realized that the vast possibilities of electronic music would be circumscribed by the limits of human cognition,[66] so it may have therefore seemed urgent to understand his compositional techniques, and those from which he drew inspiration, in relation to those limits. Whatever the impetus, Babbitt's theories of music became, increasingly, theories of musical memory, cast in the language of cognition and information processing.

A touchstone source for Babbitt, as for so many others, was George A. Miller's 1956 classic, "The Magical Number Seven, Plus or Minus Two." Miller describes cognition as the process of "chunking" a fixed and small number of basic units, and the

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[65] Babbitt ([1952] 2003, 23).
[66] Babbitt ([1961a] 2003, 83–84) and Babbitt ([1962] 2003, 109) are two early statements of this oft-reiterated sentiment.

organization of these various chunks into a hierarchy. "The Magical Number Seven" was written in the midst of the so-called "cognitive revolution" then sweeping American psychology, a general push in psychology toward the study of cognition and memory and away from behaviorism.[67] Babbitt cites several leading participants in this revolution at various points, including Eugene Galanter, Noam Chomsky, and Miller himself.[68] Following this revolution, Babbitt came to describe the promotion of cognitive chunking and hierarchization as an essential desideratum of musical structure, and the competent achievement of chunking and hierarchization as the foundation of competent listening. The result is that musical listening is defined within a computational theory of mind,[69] in which a critical task (perhaps *the* critical task) for the listener is to competently form and remember chunks.

This view is put forth explicitly in Babbitt's 1986 interview with Ev Grimes in *Music Educators Journal*. In response to a question about how one teaches music, Babbitt replies, "The critical aspect of hearing music is musical memory."[70] He then goes on to describe how memory can handle only five to seven unrelated chunks of information—referring to posited restrictions, by Miller and others, on working memory—and that listening to a piece of music as a whole requires the compounding of chunks. Presumably Babbitt feels this response answers the question because he thinks that chunking is a necessary and teachable skill that the pedagogues who read *Music Educators Journal* should

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[67] See Mandler (2002) and Miller (2003).
[68] Galanter and Miller are cited in Babbitt ([1972] 2003, 304). Chomsky is alluded to in Babbitt ([1965] 2003, 199), Westergaard ([1966] 1968, 71), and Babbitt ([1972] 2003, 292).
[69] On Babbitt and the computational theory of mind, see Sayrs and Proctor (2007, 41–42).
[70] Babbitt and Grimes (1986, 59).

instill in their students.[71] Later, in perhaps his most enthusiastic statement on the subject, he would expand on the idea that a "suitably equipped receptor"[72] is one able to proficiently chunk and that a competent piece of music is, at minimum, one able to be chunked:

> For, although everyone possessed of physically normal hearing "hears" the same thing and things, the listener declares his appropriateness by conceptualizing, "chunking," acquiring cumulative knowledge at the first hearing of a work as it proceeds, and at later hearing by differently applying the knowledge of past performances. If the work is not constructible eventually as a totality, whether the failure resides in the listener's constructive memory (the creator of musical structure) or in the work itself is the central question of music analysis.[73]

This turn toward a focus on cognition and memory represents a substantial rhetorical shift from Babbitt's earlier theorizing, with its focus on axiomatic logical systems. But despite the shift in emphasis, Babbitt's interest in cognition did not diminish the level of his interest in Schenker. Quite the opposite, in fact, for he came to view Schenkerian theory as a model for the process of cognitive chunking: "Schenker allowed us to view how a piece of music takes shape on various temporal and structural levels in a cumulative way—cumulative containment, or successive subsumption, if you will—thus making it possible for musical memory to function and musical works to be perceived in their entirety."[74] Although Babbitt does not appear to have changed his mind about his earlier, axiomatic understanding of Schenker, and his writings continue to present frequent Schenkerian organicist metaphors such as those discussed above, this new

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[71] A similar statement on pedagogy and the development of memorative capacity can be found in Westergaard ([1966] 1968, 69–70 and 72).
[72] Babbitt ([1958] 2003, 50).
[73] Babbitt and Wuorinen (1998, 24–25).
[74] Babbitt (1991a, 129). This sentiment is reiterated in a number of other sources, such as Babbitt (1987, 145).

cognitive reading—what he once referred to as the "Schenker memorative approach"[75]—came to dominate his rhetoric on Schenker and musical structure generally in the last several decades of his life.[76] And just as his early rhetoric on the twelve-tone system echoes his early writings on Schenker, with the same characteristic mix of axiomatic logic and metaphors of organic growth, his later discussions of both Schenker and his own music focus on the relationship between hierarchy and memory. His own compositional techniques, for instance, are similarly justified for their facilitation of "cumulative containment."[77]

THE IMPLICATIONS OF THE SERIES

In his telling, as discussed above, hierarchical development in Babbitt's music begins with the "unique compositional stage" represented by the choice of the initial series. Babbitt's series are composed of either six or twelve distinct pitch classes; the six-note series are invariably all-combinatorial hexachords and, when they appear, are generally linked with their complement to form a complete twelve-tone series (which

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[75] Ibid., 126.

[76] As mentioned in the quotation cited above, a primary role of analysis in this model is to demonstrate the cognitive comprehensibility, or lack thereof, of the work under consideration. Many of Babbitt's later analytical comments, demonstrated above all in Babbitt (1987), can be read in this light. Consider his comment (ibid., 159) that the correspondence in Schoenberg's *Fünf Orchesterstücke* (1909) between a moment near the opening of the first movement and the chord that begins the third movement is there to "make your life simpler." Babbitt presents this comment as a throwaway, but as with many of Babbitt's quips, this is no joke: one's life is simpler, in the world of Babbitt's cognitive theory, because the association facilitates cognitive hierarchization.

[77] This phrase and sentiment appear in many of Babbitt's program notes from 1980 on. See, for instance, the notes to *Dual* (1980) quoted in Sandow ([1982] 2004, 254). For a contrasting approach to the relationship between information theory and twelve-tone music, see Lewin (1968).

Babbitt calls a "degenerate set"[78]). Elaboration outward from the initial series begins by seizing on the basic fact that it *is* a twelve-tone series; that is, it features the complete aggregate of all twelve pitch classes: "The minimal configuration identified uniquely within the twelve-tone system is the collection of elements of the chromatic scale, and it would thus seem desirable to consider this collection the basis for the construction of the fundamental unit of progression."[79] Accordingly, the first several stages of hierarchical development involve building further aggregates out from the initial series, eventually resulting in "arrays" that present four distinct techniques of aggregate construction. Just as every hierarchical level in a Schenkerian analysis is defined by one of the techniques of tonal transformation, every hierarchical level in one of Babbitt's arrays is defined by the completion of an aggregate.

The contrapuntal lines that are combined in these arrays come from one of two categories of sources. One strategy, seen in Examples 1.1–1.2 and Figure 1.1, presents derived sets constructed of segments of the series. The other, seen in Figure 1.2 below, presents lines that are simply members of the series's series class transformed using the basic twelve-tone operators. For the most part, Babbitt used the first strategy from 1948 to 60, the second from 1961 to 80, and used both strategies, sometimes in combination, in his final decades.[80]

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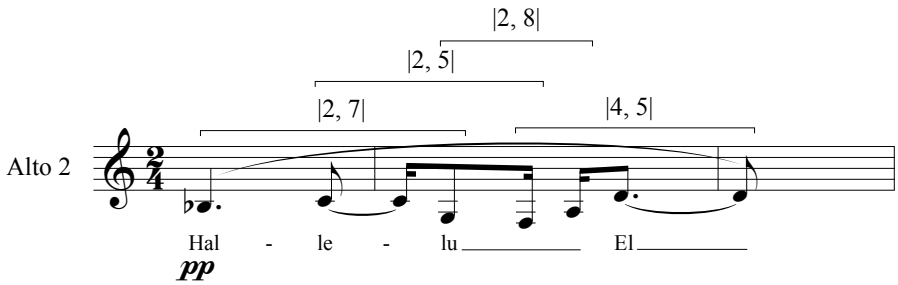
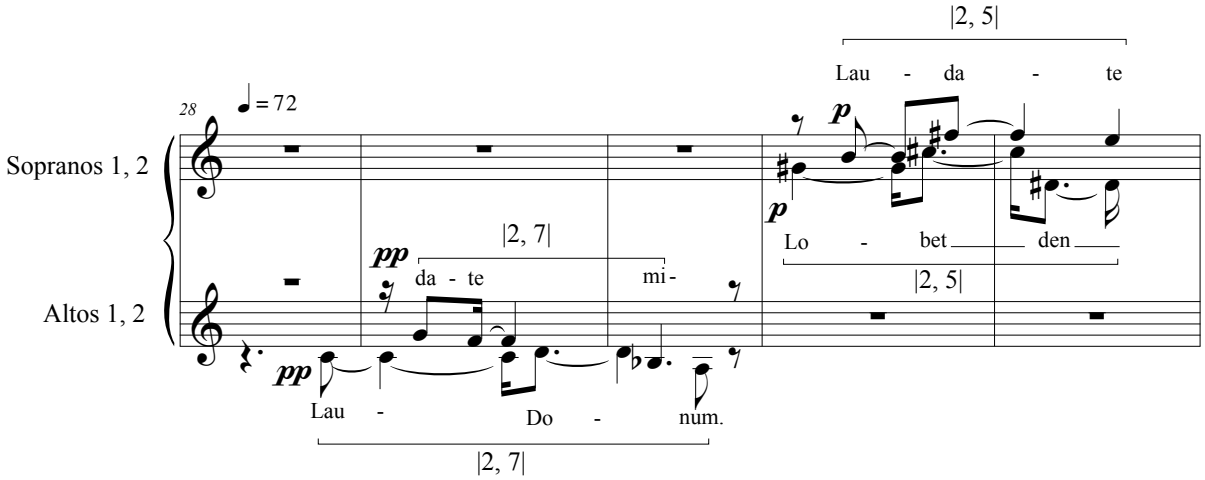
[78] Babbitt ([1976] 2003, 351).
[79] Babbitt ([1946] 1992, 75).
[80] Mead (1994) justifies the division of Babbitt's output into three compositional "periods" on the basis of these tendencies. Other developments support these divisions: as will be discussed in Chapter 2, the years around 1960 saw Babbitt change a number of aspects of his practice. Much more detailed discussions of array structure in Babbitt's music appear in a number of other sources, particularly Mead (1994), Dubiel (1990a, 219–35), and Babbitt (1974).



Example 1.1. *Glosses*, mm. 1–3, with trichord orderings indicated



Example 1.2. *Glosses*, mm. 28–32, with trichord orderings indicated

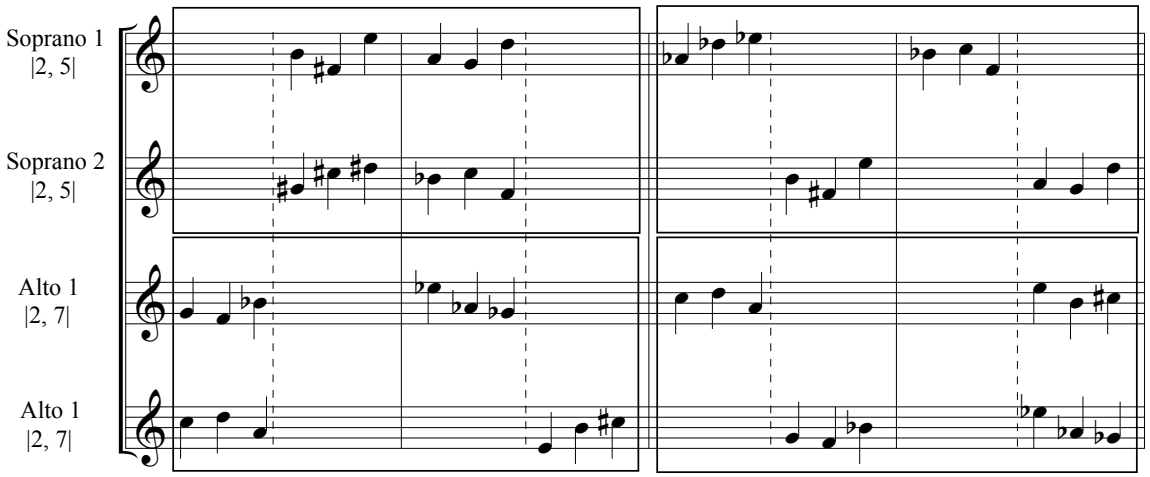


Figure 1.1a. Trichordal array for *Glosses*, mm. 28–45. Dashed lines indicate partitioning. Bar lines indicate aggregates. Boxes indicate further aggregates formed between pairs of lines.

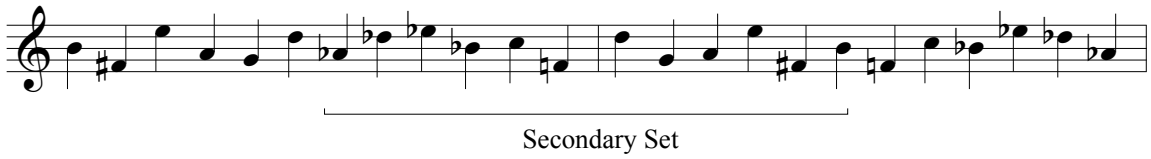


Figure 1.1b. Secondary set in the Soprano 1 line across mm. 31–59 of *Glosses*

Glosses (1988) is for children's choir; perhaps for that reason, it presents an appealingly didactic example of the first strategy outlined above, the use of arrays generated from segments of a series. The piece begins with solo altos, as shown in Example 1.1. Although at first hearing we do not yet know it, the first six notes presented by the altos are the piece's series. The piece alternates between passages like the opening, which presents straightforward iterations of the series, and passages like that shown in Example 1.2, based on "trichordal arrays" derived from the series.

Trichordal arrays are generated from the segmental trichords of the series for the piece of which they are a part. Some, such as *Glosses*, present lines generated from each segmental trichord of the series; others, such as *Composition for Four Instruments* (1948), as discussed in Chapter 3, use only the series's discrete trichords. This understanding of the origin of trichordal arrays is propounded throughout Babbitt's writings as well as in the writings of many of his exegetes.[81] It also reflects his compositional process: as is apparent in Babbitt's sketches, Babbitt typically begins composing a trichordal-array piece by sketching its series and working out the orderings of its segmental trichords before combining those trichords into arrays. Since the series that is the source of the trichordal arrays is ordinarily not explicitly stated during the trichordal array, it will be referred to as

[81] See, e.g., Babbitt ([1976] 2003), Babbitt (1987, 26–30 and 85–97), and Mead (1994, 25–30 and 54–123).

"underlying" those arrays. As can be seen in Examples 1.1–1.2 and Figure 1.1a, the beginning of *Glosses*' trichordal array is generated from the first two segmental trichords of *Glosses*' series.

The segmental trichords of the series define what I will call "trichord orderings" that can be abstracted from the series and thus transposed, inverted, and/or retrograded. Trichord orderings are characterized by the ordered pitch-class intervals that define them. As a normal form convention, these orderings will always be written with the lowest possible interval first, given the four possibilities of the S, I, R, and RI forms of the ordering. These intervals will then be bracketed by vertical lines. For instance, the opening trichord, <B♭, C, G>, sequentially expresses ordered pitch-class intervals |2, 7|. The R, I, and RI of those intervals are, respectively, intervals |5, t|, |t, 5|, and |7, 2|—these patterns can be seen in the lower two lines of Figure 1.1a. Of those four options, the one with the lowest possible starting interval is |2, 7|, and therefore "|2, 7|" will be taken as the label for the trichord ordering.

Trichordal arrays not only develop the ordering possibilities inherent within the underlying series, but also the series's harmonic content. *Glosses* demonstrates this principle, too, with didactic clarity. The C-type hexachord of the series,[82] {F, G, A, B♭, C, D}, is also the first hexachord of the trichordal array, heard in isolation in the altos. *Glosses* helpfully precedes the trichordal array with the series such that the origin of the array can be readily heard. Most trichordal-array pieces do not similarly precede their arrays with their series; indeed, in some pieces, the series is never stated. Nonetheless,

[82] Throughout this dissertation, I will use the classification of all-combinatorial hexachords introduced in Martino (1961) and picked up in Mead (1994) and elsewhere. The A-type hexachord is the set class (012345), the B-type (023457), the C-type (024579), the D-type (012678), the E-type (014589), and the F-type (02468t).

given the orderings and content presented in the arrays, the underlying six- or twelve-note series can usually be reconstructed. As *Glosses* demonstrates, the sequence in which trichord orderings are presented generally reflects the sequence in which those trichord orderings appear in the series: *Glosses*' array presents first |2, 7| and then |2, 5|, the first two trichord orderings of the series in order. Although not every piece with trichordal arrays is as straightforward as *Glosses*, the principle holds broadly.

The array for *Glosses*, typically for a trichordal array, demonstrates four techniques of aggregate construction. Each of the four lines presents a derived set, each line is paired with another line such that the separate hexachords of each create aggregates (boxed in Figure 1.1a), and all four lines together are arranged to create surface aggregates (delineated by bar lines in Figure 1.1a). The surface aggregates are each distinguished by partitioning (indicated with dashed lines in Figure 1.1a): every eight aggregates, the array, also typically, will cycle through the eight partitions of four trichords into two or fewer parts (or, equivalently, through the fifteen possible combinations of four trichords arranged into complementary pairs and a *tutti*). As the array continues, each line is followed by another line such that the last hexachord of the first line and the first hexachord of the second line create yet another aggregate, called a "secondary set," as shown in Figure 1.1b.[83] The result of this process is that the "emergent history of environments" of atomic local events is "secured by the complex of imbricated and

[83] As secondary sets cut across linear aggregates, they are effectively extra-hierarchical. Babbitt's music contains many extra-hierarchical connections like this: important features (such as aggregates) or relationships (such as the cross-references discussed below) that bridge hierarchical boundaries. This reflects his general interest, discussed below, in saturating his music with significant relationships. Incidentally, the Schenkerian analyses that appear to have inspired Babbitt's arrays also contain extra-hierarchical connections of various kinds, such as motivic relationships (Cohn [1992]) and prolongations that "fill" gaps between hierarchically distinct events, such as branches of an interruption (Goldenberg [2012]).

concatenated aggregates."[84] And the "set structure" of Example 1.1 has "determined" the array in two distinct ways: the combinatorial possibilities of the hexachord facilitate the array's aggregate construction, and the subset content of its first two trichords determines the array's linear content. The ability of the opening two trichords to generate the piece's C-type hexachord is a crucial adjunct to this process.[85]

Figure 1.2a presents the beginning of the array for *My Ends are My Beginnings* (1978).[86] In some respects, this array is much like that for *Glosses*: it too presents the same four techniques of aggregate construction, also dependent on its series's combinatorial structure. But there are two crucial differences. First, the lines of the array are no longer *derived* from the initial series, they simply *are* iterations of that series, transformed using the classic twelve-tone operators. Secondly, the partitioning is substantially more varied. Every aggregate of Figure 1.1a presents four trichords, while the aggregates of Figure 1.2a each present a distinct partition. The partitioning of each aggregate in Figure 1.2a is indicated beneath the example: "$(4^2 31)$," for instance, indicates that two lines contribute four-note segments, one line contributes a three-note segment, and one line contributes a single note. Figure 1.2a presents the beginning of an "all-partition array," an array that proceeds through every possible means of partitioning the aggregate for however many parts happen to be in that array. Since *My Ends are My Beginnings* has four lines, the full array presents thirty-four aggregates, ranging from the maximally even (3^4) partition, in which every line contributes three notes, to the maximally uneven (12^1) partition, in which a single line contributes the entire aggregate. For arrays with more lines, there are

[84] Babbitt ([1974] 2003, 317).
[85] A trichordal "generator" of a hexachord is a set class such that two of its members can be combined to form that hexachord. (025), the set class of |2, 7|, is a generator of the C-type hexachord. See Babbitt ([1955] 2003, 44).
[86] The full array for *My Ends are My Beginnings* is given in Mead (1994, 273).

more possible partitions. In addition to four-line, thirty-four-aggregate arrays, the most common all-partition arrays in Babbitt's music include twelve-line, seventy-seven-aggregate arrays; six-line, fifty-eight-aggregate arrays; and, somewhat differently, twelve-line arrays using only the fifty-eight partitions whose segments are no longer than six notes.

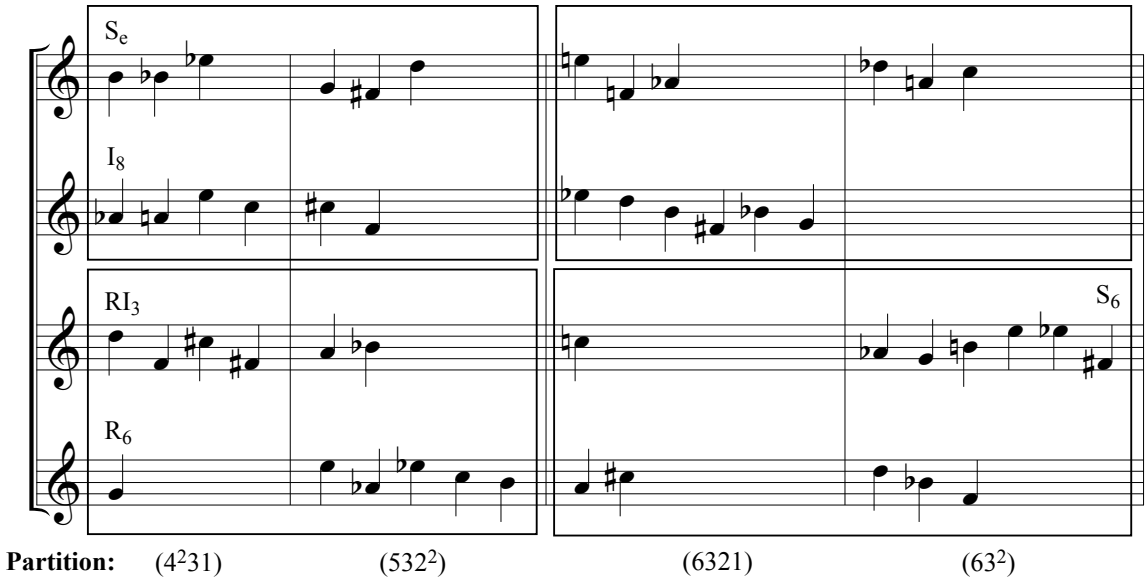


Figure 1.2a. First four aggregates of the array for *My Ends are My Beginnings*. Bar lines indicate aggregates. Boxes indicate further aggregates formed between pairs of lines.

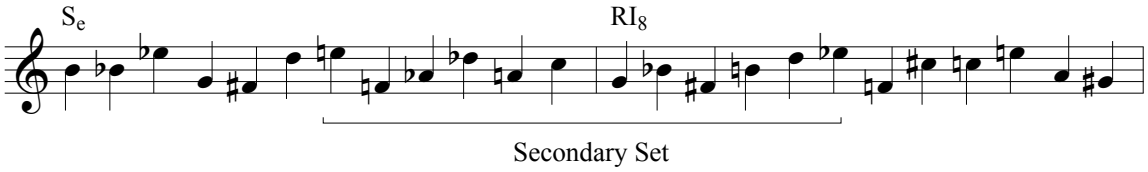


Figure 1.2b. Secondary set in the beginning of the uppermost line of *My Ends are My Beginnings*

The array counterpoint shown in Figures 1.1a and 1.2a is "partially ordered."[87] The ordering of each line, expressing, as it does, a twelve-tone series, is fixed, but the relative disposition of the various segments found within each aggregate is left completely free from the perspective of array construction. That is, within the first aggregate of Figure 1.2a, B must precede B♭, which must precede E♭, but G, from another line, could interject at any point and not violate the principles of the array. The compositional criteria motivating the arrangement of the various segments in relation to each other are properly extrinsic to array construction. The most important of these criteria is the saturation of the surface of the music with references to other aggregates of the array or to the piece's series, a technique to be discussed shortly. Given the principle of partial ordering, the relationship of the aggregates to the piece's series varies with the partitioning. In the (12^1) partition, the series is presented straightforwardly in a single voice. In the more even partitions, the series may be almost completely obscured.

The principle of the aggregate is carried yet further, in many pieces, with the translation of pitch structures into rhythm. Most often, from 1960 on, this is accomplished with the time-point system, which translates pitch classes into beat classes and, thus, pitch-class intervals into time-point intervals—that is, durations, modulo a defined time-point modulus.[88] Babbitt's explanations for the development of the time-point system invoke, characteristically, both organicist and cognitive concerns. The adoption of the time-point system as an analogue to the twelve-tone system is justified as an attempt "not only to fill some of the holes in my holism but to further reduce the

[87] Babbitt ([1976] 2003, 346).
[88] On the time-point system, see Babbitt ([1962] 2003). As discussed in Mead (1994, 38–45 and 54–123), Babbitt used a number of different rhythmic techniques early in his career. Although Babbitt used the time-point system in most pieces after 1960, its implementation was quite varied, particularly before 1982; see Mead (1987).

admittedly context dependent pitch structure by introducing the reinforcing redundancy of interdimensional parallelism."[89] Babbitt's interest in establishing cognitive redundancy through the time-point system may be the result of his newfound interest in cognitive psychology: both developments took place right around the year 1960.

In support of both holistic unity and "reinforcing redundancy," Babbitt often uses precisely the same array structure for both pitch and rhythm.[90] Indeed, the sketches for numerous later pieces reveal that Babbitt tended to use the same array chart to work out both time-point and pitch-class structure. Example 1.3 shows the first page of the array chart for *None but the Lonely Flute* (1991). *None but the Lonely Flute* also uses an all-partition array, proceeding through the fifty-eight partitions of the aggregate into six or fewer parts.[91] Those six lines are arranged into three combinatorial pairs. When realized in the pitch domain, each line pair is projected in a discrete register: the highest line pair appears between C6 and B6, the middle line pair between C5 and B5, and the lowest line pair between C4 and B5. Example 1.4 shows the first page of the sketch for the piece, demonstrating that both pitch-class and time-point structure were composed from the same array chart. The completed score for this passage is shown in Example 1.5.

The uppermost staff in each system of Example 1.4 indicates the pitches to be used in the piece. The lower three staves in each system indicate time points, with stem

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[89] Babbitt and Wuorinen (1998, 32). In his initial exposition of the time-point system, Babbitt ([1962] 2003, 138) explains the cognitive reinforcement he hoped to achieve: "Systematically determined similarity relations, particularly when reinforced by identity of other components, are powerful perceptual aids; two isolated events, specified as similar but . . . perceived as dissimilar, may be perceived as similar when made components of larger contexts whose relationship as totalities is inferable under the presented constraints of the system."

[90] Mead (1994, 48).

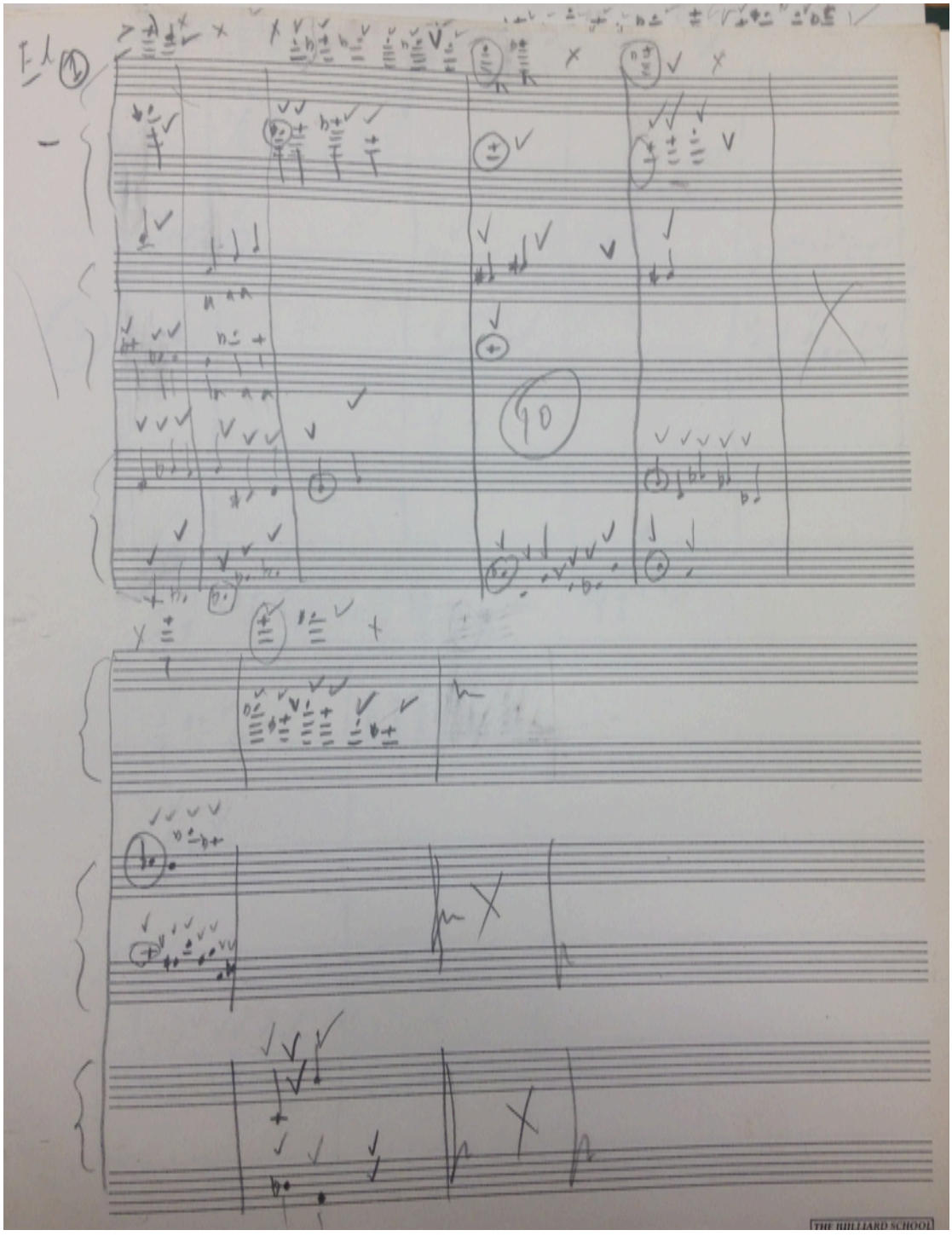
[91] If C=0, the array for *None but the Lonely Flute* is T_5 of the array given for *The Joy of More Sextets* (1986) in Mead (1994, 278–79).

direction delineating between the two time-point lines contained within each staff. In this notation, pitch-class intervals correspond to time-point intervals. Semitones in this piece, as in most of Babbitt's late music, correspond to the duration of a sixteenth note, and therefore octaves correspond to moduli of twelve sixteenth notes. Each of the six time-point lines is articulated by a single dynamic value, spanning the six dynamics between ***pp*** and ***ff***, with higher lines on the page matched to louder dynamics. Therefore, as the first time point indicated is F♯ (stemmed down in the uppermost time-point line, and therefore ***f***), and the second time point is G (stemmed up in the uppermost line, and therefore ***ff***), and the interval between F♯ and G is one semitone, the first sixteenth-note value of the piece is ***f*** and the second is ***ff*** (although as will be discussed below, the opening sixteenth-note value is subdivided for the sake of a cross-reference). The third time point is C (stemmed down in the lowest line, and therefore ***pp***). As this C is five semitones from the second time point, G, the duration between the second and third time points is five sixteenth notes. (See Example 1.5 for verification.) The specific pitch classes with which the time-point lines are sketched are essentially arbitrary from the perspective of the time-point system: there is no particular significance to the F♯ beginning the piece's time-point array.[92] Rather, these pitch classes are merely an artifact of the original array chart shown in Example 1.3: the F♯ and G are the first notes of the top two lines of the array, and C is the first note of the bottom line.

[92] Accordingly, Leong and McNutt (2005) are mistaken in describing the relationship between the pitch array and the time-point array in *None but the Lonely Flute* as T_6. This transformation appears to result if "0" is assigned to both pitch class C and the opening downbeat. But as pointed out in Mead (1987, 234n.21), as this assignment is arbitrary in both independent domains, this or any other alleged transpositional relationship between pitch-class and time-point structure is "meaningless."

Despite the fact that pitch and rhythmic arrays express equivalent material, they remain independent, both conceptually and in practical application. As Babbitt explains, "the rhythmic system is closed, and as its structure is independent of pitch clarification, it can be applied as independently as the pitch system." The two dimensions are not "simply coordinat[ed]," they interact polyphonically, in "structured rhythmic counterpoint."[93] As can be seen in Example 1.5, the time points in the first nine measures of *None but the Lonely Flute* complete the first two aggregates of the array while the pitches complete the first three aggregates. The rhythmic independence between the dimensions, the fact that they unfold separately and often at different rates, means that even though both dimensions are drawn from the same array, they generally do not end up completing the same amount of material. This independence is thus a primary contributor to the "problem of completeness" that will be discussed in Chapter 4.

[93] Babbitt ([1962] 2003, 131). See also Mead (1994, 48).

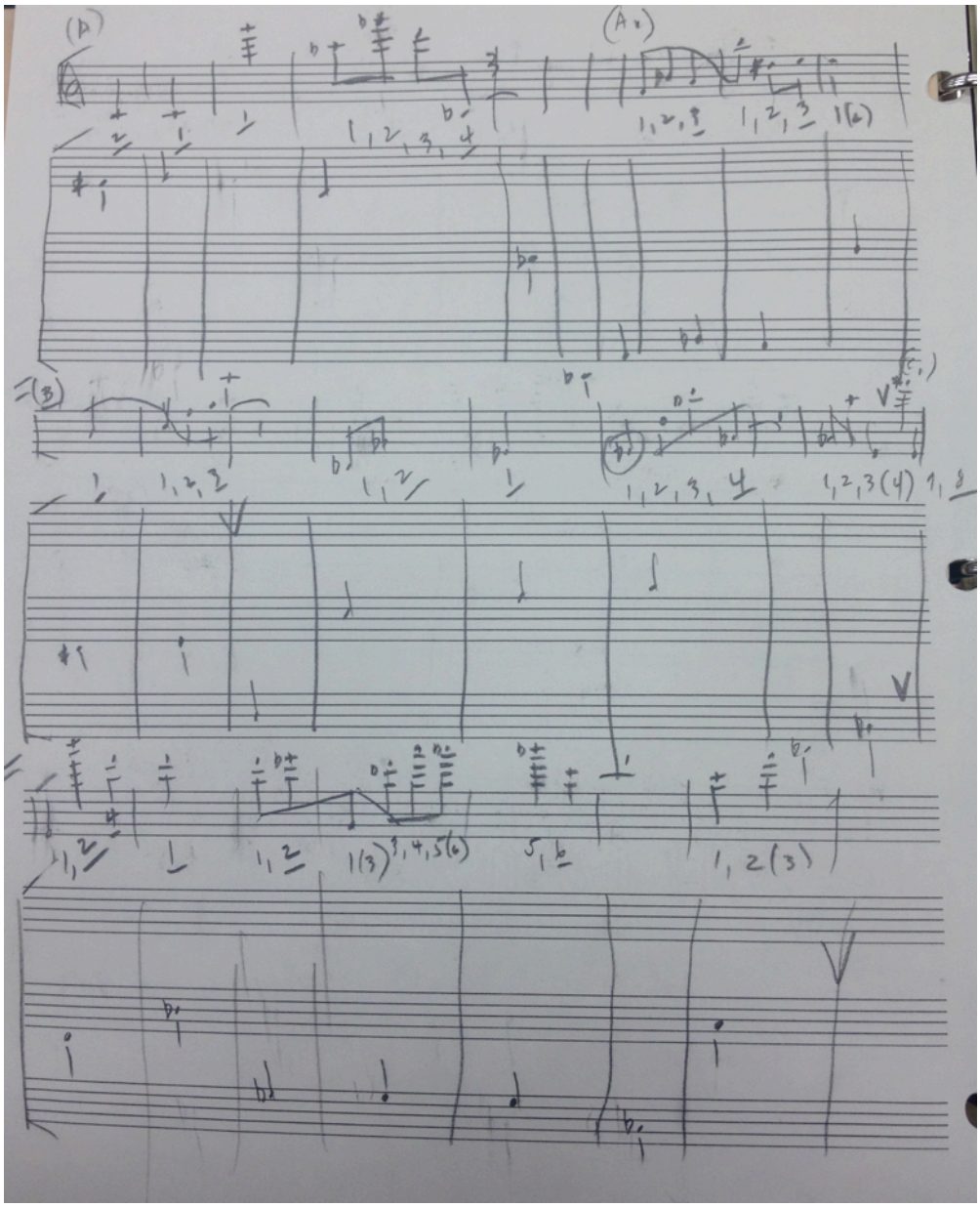


Example 1.3. Array chart for *None but the Lonely Flute*, p. 1 ("Flute" folder, Milton Babbitt Collection)

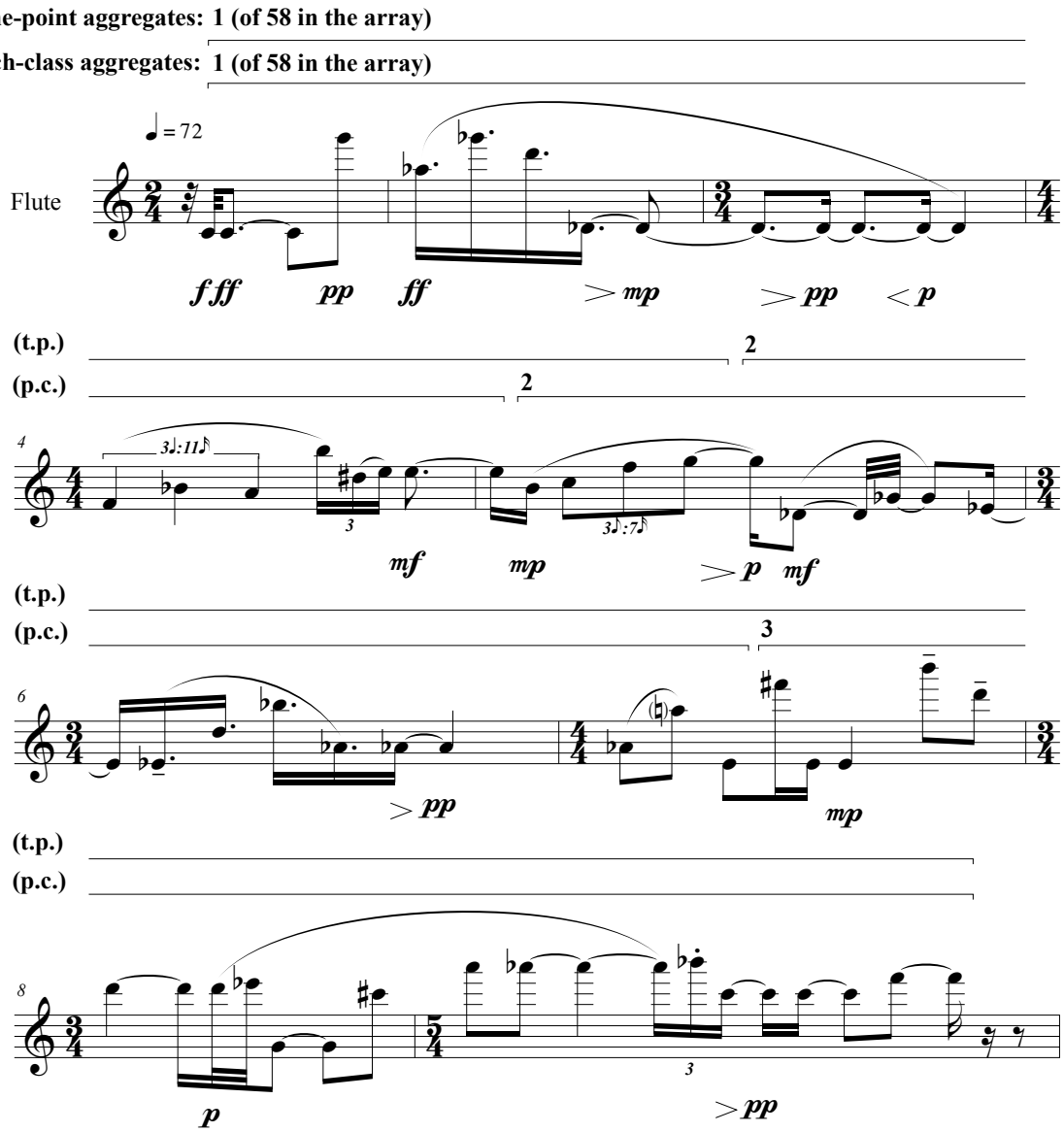
Pitches:

Indications of References:

Time points:



Example 1.4. Sketch for *None but the Lonely Flute,* p. 1 ("Flute" folder, Milton Babbitt Collection)



Example 1.5. *None but the Lonely Flute*, mm. 1–9

Having extended the principle of the aggregate inherent in the series into four distinct levels—the individual series, the secondary set, the combinatorial pair, and the array—and having established a parallel array system in the rhythmic dimension, Babbitt seems to have gone as far as he was interested in going with the aggregate itself. The remaining hierarchical levels are formed not from aggregates, but from an abstraction of the principle of the aggregate. Just as the initial twelve-tone series presents one of every

possible pitch class, the remaining hierarchical levels also present exhaustive lists, but lists not of pitch classes, but of various other kinds of musical things. Many of the techniques with which the principle of exhaustive completion is developed have been explored by other commentators, most notably Andrew Mead.[94] The most important of these techniques regards the partitioning of arrays: as discussed above, both trichordal arrays and all-partition arrays present exhaustive lists of partitions. Other frequent, and frequently mentioned, examples of this principle include exhaustive lists of combinations of instruments or registers. But the principle of exhaustive completion of a list of possibilities extends broadly and manifests quite variously in Babbitt's output. Suffice it to say that this principle underlies practically every aspect of nearly all of Babbitt's compositions.[95]

The principle of exhaustive completion secures the hierarchy essential to Babbitt's Schenkerian vision. However, the hierarchical logic of the arrays only loosely determines the surface of Babbitt's music—as discussed above, the "partial ordering" of Babbitt's aggregates means that nearly every partition can be realized in a countless number of different configurations that all equally satisfy the requirements of array construction.[96] The primary criterion guiding the realization of arrays on the surface of Babbitt's music is therefore extrinsic to his systematic hierarchy, but it is related. His music is nearly saturated with references to hierarchically significant aspects of the piece: the series itself

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[94] See particularly Mead (1994).

[95] Babbitt's principle of exhaustive completion of a list of possibilities is commonly referred to as the principle of "maximal diversity" (e.g., Mead [1994, 19–20]), or, in Babbitt's terms, the "spirit of maximum variety" (Babbitt [1987, 87]). Following Dubiel (1992), I prefer "exhaustive completion," on account of its precision. Babbitt's music not only reflects an aesthetic preference for diversity or variety, but a systematic extension of the exhaustive list inherent in a twelve-tone series.

[96] Dubiel (1997) makes much of this flexibility.

or segments of the array. For instance, simultaneities and, especially, simultaneous attacks—in which each note is struck together—tend to realize segments of the series or array.[97]

The specific techniques guiding which aspects of the piece are chosen for reference and how the references are to be projected are quite various until about 1982, after which Babbitt settles into something like a common practice; this late technique of cross-references to the array is exemplified in *None but the Lonely Flute* and will be discussed shortly. In many of these pieces, including those using the late technique of array cross-reference, these references are arranged with a consistency that might be called "systematic." However, even in such pieces, non-systematic references to the series or the array abound, in addition to the consistent systematic techniques: the general principle seems to be that Babbitt wants his music to reflect the series and array almost as much as possible (barring certain pronounced exceptions, such as those discussed in Chapter 5). It is this "richness of relation"[98] that Babbitt refers to when he expresses his desire to make music "as much as it can be."[99]

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[97] Mead (1994) discusses many of the techniques Babbitt uses to relate the surface and the array.

[98] Babbitt ([1984] 2003, 386).

[99] Ibid., 387 and Babbitt (1987, 64 and 183). This interpretation of Babbitt's phrase is clarified by context in Babbitt (1987, 64). As will be discussed, the specific concept of relating the surface and deeper levels of structure likely stems from Schenker. But a possible source for the more general idea that a piece should contain as many relationships as possible is Gottfried Wilhelm Leibniz. At the very least, there is much about Leibniz that resonates with Babbitt's thought, and Babbitt apparently recognized this. Leibniz is the only pre-twentieth-century philosopher Babbitt ever cites approvingly. In Babbitt (1991a, 132), he calls Leibniz one of his "best friends"; Leibniz is described as an antecedent of Babbitt's understanding of rhythm in Babbitt ([1991b] 2003, 442), where he is described as "our colleague," and Babbitt and Wuorinen (1998, 32); and in Babbitt (1987, 122), Leibniz is described as "a fine guy to be influenced by." Babbitt's *Ars Combinatoria* (1981) may have been named after a logical system detailed in Leibniz's *De Arte Combinatoria*. In none of the cited comments does Babbitt expand on just what it was

The general concept that the surface should reflect significant aspects of array hierarchy appears to have been developed as an analogue to the late Schenker's understanding of "concealed repetition," adumbrated in *Free Composition* and latent in many of his analyses of the '20s and '30s. In *Free Composition*, Schenker distinguishes between "motives," which are simply "repetition in the foreground," and the "concealed repetitions" in which a middleground pattern is transferred to the foreground.[100] These

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about Leibniz he found appealing, and it is therefore difficult to trace specific lines of influence. I will simply note some striking correspondences between the two thinkers.

For Leibniz, harmony increases in direction proportion to the number of relationships expressing rational "order"—that is, relationships which are "cogitable" (which Carlin [2000, 105] defines as those which are "thinkable or potentially observable"). Therefore, "Harmony is the perfection of cogitability, insofar as there are cogitable things. Harmony is when many things are reduced to some unity. For where there is no variety, there is no harmony. Conversely, where variety is without order, without proportion, there is no harmony. Hence, it is evident that the greater the variety and unity in variety, this variety is harmonious to a higher degree" (qtd. and translated in Carlin [2000, 106]). Babbitt (1987, 87) likewise sought the "spirit of maximum variety"—within the constraints of serial hierarchy. For Leibniz, the desideratum of cogitability means that the various relations in a harmonious object can be "taken at the same time"; as Carlin (2000, 107) suggests, "harmony results from a given collection of entities (in this case relations) when they are simultaneously considered by a mind." Babbitt (as expressed in Babbitt and Wuorinen [1998, 25], quoted above) sought a hierarchy such that the various events of a musical work could be "constructible . . . as a totality"—that is, conceived of as a unit in the listener's "constructive memory."

Although Leibniz did not discuss art or music in organicist language, Leibniz is an archetypal metaphysical organicist in that he believed each substance—each "monad"—to be imbued with "perceptions" and "desires" (Leibniz [1898, 418]). Each separate substance, then—in our perfect, harmonious universe—connects to all else through orderly relations: "For all is regulated in things, once for all, with as much order and mutual connexion as possible, since supreme wisdom and goodness can act only with perfect harmony. The present is big with the future, the future might be read in the past, the distant is expressed in the near. We might get to know the beauty of the universe in each soul, if we could unfold all that is enfolded in it and that is perceptibly developed only through time" (ibid., 418). Whether or not this inspired Babbitt's interest in analepsis and prolepsis, discussed below, the concepts are clearly concordant.

I am grateful for a suggestive comment Joseph Dubiel made in a presentation at the CUNY Graduate Center on 25 May 2012 that drew my attention to the Babbitt-Leibniz connection.

[100] Schenker (1979, 99–100). Burkhart (1978) remains the classic statement on concealed repetitions, which he calls "motivic parallelisms."

concealed repetitions are characterized as the "prime carriers of synthesis,"[101] and the analyses of Schenker's last fifteen years demonstrate the profound importance this concept had in his theory. "Motivic" repetition, pertaining only to the foreground—although "in its place, beneficial"—does not have the same significance. The music in which that technique predominates is "of the lesser talents."[102]

Babbitt reflects Schenker's understanding of the surface's role in projecting significant aspects of hierarchy not just in his music, but also in his analyses. A favorite observation of Babbitt's is to remark on how the surface of one passage is organized to predict or recall another passage.[103] But these instances of "analepsis" and "prolepsis" generally do not connect surface aspects of both passages; rather, the point of these discussions is to show that the surface of one passage calls to mind a hierarchically prior aspect of another passage. In an oft-mentioned example, the registral configuration—a "secondary aspect"—of the opening of Schoenberg's String Quartet no. 4 (1936) is taken as predicting a hexachordal area to which the piece later moves.[104]

As mentioned above, most of Babbitt's later music uses a consistent technique for organizing the surface into cross-references to the array. This technique is exemplified in *None but the Lonely Flute*, and is visible in the sketches for the piece. In Example 1.4, the numbers written below the uppermost staff in each system indicate cross-references.[105]

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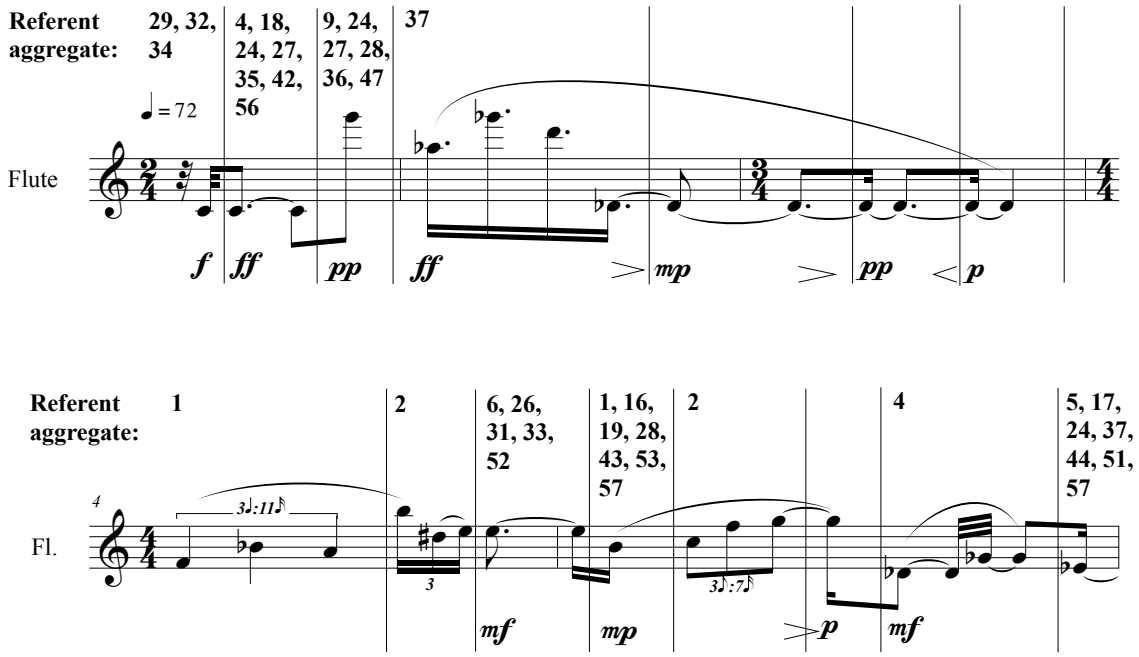
[101] Schenker (1979, 100).
[102] Ibid., 99. As Burkhart (1978, 159–62) points out, Schenker's (2004) *Tonwille* analysis of Beethoven's Op. 2, No. 1—the first Schenker analysis Babbitt encountered—presents vivid examples of motivic parallelism. Did Babbitt realize the compositional implications of motivic parallelism as early as that first encounter?
[103] Babbitt's analytic interest in analepsis and prolepsis is noted in Straus (2012, 26).
[104] Babbitt (1987, 64–67).
[105] See Mead (1983), Mead (1987, 213–18), and Dubiel (1997, 37–39), for more on the technique discussed here (or, in the case of Mead [1983], a suitably similar technique).

Each time-point interval in Example 1.4, isolated by vertical lines resembling bar lines, is subdivided into a string of equal note values. (As can be seen in comparison with Example 1.5, these lines do no coincide with the bar lines in the finished score.) The number of equal note values into which each time-point interval is subdivided corresponds to the length of the array segment being referred to. Underscored numbers and numbers in parentheses indicate the overall length of the referenced segment: underscores are used if the final pitch class of the segment is sounded in the reference, and parentheses are used if it is not. A note's placement within that subdivision reflects its position within the referenced segment and is indicated by the number written below it in Example 1.4. Therefore, the underscored "2" under C, the first note of the sketch, indicates that that note is part of a reference to a two-note segment of the array in which C is the second note. The first note of that segment is not referred to here, a circumstance Babbitt signals using a rest. Therefore, the opening time-point interval of one sixteenth note is subdivided into two thirty-second notes, of which the first is silent and the second is C. As can be seen in Example 1.4, *None but the Lonely Flute*—like almost all of Babbitt's late music—is completely saturated with such cross-references.



Example 1.6. Array references in *None but the Lonely Flute*, mm. 1–5

Example 1.6 details the places in the array to which the cross-references in the opening of *None but the Lonely Flute* refer. The sixteenth-note triplet in measure 4, for instance, corresponds to a three-note segment in the second aggregate; this can be seen in the array in Example 1.3. There is often ambiguity about which aggregate is being referred to: most references of one or two notes correspond to multiple segments from various places in the array. The opening reference, which as discussed above refers to a two-note segment whose second note is C, could be referring to segments in the twenty-ninth, thirty-second, or thirty-fourth aggregate. This sort of ambiguity is extremely common when references are made to segments of one or two notes and is apparently not of concern to Babbitt.[106]

[106] While many references are ambiguous, there are sometimes bases for understanding a reference as linked to a particular referent, in particular when references refer to

These shorter cross-references are in fact much more common than longer cross-references. As Examples 1.4 and 1.6 exemplify, most of Babbitt's cross-references are to segments of six notes or fewer. This could be ascribed to a variety of potential compositional concerns (interest in a certain gestural vocabulary, for instance), although it might also just be a consequence of the fact that partitioned segments in an all-partition array are more likely to be short than long.[107] But one result is that the piece's underlying series class is primarily presented in segments whose lengths are well within Miller's magical restriction on working memory. One can therefore comprehend the series as built up from manageable chunks.

The cross-reference technique exemplified in *None but the Lonely Flute* is used in most of Babbitt's late pieces. The only significant development in Babbitt's reference technique that would follow is that in a number of pieces from the '90s, certain instruments or registers consistently refer to certain other instruments or registers.[108] Over the course of these pieces, the patterns of reference change, often in an exhaustive list of combinations (in fact, in a number of these pieces, these patterns of reference form the primary exhaustive list that spans the piece). Babbitt mentions this technique (if

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consecutive aggregates. The opening of *None but the Lonely Flute* exemplifies this. The first four references can be construed as referencing the thirty-fourth, thirty-fifth, thirty-sixth, and thirty-seventh aggregates consecutively, in each case referring specifically to the lowest line of the array. In the thirty-eighth, thirty-ninth, and fortieth aggregate of the array, the lowest line is silent: the three tied D♭s in measures 2–3 refer to these silent partitions. (Ties in Babbitt's late music can generally be interpreted thus.) After this, the pattern is broken, and measure 4 presents two consecutive partitions from the first two aggregates of the second-lowest line of the array (as can be seen in Example 1.3). I am grateful to Daniel Colson for this observation. For more on Babbitt's cross-reference technique, see Colson (forthcoming).

[107] To wit, consider the conjugate partitions (12^1) and (1^{12}). The former has one, long twelve-pitch-class segment, while the latter has twelve, short singletons.

[108] Pieces that use this technique include String Quartet no. 6 (1993), *Triad* (1994), *Tutte le Corde* (1994), Piano Quartet (1995), Clarinet Quintet (1996), and *When Shall We Three Meet Again?* (1996). Colson (forthcoming) discusses this technique in String Quartet no. 6.

elliptically) in an intriguing quotation that alludes to both the technique and its aesthetic motivation:

> In my latest works, particularly those beginning with my Sixth String Quartet, the "macrophases"—or even "-phases"—are most immediately characterized by changes in the degree of interdependency among the pitch-class and temporal materials of the instrumental parts, with their constantly changing range of reference both proleptically and analeptically, by intimation and recollection. The total organicism, after which I have always strived, does not immediately manifest itself in such clearly reflected dimensions whose structures, though ultimately genidentical, are more often, or almost always, "polyphonic," rather than "homophonically" coordinated.[109]

The first sentence discusses the differentiation between sections—"macrophases"—by changes of reference: in different sections, the instruments (or registers) refer to each other in different patterns (change their "degree of interdependency"). These references effect the analepsis and prolepsis Babbitt valued. The second sentence of this quotation is more difficult to untangle, but it appears that the "genidentical"[110] structures in "clearly reflected dimensions" are the all-partition arrays sounding separately in each instrumental part or register in these pieces.[111] These are indeed "coordinated" polyphonically, in the sense that they usually unfold disjointedly, rather than with the same harmonic rhythm.[112]

But from the perspective of this discussion, the most striking aspect of this quotation is Babbitt's assertion that he is seeking "total organicism." The polyphonic

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[109] Babbitt and Wuorinen (1998, 28–29). Babbitt goes on to mention that his reference technique is "inspired . . . by that source of plenty, the Schoenberg Fourth String Quartet," and explicitly mentions the proleptic registral disposition of the first aggregate of that piece, discussed above.

[110] Carnap ([1967] 2003, 199) explains, "we call *genidentical* . . . two states of the same thing."

[111] Since Lake (1986), combinations of multiple simultaneous arrays such as this have been referred to as "superarrays."

[112] See Mead (2009, 230–32) and Mead (1997, 117–18) for an overview of the superarrays of String Quartet no. 6 and Clarinet Quintet, respectively.

disposition of the arrays means this organicism is somewhat obscured where they are concerned: it "does not immediately manifest itself" in the relationship between the arrays. More "immediately" available, as the first sentence claims, is the "interdependency" secured by the cross-references. And thus, especially in the complex late works like String Quartet no. 6, do the principle of exhaustive completion and the principle of surface reference to the array complement one another. The series develops outward hierarchically in nested exhaustive lists such as all-partition arrays. The surface, in turn, is arranged to reflect this hierarchy. The result is "total organicism."

CONCLUSION

It is an odd sort of compliment to congratulate someone on winning a game of his own devising. But Babbitt's compositional re-imagination of Schenkerian organicism clearly is, from some perspectives, immensely powerful. If one wants music to be "as much as it can be"—in the terms he defines—the complementary mechanisms of hierarchical expansion and surface reflection realize this ideal to a startling degree. In addition to this—and, in his telling, as a result of it—Babbitt's compositional techniques offer the promise of intelligibility through sensitivity to the limits of cognition. A listener armed with not much more than the ability to recognize and remember pitches, intervals, and durations can develop a set of expectations that, if usually not very specific—it is still generally impossible to predict any particular sequence of notes or rhythms with much precision—may be enough to start down a path to comprehension.

But the range of possible meanings one might attribute to music on the basis of Babbitt's writings, the qualities that contribute to his sense of musical "richness"—as

astonishingly multivalent as they are—are still limited. It is a central contention of this dissertation that Babbitt's music is not so limited, and that exploring the full range of things his music might be will require looking beyond those that he drew from organicism.[113] This is especially true because the expectations one develops as a result of the organicist bases of his compositional systems—that his music presents neat hierarchies of exhaustive lists that can be shown to be derived from a single initiating twelve-tone series, for instance—are often not met. Later chapters of this dissertation will explore these anti-organicist tendencies in Babbitt's music.

It is a second basic contention, however, that the organicist potential of Babbitt's music should still be taken seriously. Babbitt's organicism is useful, if not as a governing principle, then as an interpretive frame. It will, at times, function as an ideal against which Babbitt's actual music might be fruitfully compared. At other times, certain facets of Babbitt's organicism seem not to be relevant, but others still might be. Babbitt's music demands a flexible listener, one who takes insights from organicist principles when it is analytically fruitful and puts them aside when it is not. It is music passionately resistant to doctrine.

[113] This contention, as far as it goes, is hardly original: many analysts of Babbitt's music in the past twenty-five years have distinguished their analytical approach from that suggested by Babbitt's writings in one way or another. See, e.g., Dubiel (1997), Mead (2004, 273n.6), and Adamowicz (2011).

Chapter Two

The Seam in Milton Babbitt's Compositional Development: *Composition for Tenor and Six Instruments*

"MY MOST DIFFICULT PIECE"

The years just around 1960—approximately from the 1957 composition of *Partitions* to the 1965 composition of *Relata I*—were transformative years for Babbitt in three important respects. The search for a more precise analogy between pitch and rhythmic intervals led to the invention of the time-point system. A deepening frustration with performative limitations, especially given the new rhythmic difficulties of his time-point music, led to the adoption of electronic synthesis in the 1961 *Composition for Synthesizer*, following some four years spent mastering the R.C.A. Mark II Electronic Sound Synthesizer. And, finally, and arguably most consequentially, an interest in a more varied and ramified contrapuntal practice gradually led him away from the foursquare (3^4) partitioning of the trichordal array, with the glimpse of partitional asymmetry in the opening bars of *Partitions* finally culminating in the all-partition array of *Relata I*. Balancing this increase in contrapuntal complexity is a simplification of the lines forming each array, resulting in significant changes in the hierarchical structure of Babbitt's music. While in the '40s and '50s the lines of Babbitt's arrays are almost always derived sets, generated from segments (most often, trichords) of an underlying series, the lines of Babbitt's arrays henceforth would present straightforward, concatenated iterations of

series with identical hexachordal content.[1]

Standing at the intersection of all of these developments is *Composition for Tenor and Six Instruments* (hereafter *CT6*), of 1960. As will be shown, this piece represented something of an endpoint for Babbitt. Certain considerations had evidently led him along a path that he felt his current practice could no longer support, necessitating a change. In his only two significant published comments about the work, he appears to regard *CT6* as a failure, describing it in an almost apologetic tone that he used for no other piece of his. These comments reveal much about the creative struggle surrounding the work.

> When, in perhaps the last of my instrumental works in which trichords appear in a foreground role, *Composition for Tenor and Six Instruments*, I again employed an explicit unfolding of the set content, but the work is so much more complex than the Second Quartet, the instrumental lines are so rarely generatively univocal, and the sections so sharply contrasted in so many respects, that—although there might be those who would judge its proportions more nearly divine than those of others of my works—convincing continuity depends crucially on invariants of order embedded in invariants of contents.[2]

> The piece of mine that Stefan [Wolpe] pressed me most about, and obviously delighted him for rather esoteric personal reasons, was one that never made it quite to the top of the charts. It was a piece called *Composition for Tenor and Six Instruments*. He heard a performance which the Group for Contemporary Music did up at McMillin and professed to love it. Now I must confess to you, I think the reason he felt that was because in many ways it was my most difficult piece both to perform and to hear. It was a piece that made many people very angry. It had long, long, long periods of unchanging notes, or very, very slow-changing pitch combinations, which was not like my usual music and which intrigued Stefan. There was another reason, too. It was conducted by Harvey Sollberger, and Harvey and Charles [Wuorinen, presumably] both sort of latched onto that piece. It was then repeated

[1] The first two of these transformations are the subject of Babbitt ([1962] 2003). Babbitt's clearest statement on the move toward all-partition arrays is in Babbitt ([1976] 2003, 354), as discussed below. Dubiel (1990a) reviews aspects of the evolution of Babbitt's contrapuntal practice in some detail, remarking on the "more constant and literal . . . employment of the set" in all-partition arrays as contrasted with Babbitt's earlier practice (25). Mead (1994) demarcates the beginning of Babbitt's "second period" at the year 1961, characterizing the all-partition array as the "structural hallmark" of that period (125). He also describes the asymmetrical partitioning of the opening of *Partitions* as a "harbinger of the music to follow" (113).

[2] Babbitt ([1976] 2003, 354).

> at a large concert at Town Hall and I remember walking out with Stefan after that, and he expressed this great, great enthusiasm for this piece, which has never been performed since. Now *that* piece we did go over in enormous detail, for two reasons, the first being the tempo organization. It's not the only piece of mine in which I've done this, but it's the most extreme piece. I decided after that piece that I would have to find some sort of way of writing music that was not as difficult. It was just too much. We also had the problem of the tenor. The tenor in that piece used only phonemes, and the phonemes were indeed chosen in order to either contrast or blend with the instruments. Sometimes it worked very well, and sometimes it didn't. Now that's a piece about which I talked a great deal with Stefan. He wanted to know about phonemic structure. Obviously he knew not a great deal about vocal acoustics and vowel acoustics, and many of us were involved in this, not merely for musical purposes, because we were involved in electronics. He did not know about the Haskins Laboratory in New York. I told him about it. He said he would like to visit it, and he had friends who could get him there. That is the piece with which I can remember the most discussion about the organization—spatial organization, division of the musical space, as well as musical time, and possible analogies between the two.[3]

There is much to unpack in these quotations, and we will be returning to them throughout the remainder of the chapter. For now, let us simply observe Babbitt's expressed concerns about all three of the aforementioned areas in which his compositional practice changed around 1960. There are new analogies pursued between tempo and "space"—that is, using a metaphor common in Babbitt's writings, pitch.[4] Although he does not specify it here, he is apparently referring to the piece's use of the time-point system—a technique that debuted in *CT6*[5]—and, as discussed below, the

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[3] Babbitt (1983). The performance at McMillin Theater occurred on 4 December 1967; the performance at Town Hall occurred on 24 November 1968 (Deaver [1993, 194–95]). Peter Frank's (1968) review of the Town Hall concert corroborates Babbitt's recollection of the piece's reception, calling it "the driest piece on the program." Babbitt's claim that the piece has not been performed since apparently remains true.

[4] See, for instance, Babbitt (1987, 20).

[5] Published catalogues of Babbitt's works (e.g., Mead [1994, 267]) place the composition of "Sounds and Words" (1960), which also uses the time-point system, before that of *CT6*. Babbitt himself claimed otherwise: "But [*CT6*] was very elaborate and I wanted to [compose using phonemes] on a simpler basis. So I wrote a piece called 'Sounds and Words for Soprano and Voice' . . ." (Babbitt and Page [1988, 154]). A piece of supporting evidence is that "Sounds and Words," unlike *CT6* and Babbitt's pieces from the '40s and

application of the time-point system to determine not only local rhythm, but also global relationships between the piece's various sections. The rhythmic challenges this new system engenders, as well as such subtleties as the matching of phonemes and instrumental timbre, created apparently insurmountable performance difficulties. Either, as mentioned in these quotations, he would have to change his compositional practice or turn to electronic synthesis, and in the years following the composition of *CT6* he would explore both options. Finally, concerns for "convincing continuity" led to a radical revision of his contrapuntal practice: this would, he thought in 1976, be the last of his trichordal pieces.[6]

As significant as these changes were, however, all three of these areas of development are motivated by an essentially practical set of concerns, not substantive ideological rethinking. The rhythmic considerations stem from an attempt to solidify the pitch-rhythm analogies he had already been pursuing for the previous two decades; that is, from a desire to heighten the organic relationship he had been trying to secure between the dimensions.[7] The performative challenges result both from this desire to forge a more powerful rhythmic analogy and from an attempt to additionally make the tenor's timbre—its phonemes—interact meaningfully with the timbre of the various instruments.[8] And, finally, the changes to his contrapuntal practices were apparently motivated by the combination of an interest in aesthetic variety and a pragmatic,

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'50s, does not use derived sets. As will be discussed at length below, *CT6* marks the turning point away from derived sets.

[6] As discussed in Mead (1984) and Mead (1994), trichordal arrays returned to Babbitt's practice shortly thereafter, beginning with the 1977 *Minute Waltz (or) 3/4 ± 1/8*, and would remain a central part of his practice.

[7] On the time-point system and the pitch-rhythm analogy, see Babbitt ([1962] 2003).

[8] As suggested even in the title of Babbitt ([1962] 2003)—"Twelve-Tone Rhythmic Structure and the Electronic Medium"—Babbitt was aware early on that the time-point system would create severe difficulties for performers. See ibid., 33.

compensatory impulse to preserve the hierarchical relationships that had always interested him. Although his trichordal pieces are generally interesting enough rhythmically and gesturally to avoid becoming overly predictable, one can imagine Babbitt chafing against the requirement for each line to contribute three notes per aggregate. Furthermore, the fact that surface organization in Babbitt's practice is generally based on array reference sharply limits the surface possibilities in Babbitt's trichordal pieces: simultaneous attacks in these pieces, for instance, are typically of three notes or fewer. Expanding his practice to include a greater variety of contrapuntal and harmonic configurations, however, results in new perceptual challenges that he apparently felt needed to be offset: if the contrapuntal relationships between lines were to be more complex, the lines themselves would have to be simpler to be perceptibly related. The commitment to organicism that shapes Babbitt's compositional technique is preserved through all of these transformations.

It is worth noting at this juncture that there are no technical reasons why an all-partition array requires each of its lines to be iterations of a series, or that each line should be restricted to a single pair of complementary hexachords. Exhaustive lists of partitions could be assembled in arrays with derived sets, or with multiple series, or with any number of other imaginable configurations.[9] Babbitt's understanding of "convincing continuity"—which is to say, apparently, his understanding of the limits of human perception—restricts the lines of his all-partition arrays, not any inherent limitations of the twelve-tone system. The limits of perception were a topic of deep concern for Babbitt in the years surrounding the composition of *CT6* as a result of his adoption of electronic

[9] See Alegant (1993, 148–62) for discussion of a deeply un-Babbittian all-partition array in Robert Morris's *Four Voices in Three Voices* (1983).

synthesis. As he explained in a set of oft-reiterated remarks, "[the electronic] revolution has effected, summarily and almost completely, a transfer of the limits of musical composition from the limits of the nonelectronic medium and the human performer, not to the limits of this most extensive and flexible of media but to those more restrictive, more intricate, far less well-understood limits: the perceptual and conceptual capacities of the human auditor."[10] There is no evidence that the changes to Babbitt's contrapuntal practice following *CT6* were the result of any particular scientific paper or experiment. However, if "every musical composition justifiably may be regarded as an experiment, the embodiment of hypotheses as to certain specific conditions of musical coherence,"[11] and "coherence and continuity" depend on "principles of relatedness" that—structure being cognitive, for Babbitt, rather than immanent[12]—depend on the "perceptual and cognitive abilities of the listener,"[13] one might suppose that Babbitt himself—his own "hypothetical other," in any case[14]—could not hear coherence or "convincing continuity" in *CT6*.

"NEARLY DIVINE" PROPORTIONS

Neither divinity nor the "divine proportion"[15] figured much into the metaphysics of an "unreconstructed logical empiricist,"[16] but one might guess what about the proportions of *CT6* Babbitt would have considered "most nearly divine": the proportions

[10] Babbitt ([1962] 2003, 109).
[11] Ibid.
[12] Babbitt and Wuorinen (1998, 25).
[13] Babbitt ([1958] 2003, 50).
[14] Babbitt ([1989] 2003, 434).
[15] The "divine proportion" is a synonym for the Golden Ratio, as in Luca Pacioli's *Da divina proportione* (1509).
[16] Qtd. in Bortz (2005, 96).

of the piece's sections are determined by the piece's series. In *CT6*, Babbitt's first public demonstration of the time-point system, the time-point system determines both local rhythm and the durations of sections. This large-scale application of the time-point system is used, apparently, in only one other of Babbitt's pieces, "Sounds and Words," written just after *CT6*. In this technique, sectional duration is defined by the intervals of the piece's series class.[17]

As shown in Figures 2.1 and 2.2, in both "Sounds and Words" and *CT6*, the durations of the first eleven sections of the piece correspond to the intervals of the series. In "Sounds and Words," the durations of each section correspond directly to the intervals of the piece's series measured in seconds, while in the more ambitious *CT6*, the durations of each section, measured in seconds, correspond to the intervals of the series multiplied by four.[18] Following these first eleven sections of "Sounds and Words," there is a twelfth section; apparently inserted for the sake of array completion (it allows the first half of the piece to present three complete four-aggregate-long arrays), its duration of twelve seconds corresponds, assuming modularity, to the interval of a unison, and therefore does not play a role in the large-scale presentation of the series. The first eleven sections of the second half of the piece present the retrograde of the durations of the first eleven sections—an

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[17] Although *CT6* and "Sounds and Words" are the only two pieces completely divided into (more or less) discrete sections whose durations are determined by large-scale time-point intervals, certain later pieces such as *My Ends are My Beginnings* and *Melismata* (1982) use time-point intervals to determine the duration of pitch-class aggregates (see Mead [1987, 218–20] and Mead [1994, 193–95]). The durational scheme of "Sounds and Words" is mentioned in Dubiel (1990b, 78n.26).

[18] The word "section" as used here is probably more appropriate, in its familiar usage, to *CT6* than to "Sounds and Words," given both the difference in overall scale between the two pieces (14'28" versus 2'36", respectively) and the fact that in *CT6* each section presents a relatively discrete array, while the sections in "Sounds and Words" present only single aggregates of four-aggregate-long arrays. But since *CT6* is our primary focus here and no other term is readily available, I will use it for both pieces.

operation that, given that durations function as intervals in the time-point system, corresponds to the retrograde inversion of the original series—before again concluding with a "neutral" section of twelve seconds' duration.

The overall scheme in *CT6* is quite similar: the primary global structure of the piece presents the intervals of the series (now measured in units of four seconds) twice, with the second the retrograde inversion of the first. Since each section in *CT6* presents its own array, there is no need for neutral sections. There is, however, an "interlude" between the two large-scale statements of the series. The durations of the interlude's three sections, each somewhat longer than the durations defined by the series, are not divisible by four, and therefore do not correspond to any interval of the series in the established grammar of the piece. The middle section of the interlude—by far the longest section of the piece—is probably the section Babbitt referred to as having "long, long, long periods of unchanging notes." The first and last aggregates of that section, in particular, each take about forty seconds (during which they each present only twelve discrete attacks). In the first, the tenor is asked to hold a single note, ***f***, for an asphyxiating twenty-five seconds.

Series Statement One: S

Section	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
First Measure	1	4	6	8	10	14	18	22	25	31	36	37
Tempo (bpm)	60	60	60	60	60	60	60	60	60	60	60	60
Modulus (s)	3	2.5	1	2	1.75	2	2.75	1	1	2	N/A	2
Duration (s) = i(S)	9	5	2	4	7	8	11	3	6	10	1	12

Series Statement Two: RI

Section	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII	XXIV
First Measure	43	44	49	55	59	63	67	71	75	78	80	82
Tempo (bpm)	60	60	60	80	60	60	60	60	90	60	60	60
Modulus (s)	N/A	2	1	.75	2.75	2	1.75	1	.667	2.5	4.5	4
Duration (s) = i(RI)	1	10	6	3	11	8	7	4	2	5	9	12

Figure 2.1. Section durations of "Sounds and Words." The moduli and durations of each section are given in seconds. The durations of the first half correspond to the intervals of the S form of the series and a final, neutral, twelve-second section; the durations of the second half correspond to the intervals of the RI form and another neutral section.

Series Statement One: S

Section	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
First Measure	1	16	30	45	57	71	87	102	116	131	145
Tempo (bpm)	60	75	90	180	120	160	60	90	90	140	120
Modulus (s)	3	2.4	2.67	.333	2	.75	3	2	2.67	1.71	2
Duration (s)	44	32	40	4	28	12	44	28	40	24	28
d/4 = i(S)	e	8	t	1	7	3	e	7	t	6	7

Interlude

Section	XII	XIII	XIV
First Measure	159	187	233
Tempo (bpm)	96	96	96
Modulus (s)	1.875	2.5	1.875
Duration (s)	52.5	115	52.5
d/4	N/A	N/A	N/A

Series Statement Two: RI

Section	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII	XXIV	XXV
First Measure	261	275	293	317	336	358	374	393	397	417	433
Tempo (bpm)	90	90	108	120	120	160	120	120	90	90	120
Modulus (s)	2	1.67	1.67	1.5	2	.75	1.5	1	2	2	1.5
Duration (s)	28	24	40	28	44	12	28	4	40	32	44
d/4 = i(RI)	7	6	t	7	e	3	7	1	t	8	e

Figure 2.2. Section durations of *CT6*. The first and last eleven section durations divided by four correspond to the intervals of the piece's series, the former the S form and the latter the RI form. The three section durations of the "Interlude" are not determined by the series.

Figures 2.1 and 2.2 detail the overall durational patterns discussed above. They also include information about the time-point modulus and tempo of each section. Throughout "Sounds and Words," the modulus evenly divides the duration of the section, while in *CT6* this is often not the case. Since the modulus in both pieces is equivalent to the written measure, this means that each section of "Sounds and Words"

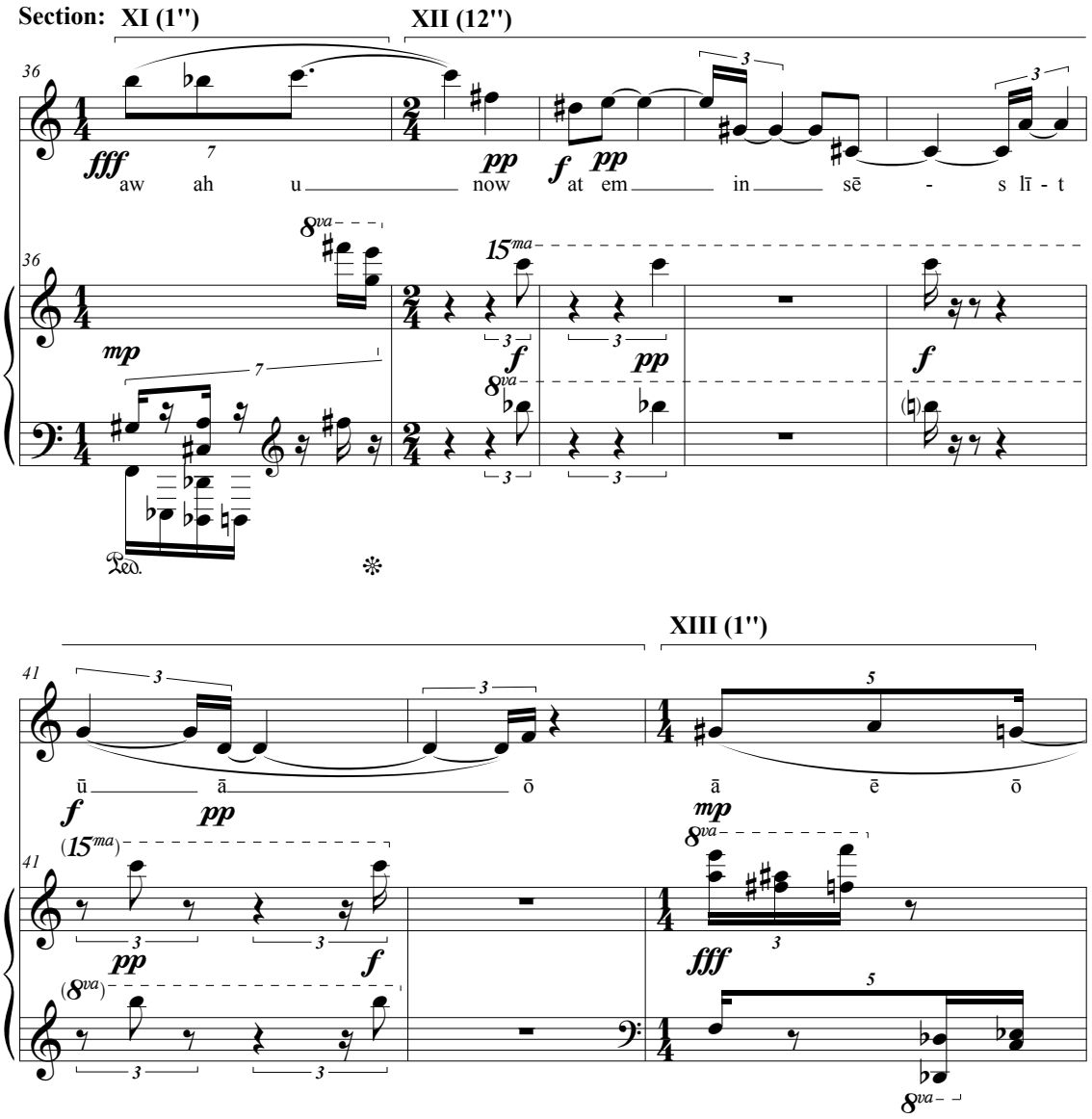
includes a number of measures of equal duration, while in *CT6* there is sometimes a "residue" measure—a measure at the end of a section just long enough that the section will have the correct duration. For example, the first section of *CT6* divides forty-four seconds into a three-second modulus, and 44/3 = 14 *r* 2; accordingly, the section begins with fourteen three-second-long measures and ends with one two-second-long measure (3/4 and 2/4 in the prevailing tempo of ♩=60). That is, the duration of the modulus is partially determined by sectional duration in "Sounds and Words," and is basically not so determined in *CT6*.[19]

It appears that there is a dramatic difference in the use of tempo in the two pieces, but this is mostly a notational illusion. "Sounds and Words" maintains an even ♩=60 tempo almost entirely throughout the piece, effecting the changing modulus with complex time signatures and tuplets. For instance, a modulus of 2.75 seconds requires a time signature of 11/16 and a 12:11 tuplet that spans the bar. *CT6* simplifies this notationally using tempo changes. This simplification is made urgent because *CT6* uses many offset and nested tuplets, techniques not found in "Sounds and Words."

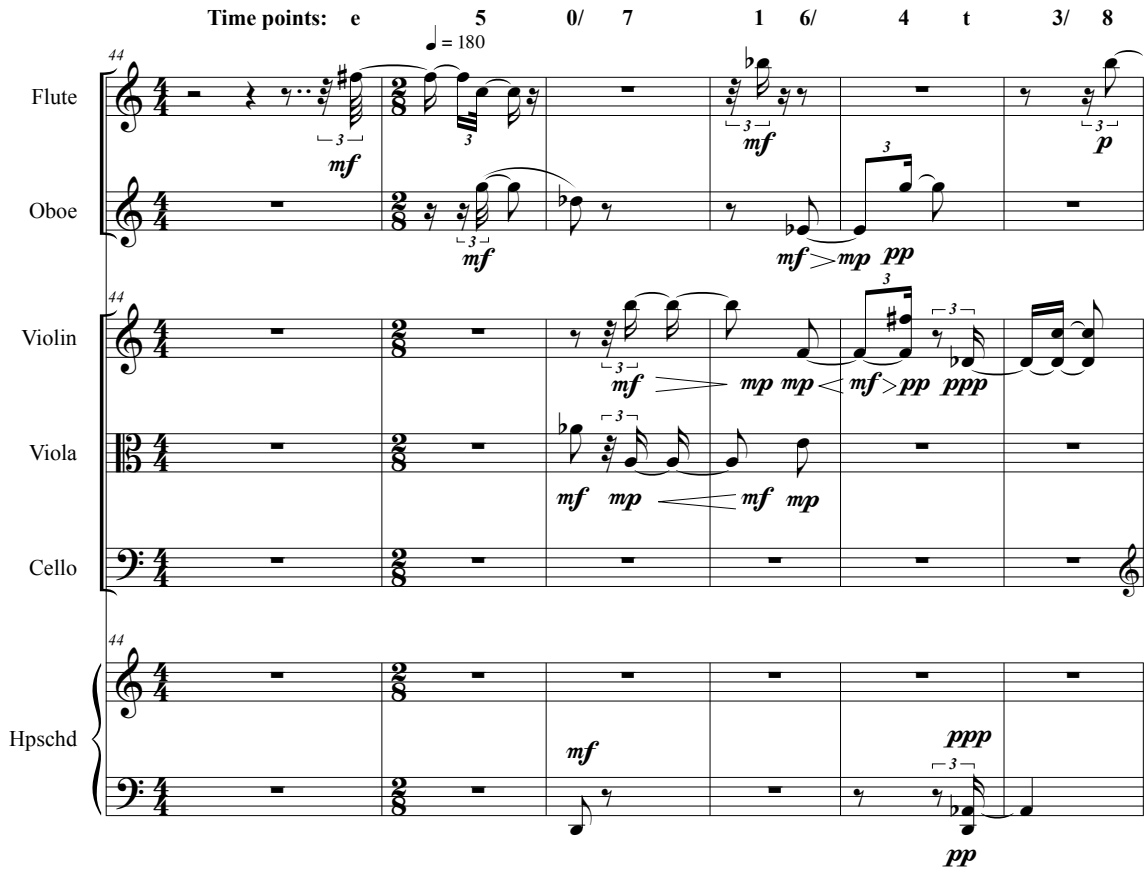
In the second quotation given above, Babbitt describes *CT6* as "the most extreme piece" to use this large-scale time-point technique. Given its many similarities with "Sounds and Words," what about the earlier piece is more extreme? The primary concession to practicalities that "Sounds and Words" makes but *CT6* does not regards their treatment of the shortest sections, those corresponding to interval 1, as shown in Examples 2.1 and 2.2. In "Sounds and Words," accommodating the systematically expected time-point material in those sections would require at least four moduli. Within

[19] Indeed, it does not appear that the modulus or tempo are systematically determined in *CT6* at all. They may simply be loosely determined byproducts of the desire to complete a certain amount of pitch-class and time-point material within a given duration.

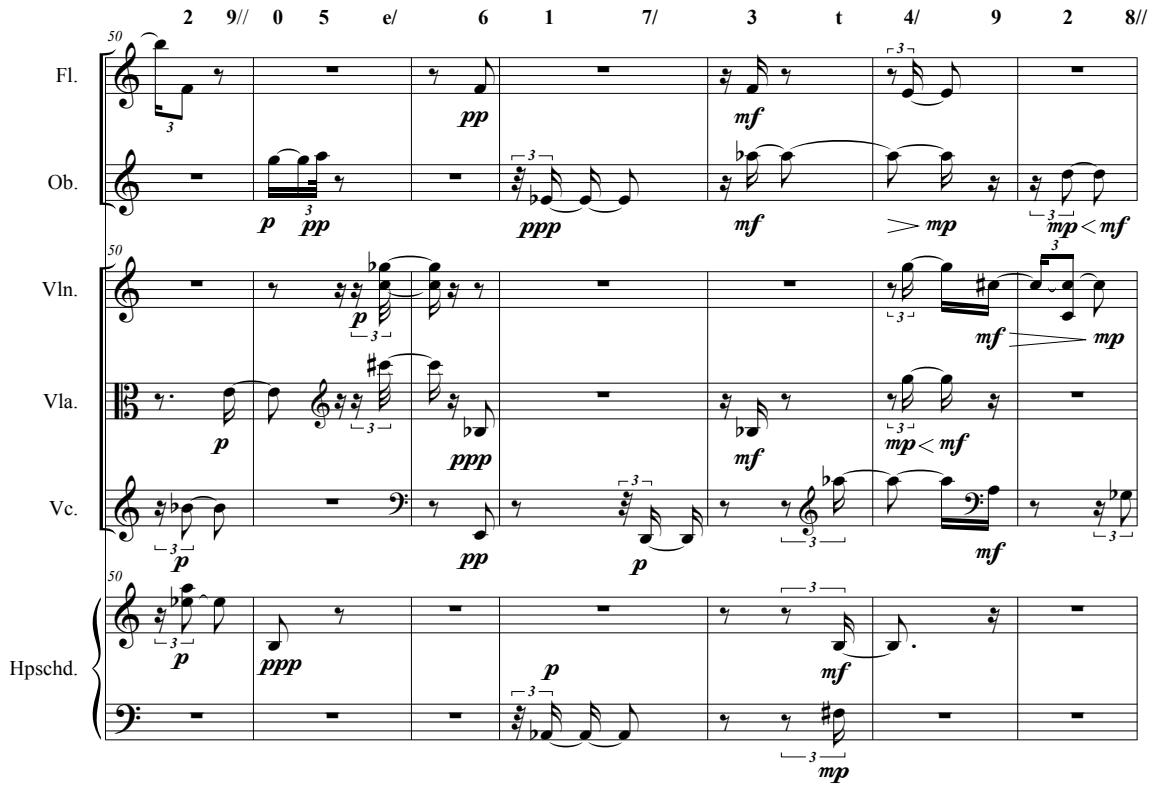
the sectional duration of one second, each modulus would be one quarter of a second and the time-point unit interval (a twelfth of a modulus) would be one forty-eighth of a second—obviously far shorter than the capabilities of any human performer or listener. Babbitt simply ignores the time-point dimension in these sections, filling the duration of the sections with a string of five or seven even note values. Oddly enough, the remaining sections of the piece continue as though the expected time points in Sections XI and XIII had been successfully completed. As with many of the violations of serial structure discussed in Chapter 5, the surrounding context seems oddly unresponsive to the fact that serial expectations have been flouted.



Example 2.1. "Sounds and Words," mm. 36–43



Example 2.2. *CT6*, mm. 44–58. Slashes indicate the end of |5, 6| time-point trichords; the double slash indicates the time-point aggregate boundary. The downbeat is taken as time-point 0.



Example 2.2, cont.

In Section IV of *CT6*, shown in Example 2.2, which should be completed in four seconds, Babbitt does make some concession to practicality: most of the piece uses approximately eight pitch-class aggregates per section, but this section uses only four. The time-point structure, as indicated in Example 2.2, is also unusually simple, presenting two successive aggregates generated by |5, 6|, <e507164t3829> and <05e6173t4928> (taking the downbeat as time point 0). These require a minimum of 141 time-point unit intervals, here realized as twelve moduli and a one-unit upbeat. The upbeat itself is a bit of a concession, extending the material of Section IV into the time span of Section III. However, dividing four seconds into twelve moduli means the modulus is one third of a second and the time-point unit interval is one thirty-sixth of a second (thirty-second-note

triplets at ♩=180). Clearly, despite the concession to practicality afforded by halving the section's expected material, this is impossible to perform.[20] Babbitt may have even recognized this and relented during the composition of the piece, for the second four-second-long section, Section XXII, presents only one time-point aggregate, requiring only four moduli. The fact that this large-scale application of the time-point system necessitated adjustments for the sake of realistic performance may have been one of the things that led Babbitt to abandon the technique.[21]

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[20] As described in Babbitt and Romig (2002), Babbitt once sought to test the limits of human performance, finding that "15 alterations a second is about the limit of the muscular system." In his later music, perhaps as a result of this experiment, Babbitt does not exceed this limit.

[21] The large-scale time-point technique found in "Sounds and Words" and *CT6* is remarkably similar to the largest level of Charles Wuorinen's "nesting" method, described in Wuorinen (1979, 149–62) and used in many pieces throughout Wuorinen's career. The only difference at the global level is that Wuorinen expresses the intervals of a series using twelve sections, not eleven, the twelfth representing the interval between the series's last note and its first note. Whether Wuorinen learned this technique from "Sounds and Words" or *CT6* is unclear. In Wuorinen (1979, 150), Wuorinen introduces the nesting method as a difference between his practice and Babbitt's:

> We have observed that the Babbittonian formulation of the time-point system implies a progress of mosaic-like accretion—small units of continuity (pitch-class/time-point set-form complexes) are conjoined to make a larger continuity. The large is built up out of, and gradually emerges from, the manipulation of small entities. In the alternative method I am about to outline, one takes the reverse approach, beginning with large spans.

Two recent dissertations that were advised by Wuorinen and discuss the nesting technique in detail, Romig (2000) and Holochwost (2008), echo the sentiment that Wuorinen achieved a large-scale application of twelve-tone rhythmic structure that was fundamentally different from anything Babbitt had attempted. McConville (2011), also by a Wuorinen student, repeats the same claims. This suggests that Wuorinen arrived at the approach independently and continues to believe it was without "Babbittonian" precedent. However, Wuorinen was co-founder of the Group for Contemporary Music and was involved in the Town Hall concert at which *CT6* was performed (as the composer of *Janissary Music* [1966] and performer of Harvey Sollberger's *Impromptu* [1968]) (Frank [1968]), so he was almost certainly at least roughly familiar with that piece right around the time he formulated his nesting technique (which was, according to Romig [2006], "in the 1960s"; as McConville [2011] shows, the nesting technique was

The large-scale application of the time-point technique effects one of the most direct examples of hierarchy—one might even call it *Auskomponierung*—in Babbitt's practice. Although all of his compositional techniques are oriented toward hierarchically developing an initial series, most often the hierarchy that results is of a rather conceptual sort: of nested exhaustive lists, or the understanding that a trichord in a trichordal array might be understood as a segment of an underlying series. The global time-point series ensures that each individual section not only presents pitches, intervals, and rhythms derived from the piece's series, but is contained within a duration that can be understood as an interval of the series.

GENERATIVE POLYVOCALITY

The first quotation given above compares *CT6* to Babbitt's String Quartet no. 2 (1954), and the comparison is apt: both pieces develop the segments of a twelve-tone series with derived sets before eventually presenting the series directly. But the quotation goes on to say that *CT6* is "so much more complex than the Second Quartet, the instrumental lines are so rarely generatively univocal, and the sections so sharply contrasted in so many respects," that profound changes in compositional technique were

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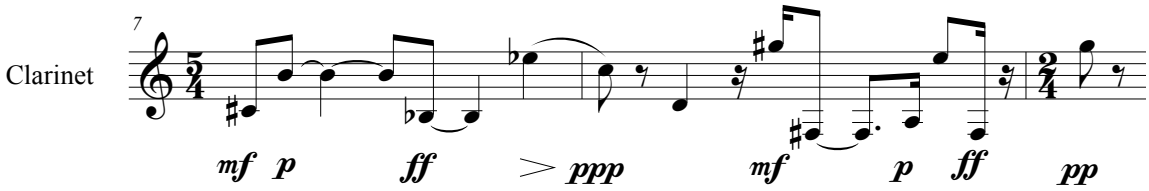
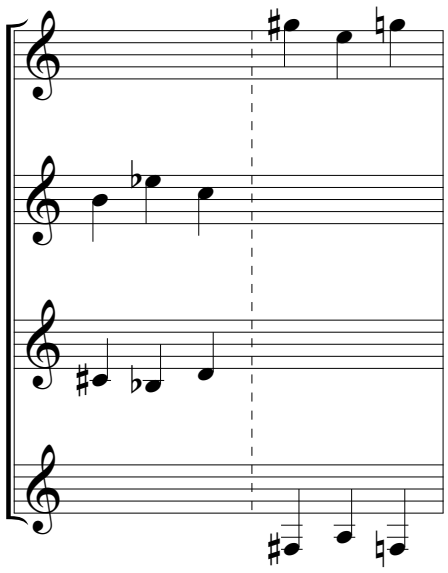
fully deployed in the 1970 *Cello Variations*). Furthermore, Babbitt appears to make sly reference to him in the second quotation given above, saying that "Charles . . . sort of latched onto that piece." The Charles is presumably Charles Wuorinen (his name is mentioned in conjunction with Harvey Sollberger, another co-founder of the Group for Contemporary Music) and the way in which Babbitt thought he latched onto it might have been his subsequent adoption of its large-scale formal scheme. But Wuorinen has been forthright about his indebtedness to Babbitt (see, e.g., Wuorinen [1979, *vii*]) and it seems unlikely that Wuorinen would attempt to keep this similarity secret, so he may actually be unaware of Babbitt's adumbration of his nesting technique in "Sounds and Words" and *CT6,* or have once known it but forgotten its origins and assimilated it into his own practice unwittingly.

required. The mention of rare "generative univocality" appears to refer to the fact that many instrumental lines and even single pitches play roles in multiple simultaneous generated structures. This is hardly unprecedented; indeed, an instance of what may be called "generative polyvocality" can be found as early as the second aggregate of *Composition for Four Instruments* (1948), as seen in Examples 2.3–2.6.[22] This passage displays three distinct aggregate-forming structures that span just this single aggregate, presenting derived sets generated from three different trichordal set classes, each articulated with distinct means (register, temporal order, and dynamic level). Two of these—the generations from (013) and (027)—are in addition to the prevailing trichordal array, which—as is normal for a trichordal array—also presents hexachordal aggregates across the array's first two aggregates and linear aggregates across the array's first four aggregates, as well as the trichordal formation shown in Example 2.4. All told, each note in Example 2.3 is part of five distinct aggregate formations, all generated from derived sets. This is not an unusual density of aggregate formation in Babbitt's music preceding *CT6*.

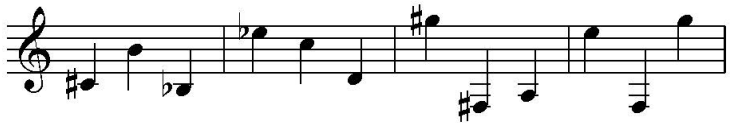


Example 2.3. *Composition for Four Instruments*, mm. 7–9

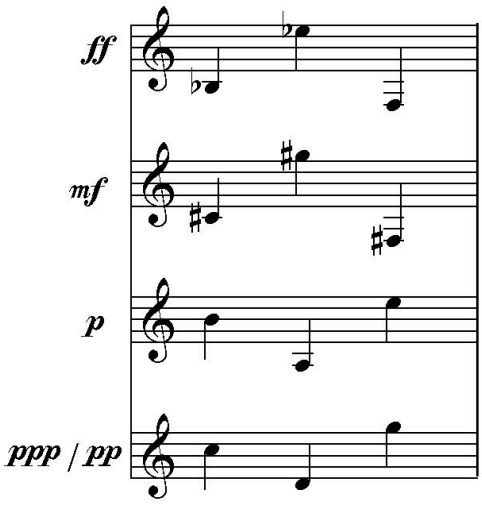
[22] These examples originated in a different context in Bernstein (2013b). The opening of *Composition for Four Instruments* will be discussed further in Chapter 3.



Example 2.4. Generation of Example 2.3 from (014), articulated using register



Example 2.5. Generation of Example 2.3 from (013), articulated using temporal order



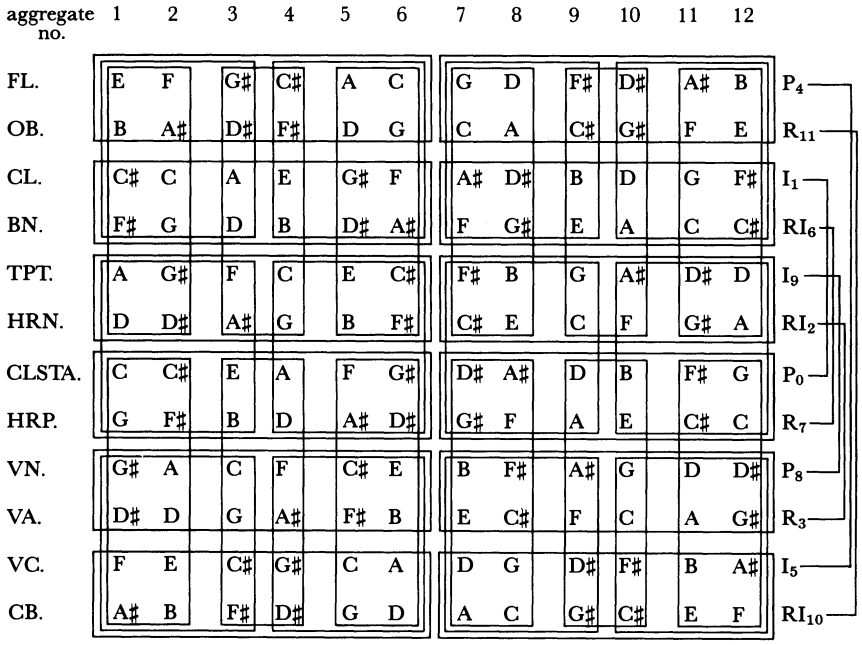
Example 2.6. Generation of Example 2.3 from (027), articulated using dynamics

That is, generative polyvocality in and of itself is not what makes *CT6* especially complex. Rather, what seems to be innovative about *CT6* in this regard is the quantity of simultaneous generated lines (up to thirteen), the uneven partitioning of those lines, the variety of kinds of generation (from dyads, trichords, and tetrachords, often intermixed in complex patterns), and, especially, the fact that simultaneous generated lines unfold across sharply divergent, loosely coordinated, and sometimes ambiguous time spans.

Babbitt had experimented with large quantities of contrapuntal lines—more than the four of a trichordal array—at least once before, in *Composition for Twelve Instruments* (1948). Peter Westergaards's chart of aggregate structure in the first section of the piece is reproduced as Example 2.7.[23] As can be seen by comparing this chart with the arrays of *CT6* to be discussed shortly, *Composition for Twelve Instruments* is simpler than *CT6* in almost every respect. The lines of the first half of *Composition for Twelve Instruments*, including those shown in Example 2.7, are all standard transformations of a single twelve-tone series. As indicated in boxes in the example, the array "display[s] (12), (6^2), (3^4), (2^6), and (1^{12}) combinatoriality,"[24]—a remarkable instance of generative polyvocality to be sure, but one that still exemplifies regular partitioning and a texture in which harmonic rhythm is consistent at each distinct level of aggregate formation (e.g., each line completes a series form in twelve aggregates). *Composition for Twelve Instruments*, like several other pieces from the late '40s and '50s, includes a number of instances of "swapping"—a technique in which a regular array is "roughed up" by means of exchanging pitch classes across

[23] Westergaard (1965, 114). This array is also discussed in Babbitt ([1961b] 2003, 94–95). Much more on *Composition for Twelve Instruments* can be found in Hush (1982–83).
[24] Babbitt ([1961b] 2003, 94).

aggregate boundaries.[25] The second half of the piece uses trichordal lines derived from the series presented in the first half of the piece, but is also based on regular 12x12 arrays.[26] While *CT6* only occasionally uses arrays with as many or more lines than the twelve-line arrays of *Composition for Twelve Instruments*, the contrast between its lines, the complexity of its partitioning, and the variability of its harmonic rhythm often far exceed the earlier piece.

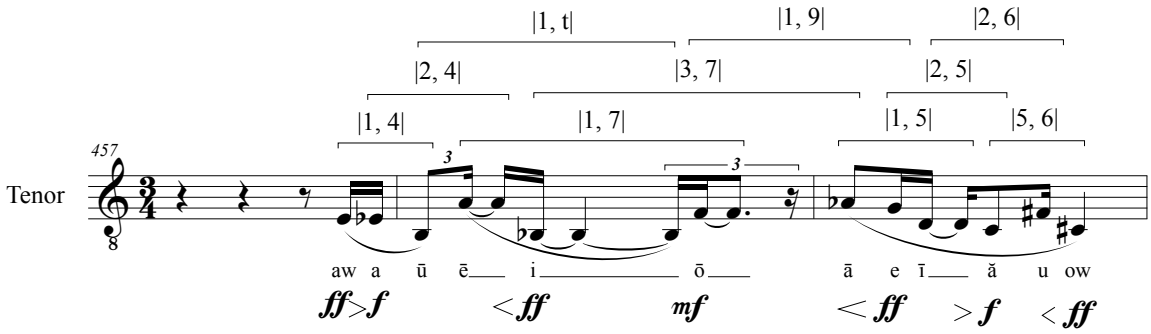


Example 2.7. Array for the opening of *Composition for Twelve Instruments*, reproduced from Westergaard (1965). Boxes indicate hexachord, trichordal, and dyadic combinatoriality; further aggregates are also formed by each column of singletons.

The series class for *CT6* is unambiguously <01576e8924t3>: the ten trichord orderings used in the piece's arrays can only be combined into this class, the pattern of sectional durations clarifies it, and the final section, mostly composed of iterations of the

[25] Swapping in *Composition for Twelve Instruments* is discussed in Hush (1982–83, 178–97 and 205), where it is referred to, given its limited extension in that piece, as "dyad exchange." Both Dubiel (1990a, 222) and Mead (1994, 31) discuss what Dubiel calls the "rough[ing] up" of the opening of *Partitions* by swapping.
[26] Hush (1982–83, 170–77).

series class, confirms it. The determination of the particular series generating *CT6* is somewhat less clear, but the series form projected by the tenor in mm. 457–59 is a good candidate. Not only is it is the sole series form articulated by the tenor soloist, it projects the sequence of intervals realized by the durations of the first eleven sections, begins with the trichord ordering that generates the trichordal array of the first section of the piece, and includes set content that occurs frequently throughout the piece. This series, and the trichord orderings that generate most of the piece's arrays, is shown in Example 2.8.



Example 2.8. Series for *CT6*, as presented in the tenor in mm. 457–59, with trichord orderings indicated

CT6 develops the trichord orderings of Example 2.8 using a variety of techniques unknown to Babbitt's earlier practice. Although, as Babbitt claims in the first quotation above, the various sections of the piece are quite sharply differentiated in a number of respects, most of *CT6*'s innovations are presented in its first five sections. Accordingly, our discussion of the piece will begin with an examination of those opening sections.

Figure 2.3a presents the array for Section I of *CT6*.[27] At a level we might call the "foreground" to distinguish it from slower processes behind it, Section I realizes a mostly

[27] Certain things appear ordered in Figures 2.3–2.12 but are presented as simultaneities. I have interpreted their ordering so that the governing trichord orderings, unambiguous whenever the notes are presented sequentially, are clarified. Some of these simultaneities should be interpreted as ordered from bottom to top (e.g., {G, A♭} in the strings in the

standard trichordal array generated from intervallic pattern |1, 4|, the first trichord of the series. This foreground array is clarified in Figure 2.3b. The array proceeds, as is typical for Babbitt's trichordal arrays, through the eight partitions of four trichords into two or fewer parts. Each instrumental family—the strings, the winds, the harpsichord, and the tenor—presents one of these trichords in each aggregate.

In addition to the trichordal array, each instrumental line in the winds and strings is separately generated—this is the sense in which the array is generatively polyvocal. Each of the wind instruments separately completes an aggregate generated from (015). Three out of four of the trichords in each of the winds' instrumental lines express |1, 7|, the fourth segmental (or second discrete) trichord of the piece's series; the exception is the third trichord for both the flute and the oboe. Those trichords, in the fifth and sixth aggregates respectively, use the ordering |1, 4|, the ordering developed by the trichordal array. In those aggregates, the coincidence of the two generating schemes (the total ensemble generation from |1, 4| and the separate wind instruments' generation from |1, 7|) mean that the (015) that the winds should contribute to the foreground trichordal array must come from first the oboe alone, in the fifth aggregate, and then the flute alone, in the sixth aggregate. This brings the two orderings of (015) into conflict: either the instrumental generation or the generation of the foreground trichordal array will be violated. Apparently the trichordal array takes precedence.

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first measure), while others should be read from top to bottom (e.g., {A, B♭} in the winds in the first measure). After Section XII, Babbitt begins to consistently present every simultaneity such that it should be considered conceptually ordered from bottom to top, a practice he would continue almost without exception for the rest of his career (the opening of *Philomel* [1964] being the most prominent, and perhaps the final, counterexample; see Swift [1976, 243] and Chapter 5 below). This standardization of harmonic interpretation is yet another example of accommodating increasing contrapuntal complexity through the simplification of other practices. C=0 throughout.

	Content of trichordal array	Slower derived sets															
Tenor	|1, 4|			621	t95			7e0		348//	912	56t		087		43e//	
Hpschd	|1, 4|			e34	780			2t9	651//		40e		873		59t		126//
Flute	|1, 4|	|1, 7|		t 5		6/	4			e0/			912/	3				87//
Oboe		|1, 7|		9		21/	3 8			7/	56t/			4 e				0//
Violin		|5, 6, 7|	7 0				6 1/					4 e					5 t/
Viola	|1, 4|	|5, 1, 5|	8		3				2 9/		7	0		1 6/			
Cello		|5, 1, 5|			e 4		5		t/		8 3			2			9/

Figure 2.3a. Array for Section I of *CT6*, mm. 1–15. Columns indicate aggregates. Slashes indicate the end of segments of the slower derived sets; double slashes indicate linear aggregate boundaries. Vertical dashed lines indicate the partitioning of the foreground trichordal array. Instrumental families are arranged in order to demonstrate hexachordal aggregates; groups of instruments that form such aggregates are separated by dashed lines.

Tenor	|1, 4|		621	t95			7e0		348	912	56t		087		43e	
Hpschd	|1, 4|		e34	780			2t9	651		40e		873		59t		126
Winds	|1, 4|		t95		621	348			7e0	56t		912	43e			087
Strings	|1, 4|	780		e34		651		2t9		873	40e		126			59t

Figure 2.3b. Clarification of foreground trichordal array in Section I of *CT6*

The strings present the first two aggregates of a tetrachordal array generated from two orderings of (0167). (0167) is not itself a subset of the piece's series, making its appearance an unusual occurrence in Babbitt's pieces built with derived sets—as outlined above, the general principle is that derived sets are generated from segments of the underlying series. However, the two orderings of (0167) —|5, 6, 7|, used in the violin, and |5, 1, 5|, used in the viola and cello —each concatenate two imbricated statements of trichord orderings that *are* found in the series, namely the series's seventh and tenth segmental (or third and fourth discrete) trichords. The violin's first tetrachord, <G, C, F♯, C♯>, for instance, concatenates <G, C, F♯> and <C, F♯, C♯>, each of which represents trichord ordering |5, 6|, the final trichord of the piece's series. In sum, the surface trichordal array presents the series's first discrete trichord, the individual wind lines present its second discrete trichord, and the strings' tetrachordal array presents its third and fourth discrete trichords. Section I thus adumbrates the entire series.

A notable feature of this passage—common in this piece, but in sharp contrast to Babbitt's earlier practice and, for the most part, to his later practice—is the vastly different rates of aggregate completion in the different instrumental lines. The tenor and harpsichord complete their aggregates every four ensemble aggregates. The winds unfold their aggregates at half that speed, completing them only at the end of the section. The strings are slower still: they finish the section having completed only two tetrachords, and will complete their aggregates in the next section.

Tenor	|1, 4|	62	1/	7		780/	t	95/e	34//
Hpschd	|1, 4|		t9	5/e3		4		4/087/1	26//
Flute High	|5, 6|/|2, 4|	e	5	t/	73	1	1 /		
Flute Low	|2, 4|/|5, 6|	04		6/	82		29		9/
Oboe High	|1, 5|/|2, 4|	8		892/	04	6	6/		
Oboe Low	|2, 4|/|5, 6|	73		1/	e5t			t/	
Violin	|5, 6, 7|	9	283//		61		70/e4t5/	293	8//
Viola	|5, 1, 5|	t5	4e//		9	923	8/0	76	1/ 5te4//
Cello	|5, 1, 5|	1	670	0//4		et5/	3	89	2/6107//

Figure 2.4. Array for Section II of *CT6*, mm. 16–29. Columns represent completions of the chromatic gamut, as before, but the final three "aggregates" include duplications.

In Section II, the tenor and harpsichord continue to be generated by |1, 4|, the first trichord of the series, although in this section they unfold only a single aggregate over the course of the section. The strings complete the tetrachordal array begun in Section I and then complete a new tetrachordal array, presenting the same tetrachordal contents as the first tetrachordal array in the same order, although each tetrachord has been inverted into itself. The winds have a new strategy: both the flute and oboe are divided into two registers, and both present the same four trichords, transformations of the second, seventh, and tenth segmental trichords of the series (namely, |2, 4|, and the two orderings of (016)), in an invertible counterpoint pattern featuring D-type hexachords in both instruments.[28] These registral lines in the winds do not complete linear aggregates: they present only six notes each in Section II and do not continue into the next section.

The lines formed by these various generative strategies do not—indeed, cannot—be combined into a trichordal array as the various lines of Section I were. The partitioning of each aggregate is uneven and irregular—genuinely so, not as the result of "swapping" pitch classes across aggregate boundaries. Furthermore, these separate lines do not neatly partition into ensemble aggregates. In order to create aggregates with these lines, it is required that pitch classes be held over across aggregate boundaries.[29] For instance, in the second, third, and fourth aggregates, only the upper register of the oboe and the cello

[28] Three of these four trichords, <B, F, B♭>, <G, D♯, C♯>, and <C, E, F♯> are presented in the same order in each instrument. It is not clear why {G♯, A, D} does not follow suit; in particular, it seems that D and A could be swapped in the oboe part in measure 21. This would group the four trichords into two inversionally related pairs (as is very common throughout the piece and elsewhere in Babbitt's trichordal practice).

[29] This is the first instance of this technique—which Robert Morris (1993) would later call "horizontal weighting"—in Babbitt's practice. It would eventually become a standard (indeed, necessary) part of all-partition array construction, as discussed in Babbitt ([1974] 2003, 317). One difference between *CT6* and Babbitt's later practice is that in *CT6*, certain pitch classes repeated across aggregate boundaries are transposed by an octave; in the later music, they are generally repeated at pitch.

contain C. In order for C to be represented in all three aggregates, one of the instruments must repeat that pitch class across the aggregate boundary, as the cello does between the second and third aggregate. The result of these repetitions is that even though the various lines present eight aggregates worth of material, by the end of the section there are more remaining pitch classes than can be sorted into aggregates. Therefore, the last three columns of Figure 2.4 contain more than twelve pitch classes. They are aggregates in the sense of chromatic completion (every pitch class is represented) but not precise exhaustion (some pitch classes are duplicated). As can be seen in Example 2.9, which reproduces the final three "aggregates" of Section II, these duplications are generally presented as unison simultaneities—most often as simultaneous attacks. It is unclear how this fact should be interpreted. One the one hand, presenting these duplications as simultaneous unisons has the effect of condensing them. From the perspective of the ensemble, there are still basically twelve pitch-class events in each of the final three aggregates. On the other hand, unison simultaneities (except those effected by harpsichord coupling[30]) are relatively unusual in *CT6* and, indeed, in Babbitt's output generally up to this point, and thus attract special attention.[31]

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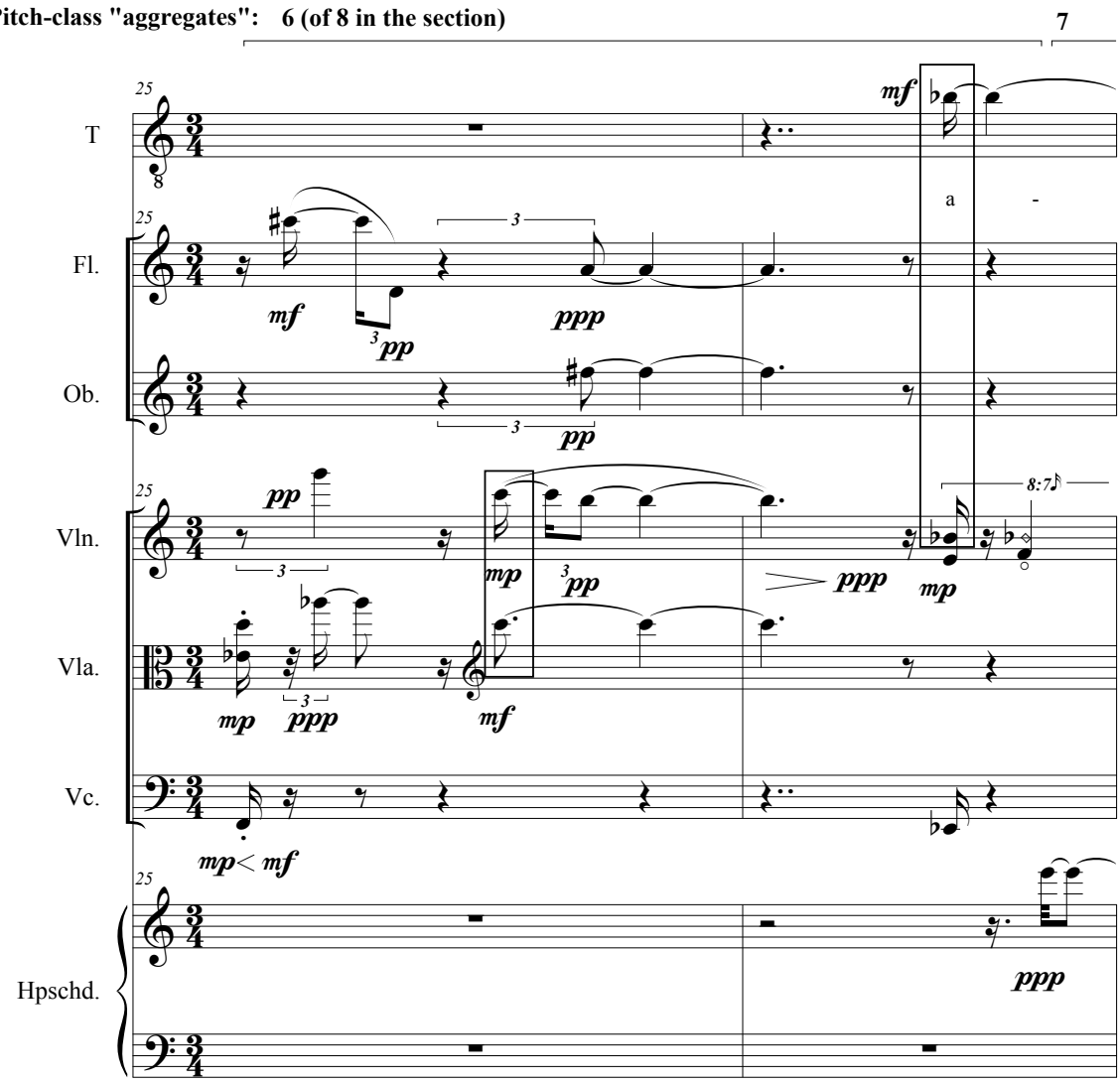
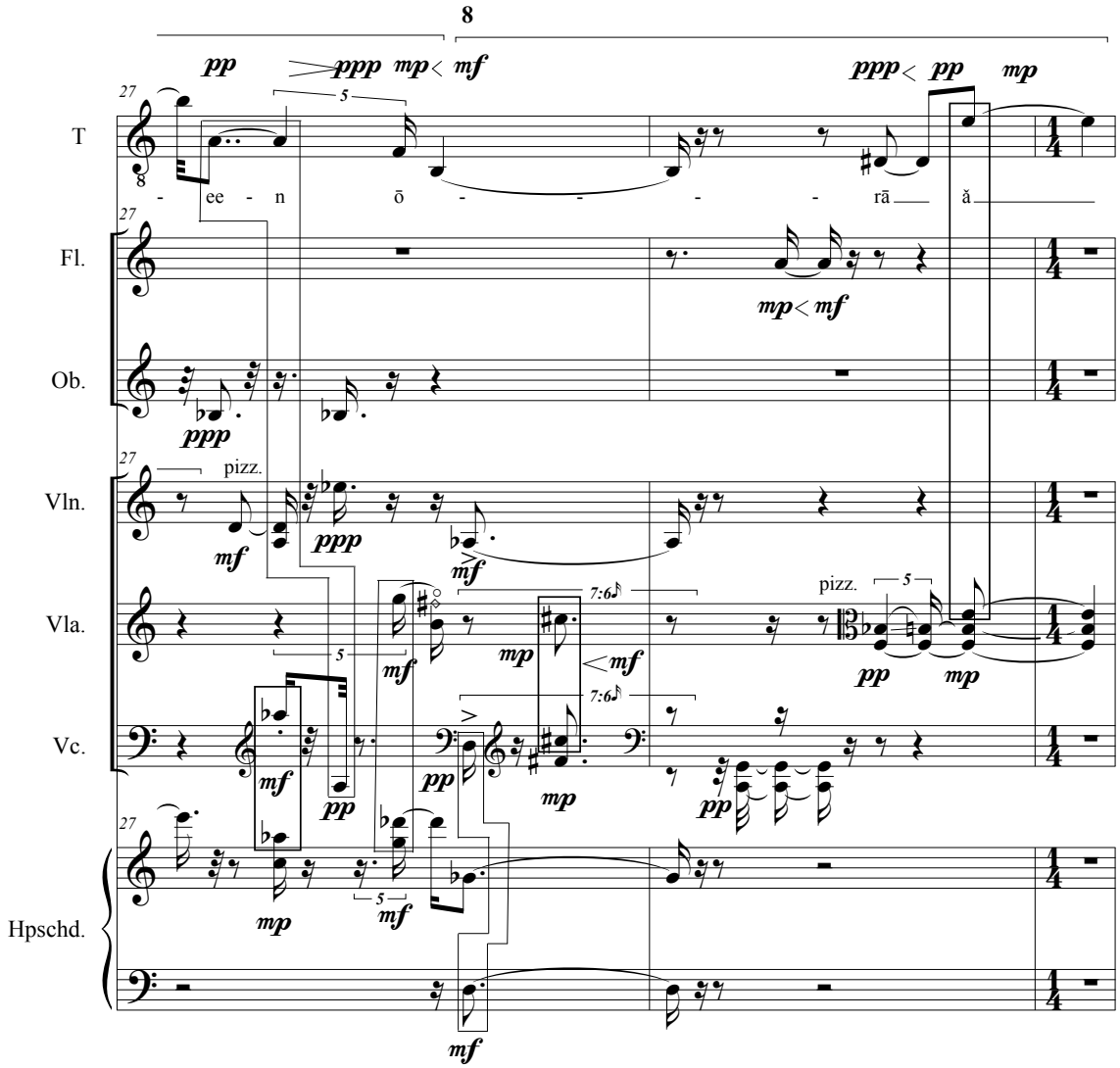
[30] Babbitt is permissive on this point, directing simply: "Harpsichord registration is to be chosen in order to achieve the designated dynamics and durations as accurately as possible by means of the particular instrument employed."

[31] This type of "aggregate" (if that term is still applicable) is resonant with a general interest of Babbitt's throughout the '60s in re-introducing octaves and unisons into his compositions (though earlier examples do exist, most strikingly in String Quartet no. 2). Many of his pieces from that decade, including *CT6,* "Sounds and Words" (see Example 2.1), *Philomel*, *Relata I, Post-Partitions* (1966), and *Sextets* (1966) use octaves or unisons, sometimes as "anomalous" duplications of serially expected notes, as will be discussed in Chapter 5, and sometimes within a consistent, orchestrationally doubled projection of a contrapuntal line (as discussed in Babbitt [(1970) 2003, 244–54], as well as below: the final section of *CT6* contains several complete unison or octave duplications of series statements). This interest would eventually be fully incorporated into his compositional syntax in the form of weighted aggregates (beginning with String Quartet no. 4 [1970])



Example 2.9. *CT6*, mm. 25–29. Duplicated pitch classes are boxed.

and superarrays (beginning with *Reflections* [1975]). On weighted aggregates, see Babbitt ([1974] 2003, 318–20).



Example 2.9, cont.

Tenor Viola	|2, 6|/|5, 6| |2, 6|/|5, 6|	 9e5/4	860/1	 t3/	72/	e5	 60	3/t49//	 2/718//
Hpschd High Hpschd Low	|5, 6|/|2, 6| |5, 6|/|2, 6|	 t3	72	 9/e54/	8/061/	3t4/9	 271/8	e5//	 60//
Flute High Flute Low Oboe High Oboe Low	|1, 4|/|1, 7| |1, 7|/|1, 4| |1, t| |1, t|	0 6 21 87			45/ et/ 3/ 9/	78 21 6 0			3/ 9/ 45/ te/
Violin High Violin Low Cello High Cello Low	|1, 7|/|1, 4| |1, 4|/|1, 7| |2, 5| |2, 5|		5 e 94 3t	01/ 76/ 2/ 8/			34 t9 5 e	8/ 2/ 70/ 16/	

Figure 2.5. Array for Section III of *CT6*, mm. 30–44

In Section III, every line is trichordally derived, presenting six distinct trichord orderings: the first, third, fourth, eighth, ninth, and tenth trichords of the series. These trichords are then partitioned into dyads and tetrachords such that every aggregate and, over the course of the section, every instrument presents pairs of dyads and tetrachords. The viola, tenor, and harpsichord use the only two directly adjacent segmental trichords in the series that can be combined to form D-type hexachords—the hexachord type of the piece's series—and indeed the hexachords formed here are the specific D-type collections found in the primary series form of the piece, as shown above in Example 2.8. The registrally separate lines in the winds, violin, and cello present the first six notes of a trichordally generated aggregate that will continue through Section IV and will be completed in the fourth aggregate of Section V, as can be seen below in Figures 2.7 and 2.8.

Flute High Flute Low	|1, 4| |1, 7|	6t 0	e/ 5	 5	 54/
Oboe High Oboe Low	|1, t| |1, t|	7 13	7	79 3	8/ 2/
Violin High Violin Low	|1, 7| |1, 4|	e 5	6 10	6 0	7/(1) 0/
Cello High Cello Low	|2, 5| |2, 5|		t	 42	83/ 9/
Viola High Viola Low	|5, 6| |5, 6|	8 94	 4	1 t	7/ t/
Hpschd High Hpschd Low	|2, 6| |2, 6|	 2	39 28	e 8	e/ 6/

Figure 2.6. Array for Section IV of *CT6*, mm. 45–56. The parentheses indicate a pitch class inserted into the section's trichordal scheme.

Figure 2.6 shows the pitch-class array for Section IV. The music in question is shown above in Example 2.2. As mentioned above, Section IV has only four aggregates.

The winds, violin, and cello continue with the same trichordal content they had used in Section III, presenting the third trichord of linear aggregates that began in Section III and will be completed in Section V. In this section, there are a great number of pitch classes held across aggregate boundaries. We have seen this technique already in Section II, but the apparent justification for these repetitions is quite different than it had been in the earlier section. Each of the twelve lines contains three pitch classes, but not every pitch class is represented exactly three times (for instance, F is found only in the low registers of the flute and violin, while A is found four times, in the high register of the oboe and harpsichord and the low register of the cello and viola). In order to stretch this material across four aggregates, there must be twelve repetitions, weighted toward the underrepresented notes. There are, however, thirteen repetitions, as well as an anomalously inserted C♯ in the final aggregate in the violin, resulting in two duplications (G and A♭) in the final "aggregate." As in Section II, the duplications are presented as simultaneous unisons. But unlike in Section II, it is easy to imagine a recomposition that would not result in G and A♭ being duplicated in the final aggregate. If the harpsichord did not repeat its A♭, either the cello or oboe A♭ could be shifted back an aggregate, and if the oboe did not repeat its G in the third aggregate, either the violin or viola G could be shifted back an aggregate. The inserted C♯ completes the final aggregate, but it is also easy to imagine a recomposition that wouldn't require the insertion: it could be removed if the C♯ in the viola were repeated. For the time being, the duplications and insertion remain mysterious.

Tenor	|2, 6| / |5, 6|	682/		071/			5	e4/	t
Flute High	|1, 4| / |1, 7|		219	9	9//				450/
Flute Low	|1, 7| / |1, 4|	7	8	3	3//	e	t		6/
Oboe High	|1, t| / |1, 7|	e		0	t//		9	81	1/
Oboe Low	|1, t| / |1, 4|	5		6	4//	237/			
Violin High	|1, 7| / |1, t|	t9		2	2//	1			e0/
Violin Low	|1, 4| / |1, t|		34	48	8//	65	7	7/	
Cello High	|2, 5|	6	6e	e	1//		83	t/	
Cello Low	|2, 5|	0			75//		42	2	9/
Viola High	|2, 6| / |5, 6|	2	0		6/	94		t/e5	3//
Viola Low	|2, 6| / |5, 6|	3	5		e/	817/	60	0	2//
Hpschd High	|5, 6| / |1, t|	4	t	t5/		t	e	9/435/	
Hpschd Low	|5, 6| / |1, t|	1	7	7	0/	20	1/	6	87/

Figure 2.7. Array for Section V of *CT6*, mm. 57–70

As can be seen in Figure 2.7, Section V presents trichordal lines in thirteen-part counterpoint, developing the same six trichord orderings presented in Section III. This is the high-water mark for contrapuntal complexity in this piece and in Babbitt's output up to this point. Furthermore, we see here a limiting case for another innovative aspect of the piece: the quite different and sometimes ambiguous rates of linear aggregate completion. The registrally discrete lines in the winds, violin, and cello present the final trichord of the linear aggregates they began in Section III and then go on to present an additional trichord.[32] These additional trichords do not go on to create further linear aggregates, but do mean that the flute, oboe, violin, and cello parts as a whole present aggregates within Section V. The viola, contrastingly, completes the linear aggregates it had begun in Section IV. The harpsichord does not complete *any* linear aggregate but does complete two hexachordal aggregates: of the three trichords it presents in each of its registers, the first create aggregates in combination with the harpsichord's trichords in Section IV, while the second and third combine to complete a new aggregate. The tenor presents ten notes of an aggregate derived from the final two segmental trichords of the series, arranged into D-type hexachords (as in Section III); this aggregate would be completed by E♭ and A. A was the last note the tenor sang before Section V (back in Section III, as can be seen in Figure 2.5), and E♭ will be the first new note it sings in Section VI, after repeating B♭, but viewing the tenor's material as an aggregate beginning with that distant A and finishing with the succeeding E♭ would obscure its trichordal and hexachordal derivation: the tenor's trichords in Section V appear to begin with the beginning of

[32] The cello's high A♭ and E♭ in measure 65 appear to be reversed (whether intentionally or not): the resultant |5, 5| trichord ordering in the fifth and sixth aggregate of Section V is not contained within the piece's series.

Section V, not with the preceding A. To wit, <G♭, A♭, D>, the first three tenor notes of Section V, create a familiar array trichord, |2, 6|, while <A, G♭, A♭>, which incorporates the A at the end of Section III, do not. It is therefore unclear to me how to interpret the tenor's incomplete aggregate. The diverse, and sometimes ambiguous, spans within which the various lines complete aggregates are a distinctive feature of this piece. It may well be one of the aspects that Babbitt found problematic. There is no other Babbitt piece in which aggregate structure is this opaque and creates such a tangle of contradictory grouping patterns.

Sections I through V demonstrate most of the innovative complexities found in *CT6*'s array construction. For the most part, the remainder of the piece develops various segments of the series using the techniques discussed above. Figures 2.8–2.10, however, present three additional array strategies—simpler than those in the first five sections, yet still distinctive—found later in the piece.

Tenor	|3, 7|				527				694				03t			e81
Violin	|3, 7|	18e				t30					496				725	
Tenor	|3, 7|	t30					18e			725					496	
Cello	|3, 7|			694					527			e81				03t
Flute	|1, 4|			108		267							459	3et		
Oboe	|1, 4|			te3			954					762			801	
Viola	|1, 4|		267					108		3et						459
Hpschd	|1, 4|		954						te3	801						762

Figure 2.8. Array for Section VIII of *CT6*, mm. 102–115

Flute	72	0t	e9	54	31	86	27	0t	e9	45	31	86
Violin	13	68	5[4?]	t0	9e	72	13	68	45	t0	9e	27
Viola	54	13	68	72	t0	9e	45	13	68	27	t0	9e
Cello	0t	e9	72	31	86	54	0t	e9	27	31	86	45
Hpschd	e9	54	31	86	72	0t	e9	45	31	86	72	0t
Hpschd	68	72	t0	9e	54	13	68	27	t0	9e	45	13

Figure 2.9. Array for Section XII of *CT6*, mm. 159–86[33]

Tenor	|1, t|	|2, 5|		6	1	e
Flute		|2, 5|	4		2	9
Oboe		|2, 5|	3	8		t
Viola		|2, 5|	5	7	0	
Violin	|1, t|		t9e		687	
Cello				120		534
Hpschd High	|1, 7|		078	9t5	e43	216
Hpschd Low	|1, 7|		216	e43	9t5	078

Figure 2.10. Array for Section XXII of *CT6*, mm. 393–96

Section VIII, as shown in Figure 2.8, presents a typical trichordal array on the surface, progressing, as is usual, through the eight partitions of four trichords into two or fewer parts. However, the trichords of this array are distributed such that each instrument completes exactly one aggregate—except for the tenor, which completes two (presenting two lines undifferentiated in their projection). Figure 2.9 depicts the array for the first section of the "interlude"—the three sections in the middle of the piece that do not play a role in the large-scale durational scheme discussed above. Both of the outer sections of the interlude, uniquely in the piece, present twelve aggregates. This array develops an unusual property of the series; namely that its discrete dyads present only three interval

[33] The violin appears to be missing an E in the third aggregate. It is unclear if this is intentional. The harpsichord lines in this section are undifferentiated in their projection.

classes, in the sequence <*ic*1, *ic*2, *ic*5> in both hexachords. Each line presents one of these intervals in each aggregate. Finally, Figure 2.10 presents the array for Section XXII, the second four-second-long section, which like Section IV uses only four aggregates. This array presents four standard trichordal lines, derived from the third and fourth trichords of the series. Two of these lines are isolated registrally in the harpsichord, one is divided between the violin and cello, and one is shared between the flute, oboe, viola, and tenor. This shared line presents yet another, especially diffuse, instance of generative polyvocality: the four instruments together present a single line derived from |1, t| (the third trichord of the series), while they each individually also present |2, 5| (the eighth trichord of the series—or, rather, the third-to-last, balancing |1, t|).

"INVARIANTS OF ORDER EMBEDDED IN INVARIANTS OF CONTENT"

In the first quotation above, Babbitt remarks on the complexity of certain aspects of the piece, especially that the instrumental lines are "so rarely generatively univocal" and that the "sections are so sharply delineated in so many respects." The foregoing discussion should have amply demonstrated both of these points. From this, Babbitt evidently felt that he had sacrificed "convincing continuity," which, he claims, "depends crucially on invariants of order embedded in invariants of contents." From this point forward, the lines of Babbitt's arrays would be concatenated iterations of a single series—"invariants of order"—proceeding, via secondary sets, through series forms with identical hexachords—"invariants of content." In order to accommodate the increase in contrapuntal lines and partitional variety, he apparently felt that he had to simplify each line and make the relationships between the lines more straightforward. Babbitt would

attempt increasingly elaborate contrapuntal structures in the years to come as he expanded into all-partition arrays, weighted aggregates, and superarrays, but the lines of these arrays would remain simple. Even when he returned to derived sets some seventeen years hence, they never appear in anything more complex than a basic trichordal array. The vortex of generative strategies found in *CT6* has no successors in Babbitt's output.

Babbitt's break away from generated sets begins, arguably, in the final section of *CT6*. This section is not a coda according to the durational scheme—it extends for the expected forty-four-second-long duration—but is strikingly different in its pitch organization from any section presented thus far. In the first quotation above, Babbitt compared this piece to his String Quartet no. 2, writing that both employ "an explicit unfolding of the set content"; as in the earlier piece, the full last section of *CT6* is built nearly entirely from statements of the piece's underlying series, conjoining series forms that all share identical hexachordal content. As shown in Figure 2.11, these series forms are primarily found in the three strings and in two distinct registers of the harpsichord. Each of these five lines presents four series forms, progressing through the four classical transformations (S, I, R, and RI); these series forms are presented in a sort of array, cycling through the ten ways in which the four ordering possibilities can be presented in solos or pairs.[34] Since there is a mismatch between the number of series required to complete these ten combinations (sixteen) and the number of series required for each of the five lines to present all four orderings (twenty), there are four duplications in which

[34] There is an exception to the first of these principles: the viola has no R form and the cello presents two R forms. Apparently, the cello presents the viola's R form (whether intentionally or not is unclear). Arrays of series forms such as that found here are constructs found in several pieces Babbitt wrote immediately after *CT6*, including *Vision and Prayer* (1961) and *Philomel*, as well as in the much later *Glosses* (Example 1.1 presents the beginning of one).

two instruments present identical series simultaneously. Generally—as with the earlier duplications in the piece, such as those in Section II—doubled series forms are presented in tightly coordinated unisons or octaves or a close approximation thereof. Further doublings are found in the winds and tenor: although not participating in the array of series forms, they occasionally enter to double notes found within the array. Ultimately, the winds and tenor present aggregates, or the beginnings of aggregates, generated from the series's two orderings of (015), |1, 4| and |1, 7|, compiled into the D-type hexachords also found in the section's series forms.[35] The tenor duplicates not just a trichord but a complete series form, S_4. This is the only series form duplicated outside of the array of series forms, and the only series form presented by the tenor: as discussed above, for these reasons among others, S_4 may be taken as the series of the piece. The array, the doubled material found in the winds and tenor, and the final simultaneity—which occurs after the completion of the array—can be found in Figure 2.11.

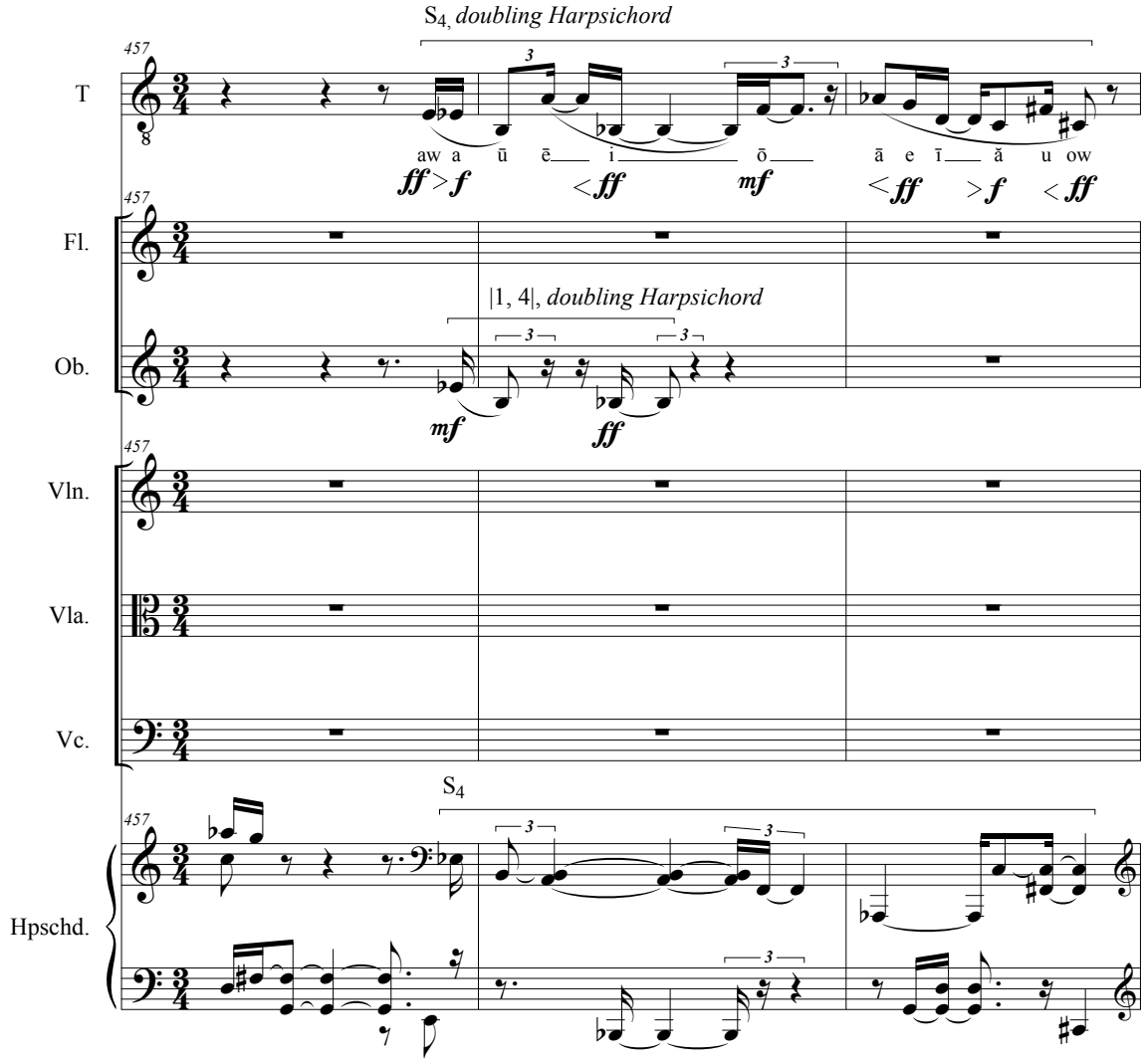
Tenor	|1, 7|/|1, 4|				5t9		34e/216	087		S_4		5
Flute	|1, 4|					954	te3					3
Oboe High Oboe Low	|1, 4|/|1, 7| |1, 4|/|1, 7|	801 762				276		 018		 3et	549	9
Violin		S_7	RI_4			I_1	R_4					34
Viola		S_7				I_1		RI_t				et
Cello		I_7		R_t	S_1		R_4	RI_t				et
Hpschd High Hpschd Low					 RI_1	R_1	S_t	 I_4	RI_7 R_7	 S_4	I_t	

Figure 2.11. Array for Section XXV of *CT6*, mm. 433–62. Columns represent completed series forms; there is no consistent aggregate construction.

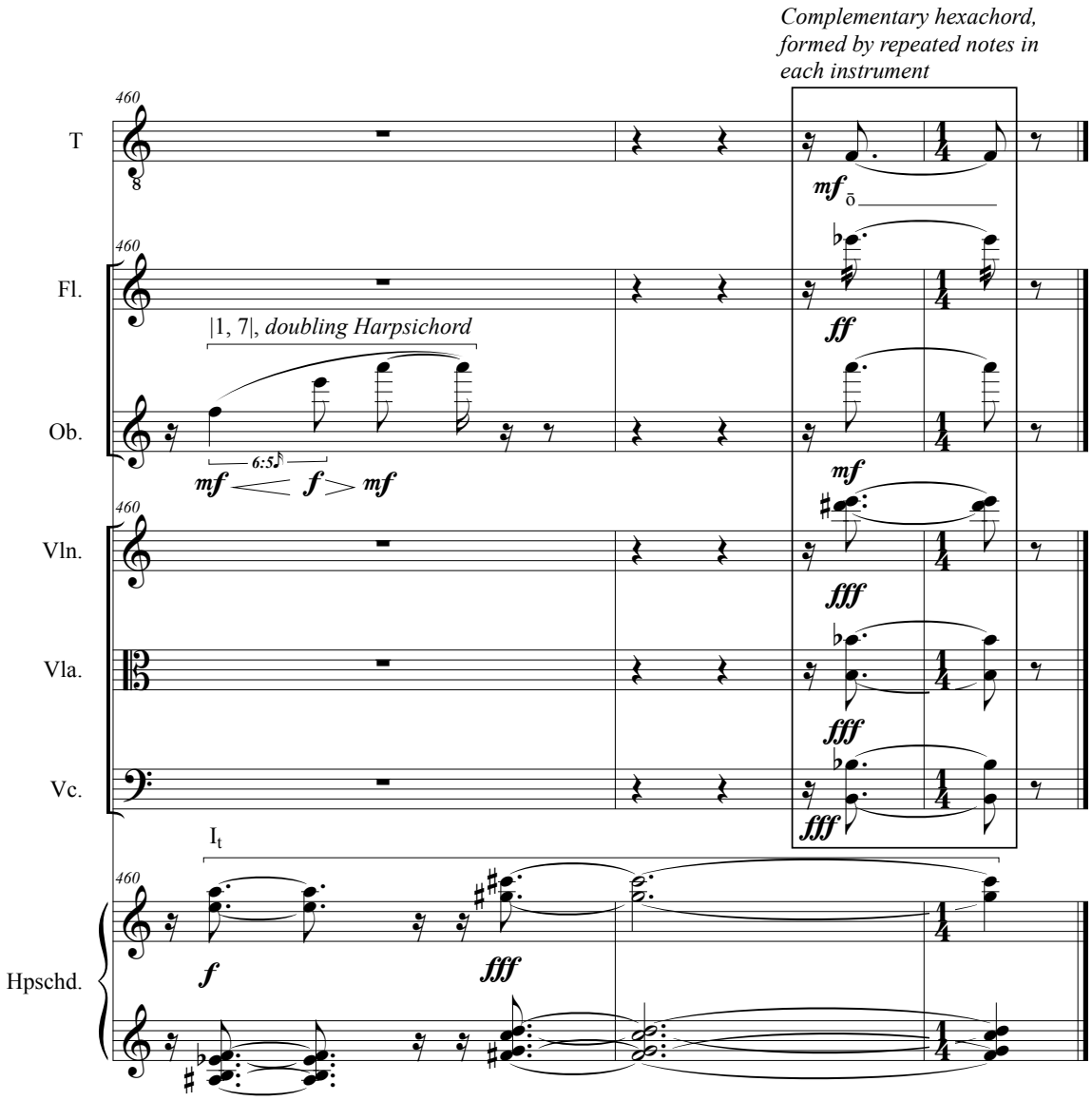
[35] Additional material is sometimes also projected by these duplications. For instance, the oboe's opening six notes are arranged registrally into instances of |1, 4|, as shown in Figure 2.11, but temporally into instances of |1, t|.

Example 2.10 presents the final six measures of the piece, encompassing the final two series statements and the final simultaneity. The tenor and oboe duplicate the harpsichord: the tenor, the series form S_4; the oboe, six pitch classes, forming instances of |1, 4| and |1, 7|. After the completion of the array of series forms, the full ensemble returns to sound {D♯, E, F, A, B♭, B}. {D♯, E, F, A, B♭, B} complements the second hexachord of I_t, sustained simultaneously in the harpsichord; it is one of the complementary hexachords used throughout the final section. This simultaneity is mostly compiled by having instruments repeat the last notes they played, as can be seen in the oboe part in Example 2.10; the only exception is the tenor, which sings F—needed to complete the hexachord—rather than repeating its last note (which is not a member of the hexachord). Emphasizing this restatement is the fact that the dynamics for each instrument in the final sonority maintain the dynamic level with which those pitches were last sounded in the instrument—including the tenor, whose concluding F was last heard, also ***mf***, in measure 458.[36]

[36] As will be discussed in Chapter 4, repeated notes are a characteristic closing technique for Babbitt.



Example 2.10. *CT6*, mm. 457–62



Example 2.10, cont.

The simplicity of this final section, in comparison with the convolutions of the rest of the piece, belies its significant implications. Babbitt's work over the next few years can be seen as a variety of attempts to synthesize the contrapuntal complexity developed in the preceding twenty-four sections with the linear cogency of this final section. The result, the foundation of his later practice, would be the all-partition array.

Section XXV also foreshadows a substantial change in the hierarchical structure of Babbitt's music henceforth. In an array with derived lines, the basic model is that the lines are understood to be derived from an underlying series—a specific ordering of twelve pitch classes that the content and order of the derived material can be understood as reflecting. In an array in which each line states an iteration of the series, such as that seen in Section XXV, there is ordinarily no reason to suppose that any particular form of the series is hierarchically prior. In these cases, often the most specific object that can be regarded as the hierarchical source is a series *class*, not any particular series. The result is that even though later pieces present considerably more direct statements of their series than can be found in trichordal pieces (some of which contain no statements of their series whatsoever), the underlying source is more abstract: an equivalence class, not a series of pitch classes.

This increased abstraction at the level of the hierarchical source would eventually be balanced not only by simpler array lines, but also by an increased concreteness at the level of surface organization. The primary determinant of surface organization in music throughout Babbitt's career is that the surface should be built from materials also found in the array—to borrow a familiar locution (which was discussed in Chapter 1 and will be reconsidered in Chapter 3), the surface is generally composed of *references* to the array. In pieces with trichordal arrays, the result is that the surface will be filled with the trichord

orderings found in the array (or, sometimes, with segments of the underlying series). In pieces with all-partition arrays, on the other hand, particularly from 1982 on, surface references are generally to specific partitions of the aggregate found elsewhere in the array. That is, the practice with trichordal arrays is for the surface to be composed of hierarchically significant intervallic patterns. In later pieces with all-partition arrays, such as *None but the Lonely Flute* (see Examples 1.4 and 1.6), references are to specific collections of pitch classes.

As Dubiel has it, the invention of the all-partition array was a "watershed" moment for Babbitt: although his compositional practice would continue to evolve, later developments might be described as "comparatively superficial."[37] The array's strengths, in light of Babbitt's general systematic concerns, are clear. The all-partition array not only incorporates the contrapuntal variety that was an increasingly important interest of Babbitt's, it codifies it. It extends the principle of exhaustive completion latent in the twelve-tone series—the basic "level-invariant"[38] principle undergirding hierarchy in Babbitt's music—to the dimension of contrapuntal variety. It is worth reiterating, however, that the various changes in Babbitt's practice that took place within and around the composition of *CT6*, including the contrapuntal rethinking that led to the all-partition array—significant as they are—were motivated by practicalities, not a change in

[37] Dubiel (1990a, 222 and 225). However, Dubiel's (1990a, 225) further characterization of Babbitt's development, that "there is an unmistakable tendency . . . to place the twelve-tone set further and further in the background," strikes me as basically incorrect: the transition to using iterations of the series as material for lines in the array presents the series in a fashion much more directly available to perception than that which it occupied in Babbitt's trichordal practice. Furthermore, the (12^1) partition that appears in most all-partition arrays presents the series literally and monophonically. Compare *Composition for Four Instruments*, which, as discussed in Chapter 3, has a series that is never stated and is only decipherable by considering a wide and heterogeneous range of phenomena.
[38] Babbitt ([1965] 2003, 200).

philosophy. The organicist model appears differently in the all-partition array than it does in the trichordal pieces, but Babbitt's techniques both before and after 1960 are based, above all, on hierarchically developing the implications of an initiating twelve-tone series.

As to the application of those techniques, however, and thus the ultimate role of organicism in Babbitt's music, organic hierarchy is contested from the earliest trichordal pieces through the remainder of his career. It is to the complications with the organicist model that we now turn.

Chapter Three

Composition for Four Instruments and *Du*: Two Case Studies in Serial Hierarchy

INTRODUCTION

According to the model outlined in Chapter 1—which might be called the "received model" for analyzing trichordal arrays, propounded, as it is, by Babbitt, Mead, and many others—trichordal arrays are understood in relation to an underlying, often unstated, six- or twelve-note series. The series is thus construed as the hierarchical source of the trichordal arrays. This is a powerful explanatory framework, as evidenced above all by Mead (1994), which reveals the model's utility in clarifying formal progression in Babbitt's early trichordal pieces.[1] However, there are a number of pieces that resist straightforward hierarchical explication. Two of these pieces will be explored here. In *Composition for Four Instruments*, there is ambiguity regarding the identity of the underlying series that can only be resolved by looking to elements of the piece besides the trichordal arrays, while in *Du* (1951), there are two distinct, incommensurable series. Although these pieces are exceptional in some respects, an analytical investigation of the ways they can, and cannot, be explained hierarchically is illustrative of the relationship between trichordal-array hierarchy and the surface and of the expressive possibilities latent within these structures.

[1] Mead (1994, 54–123).

THE SURFACE AND THE SERIES IN *COMPOSITION FOR FOUR INSTRUMENTS*

In many of Babbitt's pieces with trichordal arrays, there is only one series that can account for the variety of arrays, and there is thus no ambiguity as to the identity of the series. Many pieces, such as *CT6*, confirm their series by stating it explicitly—"telling you the butler did it," as Babbitt once said about String Quartet no. 2 (1954), whose final section is dominated by complete statements of iterations of the series.[2] But despite some erroneous reports to the contrary, the series of *Composition for Four Instruments* is not clarified by either of these means, as the many published series for the piece attest.[3]

Despite these various interpretations, Babbitt apparently still believed as late as 1997 that the series for *Composition for Four Instruments* is, by the end of the piece, unambiguous, writing that "the four different trichords (different either in structure or order) are genidentically related as the four discrete trichords of the emergent referential series, and the harmony and polyphony of the aggregates which they singly and together move and shape reflect the properties of that series and—ultimately—of only that series, omnipresent and yet never present,"[4] echoing his statement of some twenty years earlier that the series in this piece is "an ever and multiply effective compositional determinant, if

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[2] Qtd. in Straus (1986, 22).

[3] There are some nine distinct series for the piece that have been published, in writings by Perle (1991, 82), Babbitt ([1976] 2003, 349–50), Mead (1994, 67), Arnold and Hair (1976, 159), and Taruskin (2010, 143). Most of this sordid tale is told in Dubiel (1990a, 252–53n.29). As Dubiel recounts, Perle (1991, 82) and Cone (1967, 37; 1976, 305) claim the series is presented at the end of the piece; the claim is repeated in Taruskin (2010, 143), in what is essentially a paraphrase of Perle (1991). Although the piece's final array is built from all four of the piece's trichord orderings, these trichords are never presented in direct sequence. In addition to these published sources, an unnamed source Babbitt mentioned several times (e.g., in Babbitt [1987, 27] and Babbitt and Wuorinen [1998, 26–27]) apparently tried to take the first twelve notes of the piece as its series. For more on the ordering of the first twelve notes and their consequences in the piece, see Colson (forthcoming).

[4] Babbitt (1997, 133).

only cumulatively inferable, in its effects, as an entity, not thereby to obscure or conceal it cryptographically, but to create individual ambiguities of reference which only finally and dispositionally, in the course of the events of the piece, become referentially unequivocal."[5] But despite Babbitt's insistence that the piece defines a single series, the fact remains that until Babbitt declared <B, E♭, C, B♭, D, C♯, G, F, E, A, F♯, G♯> to be "S_0" in 1976, nobody agreed on one, and the situation today is hardly less murky. Moreover, Babbitt does not explain why that series is a uniquely good model for the piece.

I propose that the series for the piece is indeed unequivocal, and in fact that it is exactly what Babbitt ([1976] 2003) claims it is. While there are genuine ambiguities as to how the piece's trichords and hexachords may be construed as derived from a series, there are surface aspects that sufficiently clarify their relationship. This is a role distinct from that usually ascribed to surface aspects, a fact that will occasion reflection below on what it means to be the "surface." Furthermore, there are surface aspects that clearly conflict with the series—a fact particularly notable given that the series is dependent on the surface for its clarification. This conflict draws attention to these aspects, facilitating the rhetorical function that seems to justify their inclusion.

The analytic assertion of declaring a succession of twelve pitch classes "the" series of a piece is meaningful in direct proportion to the amount that can be learned about the various events of a piece by making such an assertion. In the discussion that follows, I will assume as a guiding principle that the best series for a piece is that which takes account of *as much as possible*. That is, I assume that the extent to which an unstated series should be

[5] This quotation and Babbitt's series for the piece appear in Babbitt ([1976] 2003, 348–49).

considered the source of a piece's trichordal arrays is the extent to which that series is a uniquely effective embodiment of a piece's harmonic contents, the sequence in which those contents appear in the piece, and the relationship between and among those contents. Babbitt's statements quoted above are concordant with this assumption. A series in Babbitt's music is not only "omnipresent" (with certain exceptions, as will be discussed in Chapter 5) but is a "multiply effective compositional determinant." Accordingly, a series that can be plausibly construed to be a compositional determinant of more aspects of a piece is a stronger model for a piece than another series.

|1, 2| (013): <C, D, E♭>, <E, F, G>, <F♯, G♯, A>, <A♯, B, C♯>
|2, 9| (013): <D, C, E♭>, <E, G, F>, <G♯, F♯ , A>, <A♯ , C♯ , B>
|1, 8| (014): <C, B, E♭>, <C♯ , D, B♭>, <E, A♭, G>, <G♭, F, A>
|3, 8| (014): <C, E♭, B>, <C♯ , B♭, D>, <G, E, A♭>, <F, A, G♭>

Figure 3.1. Trichords used in the arrays of *Composition for Four Instruments*. Each appears both as listed and under retrogression.[6]

A-type: {E, F, F♯, G, G♯, A}, {A♯, B, C, C♯, D, D♯}
B-type: {C, D, D♯, E, F, G}, {F♯, G♯, A, A♯, B, C♯}
E-type: {C♯, D, F, F♯, A, A♯}, {D♯, E, G, G♯, B, C}

Figure 3.2. Hexachords used in the arrays of *Composition for Four Instruments*

Figures 3.1 and 3.2 list all of the trichords and hexachords used in the arrays of *Composition for Four Instruments*. The trichordal vocabulary is extraordinarily limited: two trichordal set classes, each of which is represented by only four trichords, arranged into two distinct orderings. The fact that this vocabulary is so limited is likely what has given rise to the many published series for the piece: many distinct series have discrete trichords

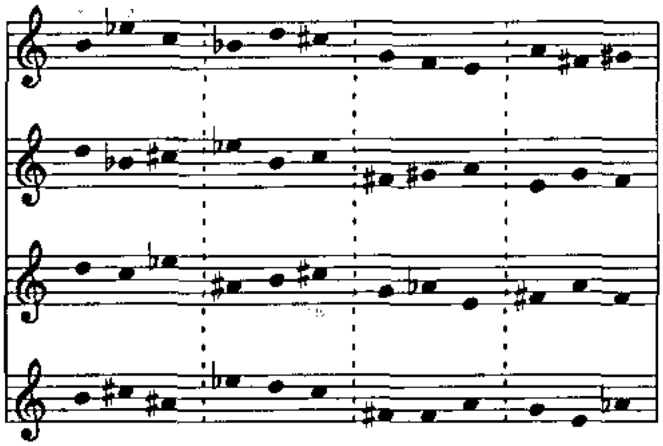
[6] Often throughout this chapter, trichord orderings will be listed alongside their T_N/T_NI set classes, as in Figure 3.1. The trichord orderings' set classes (which determines, among other things, their ability to be combined into particular hexachords) are particularly significant for the present discussion.

that present all four of the piece's trichord orderings—the minimal requirement, according to the received model, for a series of a piece based on trichordal arrays.

That these trichords are arranged into the six hexachords of Figure 3.2 raises a further question. The principle that the series should model the piece as closely as possible suggests that the discrete hexachords of the series should be hexachords used in the piece's arrays. But which pair of hexachords is the best candidate for membership in the series? The answer is clear: although all three pairs of hexachords appear in various combinations throughout the piece, the A-type hexachords appear in every one of the piece's arrays, either linearly or vertically (i.e., as the combination of two simultaneous trichords from adjacent lines in the array).[7] Given this omnipresence, {E, F, F♯, G, G♯, A} and {A♯, B, C, C♯, D, D♯} should be taken as the discrete hexachords of the piece's series.

In accordance with our guiding principle, just as the hexachords in the series should be prominent hexachords in the piece, so should the trichords. Specifically, {E, F, F♯, G, G♯, A} and {A♯, B, C, C♯, D, D♯} should be partitioned into the trichords given in Figure 3.1. One consequence of this, as a quick comparison of Figures 3.1 and 3.2 will reveal, is that the hexachords will be partitioned into two trichords of the same set class. The series, that is, will start with two members of (014) or two members of (013). Furthermore, in accordance with both the "received model" and our guiding principle, the discrete trichords of the series will not only reflect the content of the trichords in the piece, but also the four distinct trichord orderings of Figure 3.1.

[7] This is readily visible in Mead (1994, 66).



Example 3.1. The "underlying rows" of *Composition for Four Instruments*, as shown in Mead (1994)

At this point, we have essentially reached the state of knowledge embodied in Example 3.1, reproduced from Mead (1994).[8] Mead recognizes that there are multiple ways to arrange the trichords and hexachords of the piece into a single series, and therefore lists four distinct "underlying rows" as a "catalog of the ordered trichords of the piece, as well as of the principal hexachords."[9] There is much that is indisputably important in this diagram: it contains all of the trichords used in the piece arranged into the omnipresent A-type hexachords. Nonetheless, ambiguities remain. That Mead lists multiple series is indicative of the fact that, from the perspective of trichordal derivation, it is unclear whether the series should start with (013) or (014). Furthermore, each trichord given in Example 3.1 could be independently retrograded, and the trichords within each hexachord could be swapped—in any of the given series—without affecting the ability of each series to be considered the source of the piece's trichords and hexachords. Example 3.1 is indeed perfectly effective as a "catalog" of the piece's

[8] Mead (1994, 67)
[9] Ibid., 65–67.

trichords and hexachords, but it does not have the precision of an underlying series that can be taken as the model of not just trichordal and hexachordal content, but of the sequential development of the piece's arrays and of details of the piece's surface.

Perhaps the most strikingly unusual aspect of the surface organization of *Composition for Four Instruments* regards its limited vocabulary of simultaneities (not just simultaneous attacks, but all instances of pitches sounding together). Except for the final *tutti*, each section of the piece—"section" here defined by changes in instrumental ensemble, as shown below in Figure 3.5—uses no more than four set classes as simultaneities: one to three interval classes and possibly a trichordal set class. The piece's entire vocabulary of simultaneities is given in Figure 3.3.

Section	Simultaneities
I	N/A
Ia	(02), (05), ***(027)***
II	(01), (03), (04), (014)
IIa	(03), (04)
III	(01), (05), (06), (016)
IIIa	(04)
IV	(02), (04)
IVa	(04), (06)
V	(01), (05), (06), (016)
Va	(02)
VI	(01), (02)
VIa	(02), (05)
VII	N/A
VIIa	(02), (03), (05), (025)
VIII	All interval classes, (013), (015), (016). (024), (025), (026), ***(027)***, ***(0157)***

Figure 3.3. Simultaneities in *Composition for Four Instruments*. Set classes in boldface are those that cannot be considered to be part of the piece's series.

According to our guiding principle, a series that includes more of a piece's simultaneities as segments may be considered a better model of the piece than a series that contains fewer. Furthermore, as discussed in Chapter 1, it is customary in Babbitt's practice for simultaneities to be references to a piece's series. It is actually impossible to construct a series that contains all of the simultaneities in Figure 3.3 as well as the trichords and hexachords in Figures 3.1 and 3.2, but one can come very close. Permuting the possible trichords, hexachords, and trichord orderings reveals that one series class, <041e32865t79>, contains every simultaneity except for (027) and (0157).[10] (027) is the fly in the ointment in a number of respects—it is also the only subset of (0157) that cannot be included—and we will be returning to it shortly. But including every *other* simultaneity determines the series class. Indeed, there is a near-perfect match between the simultaneities and the segmental dyads and trichords of the series. Each of the segmental dyads and trichords of the series defines a set class that appears as a simultaneity somewhere in the piece, and no other dyadic or trichordal set classes are used, except for (027).

Of the possible members of the series class <041e32865t79>, some begin with two (014)s, and some begin with two (013)s. While series beginning with either trichord would still be an adequate source of the piece's trichords, hexachords, and simultaneities, an examination of the distribution of trichordal content within the piece reveals that a series beginning with (014), and ending with (013), is a better model of the piece.

[10] (027) cannot be included without abandoning a number of other simultaneities, at least including (06) and (026). The tritone is a considerably more prominent part of the piece's surface—both its simultaneities and successions—than (027), and it therefore seems preferable for the series to include it.

Line IV		•		•	•			•		•	•			•	•
Line III		•	•			•	•		•		•			•	•
Line II		•		•	•		•		•			•	•		•
Line I	•		•		•			•	•			•		•	•

Figure 3.4. Partitioning of trichordal arrays used in *Composition for Four Instruments* (retrograded after section IV). Dots denote trichords sounding in a given instrumentally or registrally defined line.

Section:	I		II		III		IV		V		VI		VII		VIII
Violin		•		•	•			•		•	•			•	•
Cello		•	•			•	•		•		•			•	•
Flute		•		•	•		•		•			•	•		•
Clarinet	•		•		•			•	•			•		•	•

Figure 3.5. Global distribution of instrumental ensembles used in *Composition for Four Instruments*. Dots denote instruments playing in a given ensemble. This is equivalent to Figure 3.4.

Section:	I		II		III		IV		V		VI		VII		VIII
|1, 2| (013)		•		•		•		•	•			•		•	•
|2, 9| (013)		•	•		•		•			•		•		•	•
|1, 8| (014)		•		•	•		•		•		•		•		•
|3, 8| (014)	•		•		•			•	•		•			•	•

Figure 3.6. Global distribution of trichordal content used in *Composition for Four Instruments.* Dots denote trichord orderings used within each array.

The pattern of trichords contained within the opening trichordal array (Figure 3.4), progressing through the fifteen combinations of four trichords arranged into complementary pairs and a final *tutti*, is replicated by the pattern of instrumental combinations that extends across the entire piece (Figure 3.5). This same pattern is also—nearly—replicated by the pattern of trichord orderings used in each of the piece's coextensive arrays (Figure 3.6). However, as can be seen by comparing these patterns, the list of trichord orderings differs from the other exhaustive lists at a number of points. Notably, from the perspective of series disambiguation, section VI begins with the two

(014) trichord orderings rather than ending with them, as it would have had it followed the patterns set out in Figures 3.4 and 3.5. This is a subtle difference, but it has important implications. It means that every complementary pair of arrays begins with at least two lines articulating (014). Ten out of fourteen trichord orderings that appear in arrays at the beginning of a complementary pair are (014)s. Conversely, every complementary pair ends with (013), and (013) is generally more weighted toward the end of these pairs. The result is that a series that begins with (014) is going to be more representative of the piece than a series that begins with (013). Both orderings of (014) are equally present at the beginning of combinatorial pairs (each appears five times), and thus this measure alone is not sufficient to determine which ordering of (014) begins the series. However, the desire to include the piece's surface simultaneities, as discussed above, does clarify this issue: were the series to begin with |1, 8|, it would be impossible to include both (016) and the arrays' (013)s.

a) <B, E♭, C, B♭, D, C♯, G, F, E, A, F♯, G♯>

b) <D, B♭, C♯, D♯, B, C, F♯, G♯, A, E, G, F>

c) <F, A, F♯, E, G♯, G, C♯, B, B♭, E♭, C, D>

d) <G♯, E, G, A, F, F♯, C, D, E♭, B♭, D♭, B>

Figure 3.7. Possible series for *Composition for Four Instruments*

At this point, we have narrowed the possible series to those listed in Figure 3.7. These are the only members of the series class that include the trichords and A-type hexachords of Figures 3.1 and 3.2 and begin with (014)s. Of these options, one has

particularly strong surface support. As Dubiel has noted,[11] the discrete trichords of the series marked "a)" in Figure 3.7 presents the first three notes played by each instrument, in the order of initial instrumental appearance (see Example 3.2, below). Given this support, I take <B, E♭, C, B♭, D, C♯, G, F, E, A, F♯, G♯> as the series of *Composition for Four Instruments.*

Dubiel finds the correspondence between this series and the first three notes in each instrument "amusing," because it appears to present the series almost immediately, thus contradicting Babbitt's claims that the series is only clear over the course of the piece. But as this discussion has shown, it has taken a consideration of virtually the entire piece to narrow our choices down to these four. Choosing the single series among these four that happens to take particularly good account of the opening of the piece is not equivalent to basing the entire determination of the series on just those four initiating trichords. I interpret Babbitt's decision to launch each instrumental part with the discrete trichords of the series as something like the hypothesis at the beginning of a science experiment: it is an important suggestion and can guide the discovery process, but conclusions only come with evidence. Or, to turn Babbitt's analogy in Babbitt (1987) on its head, hearing the first chord of Beethoven's *Second* Symphony and immediately declaring it to be the tonic is unwarranted, even though it happens, eventually, to be correct.[12] Confirmation—referential unequivocality—is gradual, and may not be conclusive until the end of the piece. Indeed, there are simultaneities introduced in the

[11] Dubiel (1990a, 253n.29).

[12] "I had no idea that anyone would misconstrue the opening clarinet solo [of *Composition for Four Instruments*] as being necessarily the set of the piece any more than one necessarily thinks that, because the first thing you hear in the First Symphony of Beethoven is an F-major triad, the piece is therefore to be construed as in F major" (Babbitt [1987, 28]).

last two sections of *Composition for Four Instruments* that are essential to the disambiguation of its series.

The necessity of considering details such as the restricted use of simultaneities and the opening three notes played by each instrument to determine the series inverts the hierarchy within which such details are usually understood. That is, it is typical to explain surface details as "references" to array counterpoint.[13] The implication is that surface details are dependent on the array, that although they may direct a listener's ears toward particular aspects of the array—predicting or recalling events elsewhere in the piece, for instance—they are nonetheless in a subordinate hierarchical position. But if these details must be invoked to disambiguate the organic kernel itself, they take on a deeper role. This promotion of the putative surface contorts, or perhaps flattens, the piece's conceptual hierarchy. Yet the organic model still has consequences, for if these surface elements are so promoted, by their role as disambiguators of the series, they become implicated in a referential network affecting almost every aspect of the piece, and gain a new kind of significance.

The heightened status these surface elements acquire by this new role in series disambiguation is reminiscent of Richard Cohn's discussion of motives in Schenkerian theory.[14] Despite Schenker's insistence that motives arise as a result of organic development, Cohn describes how their role in determining hierarchy in many Schenkerian analyses grants motivic association an independence and potential hierarchical significance at odds with the image Schenkerian theory presents of a succession of prolongations elaborating the *Ursatz*. As with motives and Schenkerian

[13] See, e.g., Mead (1994), among many other sources.
[14] Cohn (1992).

hierarchy (in Cohn's reading, at least), the foregoing discussion of *Composition for Four Instruments* flips the determining-determined binary putatively governing array hierarchy and the surface. If the series in *Composition for Four Instruments* is—partially—an account of the piece's simultaneities, the simultaneities are not also references to the series.[15]

A further consequence of this approach is the light into which it thrusts (027), the simultaneity that cannot be considered part of this referential network of series disambiguators. I believe the use of (027) to be rhetorically productive, and the fact that it is brought into relief by its unique position contrasting with the piece's hierarchy contributes to its rhetorical effect. As can be seen in Example 3.2, (027) jumps out of the first aggregate, marked by loud dynamics and the large leap that precedes the first note of the trichord. Following this dramatic intrusion, (027) underlies the dynamic structure of the second aggregate: as shown above in Example 2.6, the second aggregate features four dynamically discrete levels, each of which realizes a member of (027).[16] As the rest of

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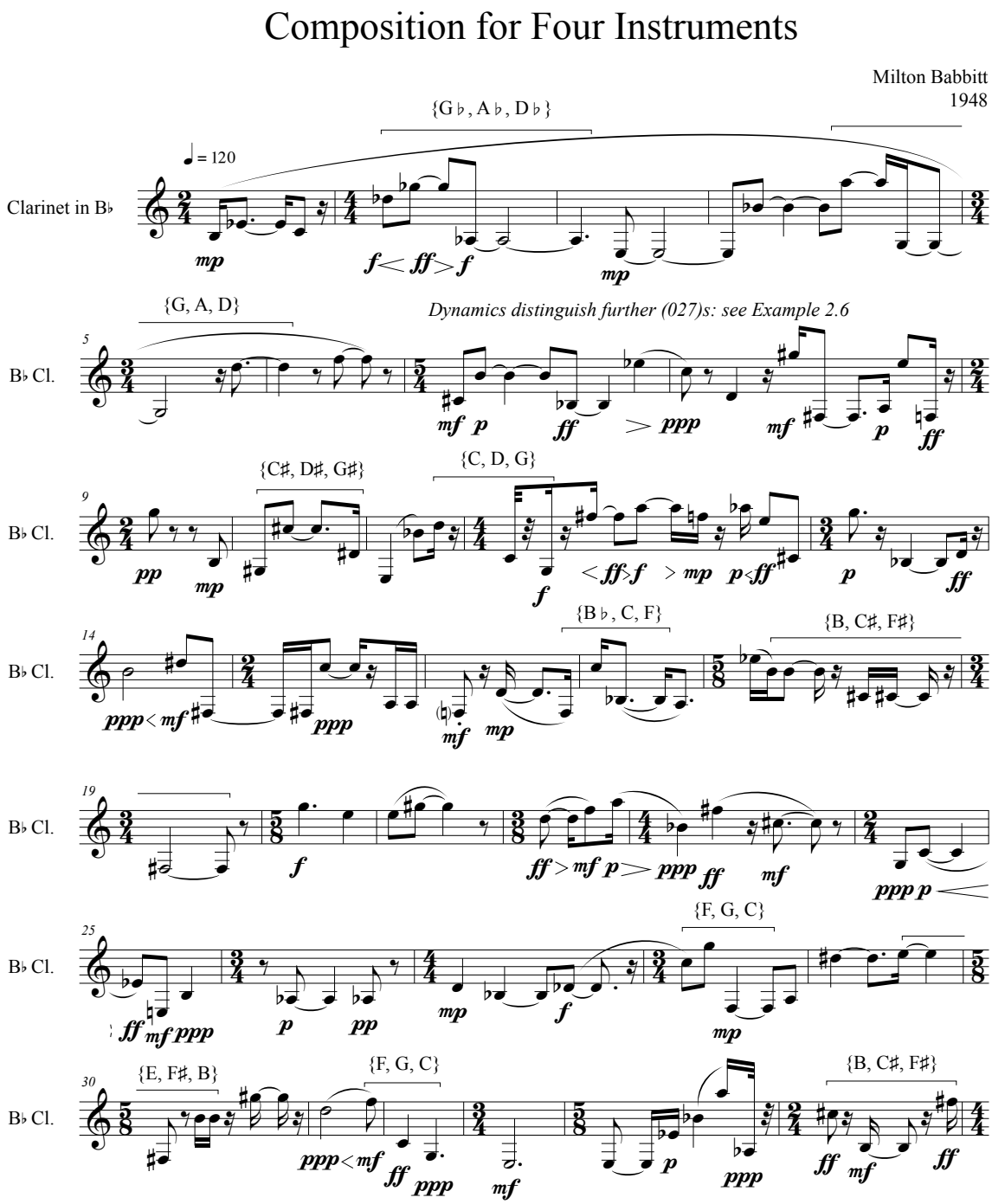
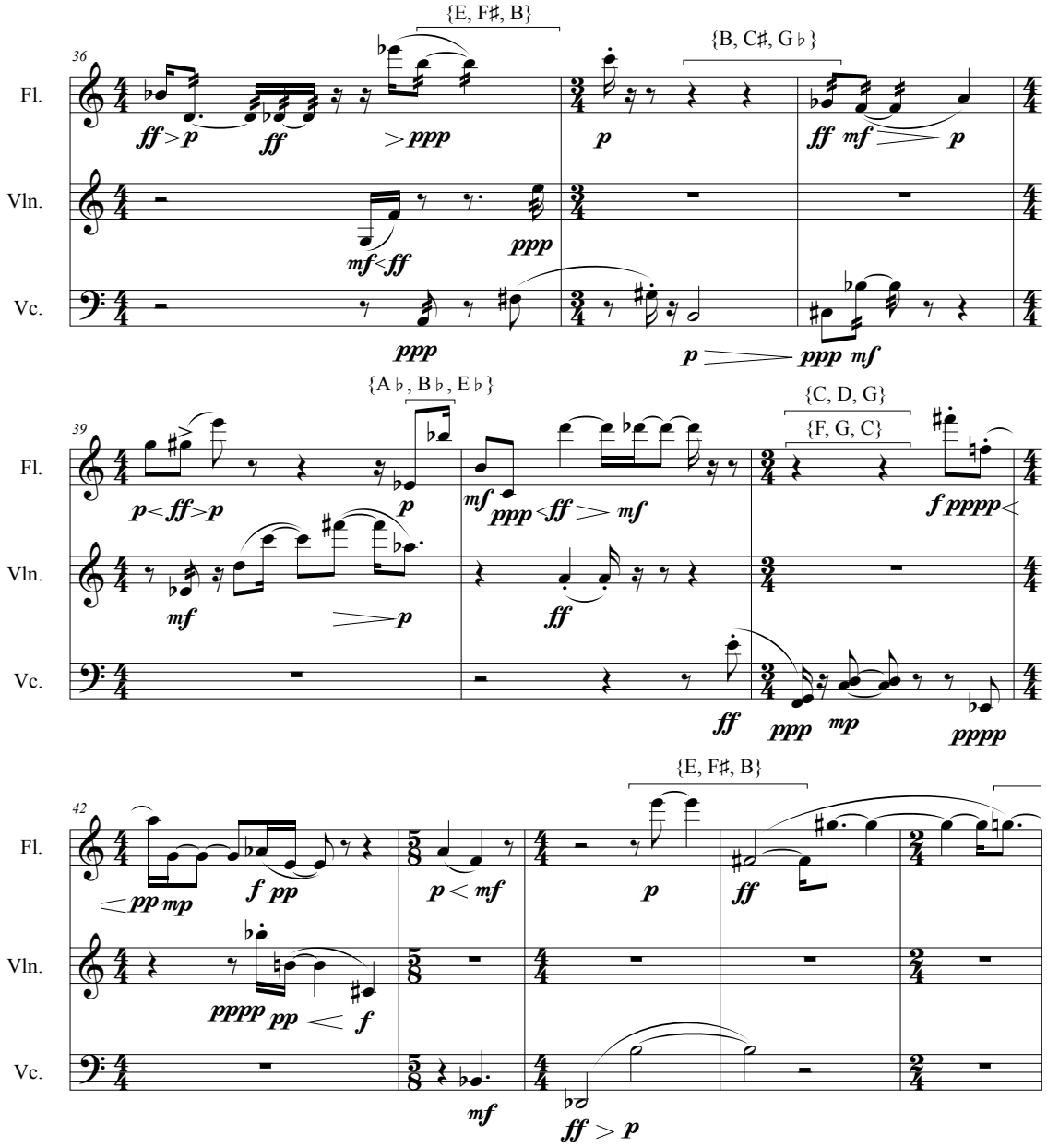
[15] Elsewhere in this dissertation, I use familiar language about "references" and "referents" to describe the relationship between the surface and the series or array. Although I feel *Composition for Four Instruments* challenges this paradigm, and I urge that it not be taken for granted, it seems more appropriate in many other pieces. In *Du*, as is discussed below, I feel the concept of reference is essential, with powerful hermeneutic implications. *Composition for Four Instruments* is a limiting case in some respects.

[16] Dynamics in *Composition for Four Instruments* are often used to articulate trichords other than the trichords used in the arrays. Most of these are trichordal set classes found elsewhere in the series; (027) is the most salient exception. However, these set classes are occasionally realized in orderings other than those found in the series. For instance, the last two aggregates of the opening clarinet solo, shown in Example 3.2, are based on (016)—the penultimate aggregate (mm. 27–30) presenting (016) as the sole ***f*** in an aggregate otherwise entirely ***mp***, and the final aggregate (mm. 31–35) set using four dynamic levels each articulating (016), much as the second aggregate articulates (027). But the ordering of (016) presented in these aggregates is |1, 5|, not the |1, 6| found in the piece's series. The dynamics throughout *Composition for Four Instruments* are generally based on a harmonic vocabulary distinct from, though sometimes intersecting with, the vocabulary presented in the piece's arrays. I am grateful to Daniel Colson for much discussion on these matters.

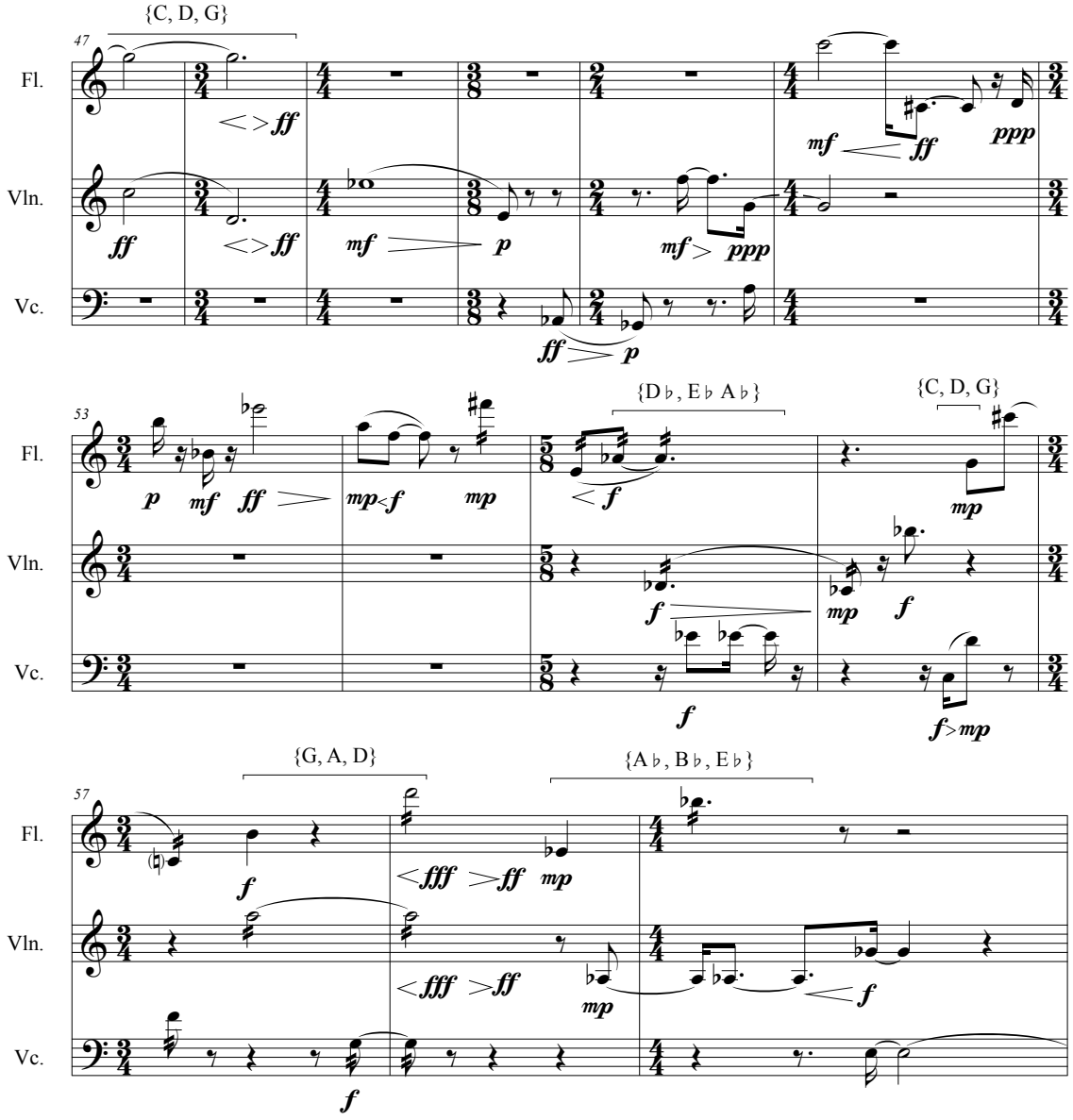
Example 3.2 shows, (027) maintains prominence throughout the opening clarinet solo and the ensuing trio, both in simultaneities and successions.



Example 3.2. *Composition for Four Instruments*, mm. 1–59, with (027)s marked. Score in C.



Example 3.2, cont.

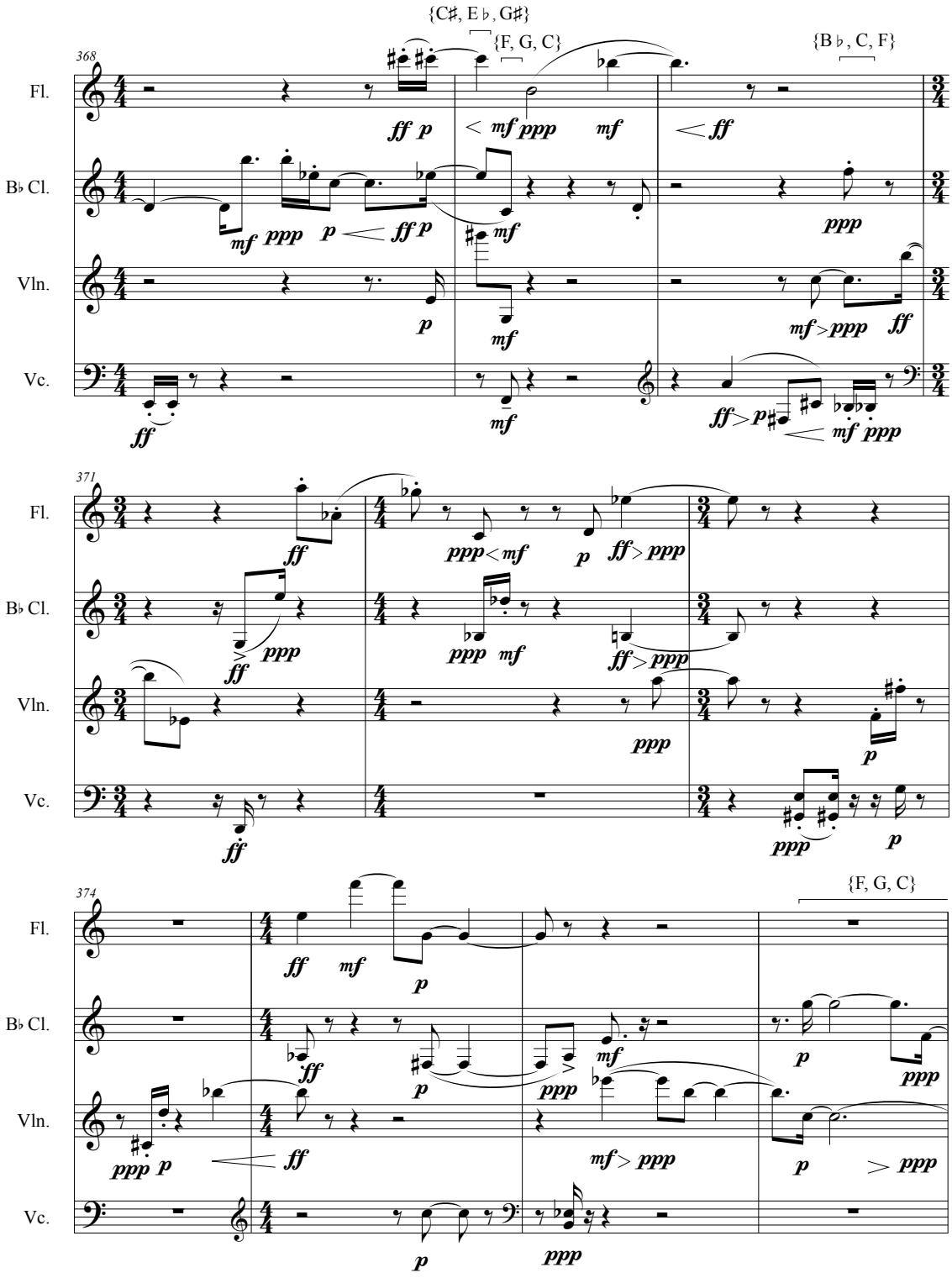


Example 3.2, cont.

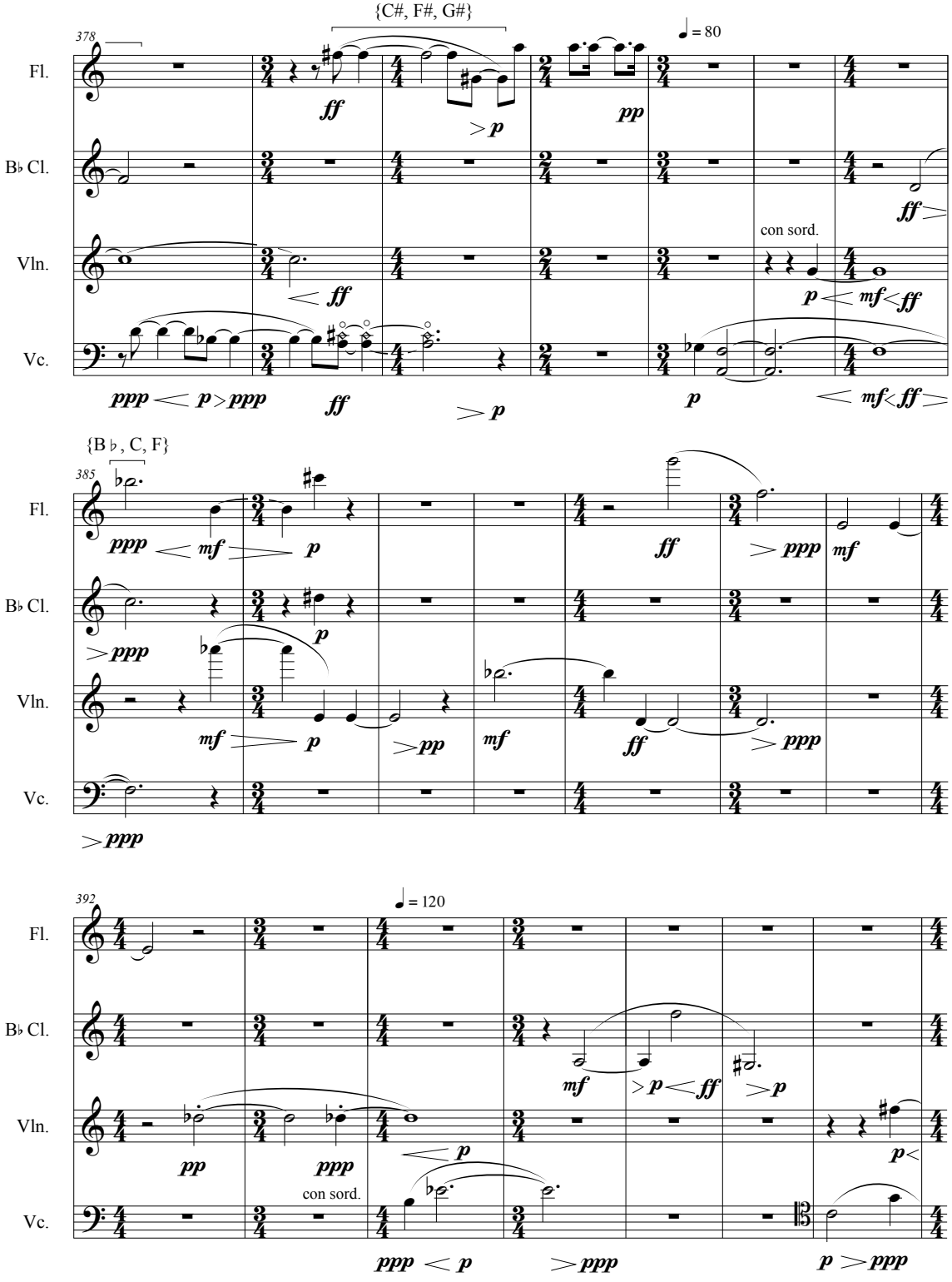
Following the end of this opening section, (027) essentially disappears for most of the rest of the piece. For over three hundred measures, it never appears as a simultaneity and can hardly be found as a plausible grouping of adjacencies. At the end of the piece, however, shown in Example 3.3, it once again features prominently, including twice in succession in measure 369, the beginning of the final section. The last simultaneity in the

piece—C# and A♭—is composed of the two pitch classes shared between the (027) heard in the second measure and the first (027) in measure 369.

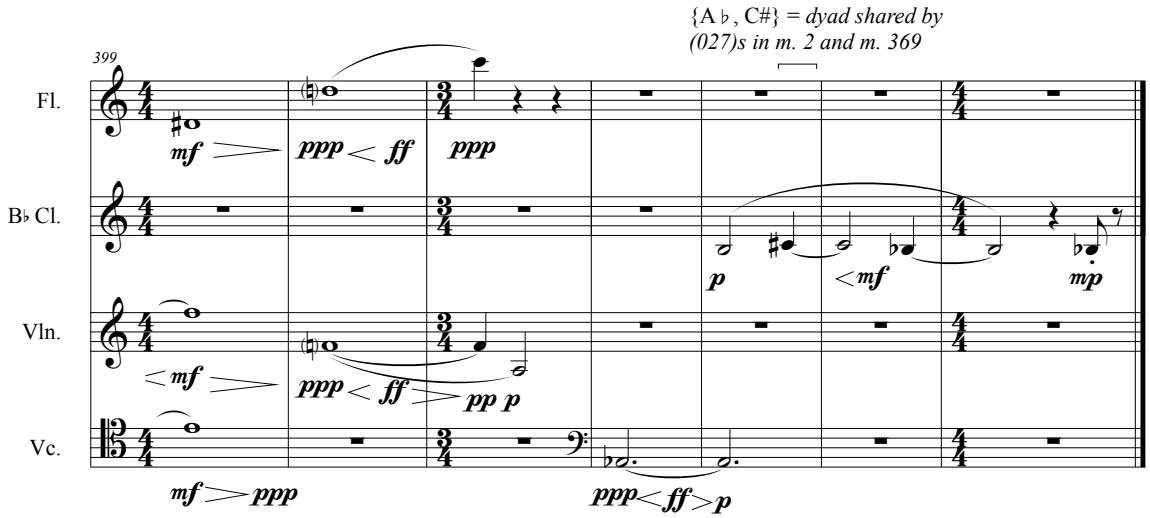
(027) is thus used to link the beginning and ending of the piece. As will be discussed in Chapters 4 and 5, this is a technique Babbitt used frequently to signal the end of a piece. The fact that (027) is hierarchically problematic contributes to the effectiveness of this technique. (027) sounds distinct from the piece's harmonic language, and its recall at the end is thus recognizable as a return to something not heard throughout the bulk of the piece.



Example 3.3. *Composition for Four Instruments*, mm. 368–405, with (027)s marked



Example 3.3, cont.



Example 3.3, cont.

DIVISION, DISUNITY, AND *DU*

August Stramm's *Du* (1915) is, as he subtitles the collection, a set of *Liebesgedichte*—love poems.[17] And like any set of love poems, its subject is the relationship between one persona and another; here they are—at once intimately and anonymously—referred to as simply "Ich" and "Du." The situation is one of mad, unrequited love by Ich for Du. Ich searches ("Mein suchen sucht!"), Du occasionally comes within sight, but to no end. Stramm's poetry, as Christopher Waller describes it, "is a poetry founded in a desperate sense of isolation."[18]

Ich sees Du as invested with tremendous powers ("Du trägst Antwort . . . Du siegst Gott!"), an ability to fight back against a hostile universe. Numerous scholars of Stramm have commented on the mystical forces that haunt his poetry and on Du's apparent

[17] *Du* has been reprinted in Stramm (2013).
[18] Waller (1986, 25).

command of those forces. As Christoph Herring notes about "Werben," a poem in Stramm's *Du* that, although not set by Babbitt, is representative:

> Cosmic law places Man and the mysteries of life in a position of waiting. Woman alone, the great mediator, could grant communication. But there will be no fulfillment . . . . The struggle between the two erotic principles will never end, for the poem, while it seems to come to a conclusion, returns to its beginning and thus, by its structure, suggests eternal frustration.[19]

The metaphysical stage on which Stramm's *Du* is set, then, ensures that Ich and Du can never be reconciled. This is no mere love affair. Ich and Du represent the eternal cosmic grappling of Stramm's dark vision.

Babbitt chose seven of the thirty-one poems in Stramm's cycle to set in his own *Du*, and there is therefore something of a distinction between the effects created by Stramm's entire cycle and those created by Babbitt's selection. Furthermore, Babbitt's ordering of the seven poems he selected is significant in a way that the arrangement of Stramm's *Du* evidently was not, at least to Stramm.[20] The narrative progression detailed below is therefore entirely a function of Babbitt's ordering of the poems. One consequence of Babbitt's selection is that the range of situations in which Stramm depicts Ich and Du is somewhat diminished. As Waller describes, sometimes, in Stramm's cycle, Ich's quest is successful, leading to poems that culminate "in an ecstasy of sexual fulfillment."[21] Waller names the poems "Erhört" and "Erfüllung" as exemplifying this tendency. Babbitt, however, set neither of these poems, nor any other poem in which Ich and Du can reasonably be regarded as interacting anywhere outside of Ich's feverish

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[19] Herring (1961, 48).
[20] According to Adler (1980, 124), Stramm did not order *Du,* "but left that task to his friend and publisher Herwarth Walden."
[21] Waller (1986, 31).

imagination.[22] From within the perspective of the seven poems in Babbitt's *Du*, the ending of "Schwermut," the last poem in Babbitt's cycle—"Tief / Stummen / Wir"—presents the only fact we know about the two personas' relationship. In regard to each other, they are both, deeply, silent. The seven poems Babbitt set are reproduced in Example 3.4.

I. Wiedersehen

Dein Schreiten bebt
In Schauen stirbt der Blick
Der Wind
Spielt
Blasse Bänder.
Du
Wendest
Fort!
Den Raum umwirbt die Zeit!

II. Wankelmut

Mein Suchen sucht!
Viel tausend wandeln Ich
Ich taste Ich
Und fasse Du
Und halte Dich!
Versehne Ich!
Und Du und Du und Du
Viel tausend Du
Und immer Du
Allwege Du
Wirr
Wirren
Wirrer
Immer wirrer
Durch
Die Wirrnis
Du
Dich
Ich!

[22] One might disagree with Waller's interpretation of "Erhört" and "Erfüllung" as genuine representations of sexual fulfillment—as often in *Du*, the line between reality and Ich's imagination can be difficult to discern—but they do present erotic imagery not found in any of the seven poems Babbitt set.

III. Begegnung

Dein Gehen lächelt in mich über
Und
Reißt das Herz.
Das Nicken hakt und spannt.
Im Schatten deines Rocks
Verhaspelt
Schlingern
Schleudert
Klatscht!
Du wiegst und wiegst.
Mein Greifen haschet blind.
Die Sonne lacht!
Und
Blödes Zagen lahmet fort
Beraubt beraubt!

IV. Verzweifelt

Droben schmettert ein greller Stein
Nacht grant Glas
Die Zeiten stehn
Ich
Steine.
Weit
Glast
Du!

V. Allmacht

Forschen Fragen
Du trägst Antwort
Fliehen Fürchten
Du stehst Mut!
Stank und Unrat
Du breitst Reine
Falsch und Tücke
Du lachst Recht!
Wahn Verzweiflung
Du schmiegst Selig
Tod und Elend
Du wärmst Reich!
Hoch und Abgrund
Du bogst Wege

Hölle Teufel
Du siegst Gott!

VI. Traum

Durch die Büsche winden Sterne
Augen tauchen blaken sinken
Flüstern plätschert
Blüten gehren
Düfte spritzen
Schauer stürzen
Winde schnellen prellen schwellen
Tücher reißen
Fallen schrickt in tiefe Nacht.

VII. Schwermut

Schreiten Streben
Leben sehnt
Schauern Stehen
Blicke suchen
Sterben wächst
Das Kommen
Schreit!
Tief
Stummen
Wir.

Example 3.4. Text of Babbitt's *Du*, selected from *Du*, by August Stramm

The anonymity of referring to Ich and Du by pronouns alone reflects a confusion about their identity that has often been taken to be a central concern of the cycle. John Rahn, for instance, writes that "[The poems'] theme seems to be the emotional relations, confusion, distinction, and identity among Du, Ich, Dich, Mich, and Wir . . ."[23] Waller summarizes the possibilities for Du's identity that have been put forth by various scholars: "The 'Du' has been variously interpreted as Stramm's wife, as God, as the cosmos, as

[23] Rahn (1976, 79).

somebody/anybody of the opposite sex, as the opposite sex, as somebody/anybody outside the poet's self."[24] All of these interpretations seem more or less plausible at various points in the cycle, and indeed a reading that allows for a shape-shifting Du—sometimes embodying realistic attributes of femininity, sometimes characterized more abstractly—is probably closest to the mark. From the perspective of the analysis to follow, the fact of confusion and ambiguity over identity is more important than any particular reading.[25]

The separation between Ich and Du that defines the cycle is reflected by a divergence within the piece's serial structure. The piece's counterpoint presents trichordally derived lines throughout. Most often, these trichords are presented in trichordal arrays; the only exceptions are the two piano interludes—which appear between songs I and II, and VI and VII—and the central song IV, "Verzweifelt." The interludes and "Verzweifelt" use three simultaneous lines arranged in (4^3) tetrachordal aggregates. Nonetheless, the lines of these passages are still trichordally derived, using trichords also found in the rest of the piece.[26] The vocabulary of trichord orderings for the entire piece is given in Figure 3.8.

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[24] Waller (1986, 31).

[25] As Richard Sheppard (1985, 281) points out, ambiguity over identity is compounded by syntagmatic ambiguity, in that the pronoun "Du" might refer to Du, the persona, or might refer to proximate nouns in particular poems that can be construed as pronoun antecedents: "'Hölle Teufel / Du siegst Gott' can be read as: 'You, oh my God, are victorious'; 'You [i.e. a second (human) person] are victorious after the manner of a God'; 'You [i.e. a second (human) person] are victorious over God' or 'You [referring back to the Devil] are victorious over or after the manner of God.'" Given these ambiguities—as well as others, such as the many words that might be taken as verbs or adjectives—I have refrained from offering translations of the poems. A valiant effort at translation, which gives a decent sense of the poems despite necessarily flattening out certain ambiguities, can be found in Sullivan (2005).

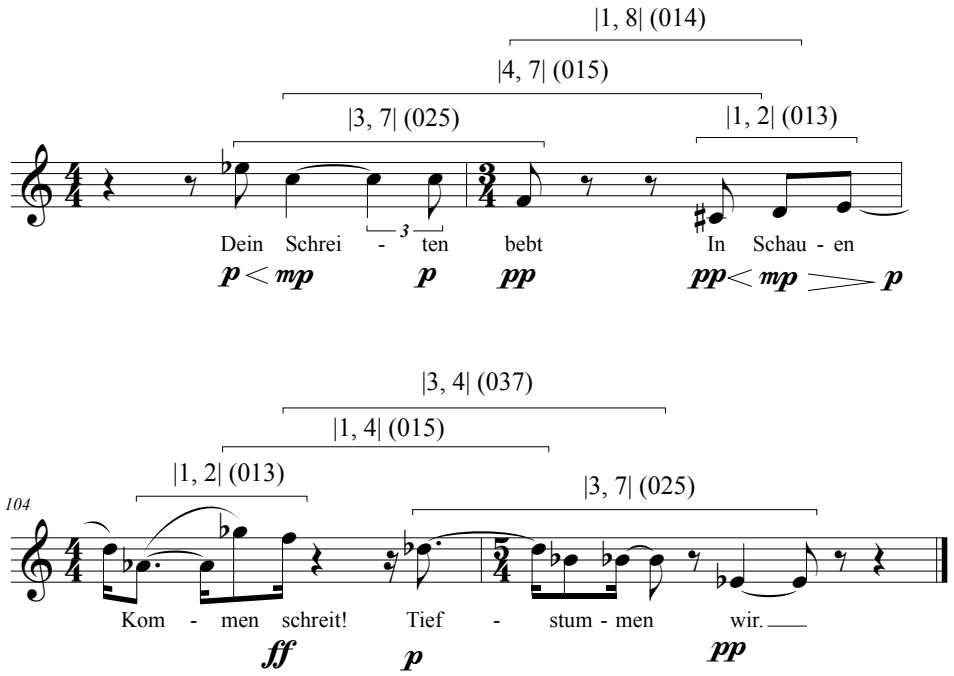
[26] See Mead (1994, 111).

|1, 2| (013)
|1, 8| (014)
|1, 4| (015)
|4, 7| (015)
|3, 7| (025)
|3, 4| (037)

Figure 3.8. Array-generating trichord orderings in *Du*

There is no all-combinatorial hexachord that contains all of the trichords in Figure 3.8,[27] and therefore there is no way to construe them as having been derived from a single underlying series or even series class. Rather, the piece presents two plausible contenders for the series, at the beginning and end of the piece's vocal part—one built from an A-type hexachord and the other from a C-type hexachord—as shown in Example 3.5.[28] This disjuncture can be interpreted as an "enactment," in the sense of Lewin (2006), of the disjuncture between the song cycle's two personas, Ich and Du.[29] Roughly, the A-type series and its trichordal subsets are associated with Ich and Ich's internal preoccupations and hysteria, while the C-type series and its subsets are associated with Du and, generally, states outside of Ich's tortured reality. Both array construction—the trichords and hexachords that appear in the arrays setting each song—and surface details support this enactment of the cycle's central, fractured relationship. I will explore the cycle in detail below, but it will first be instructive to see how previous authors have dealt with *Du*'s unique inability to be considered as derived from a single series. Figures 3.9 and 3.10, which show the work's linear trichords and hexachords, will be referred to throughout the ensuing discussion.

[27] See ibid., 29.
[28] The entire vocal parts of "Wiedersehen" and "Schwermut" present iterations of these series, "Wiedersehen" constructed from the A-type series and "Schwermut" from the C-type.
[29] Lewin (2006, xii and *passim*).



Example 3.5. Opening and closing vocal hexachords in *Du*, presenting the cycle's two series, with the trichords that generate the piece's arrays indicated

Song:	I	Interlude		II				III				IV		V				VI				Interlude		VII
Voice	A			E	E	A	A	E	C	B	B	B	C	B	B	A	E	C	C	E	E			C
Piano High	A	B	B	E	E	A	A	E	C	B	B			B	B	A	E	C	C	E	E	E	E	C
Piano Mid	C	E	B	E	E	A	A	C	E	B	B	B	A	B	B	E	A	C	C	E	E	B	C	A
Piano Low	C	E	B	E	E	A	A	C	E	B	B	B	A	B	B	E	A	C	C	E	E	B	C	A

Figure 3.9. Linear hexachord-types used in the arrays for *Du*. "A," "B," "C," and "E" refer to the familiar classification of "types" of all-combinatorial hexachords.

Song:	I	Interlude		II				III				IV		V				VI				Interlude		VII
Voice	PL			M	O	L	M	O	P	L	O	L	P	N	P	L	N	Q	P	N	Q			PL
Piano High	PL	L	L	M	O	L	M	O	P	L	O			N	P	L	N	Q	P	N	Q	N	N	PL
Piano Mid	PL	M	O	M	O	L	M	P	O	L	O	P	L	N	P	N	L	Q	P	N	Q	N	N	PL
Piano Low	PL	O	P	M	O	L	M	P	O	L	O	P	L	N	P	N	L	Q	P	N	Q	P	P	PL

Key:
|1, 2| (013) = L
|1, 8| (014) = M
|1, 4| (015) = N
|4, 7| (015) = O
|3, 7| (025) = P
|3, 4| (037) = Q

Figure 3.10. Trichords in the arrays for *Du*. Songs I and VII present two distinct trichords in each linear hexachord; the remaining songs present trichordal arrays derived from a single trichord. In the vocal parts of I and VII, these are combined to form the series shown in Example 3.5. The segmental trichords of the opening, A-type series are P, O, M, and L. The closing, C-type series includes L, N, Q, and P.

Du is discussed at some length in Babbitt ([1976] 2003). Babbitt notes the distinction between the opening and closing hexachord and describes the relationship as instantiating a kind of "progression."[30] The arrival of (037) at the beginning of "Traum" is the moment at which the closing hexachord becomes "'the' derived hexachord" of the piece. Before that (and, probably—it is unclear—only before that), the A-type hexachord is described as the "tonic."

Babbitt credits two distinct processes as effecting the progression between the hexachords. The first is that the opening and closing hexachords can be transformed into each other's set classes if either discrete trichord is transposed by a tritone. This is both true and significant: the fact that these series, although distinct in terms of their total content and interior segmental trichords, are composed of the same discrete trichords—valuable currency in a piece built of trichordal arrays—has profound implications for both the piece's array structure and the hermeneutic implications that can be drawn from it. The extent to which this fact is the result of a process is less clear. This process is prefigured, Babbitt explains, by the constant transposition by tritone "within and between the canonic lines"—that is, within the trichordal arrays. While the statement about the relationship between the opening and closing hexachords is true, it seems unwarranted to attribute it to the local tritone transpositions within the various arrays. Every trichordal array constructed from first-order hexachords will necessarily contain constant tritone transpositions, but none of Babbitt's other trichordal array pieces contain multiple distinct series traceable to that fact.[31]

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[30] Babbitt ([1976] 2003, 353).

[31] On the "order" of all-combinatorial hexachords, see Babbitt ([1955] 2003, 42–43). The reason for the constant tritone transpositions in arrays with first-order hexachords is that

The other process Babbitt discusses concerns the pitch-class intersection of hexachords. He describes how the B-type hexachord is equally related, in terms of potential pitch-class intersection, to both the A-type and C-type hexachords, implying that the B-type hexachord can thus bridge the two series.[32] This strikes me as a rather imprecise description of the piece's process. It is true that the voice part begins with A-type hexachords and ends with C-type hexachords, and the piece does include B-type hexachords. Nonetheless, an examination of Figure 3.9 demonstrates that the progression Babbitt suggests, of A-type hexachords smoothly progressing to B-types and thence to C-types, is considerably more linear than what actually happens. The piece's linear hexachords present a complex, almost scrambled, pattern, and include many E-type hexachords along with the first-order types described.

Robert Morris and Brian Alegant propose an alternative—practically opposite—account of the piece's overall form.[33] They accept—as Babbitt, in this point in his compositional practice, apparently did not—M/MI equivalence.[34] The M transformation turns A-type hexachords into C-type hexachords, effectively rendering the distinct contents of the two possible series shown in Example 3.5 members of a single equivalence class. The result is that the piece appears not progressive but almost retrograde-symmetrical. More specifically, each half is almost RM of the other. Thus, the piece

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these hexachords, the A-type, B-type, and C-type, each transpose into their complement under T_6.

[32] See Babbitt (1987, 50–51) for an illustration of the relationship between these hexachords.

[33] Morris and Alegant (1987, 95–98).

[34] Babbitt ([1976] 2003, 351) discusses the M transformation (which he here calls the "circle-of-fourths"), claiming, about *Du*, that he did not "find it necessary or desirable to multiply our analytical essences to include that operation as a process of the work." The M transformation would not unequivocally enter Babbitt's compositional practice until *Groupwise* (1983), as discussed in Mead (1994, 235–36).

begins with A-type hexachords in the voice and upper register of the piano and ends with C-type hexachords in the same parts. B-type and E-type hexachords map into themselves under the M transformation; therefore they appear in an almost precisely retrograde-symmetrical pattern (for instance, song II begins, and song VI ends, with E-type hexachords). The pattern of trichords is also nearly RM symmetrical. The M transformation exchanges (013) and (025) as well as (014) and (037). (015) is mapped into itself, although the two distinct orderings of it that appear in *Du*—|1, 4| and|4, 7|—can be considered ordered M-transforms of each other, and those distinct orderings are themselves exchanged according to RM-symmetry.[35] The interludes and song IV are again exceptions, as are songs I and VII. Songs I and VII present (025) and (013) in the same order; therefore even though (025) and (013) are M-equivalent, the songs are not precisely RM-symmetrical. To wit, *Du* begins and ends with (025) trichords.

The near-symmetry Morris and Alegant have found is a genuinely significant aspect of the piece's construction. Nonetheless, I find the collapsing of the two possible series into a single equivalence class has the potential to blur essential distinctions. First is the fact, which they fully admit,[36] that the M transformation relating the two series can only be considered a relationship of the series' content, not their order. If the RM symmetry is taken as a primary determinant, one is left looking for explanations for the order of the series and trichords. This analysis also minimizes the contrast between the hexachords, and above all the contrast between their trichordal subsets: as will be discussed, the fact that (014) is a subset of the A-type hexachord, (037) is a subset of the C-

[35] Morris and Alegant's inattention to trichordal ordering—they label array trichords using only set-class labels—obscures this point in their paper. This is unfortunate, since it bolsters their argument.
[36] Morris and Alegant (1987, 97).

type hexachord, and the other trichords have potentially dual allegiances, has hermeneutic implications. Finally, the sheer sonic contrast between the A-type and C-type hexachords, as well as the trichordal pairs of M-equivalents—(013) and (025), and (014) and (037)—make this analysis counterintuitive to me.[37] I may be able to trick myself into hearing the opening and closing vocal hexachords as M-equivalent, although I believe the fact that they have T_N/T_NI-equivalent discrete trichords is a crucial aid to that perception. But although I can understand the relationship between the (014)-derived opening of "Wankelmut" and the (037)-derived opening of "Traum," I cannot hear an equivalence between their arrays, nor is there much about those songs that inspires me to try to hear one. I therefore prefer an analytic approach that recognizes the contrast between these set classes.

To a certain degree, disregarding possible M equivalence also allows for a simple reconciliation of the narrative of progression outlined in Babbitt ([1976] 2003) and the symmetry discussed by Morris and Alegant. *Du* can be considered mostly retrograde symmetrical from the perspective of trichords used in its arrays (again disregarding the interludes and song IV), except that trichords unique to the first hexachord (|1, 8| (014) and |4, 7| (015)) are replaced by material from the second hexachord (|3, 4| (037) and |1, 4| (015), respectively), while trichords common to both (|1, 2| (013) and |3, 7| (025)) are exchanged. While this is generally true of trichords, however, it is not as straightforwardly true of hexachords. While A-type hexachords in the first half are replaced by C-type hexachords, C-type hexachords are also present in the first half—including in the first song—and are replaced by A-type hexachords.

[37] The qualitative differences between A-type and C-type hexachords is encapsulated by their position as generic prototypes in Quinn (2007).

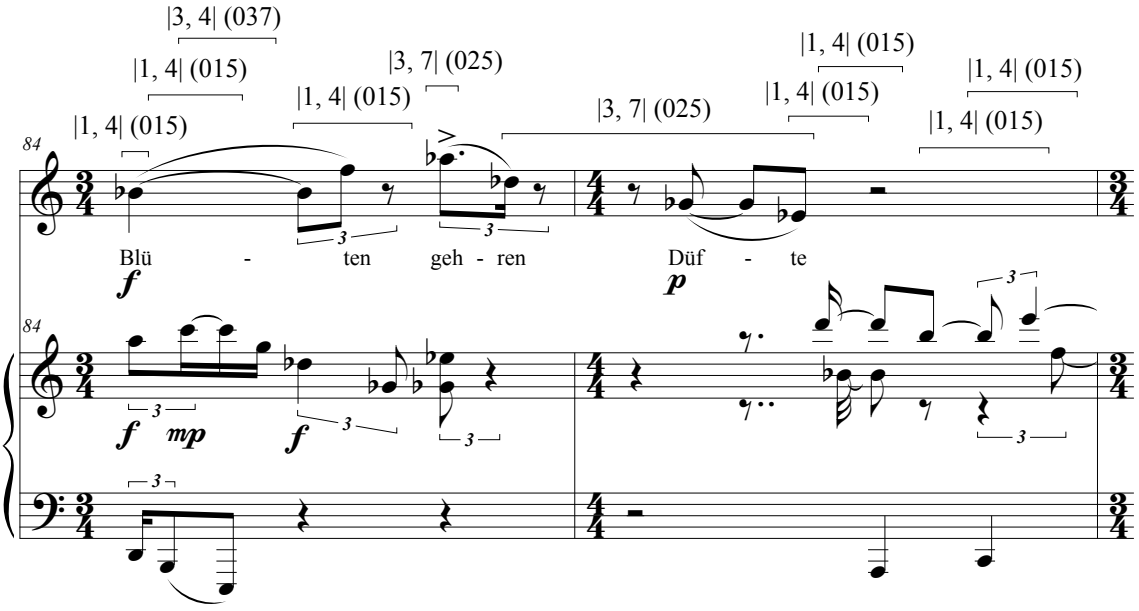
Mead (1994) notes the two potential series in the voice parts of the opening and closing songs but reads them as, fundamentally, byproducts of another process.[38] The piece is described as "cyclical," proceeding through permutations of trichordal mosaics that are combined to form various hexachords. The two series are but two special combinations of (013) and (025), notable for their unique ability to be combined with their transposed retrogrades into all-interval series, as they are in the opening and closing songs. This characterization of the two series is quite convincing—the unique all-interval property likely did determine which combinations of (013) and (025) were elevated to become generative series—but it does not fully account for their development throughout the piece. A quick glance at the progression of trichords shown in Figure 3.10 will confirm that the piece does not engage in any sort of exhaustive list of permutations, unlike, for instance, *Composition for Four Instruments* (cf. Figure 3.6).

Mead's analysis is notable for its discussion of surface details, particularly trichords that are presented in temporal succession. He notes that the surface of the first four aggregates of "Wiedersehen" presents derived sets built from single trichords used in the array, while the first interlude presents a range of surface trichords, including such strategies as the surface of the second half of the interlude referring to the trichords presented in the array of the first half. This is a consistent aspect of the cycle's surface construction: the surface of the entire cycle is nearly saturated with references to array trichords. This is especially true of simultaneous attacks and successions under slurs, practically all of which present trichords from the array.[39] In many cases, including those

[38] Mead (1994, 107–12).

[39] Simultaneous attacks in *Du* consistently refer to array trichords, while simultaneities formed from notes struck separately and sustained may or may not. (As discussed above, *Composition for Four Instruments* does not make the same distinction, treating all

shown in Mead (1994), these surface trichords are discrete, but often enough they overlap, as can be seen in Example 3.6.



Example 3.6. *Du*, "Traum," mm. 84–85, with surface trichords indicated

Mead discusses these surface trichords in terms of pitch-class sets, but one can be more specific: these surface trichords reference not just trichordal content, but the specific trichord orderings contained within the series and used in the arrays. These orderings are clarified either through temporal succession or through the registral ordering of simultaneities. In Example 3.6, for instance, {A, B♭, D} realizes trichord order |1, 4|.

simultaneities as referential.) This consistent tendency regarding simultaneous attacks is particularly true regarding pitches newly introduced in the aggregate. When a pitch has been sounded previously within the aggregate and is reiterated in a simultaneous attack, that simultaneous attack may or may not refer to an array trichord. That is, reiterated notes are treated analogously to sustained notes.

Practically every three-note simultaneous attack in the piece is legible as a reference to an array trichord when read from either top to bottom or bottom to top.[40]

The pattern of surface trichords is, by and large, quite varied, a fact that has important implications for text setting. But one general aspect of their use is especially significant: in the first half of the piece—songs I–III and the first interlude—the surface trichords refer to the first series, while in the second half of the piece—from song V on—the surface trichords refer to the second series. The central song IV, "Verzweifelt," is something of a mixed case, mostly presenting trichords common to both series, but including a few prominent groupings that come from one or the other, as well as a few unusual (for this piece) presentations of (016) and (027), trichords not in either series. The tendency for surface trichords in each half of the piece to refer to that half's series is clarified by three-note simultaneous attacks, for while groupings of singletons and dyads are sometimes ambiguous and can occasionally be considered to deviate from this pattern, three-note simultaneous attacks realize it almost without fail. The treatment of (015) is exemplary, for although (015) simultaneous attacks occur throughout the piece, in the first half of the piece their registral order consistently realizes |4, 7|, while in the second half they are consistently |1, 4|. Example 3.6, which shows a registrally ordered <D, B♭, A> in its first measure, is from the second half of the piece.

[40] At this point in Babbitt's practice, there appears to be no consistent basis for simultaneities to be read from top to bottom or (as is consistent later) from bottom to top. In *Du*, this ambivalence can be seen in surface trichords formed from a dyadic simultaneity and a singleton: sometimes the dyad must be read bottom to top and sometimes it must be read top to bottom to be legible as a reference to an array trichord. The realization of the array also manifests this ambiguity: when simultaneities include notes that are ordered in the array, earlier notes are sometimes higher than later notes, and sometimes vice versa.

My own analysis of *Du* begins with the presumption that the two distinct series represent an unusual and problematic departure from Babbitt's typical practice. In a compositional practice so thoroughly oriented around hierarchical development from a unitary source, the bifurcated structure of *Du* dissonates markedly. Although the symmetries and patterns of permutations discussed by Mead, Morris, and Alegant speak to ways in which the cycle is coherent, there remains a disunity at the heart of the work—a tension between two opposing forces. This disunity mirrors the separation between Ich and Du, with the opening, A-type series representing the terror of Ich's waking life, and the C-type series representing Du, and motion away from Ich. (It will also represent Ich's dream, as that too is distant from Ich's conscious reality.) An approach that takes these text-setting concerns into consideration leads to interpretation of numerous details, both of array construction and surface segmentation, that the symmetrical or progressive analyses of the piece recounted above had left under-determined.

The cycle begins with Ich and the A-type series, although from the very beginning, the C-type hexachord and certain subsets of that hexachord already begin to push outward. As the cycle develops, notably in "Allmacht" and "Traum," the focus shifts away from a representation of Ich, a shift that corresponds with the transition toward material developed from the second, C-type series. The concluding song, "Schwermut," effects a touch of synthesis: it both presents the second series and, like the first song, intermixes it with the contrasting (in this case, A-type) hexachord.

The five trichordal set classes used in *Du*'s arrays, and that make up such an important part of its surface, can each be considered representative of the referential hexachords to varying degrees. (014) is both a member and a generator of the A-type

hexachord but is not a member of the C-type hexachord. Conversely, (037) is a member and generator of the C-type hexachord but is not a member of the A-type hexachord. (013) and (025) are each members of both hexachords, but (013) can generate the A-type hexachord but not the C-type, and (025) can generate the C-type hexachord but not the A-type. Thus, (014) and (037) are strongly representative of the A-type and C-type, respectively, and (013) and (025), as members of both hexachords but generators of only one, are more weakly representative of the hexachords that they can generate. (015), as a set class, is neutral. It is a member of both hexachords but a generator of neither. However, as discussed above, the two orderings with which (015) appears in *Du*'s arrays—|1, 4| and |4, 7|—*are* clearly referential, in that |4, 7| is the ordering that appears in the opening, A-type series and |1, 4| appears in the closing, C-type series. The distinction of ordering does mean, for instance, that the beginning of "Allmacht," the fifth song (shown below in Example 3.9), can be considered forward-looking and representative of the C-type series, even though its (015) trichords and B-type hexachords are familiar by this point in the cycle.

Du begins with "Wiedersehen." The ambiguities inherent in the title—is this an expression of farewell (*Auf Wiedersehen!*), a reunion, or, literally, a seeing again?—are played out in the poem. Ich sees Du, remarking on her stride ("Schreiten"—note the rhyme with *schreien,* to scream; the final song, "Schwermut," will make this rhyme explicit). He looks at her, although she apparently fails to acknowledge him ("In Schauen stirbt der Blick"). Then, in the pivotal action of the brief poem, she turns away: "Du /

Wendest / Fort!" Having lost her, Ich concludes the poem in aphoristic mystery: "Den Raum umwirbt die Zeit!"[41]

"Wiedersehen" is an account of Ich's experience, and its most salient hexachord is the A-type hexachord in the vocal part. But the C-type hexachord lurks in the two lower registers of the piano. The basic scenario is focused on Ich, but Du is also present, if at a distance. The surface organization of the song is, as noted by Mead, organized such that each aggregate presents a derived set composed of four iterations of a single trichordal set class—and, more than that, of the trichord orderings presented in the A-type series. Figure 3.11 presents the text of the poem and the trichords used to set the various words. Of the eight aggregates in the song, the first four present, one aggregate at a time, the four trichord orderings contained within the A-type series. The fifth through eighth aggregates reverse this pattern, retrograding the same sequence of surface trichords. Although the surface of the entire cycle is almost saturated with references to array trichords, the presentation of neatly derived sets in "Wiedersehen" is unique.[42]

[41] There is a possible connection between this line and Gurnemanz's "zum Raum wird hier die Zeit" from *Parsifal* (Act 1). It is also possible to read Babbitt's setting of this line as alluding to Wagner's setting of that line: there are similarities in some of their attributes, such as the placement of "Raum" and "Zeit" on successive downbeats of a 4/4 meter and the upbeat to "Raum" being an eighth-note G. As these similarities fall well short of quotation, the connection remains speculative. Nonetheless, such an allusion would arguably raise *Du*'s already high metaphysical stakes.

[42] Another, and perhaps related, unusual aspect of "Wiedersehen"'s construction is that, unlike most of Babbitt's trichordal arrays, and unlike most of the other songs in *Du*, it does not progress through the fifteen combinations of four trichords. This allows for a more consistent differentiation between surface trichords and array trichords. In arrays that progress through the fifteen combinations of trichords, there will be four array trichords every eight aggregates that are presented in isolation.

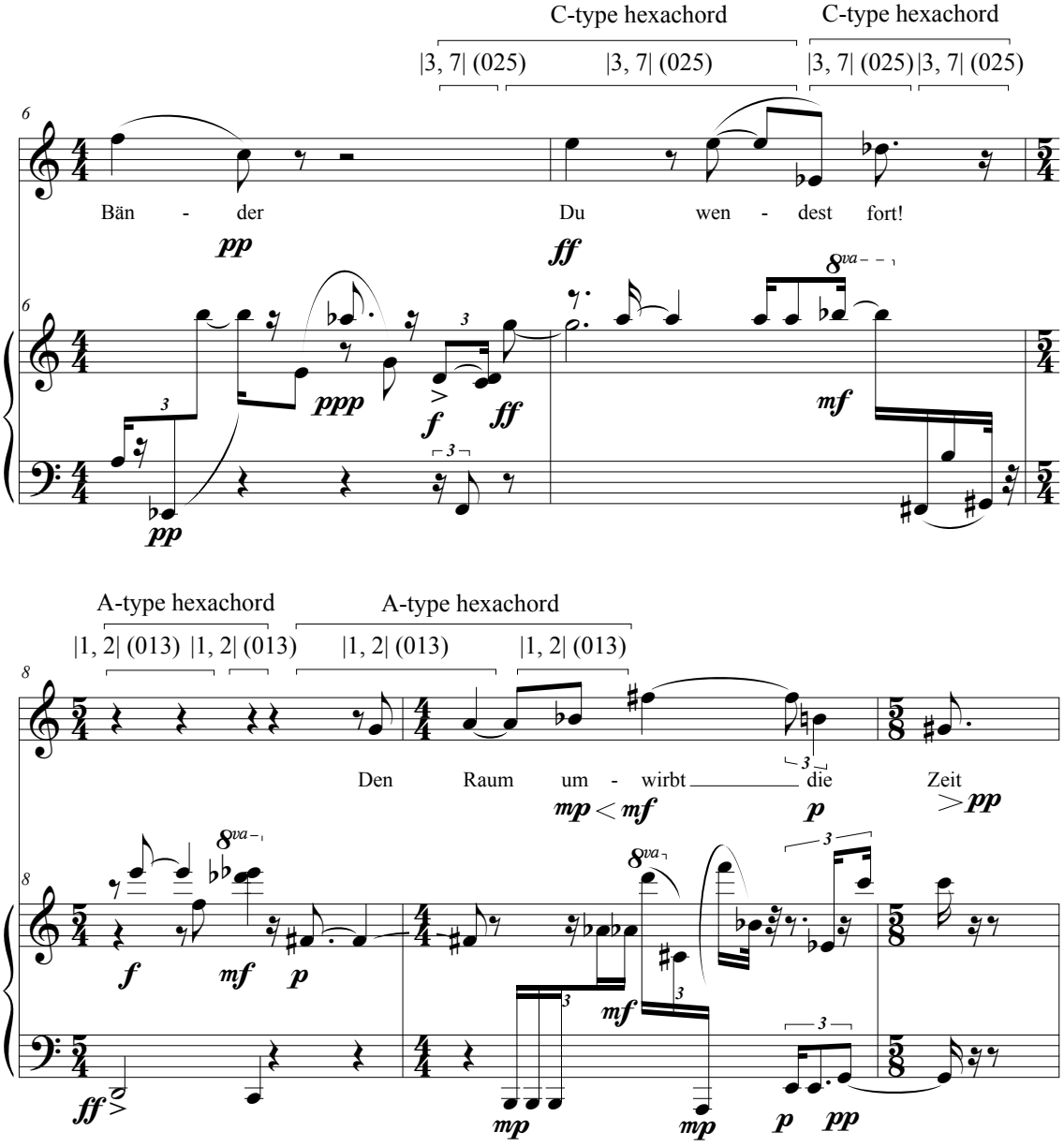
	Aggregate	Array trichords	Surface trichords
Dein Schreiten bebt	1	|3, 7| (025)	|4, 7| (015)
In Schauen	2	|1, 2| (013)	|1, 2| (013)
stirbt der Blick	3	|1, 2| (013)	|3, 7| (025)
Der Wind / spielt	4	|3, 7| (025)	|1, 8| (014)
Blasse Bänder.	5	|3, 7| (025)	|1, 8| (014)
Du / Wendest / Fort!	6	|1, 2| (013)	|3, 7| (025)
Den Raum um-	7	|1, 2| (013)	|1, 2| (013)
wirbt die Ziet!	8	|3, 7| (025)	|4, 7| (015)

Figure 3.11. Trichords used in "Wiedersehen." "Array trichords" are the linear trichords of the array. "Surface trichords" are the trichords into which the surface is partitioned using derived sets.

The critical moment of "Wiedersehen" is when Du turns away: "Du / Wendest / Fort!" The visual arrangement of the poem emphasizes this moment, setting every word in its own line. This is the only action in the poem, and arguably the moment to which the title of the poem refers: if one interprets the word "Wiedersehen" as an expression of farewell, this is the moment that would justify it. Appearing within the first poem set in Babbitt's cycle, it gains additional significance. It is the first moment in which we understand the position of Ich in relation to Du. Until this point we have been watching him observe her, but we learn at this moment that he is observing her, now and probably always, at a distance—and the distance is increasing. Moreover, this is the moment in which we first hear Du referred to directly, by the pronoun that is also the title of the cycle.

Babbitt's setting of the lines and their surroundings, shown in Example 3.7, stands out from the rest of "Wiedersehen," particularly dynamically: this passage presents the only ***f*** or ***ff*** dynamics in the song and indeed among the only ***ff*** indications in the cycle. The surface of this passage is arranged to refer powerfully to the second, C-type hexachord of the cycle. The surface of the aggregate setting "Du / Wendest / Fort!" is

derived using (025). That is, it is set using the sole trichord contained within the opening, A-type hexachord that can generate the C-type hexachord. This ability of the (025) trichord is actually realized in this aggregate: as shown in Example 3.7, the aggregate setting "Du / Wendest / Fort!" is partitioned into C-type hexachords.



Example 3.7. *Du*, "Wiedersehen," mm. 6–9

The setting of "Du / Wendest / Fort!" demonstrates the efferent forces latent in the eventually fissive structure of the cycle; it establishes the connection between the C-type hexachord, its trichordal subsets, and the world that is outside of—that has turned away from—Ich. The remainder of the cycle will eventually realize the implications of this moment. However, in its immediate context, it is still firmly contained within the world of the A-type hexachord. Indeed, in the moments just following, as shown in Example 3.7, Ich's materials return. Just following the C-type hexachords of "Du / Wendest / Fort!," an aggregate of A-type hexachords generated by (013) trichords appears. This harmonic change not only starkly juxtaposes the generative hexachords of the cycle but also coincides with a change in focus. In the last line of the poem, "Den Raum umwirbt die Zeit!," we have returned to the occult ruminations of Ich's mind.

By the end of "Wiedersehen," we have learned a number of important things about the cycle and its construction. The vocal part has introduced us to the first, A-type series, whose segmental trichords will generate the arrays of the first interlude and the next three songs. Although we have not yet heard those segmental trichords realized as arrays, we have heard all four of them realize derived sets, on the surface of each aggregate, that are much like the derived sets that will form the lines of the trichordal arrays. We have also established that, although the most prominent hexachord in "Wiedersehen" is the A-type hexachord in the voice, the discrete trichords of the vocal part can be rearranged into the C-type hexachord, as they are in the lower two registers of the piano. This alternative hexachord is, then, established by the most striking moment in the song—"Du / Wendest / Fort!"—as associated with Du and with a motion away from Ich. And just as Du turns away from Ich, the cycle as a whole will eventually turn away from the A-type series.

"Wiedersehen" is followed by one of two interludes in the piece; the other occurs, symmetrically, just before the last song in the cycle. These interludes have a rhetorical function: they set off the opening and concluding songs, which present the piece's two series, from the interior songs that are derived from those series. Their unusual structure, described above, of (4^3) aggregates formed from trichordally derived lines, may be taken to heighten this rhetorical break.[43] The first interlude's lines are the first trichordally derived lines in the cycle, quickly presenting counterpoint based on all four trichords of the A-type series. These are arranged into B-type and E-type hexachords, which, in combination with the A-type and C-type hexachords presented in the first song, fill out the cycle's complete vocabulary of linear hexachords. (Although the array is constructed using tetrachordal combinatoriality, the discrete hexachords of each line are still all-combinatorial hexachords.) The result is that the first interlude might be described as introductory, preparing the trichordal and hexachordal content of the songs that follow.

"Wankelmut" presents Ich at his most hysterical. The poem opens with Ich's seeking Du, his attempt to catch and keep her, and, in doing so, to lose himself ("Versehne Ich!"). Du becomes manifold, infinitely so, in all time ("immer") and in space, connected by infinite pathways ("Allwege"). Ich describes his increasing confusion by compounding iterations of the word *wirr*—"Wirr / Wirren / Wirrer / Immer wirrer." The first iteration he speaks is the homophone with the pronoun, *wir*; one can imagine Ich seeking *wir*, perhaps hopefully describing his state in a universe in which he is

[43] The interludes' tetrachordally combinatorial yet trichordally derived structure might also be attributed to more practical concerns: as a means to simultaneously preserve the piano's three registers, to create aggregates without the voice part, and to continue using the trichordal derivation that also characterizes the rest of the cycle. Nonetheless, the piano could have simply absorbed the voice's line in the counterpoint, expanding to four registers. This is basically what happens in the interlude of *A Solo Requiem* (1977), as noted in Dubiel (1991, 107).

surrounded by Du, and finding himself *wirr*, confused. At this point in the cycle, confusion, and not the unity denoted by *wir*, reigns. His monologue returns to Du, either as a result of, or in spite of, his confusion ("Durch / Die Wirrnis / Du / Dich"), but the poem ends—perhaps surprisingly, as the exclamation mark suggests—with Ich. The full shape is thus something of a palindrome, bracketed by Ich. "Wankelmut," more than any other song in *Du*, is a presentation of Ich's frenzied mental state.

The array structure of "Wankelmut" is heavily focused on materials already associated with Ich. As can be seen in Figure 3.10, the song begins and ends with arrays built from (014), the unique trichord that is a segmental trichord of the A-type series and is not even a subset of the C-type hexachord. Just as the poem is bracketed by Ich, the song is bracketed by the trichord most associated with Ich. The other trichords with which "Wankelmut"'s arrays are constructed are (015) and (013). That is, of the four trichords available in the A-type series, the only one not present is (025), the one trichord in that series that can generate the C-type hexachord. Both of the final arrays in the song are built using A-type linear hexachords, in the only section of the cycle to use A-type linear hexachords exclusively.

The four arrays are roughly coordinated with significant moments in the poem. The first array, built from (014), extends through the first three lines of the poem, coextensive with the opening passage in which Ich talks about himself. The array built from (015) begins at "Und fasse Du," as the subject changes to Du, and continues through "Und Du und Du und Du." That is, (014), the trichord most associated with the A-type hexachord, is associated with lines discussing Ich, while (015)—which, as a subset of the C-type hexachord and, unlike (013) and (014), not a generator of the A-type hexachord, is relatively close to the C-type series—is associated with lines discussing Du

and Ich's losing himself in Du. The array built from (013) begins with the line "Viel tausend Du." This is the first line in which we grasp Ich's vision of a manifold, universal Du. The previous line, "Und Du und Du und Du," in retrospect is also referring to a plural, *wankelmütig* Du, but upon first encounter its repetitions might just as well be read as emphatic. Therefore, the line "Viel tausend Du" is the first clear indication of Ich's mad vision, and thus is a clear return to Ich's wild mental state—a fact that may justify the use of (013), which is not only a generator of the A-type hexachord, but is in fact combined into A-type linear hexachords in this passage. The beginning of the song's final array, built from (014), does not come at such a clear textual juncture, beginning with "Wirrer" and thus coming in the middle of the passage that had begun two lines earlier, with "Wirr." Nonetheless, this final array encompasses most of the final section of the poem, focused on Ich's confusion.

The title of the third song, "Begegnung" ("Meeting" or "Encounter"), is surely ironic. As in "Wiedersehen," Du is within sight of Ich. He observes her intently. But there is no indication that they interact, or that Du acknowledges Ich. In the first line, "Dein Gehen lächelt in mich über," it is not Du that smiles at Ich, but merely her motion, her "going." As we have learned in "Wiedersehen," this motion is away from Ich, a fact that may contribute to Ich's feelings about it: it rips his heart ("Reißt das Herz"). Ich comments extensively on her movement, and at one point grabs at her blindly ("blind"), a foolish attempt that earns the scorn of a hostile universe ("Die Sonne lacht!"). Having failed to approach her, Ich and his "stupid hesitation" limp away *(*"Blödes Zagen lahmet fort"), bereft ("Beraubt").

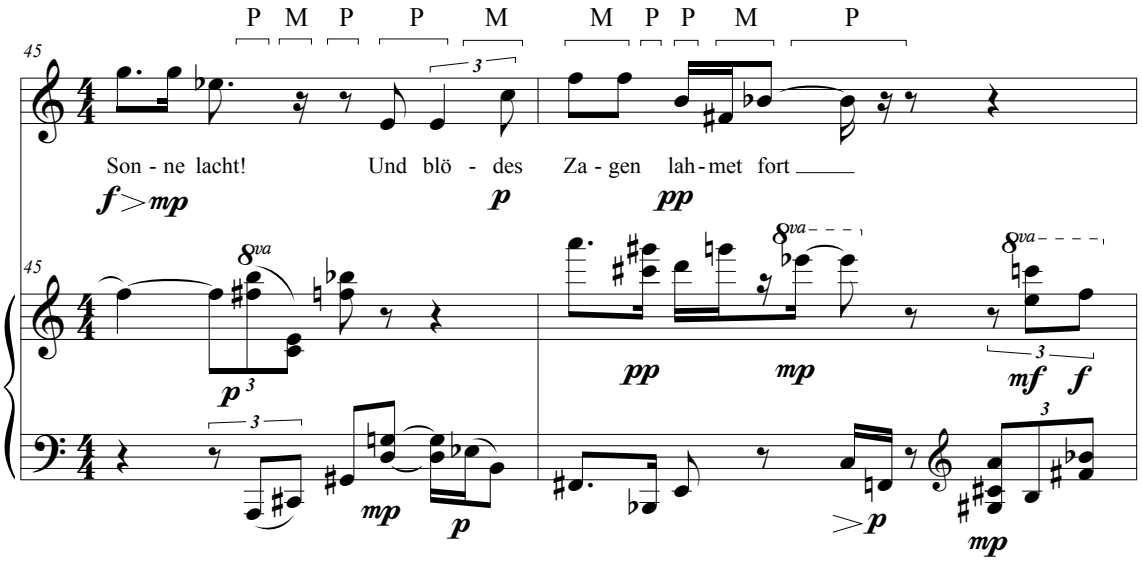
"Begegnung" is something of a turning point in the cycle. Having failed to approach Du during this encounter, Ich will not try again. In fact, his limping away is the

cycle's last action of any type. The succeeding poems present a static image ("Verzweifelt"), a discourse on Du's powers ("Allmacht"), a dream ("Traum"), and a final meditation ("Schwermut"), but the cycle's portrayal of Ich's experience and his attempts to connect with Du has ended.

The song's transitional nature is reflected in its array structure. Like "Wankelmut," "Begegnung" uses three out of four trichords from the first series, but whereas "Wankelmut" focused on (014), the distinguishing trichord of the A-type hexachord, "Begegnung" omits it, leaving us with three trichords that are subsets of the C-type hexachord. The song begins with two arrays that each present, simultaneously, linear E-type and C-type hexachords. The C-type hexachords suggest Du's presence, although the fact that the C-type hexachords are never heard alone suggests that, although Du is nearby, she is not at arm's length (as Ich's failed "Greifen" illustrates). The second half of the song is focused on the B-type hexachord, the hexachord that, as discussed above, Babbitt ([1976] 2003) described as transitioning between the A-type and C-type hexachords that begin and end the cycle.

The surface of "Begegnung" presents the four trichords of the first series in a variety of combinations, generally not in a pattern that obviously interacts with text setting. However, one detail is notable. As the final song derived from the A-type series, "Begegnung" is also the final song whose surface details consistently reference that series. It therefore presents the cycle's final (014) trichords. As shown in Example 3.8, these occur with the text "Blödes Zahmet lahmet fort," the description of a diffident Ich retreating from a possible encounter with Du. These (014) trichords, the trichords most associated with Ich, are interleaved with (025) trichords, the first-series trichord most associated with the second series, with Du and with motion away from Ich. This captures

the moment described in the text: Ich is present, shown in his final action of the cycle, and is moving away from Du, enacting the increasing separation previously described by "Du / Wendest / Fort!" and set using the same (025) trichord.



Example 3.8. *Du*, "Begegnung," mm. 45–46. M=|1, 8| (014). P=|3, 7| (025).

"Verzweifelt" stands at the center of *Du*. The poem presents stone and glass as opposing images. Stone and glass are fixed, cold, and hard—appropriate metaphors for *Du*'s antagonistic metaphysics. The stone is identified as Ich; the glass, far off ("Weit"), is Du.[44] Yet as hard as stone and glass are, neither survives the poem intact: the stone is smashed ("schmettert"), while the glass splinters into fine grains ("grant"). The state Ich is trapped in is represented by the poem's third line: "Die Zeiten stehn." The "times"—plural, perhaps evoking the chaotic multiplicity that haunted "Wankelmut"—are still.

[44] Sullivan (2005, 58) notes the fascinating grammar Stramm uses to associate Ich with stone and Du with glass. The poem's final lines, "Ich / Steine. / Weit / Glast / Du!" present stone and glass as verbs. The sense, although hard to capture in English, is of Ich and Du being stone and glass, respectively, in an active, continuous way.

The stone eternally shatters; the glass eternally splinters. At the heart of *Du*, Ich and Du—whose pronominal identities were never concrete—are depicted as disintegrating.

Coming after the completion of the songs developing the first series and before the songs developing the second, "Verzweifelt" is the still point around which the rest of the cycle turns. Just as the interludes use tetrachordal aggregates to set off the opening and closing songs, which present series, from the interior songs derived from those series, "Verzweifelt" uses tetrachordal aggregates to delineate the two halves of the cycle. Its array is built entirely from (013) and (025), the two discrete trichords shared by both series, and its surface groupings also highlight those two trichords. Although (013) and (025) have, elsewhere in the cycle, represented the A-type and C-type hexachords, respectively, on account of their respective ability to generate those hexachords, their presentation here—together, in equal measure, and without other interfering trichords—suggests a pause in the piece's progression. "Verzweifelt" explores neither Ich's consciousness, nor represents Du or Du's motion away from Ich, but simply presents the two personas frozen, immobile. The simultaneous presence of (013) and (025) facilitates this static image.

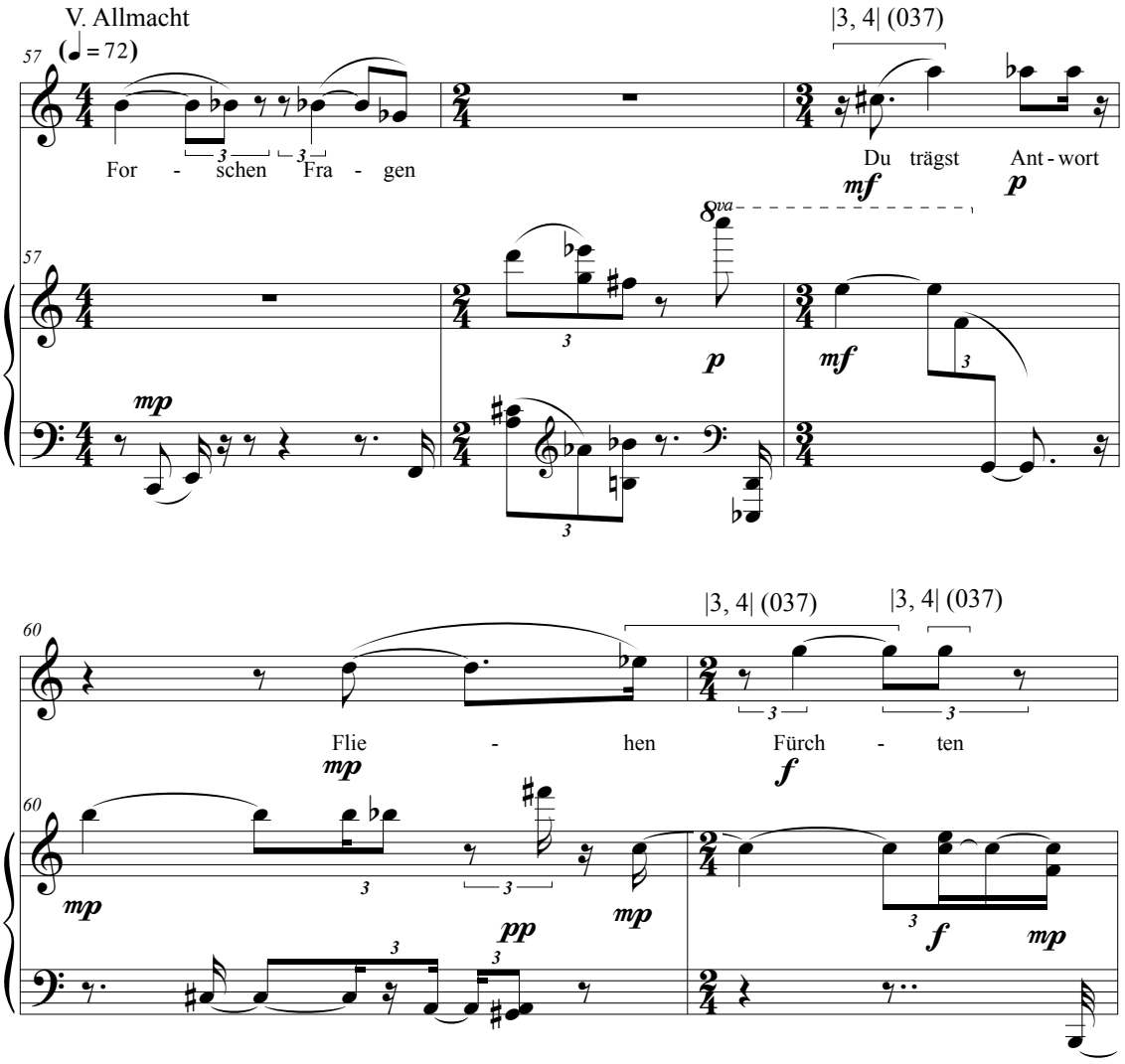
"Verzweifelt"'s array construction is asymmetrical. Although this itself is not unusual, its role as the cycle's centerpiece has implications for the whole. As discussed above, Morris and Alegant propose an RM symmetry extending across the entire cycle. This symmetry holds, with three exceptions: the two interludes and this song.
While the voice and piano exchange their trichords, the song's two arrays are built from distinct hexachords: the first from B-type hexachords, the second from A- and C-type hexachords simultaneously. (As in the interludes, the lines of "Verzweifelt" present all-combinatorial hexachords in addition to the tetrachords necessary for its (4^3) aggregates.)

The boundary between the arrays falls at the line "Die Zeiten stehn." The deployment of the hexachords follows a disambiguation in the poem. The opening lines introduce the images of the stone and the glass but do not immediately associate them with Ich and Du; accordingly, a hexachord not closely associated with either persona is appropriate. The second half of the poem clarifies the link between the images and the personas, and therefore the trichordal materials of the first half of the song are rearranged to form A-type and C-type hexachords simultaneously—the first time they have appeared simultaneously since the opening of the cycle—as a representation of the dual images.

"Allmacht" launches the second half of the cycle, a fact witnessed in its first three notes, which present a (015) ordered |1, 4|, the ordering in which that trichord appears in the second series. Although we have not yet heard the second series, the contrast with previous (015)s, which are consistently ordered |4, 7|, is readily audible. The poem celebrates Du's power, alternating lines presenting challenges with lines discussing Du's almighty ability to overcome those challenges. While Ich is probably still the narrator of this poem—presumably the extraordinary powers ("Du siegst Gott!") ascribed to Du are a function of his image of her—his persona is remarkably absent. There are no first-person pronouns, a situation nearly unique in the cycle thus far, nor is there any suggestion of Ich's presence. (There are also no first-person pronouns in "Wiedersehen," but "Wiedersehen" clearly depicts a sighting of Du from the perspective of Ich.)

Ich's absence is reflected in the transition to trichords derived from the second, C-type series. Notably, however, the second half of the song presents A-type hexachords, first in the voice part and then in the lower registers of the piano. These hexachords are introduced with the text "Wahn Verzweiflung" ("delusion despair"). This corresponds to a shift in the text. Throughout, odd-numbered lines of the poem have presented a series

of challenges, but there is a shift at this point from more general problems to conditions that might be described as Ich's reaction to those concerns. For instance, two lines before "Wahn Verzweiflung" is the line "Falsch und Tücke" ("falsity and malice"). In the context of the cycle, one may well understand the delusion and despair to be Ich's, but the falsity and malice are presumably conditions afflicting him (and perhaps the rest of the universe), not a description of him. Accordingly, the use of (013) trichords and A-type hexachords to set "Wahn Verzweiflung" and "Tod und Elend" ("death and misery"). is appropriate. The last two pairs of lines return to more general concerns. A-type hexachords continue in this final section of "Allmacht," but less prominently, in the lower registers of the piano.



Example 3.9. *Du*, "Allmacht," mm. 57–61, with (037)s indicated

Babbitt ([1976] 2003) draws attention to the opening of "Allmacht," and particularly the setting of the word "Fürchten," shown in Example 3.9.[45] He describes the first vocal hexachord of the song as the cycle's "harmonic apogee," on account of its minimal pitch-class intersection with the opening hexachord. It is quite true that this hexachord has but one pitch class in common with the opening {C, C♯, D, D♯, E, F}, but

[45] Babbitt ([1976] 2003, 353).

it is hard to understand the cycle as reaching toward an apogee of minimal intersection.[46] The complementary hexachord that follows thus has five pitch classes in common with the opening hexachord, and only one distinguishing pitch class: the G of "Fürchten." Babbitt describes the "dynamically aggressive" setting of the word as giving "some characteristic sense of the relation of the local to the large."[47] While I have yet to find evidence that Babbitt's description of the use of dynamics here amounts to a general strategy in the piece, another aspect of the setting of "Fürchten" is noteworthy—perhaps also noteworthy enough to justify the ***f*** dynamics. As indicated in the example, the second syllable of "Fürchten" coincides with the first (037) simultaneity in the piece (although, as also indicated in the example, two previous (037)s formed by adjacencies appear in the song). (037) is the characteristic set class of the piece's second, C-type series.

From its title, or even just its first few notes, it is clear: "Traum" is in a world apart from the rest of *Du*. The dream—presumably Ich's—is filled with natural imagery: bushes, wind, stars, blossoms, scents, sprays, and showers. It is not an unequivocally pleasant dream, particularly toward the end: the image of winds "schnellen prellen schwellen" might be frightening, and the final lines, with ripping sheets ("Tücher reißen") and falling into the night ("Fallen schrickt in tiefe Nacht"), might describe waking from a nightmare with a start. But Ich's horrible reality has been, at least temporarily, escaped. Indeed, the Ich/Du relationship seems completely absent from this poem. Uniquely among the seven poems Babbitt selected for *Du*, there are no pronouns in "Traum" whatsoever.

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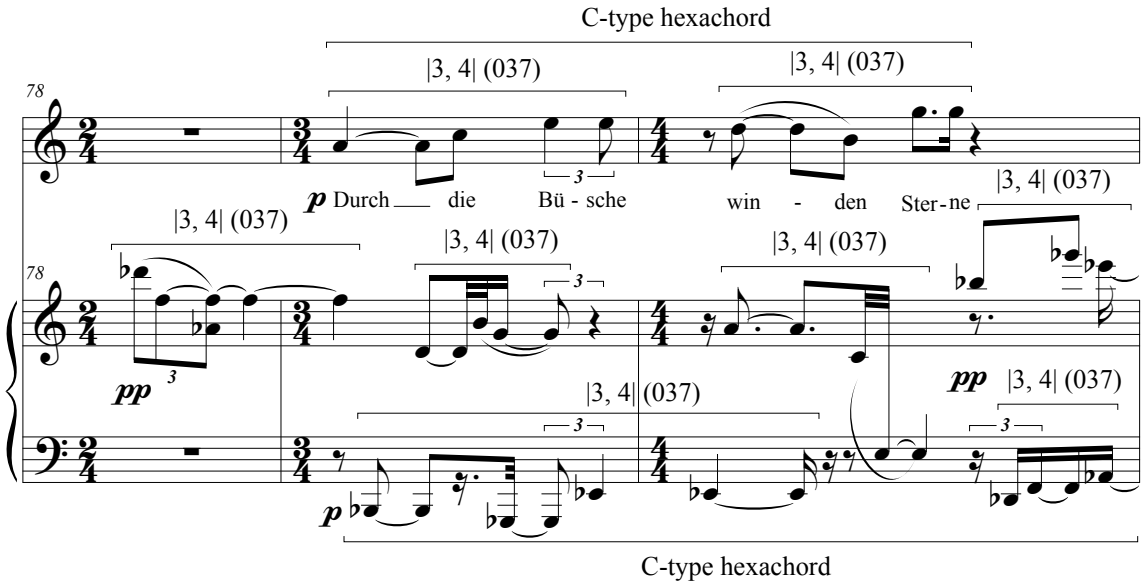
[46] The opening vocal hexachords of each song after the first have, respectively, three, four, three, one, three, and three notes in common with the opening vocal hexachord of "Wiedersehen." The opening hexachord of "Allmacht" is indeed uniquely distinct from the opening hexachord, but this distinction does not seem to be the result of a process.
[47] Babbitt ([1976] 2003, 353).



Example 3.10. *Du,* "Traum," mm. 78–80, with array trichords and hexachords indicated

"Traum" is the song in *Du* most thoroughly associated with the second series and its C-type hexachord. In its opening, shown in Example 3.10, its array is derived from members of (037), the unique trichord in the second series that is not even a subset of the first series, and these are compounded, at the beginning, into C-type hexachords.[48] There are a number of (037) simultaneities in "Allmacht," as discussed above, but they appear briefly and within a context generally focused on other sonorities. The lingering on (037) in "Traum," and its gentle, isolated presentation at the beginning of the song, marks a sharp contrast with the preceding songs in the cycle.

The dream of "Traum" draws Ich out of the world that has tormented him. Accordingly, the song presents the apotheosis of material that has been associated throughout the cycle with states outside of Ich's mind. Most of the situations set using the C-type hexachord or its materials have been linked to Du, or Du's motion away from Ich.

[48] In addition to the hexachords indicated in Example 3.10, the upper and middle registers of the piano also present C-type hexachords.

But "Traum"'s heavy use of material characteristic of the second series suggests to me that the series and its corresponding set classes are linked to a class of things, a class encompassing the world generally apart from Ich's waking terror, of which Du is only an example.

The vocal part of the concluding song, "Schwermut," presents the second series. In this sense, it represents the clarification, the final disambiguation, of the second half of the cycle.[49] As with the first song, the discrete (013) and (025) trichords that form every line are arranged such that C-type hexachords constantly coexist with A-type hexachords: beneath the voice and upper piano, the lower two piano registers persist with the A-type hexachord. This suggests that, as much as this cycle has presented a sort of progression—toward the second series, and out of Ich's head—this final song also contains a touch of synthesis.

This touch of synthesis is also present in the end of the poem. "Sterben wächst / Das Kommen / Schreit! / Tief / Stummen / Wir"—*dying grows, what is coming screams! We are deeply silencing*. The universe's hostility has not abated. But Ich, it seems, has learned his place in it and with respect to Du. "Schwermut" is melancholy, as its title suggests, but contains only a little of the hysteria that had haunted some of the earlier poems. The final word of the poem, and thus of the cycle, is "Wir." This is the only first-person plural pronoun in the entire cycle—in fact, it is the only "wir" in all of Stramm's *Du*. In context, the pronoun can hardly be taken as indicating unity or reconciliation. But the final lines are, at last, a precise description, from Ich, of his relationship with Du.

[49] See Mead (1994, 110) for a discussion of the role "Schwermut" in disambiguation.

TERMS OF ENGAGEMENT

Composition for Four Instruments and *Du* challenge the hierarchical, organicist paradigm that shapes the "received model" for analyzing pieces with trichordal arrays. Neither can be straightforwardly understood as the development of the segmental or discrete trichords of an underlying series. Given the complications involved, analysts of *Composition for Four Instruments* or *Du* might well choose not to try to describe those pieces' trichordal arrays as derived from an underlying series and, indeed, some have. But as the discussions above should demonstrate, I feel this would be a mistake. The path toward understanding the series in *Composition for Four Instruments* is convoluted, but it ultimately reveals much about a range of phenomena. *Du* does not cohere into anything approaching a unified, nested hierarchy pursuing the implications of an originary source, but *Du* also presents a poetic context in which a neatly derived musical hierarchy would have been unfitting. Rather than ignoring this context and persisting with his usual compositional practice of the early '50s, or fully abandoning a hierarchical approach, Babbitt turns the possibilities of trichordal derivation toward realizing the poem's dichotomy, creating two distinct series as a mirror of the divergent personas in the poem.

The difficulties *Composition for Four Instruments* and *Du* present for hierarchical analysis are not precisely like those in Babbitt's other pieces, even his other pieces with trichordal arrays. But these compositions do demonstrate how the hierarchical model can retain relevance, even in situations that complicate the model. The relationship between the surface and the series, for instance, is rarely straightforward; text-setting concerns often coexist in an uneasy relationship with the starkly different concerns shaping serial hierarchy. (*Philomel* is fascinating in this regard.) Although some pieces respond better

than the two under consideration here, few if any can be fully and satisfactorily explicated by hierarchical analysis. The complications that arise, the divergences between hierarchical expectations and actual events in the piece, are almost invariably revealing, uncovering associations, dependencies, and points of tension, such as the problematic (027) in *Composition for Four Instruments*. That is, Babbitt's compositions do not realize a hierarchical paradigm as much as they *engage* with it. Understanding these compositions as hierarchical—to the extent that this is possible—is thus not a matter of demonstrating their coherence, unity, or logic, as much as it is seeking out the terms of engagement.

Chapter Four

The Problem of Completeness

INTRODUCTION

In numerous remarks throughout the final decades of his life, Babbitt repeated a statement that described what he felt were certain basic requirements of music in general and fundamental goals of his compositional techniques in particular. Although this statement is varied somewhat in its many manifestations, the core concepts are presented both fully and with unusual concision in one of its first appearances, from the program notes to an early performance of *Dual*:

> It is just the progression from the local to the global in relational implications which should provide the listener with the means of achieving that cognition of cumulative containment and successive subsumption which human memory in general, and musical memory in particular, requires for a musical work to be entified, eventually, as a unified, closed totality—as an all of a piece of music.[1]

This chapter will investigate how Babbitt's music can be understood as a "unified closed totality—as an all of a piece of music." To a significant degree, his theoretical writings and compositional techniques—basically, his vision of the twelve-tone system—do indeed suggest an answer, but an answer that only accords with his actual music to a limited extent. The conceptual framework he outlines clearly defines what should be

[1] Qtd. in Sandow ([1982] 2004, 254). The occasion for which these program notes were written was a 22 February 1982 performance by the Group for Contemporary Music. Further iterations of this statement can be found in Babbitt ([1984] 2003, 386), Babbitt (1987, 144–45), Babbitt (1991a, 129), and Babbitt ([1991b] 2003, 441 and 446). Although the specific formulation of the ideas presented here seems to have originated around 1980, it has numerous precedents, including Babbitt ([1952] 2003, 25), Babbitt ([1961] 2003, 84), Babbitt ([1970] 2003, 254), and Babbitt ([1979] 2003, 372).

understood as a complete statement in his chosen musical syntax, but only certain of his compositions, or certain aspects of other compositions, are actually bounded by this definition. Many extend beyond their systematically normative endpoint, many others are cut off before the endpoint has been reached, and still others are compiled from multiple discrete units, not a single, "closed" musical whole. The ways in which Babbitt's music does not accord with the implications of his theories—ways in which his pieces challenge notions of completeness suggested by those theories—will lead to a reevaluation of the role and importance of those theories in his music. Moreover, as perceived formal progression in Babbitt's music has often, by Babbitt and others, been understood in terms of the structures that define hierarchical completeness, this investigation will ultimately lead to a reevaluation of temporality in Babbitt's music, drawing from the work of Jonathan D. Kramer.

The quotation given above indicates that Babbitt thinks processes and limitations of human cognition determine what is required for a complete piece. Cognition, he feels, requires hierarchy, a completely nested hierarchy in which each level is "contained" or "subsumed" within a deeper level of structure. It is through these means alone that musical memory can "entify" a musical work—can conceive of it as an objective whole. Listening, in the terms Babbitt discusses it, is thus computational, as discussed in Chapter 1: it is the task of a listener to competently form, remember, and hierarchize chunks of musical information. These cognitive demands have compositional implications: hierarchy must be created by progressing outward, compositionally, "from the local to the global," generating a sequence of levels that are not only nested, but related, driven by "relational implications." A later program note for *Dual* clarifies and intensifies this

statement: "relational implications" is replaced by "relational replications," indicating the extent to which Babbitt feels self-similarity is a necessary component of this hierarchy.[2]

This statement thus expresses the synthesis of two of Babbitt's primary influences, as discussed in Chapter 1. The idea that a piece develops outward in hierarchical, self-similar stages is quite directly Schenkerian, but the justification for this ontology is its ability to facilitate cognitive chunking and hierarchization. The hierarchy crucial to both Schenkerian organicism and the cognitive model that Babbitt propounds does indeed suggest, as the quotation above intimates, what defines a complete piece, a "closed totality," for Babbitt. Pieces should be built using a progressively derived hierarchy built on self-similar principles. These principles will determine what defines a level—and, accordingly, what defines the largest, piece-spanning level—as complete. But examination of Babbitt's music reveals that hierarchical logic actually does not, in general, determine a piece's completeness. Therefore, the challenges to systematic completeness in Babbitt's music result in challenges to the function and status of both hierarchical organicism and the computational model of listening as models for understanding his music.

The basic level-defining principle in Babbitt's compositional hierarchies is the principle of exhaustive completion. The principle, abstracted from the initial exhaustive list that is a twelve-tone series, is extended to every aspect of Babbitt's compositional technique. Accordingly, exhaustive completion provides us with a reasonable hypothesis for what defines a completed piece, a "closed totality," for Babbitt. Exhaustive lists are

[2] This program note was prepared for a 14 March 1984 performance at the Library of Congress. The program for that concert is in the "Dual" folder of the Milton Babbitt Collection.

"cumulatively contained" within one another, and when the largest list is complete, the piece should be over.

The exhaustive lists further suggest a model for understanding formal progression in Babbitt's music. A listener may be able to track these lists, perhaps following the narratological implications some of them seem to inspire. Babbitt himself occasionally described the varying clarity or ambiguity of a piece's series, a process embedded in all-partition arrays, in a quasi-narratological way.[3] As he explains, "disambiguation [of the piece's series] is itself an element in the overall automorphic progression."[4] Babbitt elaborates this in a 1998 interview with pianist Robert Taub, describing *Reflections* as embodying a "certain kind of musical progression" in which a "confused" beginning begins a process of "disambiguation," which gradually "unweaves" into a "very explicit statement of the materials of the piece."[5] Other sorts of piece-spanning exhaustive lists may also lend themselves to narratological construal. Dubiel's analysis of *Composition for Four Instruments*, for instance, constructs a narrative description of that piece's exhaustive list of instrumental combinations.[6] To the extent that one is aware of the principle of the

[3] As discussed in Chapter 1, the "partial ordering" of the various partitions in an all-partition array creates this varying degree of clarity. In the (12^1) partition the series is simply laid out monophonically, and in other partitions with long segments the series is, similarly, relatively clear. In the more even partitions—(1^{12}), for instance—the series might be almost completely obscured.

[4] Babbitt (1997, 133).

[5] "New Music Series: Piano Concerto No. 2" (1998).

[6] Dubiel (1992, 83–91). It should be noted, however, that Dubiel's analysis of *Composition for Four Instruments* is presented within a discussion of what he calls the "animation of lists," which complicates the image somewhat. Roughly, Dubiel aims to both use the list of instrumental combinations to construct a narrative through the piece while simultaneously discussing how the piece challenges, subverts, or transcends this list. Likewise, Dubiel's analysis of *Allegro Penseroso* similarly seeks to attribute an "aspect of succession, of progression" to the piece's exhaustive list of registral combinations, while simultaneously recognizing that "its significance for our experience is intermittent and

largest list—admittedly more likely with the list of instrumental combinations in *Composition for Four Instruments*, for instance, than with the list of partitions in an all-partition array—one might conceivably come to expect that the completion of the largest list will herald the completion of the piece as a whole.

Often enough, however, the principle of exhaustive completion does not in fact determine the overall scope of a piece. In several pieces, a large-scale exhaustive list is either preceded or followed by other things. As these pieces seem to extend beyond their systematically normative boundary points, they will be called "over-complete." In other pieces, multiple successive exhaustive lists span the piece but are not contained within an overarching exhaustive list. Accordingly, these pieces will be called "multiply complete." Finally, many other pieces present the beginning of an exhaustive list that is cut off before its completion; these, in turn, will be called "under-complete."[7] These situations are common enough to cast doubt on the normative status of these lists, the hierarchy that contains them, and the linking of a piece's completeness with the completion of exhaustive lists.

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inconsistent," and cautioning that one should resist "imposing . . . a degree of teleology on this music that the music may not sustain" (2008, 130).

[7] Babbitt was not the first composer to begin permutational patterns and cut them off before completion. As described in Harrison (1988, 43), "The majority of Bach's works which use triple counterpoint do not employ all six possible arrangements." Nonetheless, the stakes are considerably higher in Babbitt's music. Harrison continues, "Rather, triple counterpoint is generally a secondary means of organization in the service of other structures—harmonic, thematic, and so forth." Yet in Babbitt, there are no significant large-scale systematic structures apart from the exhaustive lists. The widespread under-completeness in Babbitt's music represents not the sidelining of a secondary "means of organization" in favor of a primary one, but the collapse of the primary means.

Primary Exhaustive List: The Sixty-Three Combinations of Six Registers

A6–A#7	•		•		•		•		•		•		•		•			•		•		•		•		•		•	•	
G5–G#6		•	•		•		•		•			•		•		•		•		•		•		•		•		•		•
F4–F#5		•		•	•		•		•		•			•		•		•	•		•			•		•		•	•	
D#3–E4		•		•		•	•		•		•		•			•		•		•	•		•		•		•		•	
C#2–D3		•		•		•		•	•		•		•		•			•		•		•	•			•	•		•	
B0–C2		•		•		•		•		•	•		•		•			•		•		•		•		•		•		•

A6–A#7	•		•			•		•		•		•		•		•	•		•		•		•		•		•		•		•
G5–G#6		•		•	•		•		•			•		•		•	•		•			•		•		•		•		•	•
F4–F#5		•		•		•		•		•	•		•			•		•		•	•		•		•			•		•	•
D#3–E4	•			•	•			•		•		•		•	•		•			•	•			•		•	•		•		•
C#2–D3		•	•			•	•			•	•			•		•		•	•			•	•			•	•			•	•
B0–C2		•		•		•		•	•			•	•		•			•		•		•		•	•			•	•		•

Coda: Six Additional, Repeated Combinations

A6–A#7	••	••	••	••	••	••
G5–G#6	••	••	••	••	••	
F4–F#5	••	••	••	••		
D#3–E4	••	••	••			
C#2–D3	••	••				
B0–C2	••					

Figure 4.1. List of registral combinations in *Allegro Penseroso*.[8] Each point represents a pitch-class aggregate.

OVER-, UNDER-, AND MULTIPLE COMPLETENESS

Babbitt's late piano piece *Allegro Penseroso* (1999) presents both over-completeness and under-completeness in one or another of its dimensions. As shown in Figure 4.1, the piece begins by presenting the sixty-three combinations of six registers arranged into thirty-one complementary pairs and a final *tutti*.[9] The piece's pitch structure is idiosyncratic: neither a trichordal array, nor an all-partition array, nor indeed an array at all in any sense of aggregate structure larger than the combinatorial pairs of series contained within each register. In each section, each sounding register contributes

[8] Adapted from Dubiel (2008, 127).
[9] See Dubiel (2008, 124–31).

one aggregate, a "Schoenbergian" hexachordal aggregate in which each series contributes six notes, and this is the only contrapuntal technique of aggregate formation in the piece. Without an encompassing array structure, the sequence of registral partitions becomes the piece's sole over-arching exhaustive list.

However, the piece ends with six additional combinations of registers, shown at the bottom of Figure 4.1. Taking the sixty-three combinations of six registers as the piece's largest exhaustive list, these six additional, repeated combinations at the end of the piece make the piece appear over-complete. These final, extra combinations might be considered a coda, coming after the primary formal structure is complete and serving rhetorical ends that contribute to a sense of closure. The piece begins with the highest register, isolated, before filling in the remaining registers and, eventually, all combinations of those registers. This process culminates in the *tutti*, with the fragmented registers finally coming together after having been held apart for the entire piece up to that point. The final, additional registral combinations that follow gradually bring the piece back to its starting point. Moving more slowly now, each register contributing two aggregates (which is to say, each line completing a series form), the piece retreats toward the top of the keyboard.

Meanwhile, and characteristically, the rhythmic material is precisely equivalent to the pitch-class material, and just as the pitch-class counterpoint is delineated by six registers, the time-point counterpoint is delineated by six dynamics. There is one change from usual practice here: most often in Babbitt's later pieces, as seen above in *None but the Lonely Flute*, pitch-class material articulated by high registers corresponds to rhythmic material articulated by loud dynamics, while in *Allegro Penseroso* the situation is inverted. This allows the opening to be isolated in the highest register and the softest dynamic,

heightening the sense the piece promotes, as Dubiel describes it, of "starting from 1."[10] As shown in Figure 4.2, the dynamics begin precisely the same pattern as the registers, reflecting the equivalence of the pitch and rhythmic structures. But over the course of the piece, the dynamics only present the first twenty-four of the sixty-three combinations in the pattern. Thus, if exhaustive lists are the measure of completeness, from the perspective of pitch structure and register *Allegro Penseroso* appears over-complete, while from the perspective of rhythmic structure and dynamics it appears under-complete.

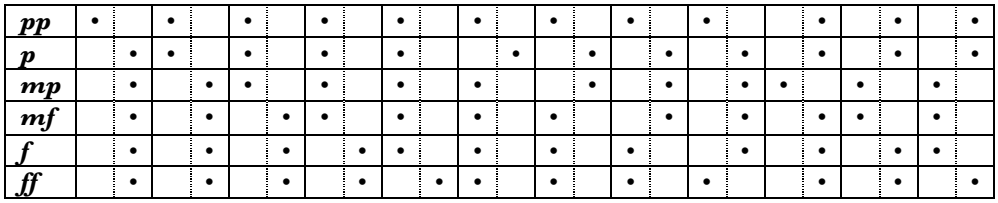

Figure 4.2. List of dynamic combinations in *Allegro Penseroso*. Each point represents a time-point aggregate.

Composition for Four Instruments provides another example of a piece that is over-complete in one dimension, in this case the dimension of rhythm. The pitch material for *Composition for Four Instruments* is presented in fifteen successive trichordal arrays, the latter seven retrograding the partitioning of the first eight. The rhythmic structure is based on analogous material, with transformations of the duration series <1, 4, 3, 2> combined and partitioned identically to the trichords of the trichordal array.[11] These rhythmic arrays unfold much more slowly than do the pitch arrays, and therefore the whole piece

[10] Dubiel (2008, 124).
[11] Mead (1994, 67–68).

presents just two rhythmic arrays, the second the retrograde of the first (echoing, in its retrogression, the change of partitioning of the trichordal arrays).[12]

The second rhythmic array is completed in measure 381, twenty-five measures from the end of the piece, and as the rhythmic material that follows is not derived from the hierarchy of exhaustive lists that form the array, the rhythmic structure of the piece as a whole appears over-complete. The rhythms of the final twenty-four measures, shown in Example 4.1, are a drastic simplification of the earlier material, a simple succession of basic transformations of the original rhythmic pattern presented monophonically—one after another—and not superimposed or augmented. The result is that the final measures sound simple, clear, and calm, a gentle denouement after the tumult of the rest of the piece. One is tempted to call this a coda, although it is really only one from the perspective of the rhythmic dimension: the pitch array structure is precisely complete, finishing with the last note of the piece.[13]

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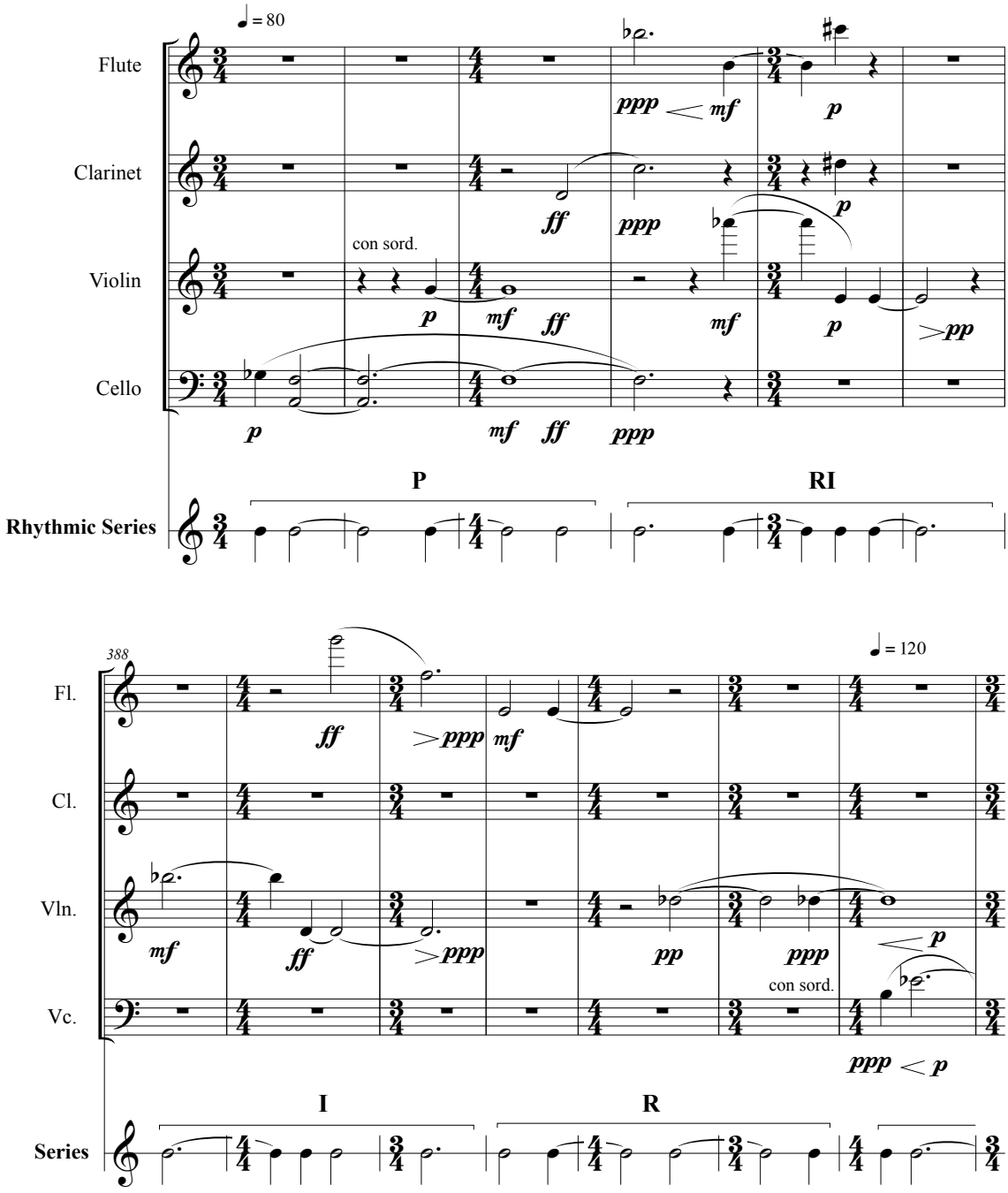
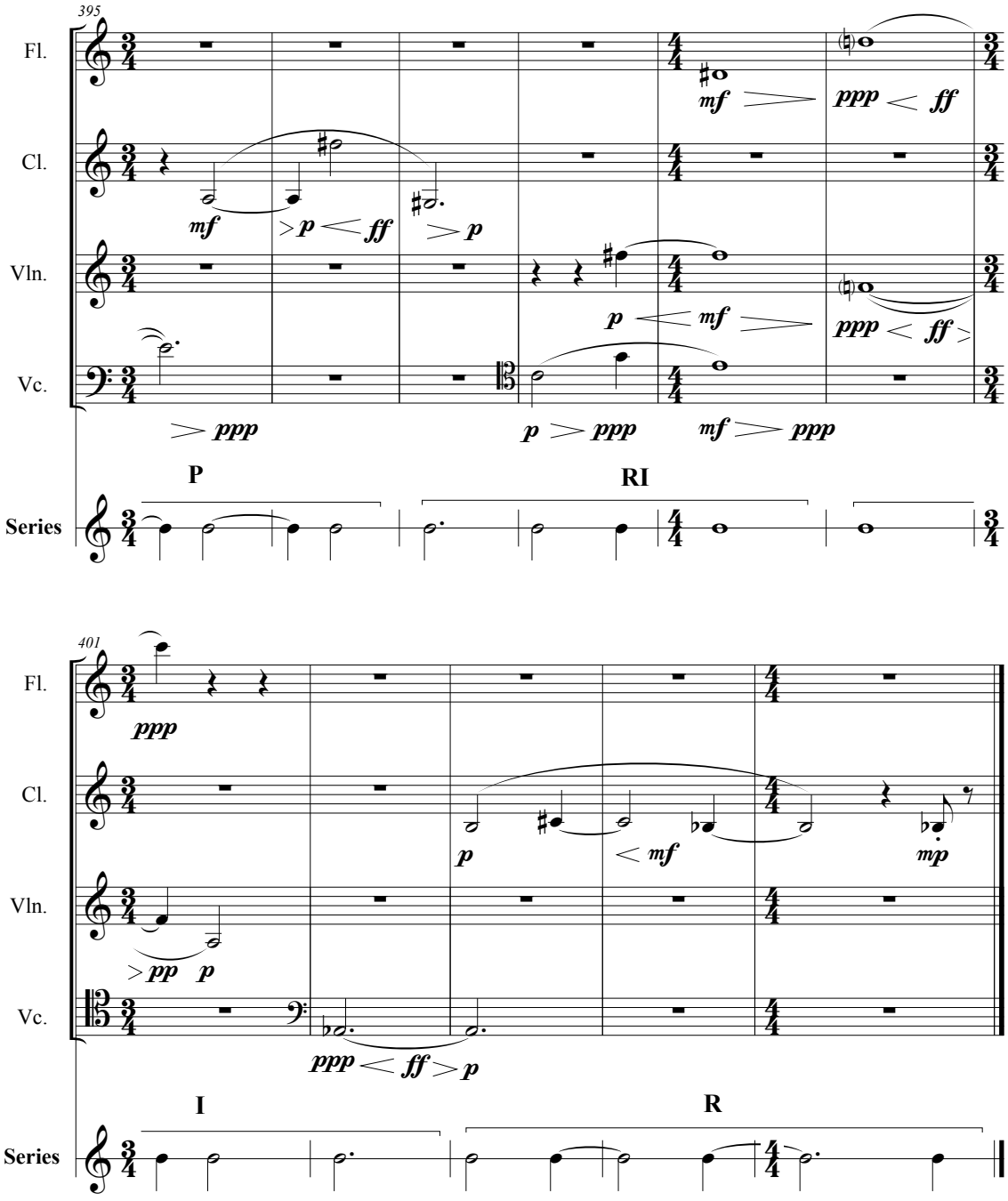
[12] Structural palindromes like this, in which the second half of a piece uses the retrograde of the array of the first half, are quite common in Babbitt's output (although they are not composed out as literal palindromes). The large-scale durational patterns of *Composition for Tenor and Six Instruments* and "Sounds and Words," discussed in Chapter 2, provide additional examples. Palindromes can be considered a proper, if simple, application of the principle of exhaustive lists, in the sense that they present all possible ways of presenting an array using only the R transformation. They also relate to another important concern of Babbitt's, to be discussed below, in that he views a return to a piece's opening as a technique for signaling closure.

[13] In the second movement of *Three Compositions for Piano* (1948), written just before *Composition for Four Instruments*, Babbitt uses a similar technique. The introduction, interludes, and coda all present straightforward, monophonic presentations of the piece's duration series (see Mead [2011, 17–22]).



Example 4.1. *Composition for Four Instruments*, mm. 382–405, with transformations of the rhythmic series <1, 4, 3, 2> indicated. Score in C.



Example 4.1, cont.

A Solo Requiem is also over-complete from a rhythmic perspective, but unlike the over-completeness seen in *Composition for Four Instruments* or *Allegro Penseroso*, *A Solo Requiem* begins with material appended to the array, rather than ends with it. Accordingly, the

extra material might be described as an "introduction"—although once again, only from the rhythmic perspective.

From measure 4 until the end of the piece, the time points go through two full all-partition arrays, corresponding precisely to the arrays supporting the pitch material of the first two songs in the cycle. But the first three measures use time-point material not drawn from the array. Example 4.2 gives the first page of the piece's sketch. The bracketed upper staves sketch the piece's two piano parts. The lowest line indicates the time points used in this passage. As can be seen, there is no time-point array here, but rather only a single line, <A, B, C, E, D, G, C♯>, proceeding through the first seven notes of a member of the piece's series class.

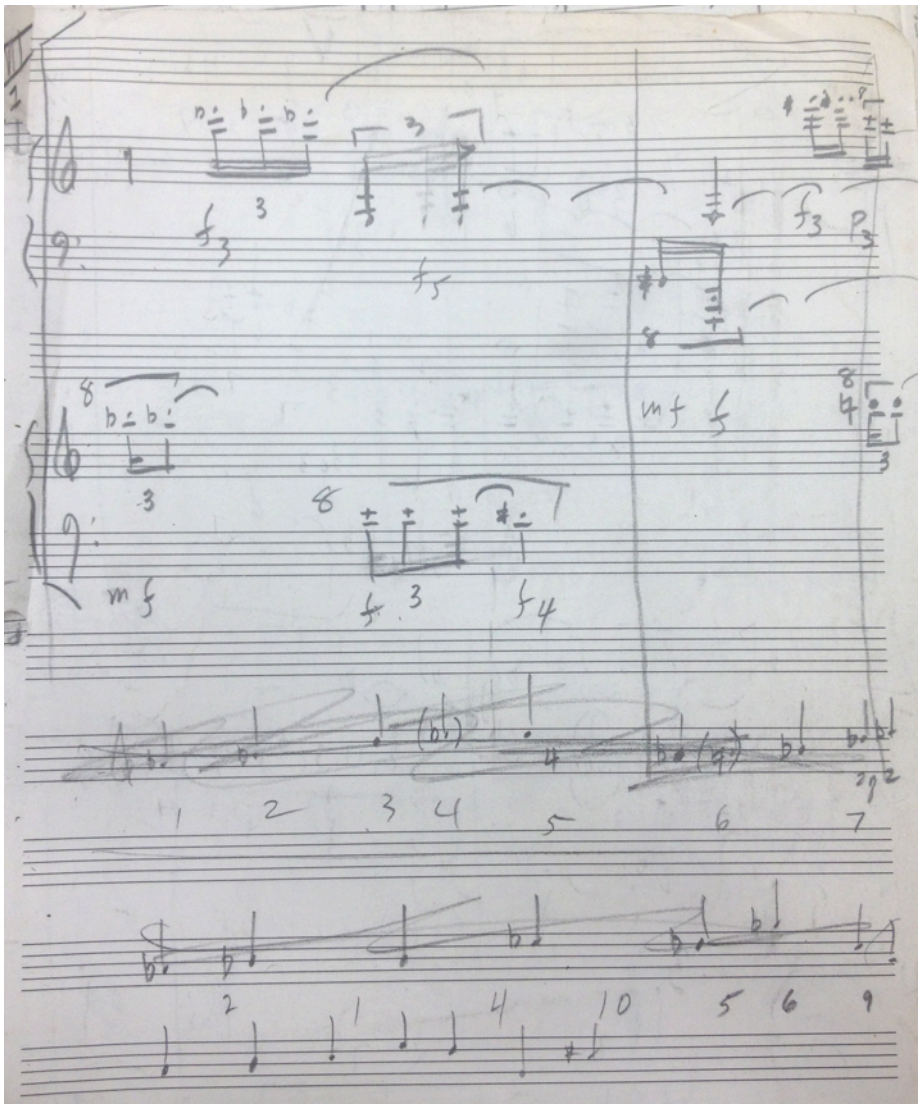
The sketch reveals that at one point Babbitt planned this opening sequence of time points to be one "half step" lower. The crossed-out line of notes directly above the time-point line that was actually used is <A♭, B♭, B, E♭, D♭, G♭, C, A>. This is the beginning of the series that appears in the (12^1) partition of the piece's first array. (The significance of the crossed-out line above that, directly under the sketch of the second piano part, is obscure to me; presumably it represents an even earlier attempt at sketching the time points of this passage.) One plausible reason this series, with all its significance later in the piece, was discarded at the beginning, is so that there could be a link to the array proper. The first time point of the time-point array appears with the entrance of the voice in measure 4. This is nine sixteenth notes after the final attack of the "introduction," corresponding to the interval 9 between the seventh and eighth time points of this series. That is, the next time point in the series form presented at the bottom of Example 4.2 is B♭, and the voice's first time point is notated as B♭.

One plausible motivation for this introduction in the time-point dimension is that it gives Babbitt an opportunity to construe dynamics broadly, apart from their usual function of delineating time-point lines. Indeed, as can be seen in Example 4.2, Babbitt sketches dynamics directly into the piano parts.[14] This is unlike his usual practice during the '70s, '80s, and '90s, as exemplified above in Example 1.4, in which dynamics are indicated by the time-point array at the bottom of each system. It is not apparent that there is any systematic rationale guiding these choices of dynamics. What is apparent, however, is that Babbitt abandoned this dynamic scheme sometime between this sketch and the completed manuscript. As can be seen in Example 4.3, the entire opening passage, up through the entrance of the voice, is ***pp*** in the finished score. Although the result is reminiscent of the ***pp*** beginning of *Allegro Penseroso*, the decision seems more likely to be motivated by the piece's text and genre. The *Requiem* begins with a mysterious shimmering scattered across the two pianos' registers, every note sustained throughout the passage. Its ghostly effect is heightened by the diminished seventh chord that opens the piece, an unusual sonority in Babbitt's practice (although common in this piece) that is underlined by the repetition of each of its notes. Although the sketch in Example 4.2 reveals that Babbitt did not initially write this time-point "introduction" with a consistent ***pp*** in mind, it is not an effect he could have achieved within the bounds of the time-point array.

[14] In Example 4.2, "f_3," "f_4," "f_5," and "p_3" appear to be shorthand for ***fff***, ***ffff***, ***fffff***, and ***ppp***. Babbitt uses this shorthand elsewhere in his sketches.

Piano One:

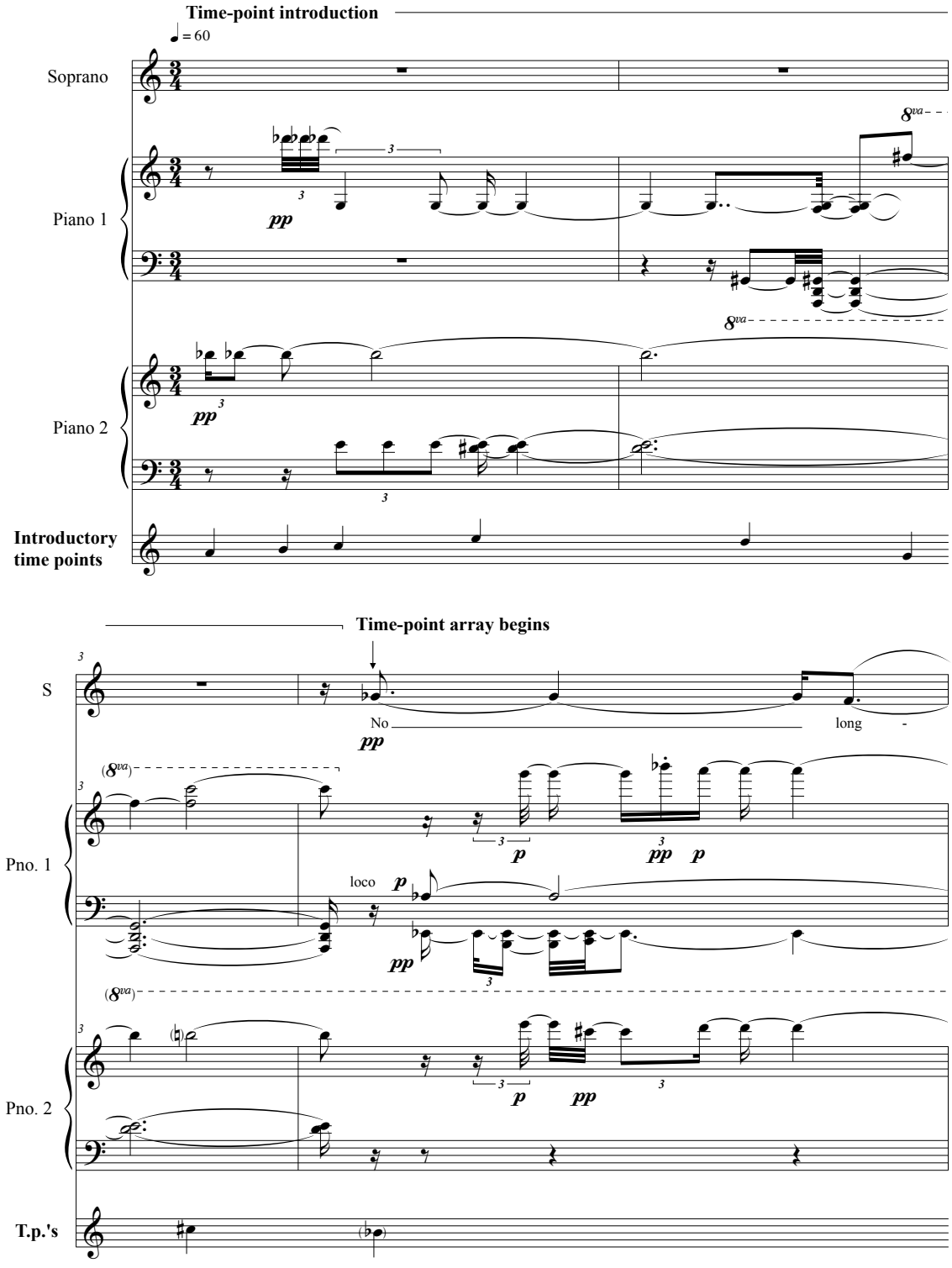
Piano Two:



Rejected time-point line:

Actual time-point line:

Example 4.2. Sketch for *A Solo Requiem*, p. 1 ("Solo Requiem" folder, Milton Babbitt Collection)



Example 4.3. *A Solo Requiem*, mm. 1–4. Introductory time-points are indicated in the manner of Babbitt's sketch of the passage: pitch-class intervals correspond to durations measured in sixteenth notes.

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The hierarchical vision sketched in Chapter 1 depends on the nesting of exhaustive lists within larger exhaustive lists. In certain pieces, however, multiple exhaustive lists are presented in succession at the largest level, not contained within any global exhaustive list. An example of one of these "multiply complete" pieces is *My Ends are My Beginnings.* Over the course of the piece, the time points present just one all-partition array. Therefore, from the perspective of rhythm, the piece is precisely complete. Meanwhile, the pitches complete three distinct all-partition arrays (of which the first is equivalent to the time-point array). This multiply complete arrangement appears to have been motivated, or at least treated, programmatically: as detailed by Mead, the hexachordal distribution of the three pitch arrays forms a large-scale ABA pattern—reinforced by the use of clarinet for the first and third arrays and bass clarinet for the second array—reflecting the piece's title.[15]

Another example of a situation that appears multiply complete can be found in the pieces that combine multiple types of arrays. Babbitt began to combine all-partition arrays and trichordal arrays in *Paraphrases* (1979) and continued in numerous pieces over the next two decades, including *The Head of the Bed* (1982), *Groupwise* (1984), *Lagniappe* (1985), *Consortini* (1989), *Manifold Music* (1995), and *When Shall We Three Meet Again?*. Although trichordal arrays and all-partition arrays are each separately based on exhaustive lists, they do not combine into any larger, piece-spanning exhaustive list. The title of the first of these pieces suggests an interpretation: the trichordal arrays are derived

[15] Mead (1994, 189).

from, and thus can be said to paraphrase, the series presented in the all-partition arrays.[16] Generally, the trichordal arrays appear to be—and are typically described as—elaborations of the content of the underlying series, and in this respect these pieces remain conceptually unified. But they no longer present a hierarchy of exhaustive lists.[17]

———

The discrepancy between the treatment of pitch and rhythm seen in many of the aforementioned examples—namely, that the rhythmic material unfolds at a slower rate than pitch material—is a standard feature of Babbitt's music, with only a handful of exceptions. Babbitt never explained why this should be the case, but plausible explanations touch on both stylistic and systematic concerns. Stylistically, this discrepancy would appear whenever there are more pitches sounded simultaneously than there are time points reiterated with different pitches.[18] As Babbitt systematically adopted the technique of cross-references seen in *None but the Lonely Flute* in Chapter 1, the problem intensified, for the technique demands that numerous pitches fall between structural time points. The combined results of these concerns is that even though pitch and rhythmic structures typically present equivalent material, the pitches tend to move through this material considerably faster. Therefore, at least one dimension will usually appear either under-complete, over-complete, or multiply complete. The precise coordination of pitch

[16] In the folder marked "Para," in the Milton Babbitt Collection, there is a note card containing an apparent draft for program notes or a pre-concert talk in which Babbitt describes the pertinence of the title of *Paraphrases* thusly. Much more on *Paraphrases* can be found in Mead (1984, 326–31).

[17] One might similarly consider as multiply complete certain of Babbitt's earlier pieces that concatenate different types of arrays, such as *Three Compositions for Piano*, *Composition for Twelve Instruments*, Woodwind Quartet (1952), *Vision and Prayer*, and *Philomel*. *Glosses* also combines different kinds of arrays—arrays of series forms and trichordal arrays. In these pieces as well, the discrete arrays are not subsumed within a global exhaustive list.

[18] This point is made in Schubert (1994, 73–75), which notes several attempts to deal with this discrepancy in *Three Cultivated Choruses* (1987). See also Scotto (1988, 10–12).

and rhythm, which would facilitate having both dimensions present complete structures, is attempted in a few pieces from the 1960s (including "Sounds and Words" and *Post-Partitions* [1966]), but did not become a general feature of Babbitt's practice.

Throughout the 1970s, in pieces such as String Quartets no. 3 (1970) and no. 4, *Tableaux* (1973), *Arie da Capo* (1974), *A Solo Requiem*, *My Ends are My Beginnings*, and *More Phonemena* (1978), Babbitt dealt with this discrepancy as described in *My Ends are My Beginnings*. The time points complete arrays of their own, but fewer arrays than the pitches complete.[19] Typically, the time points present arrays equivalent to the first one or two pitch arrays. There is usually a fixed ratio between the rates of unfolding of the pitch and rhythmic arrays.[20] But by the mid-'80s, Babbitt changed his priorities. The pitches in these later pieces, with a handful of exceptions to be discussed shortly, express complete arrays. But the time-point arrays, still proceeding more slowly than the pitches, are left under-complete. Simply, time points proceed at a rate slower—often many times slower—than the pitches, and when the pitch arrays are completed, the piece is finished.

Figure 4.3 shows the complete superarray for pitches in *Danci* (1996): each of three registers presents a complete trichordal array, exhausting the fifteen ways of combining four trichords, while the superarray as a whole presents |1, 2| in combination with each of the other trichord orderings of the piece's series. Figure 4.4 shows the superarray for the piece's time points; characteristically, it is precisely equivalent to the pitch array.[21]

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[19] With the exception of *My Ends are My Beginnings*, the multiple pitch arrays in these pieces are subsumed within a larger exhaustive list, and therefore these pieces are not multiply complete. For instance, as Dubiel (1991, 107–8) describes, the six consecutive pitch arrays of *A Solo Requiem* are permuted such that each of the six active instruments or registers project each of the six combinatorial pairs of the piece's array once in the piece.
[20] See Scotto (1988, 9–12).
[21] Or, more precisely, the pitch and time-point superarrays can be considered equivalent if one adds 4 to each time-point class beginning on the second quarter note of measure

However, twenty-seven time points at the end of the array, those indicated with strike-throughs in the example, simply do not appear. The pitch array is completed in the middle of the time points' final composite aggregate,[22] and the piece simply ends there.

32. It is as though there is a quarter note missing in that measure, and indeed a simple notational mistake might well be the cause of this. Shifts like this appear in many of Babbitt's time-point pieces. It is unclear if they are intentional.

[22] A "composite aggregate" occurs, in a superarray, when the separate arrays each complete an aggregate.

	Measure:	1–2	3–7	7–10	10–13	14–17	17–20	20–24	24–26	26–29	29–33	34–38	38–41	41–46	47–48	48–50	50–56
III	A♯5–A6		734	t91			265	e08		80e			562		19t	562	
	|1, 8|		265		e08	734		t91			19t	437			80e	437	
	G♯5–G6	10t			532		89e	467			235	t01		764		e98	
	|1, 2|	89e			467	10t			532		764		e98		235	t01	
II	G♯4–G5	532			10t		467	89e			t01		235	e98		764	
	|1, 2|		467		89e		532		10t	e98		764		t01		235	
	F♯4–F5		0e1	243			9t8		756		342		1e0	657			8t9
	|1, t|		9t8	756		0e1		243		657			8t9	342		1e0	
I	F♯3–F4		513		684	t20		97e			486	315		e79		02t	
	|2, 8|		t20		97e		513		684	e79		02t		486			315
	E3–D♯4		e98	10t		467		235		t01			89e	532			764
	|1, 2|	467		235		e98			10t		532	764		t01			89e

Figure 4.3. Pitch-class superarray for *Danci*

	Measure:	1–2	3–7	7–10	10–13	14–17	17–20	20–24	24–26	26–29	29–33	34–38	38–41	41–46	47–48	48–50	50–56
III	***ff*** |1, 8|		734 265	t91	 e08	 734	265	e08 t91		80e	 19t	 437	562		19t 80e	~~562~~ ~~437~~	
	f |1, 2|	10t 89e			532 467	 10t	89e	467	 532		235 764	t01	 e98	764	 235	~~e98~~ ~~t01~~	
II	***mf*** |1, 2|	532	 467		10t 89e		467 532	89e	 10t	 e98	t01	 764	235	e98 t01		76~~4~~ 235	
	mp |1, t|		0e1 9t8	243 756		 0e1	9t8	 243	756	 657	342		1e0 8t9	657 342		 1e0	~~8t9~~
I	***p*** |2, 8|		513 t20		684 97e	t20	 513	97e	 684	 e79	486	315 02t		e79 486		0~~2t~~	 ~~315~~
	pp |1, 2|	 467	e98	10t 235		467 e98		235	 10t	t01	 532	 764	89e	532 t01			~~764~~ ~~89e~~

Figure 4.4. Time-point superarray for *Danci*, presuming the piece begins on time point 4 and adds 4 to each time-point class (i.e., shifts forward a quarter note) beginning on the second quarter note of measure 32. Strikethroughs indicate time points not used in the piece.

Danci is a characteristic example of Babbitt's practice from the mid-'80s until the end of his life: most of the time, pitch arrays are complete, and when they have been exhausted, the piece ends, leaving the slower time-point arrays under-complete. However, *Danci* is interesting, and somewhat uncharacteristic, in that the time points almost complete their array. Had the pitches been unfolded only slightly more slowly relative to the time-point array, perhaps by repeating more notes or presenting fewer simultaneous pitches, the time-point array would have been complete.[23] This would not be without precedent: as Peter N. Schubert has noted, it appears that Babbitt ends *Three Cultivated Choruses* with a measure of repeated pitches in order to use the remaining time points.[24] But in *Danci*, Babbitt makes no such effort.

In many other pieces—and most other late pieces—the piece is over long before the time points would finish their array. *Phonemena*, dating from 1969, and apparently the earliest example by far to use an under-complete array, uses fifty-nine time-point aggregates of a seventy-seven-aggregate all-partition array.[25] In *Mehr Du* (1991), there are sixteen of an expected twenty-nine time-point aggregates—or rather just over sixteen, as the piece also uses the first three time-points of what would have been the seventeenth aggregate. In *Preludes, Interludes, and Postlude* (1991), there are forty-seven of an expected fifty-eight time-point aggregates. In *None but the Lonely Flute*, there are twenty of an expected fifty-eight time-point aggregates. In *Around the Horn* (1993), there are twenty-three of an expected thirty-four time-point aggregates. In *Soli e Duettini* for flute and guitar

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[23] One possible reason that *Danci*'s time-point structure proceeds at an uncharacteristically brisk pace relative to the pitch structure is that the piece hardly uses the reference technique seen above in *None but the Lonely Flute*. Most of the piece's attacks appear on structural time points.
[24] Schubert (1994, 75).
[25] Kuehn (1995, 24).

(1989), there are twenty-nine of an expected fifty-eight time-point aggregates. And over the course of the nearly half-hour-long String Quartet no. 6, there are just over thirty-one of an expected fifty-eight time-point aggregates.

In several of these pieces, following a practice begun as early as *Composition for Tenor and Six Instruments*, as discussed in Chapter 2, the time points already present a simplified version of the pitch arrays. Often, the pitches will present multiple arrays (successively or combined in a superarray), while the time points present only one of the first arrays that the pitches use. This was noted above in *My Ends are My Beginnings* and *A Solo Requiem*. In String Quartet no. 6, for instance, each instrument presents two full passes through the piece's fifty-eight-aggregate array, while all of the time points together contribute to only a single array, one equivalent to the cello's first array. Nonetheless, the time-point array is still significantly under-complete.

Perhaps the most extreme example of under-completeness in the time-point dimension can be found in *Soli e Duettini* for two guitars (1988). The superarray for this piece is a long crab canon: each guitar presents an array with fifty-eight aggregates, and these arrays are related by retrogression (as well by the M transformation).[26] The time points present an equivalent superarray, with the loud dynamics corresponding to the material in Guitar One and the soft dynamics corresponding to the material in Guitar Two. However, the time-point arrays each use only nine aggregates of the expected fifty-eight. Notably, since they do not reach the mid-point of the array (or, indeed, anywhere close to it), it is not evident, from examination of the time points alone, that they are even presenting retrograded versions of the same array.

[26] Mead (1994, 256).

There does not appear to be any systematic reason why the under-complete arrays end where they do. They do not tend to end at any particularly significant moment in the array. Most often, they do not even end at an aggregate boundary or when the lines complete their series. Nor, in any of these later pieces, is there a fixed relationship between the rates the pitch array and rhythmic array unfold that might be thought to determine when the time-point array will be truncated. The practice seems to be that the unfolding of the various arrays is undetermined systematically, that Babbitt's early formulation of the relationship between pitch and rhythm as one of "structured rhythmic counterpoint" overstates the logical rigor that this relationship assumes in his later practice. And when the pitch array is over, the piece is over.

This suggests that in pieces in which there are multiple arrays in various dimensions, Babbitt prioritizes one, such that completion in that domain is considered more essential, determinative of the pieces' completeness. Consistently in these later pieces, pitch is prioritized over rhythm. (Although this is not the only example of prioritized domains, as will be demonstrated shortly.) The project set out in Babbitt (1962) and elsewhere, of a rhythmic structure that is equivalent to pitch structure yet functionally independent, appears to have been at least partially abandoned. The desires for "holism" and cognitive reinforcement that Babbitt claimed justified creating equivalence between the dimensions appear not, in the end, to have been sufficiently powerful concerns to justify completing the independent yet equivalent arrays.

The prioritization of pitch over rhythm seen in the above examples of under-complete time-point arrays can also be seen in other aspects of Babbitt's compositional practice, and even in certain of his theoretical claims: consider his statement that "[pitch] is . . . the most important of the musical dimensions, since its susceptibility to musical

structuring includes and exceeds that of any other dimension."[27] First, there are a number of pieces—particularly the so-called "pulse pieces," to borrow Richard Swift's term—that simply do not have an independent rhythmic structure.[28] Excepting *Homily* (1987), for snare drum, Babbitt's only piece for solo unpitched percussion, there are no examples of pieces that have a rhythmic array but no pitch array. Secondly, in the pulse pieces, just as in the many other pieces that systematically pursue cross-references, a pitch-structural concern—reference to the pitch array—directly determines rhythm, in that the duration and placement of notes in the reference is determined by the reference being established. But there are no examples of a rhythmic concern directly determining pitch. Finally, there are a number of ways in which pitch structure appears to be more carefully finessed than rhythmic structure. For instance, the technique of cross-references, in which pitches simultaneously participate in the underlying array counterpoint and in references to other parts of the array, has essentially no correlate in rhythmic structure. There appears to be only one place in Babbitt's sketches in which Babbitt visibly tries to arrange an aggregate from a time-point array into a significant serial reference. At the very beginning of *Soli e Duettini* for two guitars, the sequence of newly presented time points spells out series form RI_t, which Babbitt copies for reference at the bottom of the sketch for the passage.[29] (These newly presented time points are occasionally interrupted by reiterations of time

[27] Babbitt ([1972] 2003, 285).
[28] Swift's coinage is cited in Mead (1987, 215). "Pulse pieces" are based around a fixed pulse (always a quarter note) that is subdivided according to the system of cross-references discussed in Chapter 1 in relation to *None but the Lonely Flute*. Babbitt used this technique in every piece he published in 1982 and 1983 (*The Head of the Bed* [1982], String Quartet no. 5 [1982], *About Time* [1982], *Canonical Form* [1983], and *Groupwise* [1983]), as well as in the much later *Concerti for Orchestra* (2004). Other pieces that derive their rhythms entirely from their pitch-class arrays, using various techniques, include *Playing for Time* (1977), *My Complements to Roger* (1978), and the final section of *Paraphrases* (Mead 1987, 214–20).
[29] This is in the folder marked "2 Guitars" in the Milton Babbitt Collection, on the first two pages of the sketch.

points that had already been stated.) Although this is perhaps not the only instance of Babbitt arranging time-point aggregates into a significant local pattern, the fact that it requires visual working out is evidence of its uniqueness. Generally, it does not appear that time points are arranged into significant local patterns. It appears to be Babbitt's typical practice that time points are simply used as necessary to support the pitch material. Accordingly, it appears to be congruous with the rest of his practice that at the conclusion of the pitch array in these many later pieces, the time-point array is simply cut off.

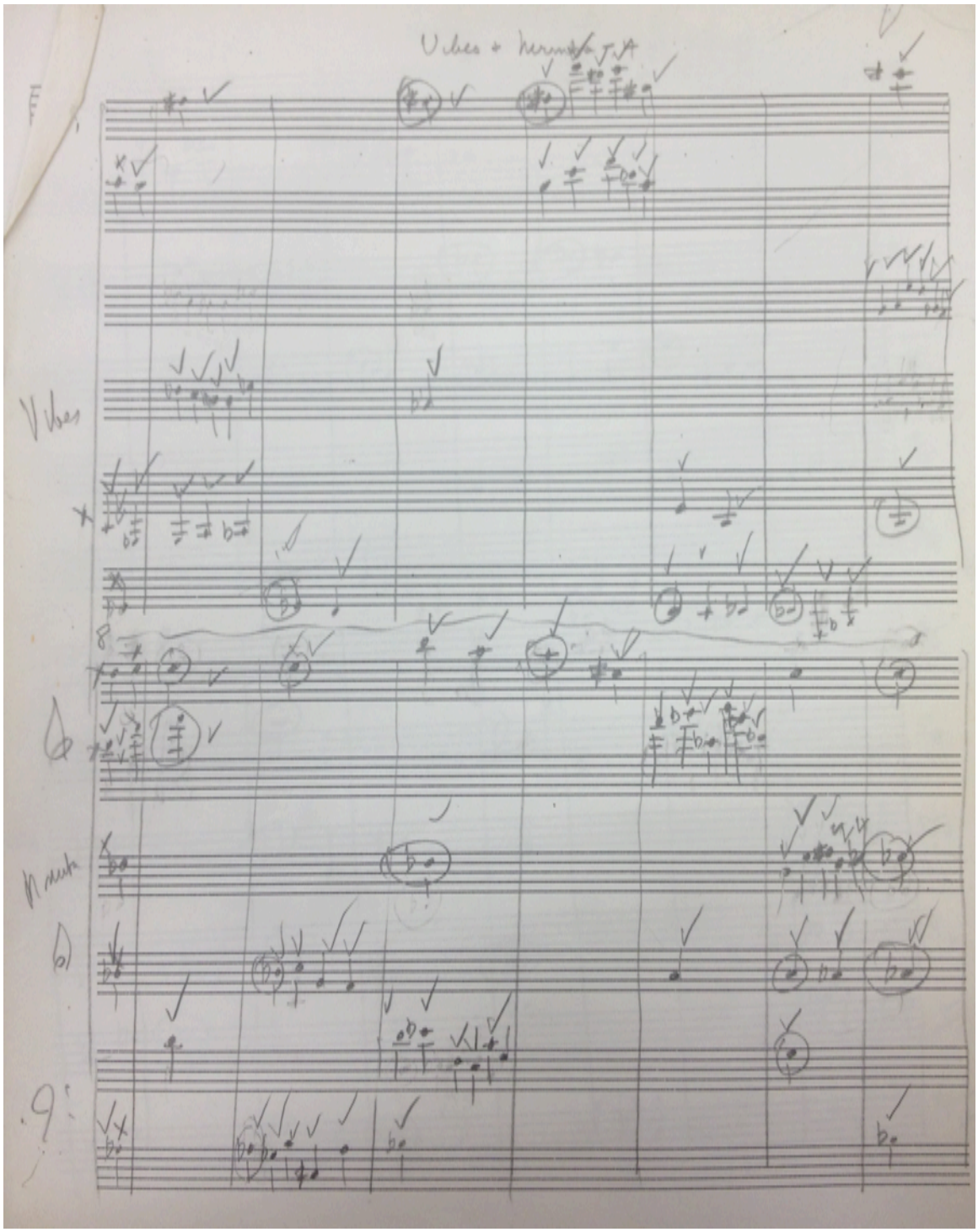
The best sketch evidence for the theory of prioritized arrays comes not from an under-complete time-point array, but from the under-complete pitch arrays in Piano Concerto no. 2 (1998). In this piece, the orchestra is divided into duets and trios, each group presenting a separate all-partition array. The solo piano part, meanwhile, presents its own set of arrays.

In an interview about this piece, Babbitt discusses the priority of the piano part, describing it as the "focal instrument," and the whole piece as "virtually an accompanied cadenza." He explains that there is "nothing that happens in any instrumental part that hasn't happened, or isn't about to happen, or isn't happening, or isn't destined to happen, in the piano."[30] This focus on the piano part may explain why the piano arrays are complete while the orchestral arrays are all left under-complete.

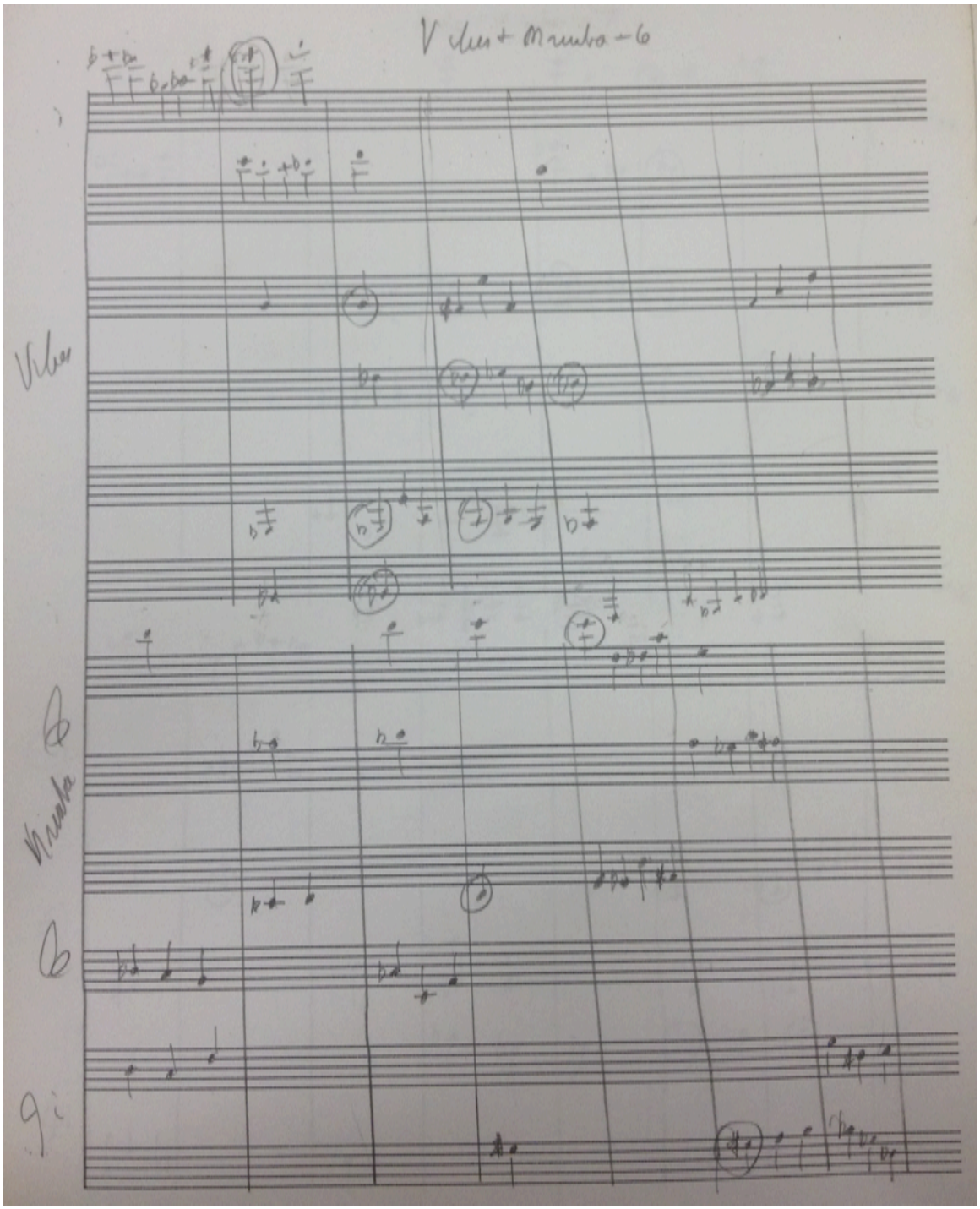
It is evident from his sketches that Babbitt typically prepared arrays in advance and then checked off notes as he used the pitch classes they denote.[31] The arrays prepared

[30] "New Music Series: Piano Concerto No. 2" (1998).
[31] Babbitt does not appear to have checked off notes in the array as he composed time points, perhaps because the notation of time points in his sketches allows for easier comparison with the array.

for the piano part of Piano Concerto no. 2 are, accordingly, all checked off. But in each of the arrays prepared for the various orchestral duets and trios, the arrays were prepared in full but the checks stop after twenty-nine aggregates. And indeed, the checked-off notes alone appear in the finished score. Examples 4.4 and 4.5 give two representative pages from the array prepared for the Vibraphone and Marimba, Example 4.4 from the first half of the array, with checks indicating Babbitt's progress as he composed, and Example 4.5 from the second half, showing a page prepared but not used. His sketches reveal that at one stage in the composition, Babbitt endeavored to prepare complete arrays for each of the orchestral groups of instruments. Their under-completeness was, apparently, not anticipated. But having completed the piano part—the prioritized part—the rest of the ensemble simply stops. Indeed, the release of the piano's last note marks the end of the piece.



Example 4.4. Vibraphone and Marimba array chart for Piano Concerto no. 2, p. 4 ("Piano Concerto No. 2" folder, Milton Babbitt Collection)



Example 4.5. Vibraphone and Marimba array chart for Piano Concerto no. 2, p. 6 ("Piano Concerto No. 2" folder, Milton Babbitt Collection)

The foregoing examples of prioritized dimensions indicate the most common kind of under-completeness in Babbitt's music. In these situations, one dimension—the prioritized dimension—is still complete in the hierarchical terms outlined above, even if from the perspective of the subsidiary dimensions the piece appears under-complete. But in at least three examples, no array whatsoever is completed. Each of these pieces recycle all-partition pitch-class arrays that Babbitt had prepared for earlier pieces. But though each begins these familiar arrays, none finish them. *Lagniappe*'s final section uses twenty-eight aggregates of a seventy-seven-aggregate pitch-class array.[32] "Now Evening after Evening" uses, over its entirety, fifty-three aggregates of a seventy-seven-aggregate array.[33] *Concerti for Orchestra* is in some senses the most confounding example, because the structures begun rather clearly at the beginning (including, but not limited to, all-partition arrays in each group of instruments) seem to gradually dissolve, eventually fading into an extended silence and a brief section of music at the very end, unconnected to any array but gently recalling some of the material heard near the very beginning.[34]

In sum, given these various complications, these pieces that appear over-complete, under-complete, or multiply complete, the idea that completeness in Babbitt's music is solely, or even largely, a result of exhaustive lists should be discarded. The model of perceived formal progression predicated on tracking these lists must, similarly, be put aside. Put simply, pieces with under-complete arrays are not all fragments, and—in my experience, and as far as I can tell, in the experience of others—they are not experienced as such. The extensively worked out organic hierarchy, the careful construction of nested

[32] See Mead (1994, 240).
[33] I am indebted to Joseph Dubiel for this observation, made in a presentation at the CUNY Graduate Center on 25 May 2012.
[34] See Morris (2012, 407).

layers built on a single principle, does not, in the end, explain why a piece of music by Babbitt is complete.

Indeed, it is not apparent that there is *any* general systematic model for completeness in Babbitt's music. There evidently is not—at least in certain cases—in terms of precompositional planning: as shown in the sketches for Piano Concerto no. 2, it appears that Babbitt had no preconception of how or when the piece, or at least its orchestral parts, might end. The failure of exhaustive lists to adequately explain completeness in Babbitt's music, the fact that no alternative systematic explanation seems forthcoming, and the sketch evidence that in early stages of composition Babbitt himself was unsure of significant aspects of a piece's overall development, suggest that in looking for a systematic and logical answer to the problem of completeness we may have been using the wrong approach.

SIGNALS AND VERTICALITY

The indeterminacy in Babbitt's preconception of the end of his Piano Concerto no. 2 fits well with my experiences listening to his music. It has been observed by certain commentators that Babbitt's music seems non-teleological. I admire this quotation of Joel Krosnick, cellist in the Juilliard quartet and long-time champion of Babbitt's music: "*Dual* . . . is not progressive in traditional ways, it is a state of mind, a philosophical state."[35] This is my impression as well. In my own experience, I would say that there is typically no basis for predicting whether a piece is two minutes or twenty minutes from completion. I could go even farther and say that there is not even anything about the music that would

[35] Included in the program notes for a 14 March 1984 performance of *Dual*. A copy of the program for this concert is in the "Dual" folder of the Milton Babbitt Collection.

inspire a listener to make this sort of prediction. One simply enters his music's "state of mind" and stays there for a while, leaving because the musicians have stopped playing, not because one has arrived at a goal or completed any sort of logical argument. In this sense, Babbitt's music exemplifies Jonathan D. Kramer's notion of "vertical time":

> A vertically conceived piece, then, does not exhibit large-scale closure. It does not begin but merely starts. It does not build to a climax, does not purposefully set up internal expectations, does not seek to fulfill any expectations that might arise accidently, does not build or release tension, and does not end but simply ceases.[36]

As the quotation of Krosnick suggests, this perception has been felt by certain performers and listeners of Babbitt's music for a long time.[37] What the present study confirms is that this perception is supported at the deepest level of Babbitt's compositional techniques.

Beyond the issue of array completeness, two additional aspects of Babbitt's compositional techniques suggest a non-goal-directed, "vertical" conception of temporal progression. In Babbitt's analyses of Schoenberg's twelve-tone music, perhaps his most frequently repeated comment regards the "analeptic" and the "proleptic," the ways in which a passage of Schoenberg's music can forecast developments to come or recall moments that have passed.[38] Although, as mentioned in Chapter 1, this was a favorite observation of Babbitt's—he discusses analepsis and prolepsis in the music of many composers—in Schoenberg's twelve-tone music these discussions usually focus on a single aspect: hexachordal levels. Babbitt demonstrates how a passage using one hexachordal level can suggest another hexachordal level, and thereby suggest a goal toward which the music is moving. However, this means of progression is undercut by Babbitt's own practice. In Babbitt's all-partition arrays, all possible hexachordal levels appear *all of the*

[36] Kramer (1988, 55). For further discussion of Kramer's ideas on non-linear temporality and their application to post-war serialism, see Guerrero (2010, 28–30).
[37] See Boretz (2006, 10–11) for a related discussion of temporality in Babbitt.
[38] E.g., Babbitt (1987, 63–84).

time. That is, the hexachordal levels of an array's combinatorial pairs are another way in which all-partition arrays present exhaustive lists: the number of combinatorial pairs in an array is determined by how many distinct hexachordal levels are available given the hexachord of the array's series.[39] Babbitt thus closes himself off from a principal "basis for moving through a piece" in twelve-tone music.[40]

Babbitt's technique of cross-references presents a similar challenge to directional progression. These references are also described by Babbitt as fostering analepsis and prolepsis, either recalling or predicting array segments that appear elsewhere in the piece.[41] But there seems to be no determinate pattern governing whether any particular reference is analeptic or proleptic, or any pattern or principle regulating the distance between references and referents.[42] Often, as noted above regarding *None but the Lonely Flute*, it is not even clear which particular segment is being referred to. In other words, the system of references does not appear to be wielded in order to create a progressive, linear, teleological path through the piece. The technique ensures that everything, in some sense, echoes something else; a "hall of mirrors," as Dubiel evocatively describes it.[43] But as in a

[39] This number is inversely related to a hexachord's symmetry. Therefore, arrays using first-order all-combinatorial hexachords—the A-type, B-type, and C-type—use six simultaneous combinatorial pairs, arrays using second-order D-type hexachords use three simultaneous combinatorial pairs, and arrays using third-order E-type hexachords use two simultaneous combinatorial pairs. There is one exception to this principle, from early in Babbitt's work with all-partition arrays. String Quartet no. 3 has an eight-line array using a second-order hexachord, and accordingly always presents one of the three possible hexachordal levels twice at any given moment (Arnold and Hair [1976, 167]). Unlike almost all of Babbitt's other all-partition arrays, the array for String Quartet no. 3 is not reused in any other piece, perhaps for this reason.
[40] Babbitt (1987, 68).
[41] Babbitt and Wuorinen (1998, 28–29).
[42] A similar point is made in Dubiel (2012, 9).
[43] Dubiel (2008, 136).

hall of mirrors, the reflected images serve only to be reflected again. They do not point to a goal.

Nonetheless, there are several important qualifications to the general image of Babbitt's music as "vertical" or non-teleological that should be made. The first is that, although Babbitt's pieces generally do not trace a complete motion from beginning to end, they are constantly suggesting directional movement of some kind or another, from striking local gestures to longer motions stretching out over a minute or more. All of Dubiel's writings on Babbitt's music emphasize the sense of movement it inspires, convincingly demonstrating that this kinetic dynamism is one of its major sources of interest. Indeed, both Dubiel and I have argued that Babbitt even occasionally sacrifices serial accuracy for the sake of certain gestures.[44] That these motions tend not to extend over entire pieces, or suggest predictions about a piece's overall span, does not challenge their aesthetic significance.

Secondly, even if most of Babbitt's music is "vertical," there are a number of striking exceptions. Most of these date from the late '40s to the early '60s: Babbitt's pieces with trichordal arrays often seem to be goal-oriented, as detailed thoroughly by Mead.[45] String Quartet no. 2, which gradually assembles its series before presenting it in full near the end of the piece, is the canonical example of this tendency. It appears that a committed embrace of a non-teleological perspective did not appear until the mid-'60s, coinciding with the advent of the all-partition array.

Furthermore, occasional glimpses of overall formal shapes can still be found in a number of pieces written after this anti-teleological turn. These shapes often hinge on one

[44] Dubiel (1992, 118–19), Dubiel (2008, 134), and Bernstein (2011). Babbitt's "serial anomalies" will be revisited in Chapter 5.
[45] Mead (1994, 54–123).

moment in particular, the unique (12^1) partition in an all-partition array. Numerous analysts of Babbitt's pieces with all-partition arrays have gravitated toward the (12^1) partition of a piece's pitch-class array, and for good reason: its serial clarity and monophonic texture make it a highly marked moment, something Babbitt occasionally emphasizes by presenting it with an instrumental playing technique not heard in the rest of the piece, by extending it for a longer duration than the aggregates that surround it, or, conversely, by compressing it into a virtuosic flourish.[46] Occasionally, one can even consider it a climax of sorts.[47] The (12^1) partition of a piece's time-point array can also occasionally be understood as climactic. This is especially true of pieces in which the (12^1) partition is assigned to the line of the time-point array that expresses the loudest dynamics, which means the (12^1) partition of the time-point array is marked by several consistently loud measures. *My Ends are My Beginnings, Homily*, and the second half of *A Solo Requiem* all offer striking examples of this technique.[48] Furthermore, the sense of climax is heightened by the usual placement of the (12^1) partition: typically toward, but not at, the end of the array.[49] As there is generally no systematic reason an array should be presented in any particular order, as opposed to its retrograde, it appears plausible that Babbitt is

[46] The importance of the (12^1) partition to Babbitt is also evident in his sketches. The sketch material for many pieces includes a page or index card listing the various (12^1) partitions that appear in the piece, with indications as to the instrumental or registral lines that project them and the measure number in which they appear. The compositional use of these lists of (12^1) partitions is obscure: as they list the measure numbers in which the partitions appear, it is evident that they were prepared after the indicated partitions had been composed. It appears that these lists were compiled for the sake of record keeping, as guides to these crucial moments in the piece.

[47] See Leong and McNutt (2005).

[48] These passages are from measures 308–13 of *My Ends are My Beginnings*, staves 3–5 of page 20 of the printed score of *Homily*, and measures 246–49 of *A Solo Requiem*. For more on this passage of *My Ends are My Beginnings*, see Bernstein (2013a, 294–95) or Mead (1987, 230); for more on this passage of *Homily,* see Leong (2011).

[49] See Bernstein (2013a, 295).

motivated to choose the order in which his arrays appear precisely because of this resonance with traditional climax structure. However, even in pieces in which the (12^1) partition is a striking, climactic, or crystallizing moment, it tends to remain just that—a moment, not a goal that has been approached over the course of the piece or that leads to a piece's conclusion. And in the many pieces with multiple all-partition arrays, either superimposed or successive, the (12^1) partition is no longer unique. Indeed, in most pieces with superarrays, it is hardly even noticeably marked.

Finally, even though one generally has no basis for predicting whether a piece will end in two minutes or twenty minutes, one can often sense that a piece is within seconds of ending. Or, conversely, having heard the end of a piece, the final few seconds often do, in memory, indeed sound like an "ending"—even if a piece's arrays have not been properly completed. This is because Babbitt uses a number of relatively traditional closing techniques. Four of these techniques appear with great frequency:

- Motion to an extreme, such as an extreme dynamic—usually extremely soft—extreme register, or extremely thick or thin texture.
- A summation or clarification of a piece's most important structural materials.
- A return to one or more aspects of a piece's opening.
- Repeating notes, often while fading out.

Each of these techniques has a long historical association, within the Western musical tradition, with closure.[50] In this sense they might be considered—almost uniquely in Babbitt's compositional practice—rhetorical. They can be understood as signals to an audience, communicating that a piece is ending. Each of these signals suggests, in their

[50] A number of these techniques, or close correlates thereof, are discussed in relation to common-practice music in Agawu (1987).

own way, that further development in a piece will not occur. A motion to an extreme, however local, initiates a process that cannot be continued; it can thus serve, synecdochically, to indicate the end of the piece as a whole. Both summations of important materials and reprises of the opening are inherently backward-looking, indicating that forward progression in the piece (such as it is) has stopped. The recapitulatory nature of these techniques is also quite directly "rhetorical," in the Classical sense.[51] Repeating notes—admittedly a simple closing technique, but a very widespread one in Babbitt's practice—echo the traditional device of tonic affirmation. They can also be thought of as indicating that the pitch material for the piece has been exhausted, that no new pitches are forthcoming.[52]

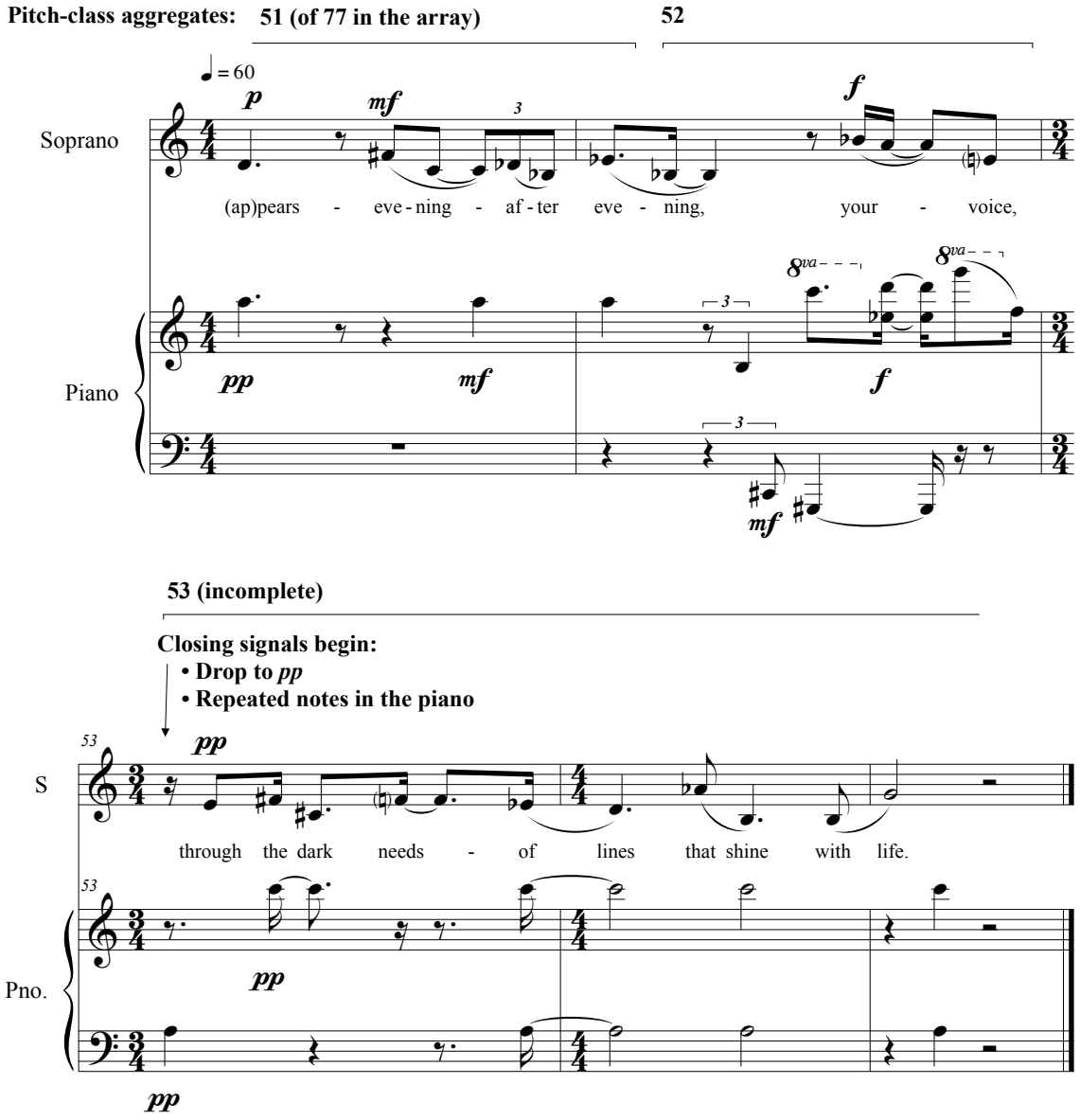
Babbitt himself notes the second and third of these techniques in various analytical comments. The third, the signaling of an ending by returning to the beginning, ranks among his favorite observations: in his writings, he observes this in pieces by J. S. Bach, Schoenberg, Bartók, Stravinsky, Varèse, Webern, Luigi Dallapiccola, and himself. It is an attitude embodied by his quip on the second movement of Webern's *Variations*, op. 27 (1936): "And he's back where he started, on B♭ and A♭, which is good enough to end any piece."[53] Both the use of a return to the opening and the device of ending (and opening) with an extreme—indeed, a glimpse of a dramatic impulse that rarely emerges from the hardened, "scientific" exterior of Babbitt's prose—can be seen in this comment on his own *Relata I*: "Cymbal, tam-tam, three drums, and wood block are used only,

[51] See, e.g., Quintillian (1907, 407–8).
[52] The final composite aggregate of *Whirled Series* (1987), stretched out over twenty-four measures, presents perhaps the most luxuriously expansive demonstration of the technique of closing a piece with repeated notes (see Mead [1994, 226–27]).
[53] Babbitt (1987, 38).

and—thus—extravagantly, in the opening eight measures, and the corresponding final seven measures."[54]

These closing signals are used whether or not an exhaustive list is complete. They are usually completely independent of serial hierarchy. Example 4.6 shows the final measures of "Now Evening after Evening," which, as mentioned above, uses only fifty-three aggregates of its seventy-seven-aggregate all-partition array. Although the array is left under-complete, the piece still concludes with two typical closing signals: a drop to ***pp***, the softest dynamic in the piece, and a series of gentle, slow repeated notes in the piano.

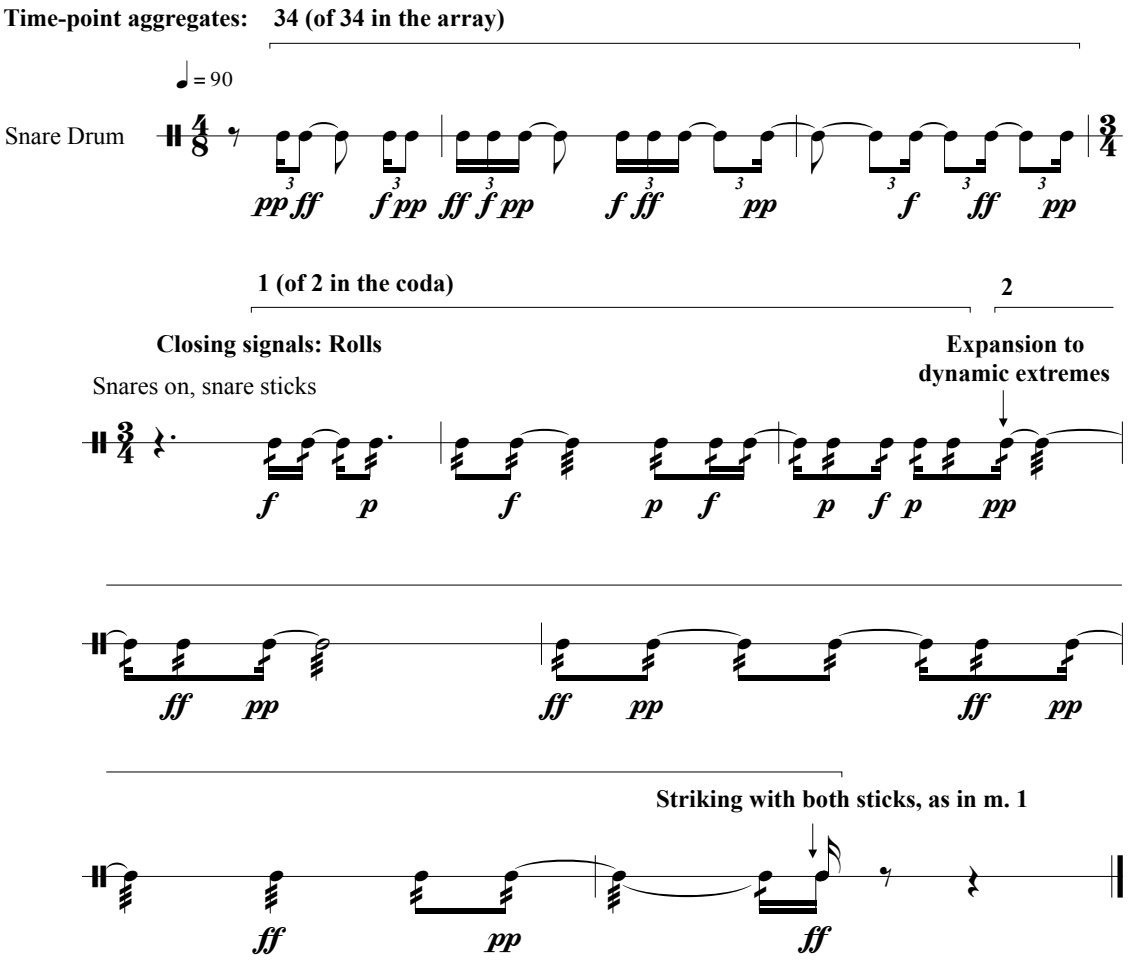
[54] Babbitt ([1970] 2003, 239).



Example 4.6. "Now Evening after Evening," mm. 51–55

Not only are the closing signals independent of twelve-tone hierarchy, they can sometimes even be understood to override that hierarchy. The "codas" at the end of many over-complete pieces, including those seen above, generally appear to be designed to highlight one or more of these techniques. The six extra combinations of registers in *Allegro Penseroso*, as shown in Figure 4.1 above, instantiate a motion toward an extreme

register—or rather, a gradual focusing on an extreme register, as the lower registers successively drop out—and a return to the register of the opening, also at the top of the piano. Similarly, as seen in Example 4.1 above, the last twenty-four measures of *Composition for Four Instruments*, a coda from the perspective of rhythmic structure, present a clarification of the basic duration series (as well as, at the end, a sly repeated note). Even the mysterious ending of *Concerti for Orchestra* can be understood as instantiating several of the closing signals.



Example 4.7. *Homily*, concluding measures

An exceptionally clear example of an over-complete piece whose coda realizes Babbitt's closing signals can be found in *Homily*, as shown in Example 4.7.[55] The coda, which begins at the indication "snares on, snare sticks" on the final page of the printed score, succinctly enacts all four of the closing signals. Until this section, there have been only three rolls in the piece, at the end of the third, fourth, and sixth blocks of the piece's all-partition array.[56] The rolls that fill the entire coda thus dramatically expand on a device already associated with closure within the piece. They also present a rather extravagant demonstration of the technique of ending a piece with repeated notes.

The last note of the piece is struck with both sticks at the same time. This technique is used just six other times in the piece: on the very first note of the piece, on the first note of blocks four, six, seven, and eight, and, anomalously, on the downbeat of the third measure. The reprise of the technique at the very end thus realizes the closing signal of connecting the ending and the beginning; indeed, it connects the ending with a technique used for important beginnings throughout the piece.

The dynamics enact a motion to extremes by expanding from ***f*** and ***p*** in the first three measures of the coda to ***ff*** and ***pp*** in the final four measures. Indeed, the use of both sticks on the final attack presumably has an accentual effect, heightening the extreme dynamic: the final note is the only note in the piece struck with both sticks and marked ***ff***, making it perhaps the loudest moment in the piece. These dynamics articulate two time-point series forms, one presented in loud dynamics and one in soft, as shown in Figure

[55] The final section of *Homily* is recognized as a structural coda in Leong (2011).
[56] A "block" of an all-partition array is a section of the array in which each line completes a series form. Given the requirement to present all partitions, block boundaries are often blurred a bit. Often, several lines will have already started their next series form before others have completed theirs. Figure 1.2a, which presents the first block of the array for *My Ends are My Beginnings* (which, incidentally, is equivalent to *Homily's* array), exemplifies this.

4.5. After the piece's all-partition array, the straightforward presentation of two series forms partitioned into simple hexachordal aggregates realizes the last remaining closing signal, the clarification of a piece's basic materials.

S_6	***f***: 672te3	***ff***: 109485
R_t	***p***: 908145	***pp***: 7326et

Figure 4.5. Time-point series in the coda of *Homily*, presuming the downbeat of each measure is time point 0

Babbitt also uses a number of characteristic and even familiar techniques for beginning a piece of music. These are somewhat more various than his closing techniques, but certain general observations can be made. Babbitt's description of the "opening of the main body" of *Relata I*—that is, the beginning of the all-partition array in measure 8, following a brief introduction—is his most detailed discussion of the formal and rhetorical requirements for beginning a piece of music. This passage is described as having "the obvious attributes of a 'beginning.'" Chief among these attributes is that this passage is a "minimal statement in many dimensions," given its use of a minimal registral span in a "'nonextreme' octave," limited dynamic range in the "midrange" of ***mp*** and ***mf***, and simple hexachordal aggregate construction. From this "minimal statement," the piece only gradually develops outward.[57]

Although there are other pieces that begin with restricted and mid-level values in their various dimensions—*Composition for Four Instruments*, *Swan Song no. 1* (2003), and *Concerti for Orchestra*, for example—Babbitt's compositional practice shows considerably more variety than his statement on *Relata I* suggests. *Allegro Penseroso*, for instance, as can be seen in Figures 4.1 and 4.2 above, also begins with straightforward hexachordal

[57] Babbitt ([1970] 2003, 240–42).

aggregates, a minimal registral span, and a limited dynamic range. However, *Allegro Penseroso* begins in an extreme register and dynamic, two features common to the opening of many of Babbitt's pieces. Other pieces seem to represent an inverse perspective, beginning not minimally but maximally, with a sudden demonstration of a piece's potential. Perhaps the two pieces that begin most explosively in this sense are *Post-Partitions* and *Septet but Equal* (1993), but the many pieces that begin with a quick flash through all available registers also exemplify this tendency. As with endings, one can generalize to say that Babbitt often begins his pieces with extremes of one kind or another, of which an extremely "minimal" statement is one possibility.

Also as with endings, the beginnings of pieces frequently lay out a piece's most important structural materials. Several pieces, for instance, begin directly with a statement of their series. "The Widow's Lament in Springtime" (1951), *All Set* (1957), *Partitions*, *Composition for Synthesizer*, *Philomel*, *Relata I*, *Images* (1979), *It Takes Twelve to Tango* (1984), *Glosses*, and Piano Concerto no. 2 all state their series clearly at the outset.[58] In many pieces that use the time-point system, the time-point modulus is indicated with unusual clarity by the repetition of the opening time point.[59] In many pieces that use superarrays, a technique that tends to obscure the aggregate, the piece begins with one aggregate presented separately, apparently in order to establish the normative status of

[58] The frequency of this occurrence challenges Dubiel's (1997, 35) claim that Babbitt's "main belief about [the influence of the series] . . . is that the series may be recognizable only as an inference over the course of the piece," although there are certainly instances—String Quartet no. 2 most famously—in which this is the case. (See the discussion of *Composition for Four Instruments* in Chapter 3.)
[59] See Mead (1987, 195–97).

the aggregate before it is subsumed into the piece's counterpoint. As can be seen in Figures 4.1–4.4 above, *Allegro Penseroso* and *Danci* give clear examples of this technique.[60]

Just as material appended to the end of a piece's overarching exhaustive list can generally be understood as a coda that realizes Babbitt's characteristic closing techniques, so can introductions generally be understood as realizing his characteristic opening techniques (although introductions are much less common than codas). This is true of the introductions of *Three Compositions for Piano* I and II, *Relata I*, and *Ars Combinatoria*. Each of these introductions presents its piece's basic structural materials in a simplified or clarified form. That this technique is introductory for Babbitt is confirmed by his statement on the first eight measures of *Relata I*, which are described as "constitut[ing] literally and pervasively an introduction, by introducing the main features of the pitch structures of the total work . . ."[61] Furthermore, each of these pieces have codas that largely recapitulate their introductions, which instantiates the closing technique of linked beginnings and endings. The time-point introduction to *A Solo Requiem* discussed above might be also understood as introducing the piece's structural materials, in that it presents most of a series form monophonically. More striking to me, however, is the flexible use of dynamics this introduction makes possible, which opens the way for the use of ***pp*** throughout the entire opening three measures. In addition to the poetic context that may have inspired it, this emergence from a soft dynamic is yet another characteristic opening technique.

The opening and closing techniques establish the second major component of perceived temporal progression—and thus perceived completeness—in Babbitt's music. After a piece's beginning, the impression throughout the bulk of it is of "vertical time," as

[60] Mead (2012a, 385) gives a further example in *The Head of the Bed*.
[61] Babbitt ([1970] 2003, 239).

Kramer has it, in the sense that there tend to be no clues as to the piece's overall scope. But then, at the end, comes a signal—constructed using the closing techniques—and the piece is understood as complete.

SOUNDS OF RELATIONS

This model for listening appears to be a far cry from the grand claims about organic hierarchy, computational chunking, and "unified closed totality" with which this chapter began, and in a sense it is. Nonetheless, it still might be possible to take Babbitt's statements on these subjects seriously. The neat systematic nesting of exhaustive lists, the comprehensive extensions of the twelve-tone system, can be thought of as serving a kind of internal coherence or consistency. They create a carefully defined field of activity, a world within which certain actions can receive a particular kind of attributive meaning in the context of their surroundings. To the extent that there is completeness, it is of the kind described by Dubiel: "There are sounds of relations, and sounds of 'limitlessly profligate' individuality and completeness of the moments so related and thereby so constituted, and the works they make up."[62] Closure in this sense becomes a property of a piece's contents, not its overall span.[63] Totality is a state, not the result of a process, a condition of being, not of having been. And when the closing signal comes—whenever it comes—the piece is over.

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[62] Dubiel (1991, 117).

[63] See Anson-Cartwright (2007, 11), which explains that "closure may *inhere* in a piece" (emphasis added). Although Anson-Cartwright is targeting the necessity of temporal linearity for closure in this passage, not hierarchical completeness, the notion that closure may be a function of the interrelatedness of a piece's constituent parts is fitting and apt.

Chapter Five

Serial Anomalies and Extra-Systematic Criteria

INTRODUCTION

In the organicist model for the analysis of Babbitt's music that was sketched in Chapter 1, where the initial kernel is the twelve-tone series and the means of its development is the twelve-tone system, unity and coherence can be understood in reasonably straightforward terms. Individual events should be understood as arising from serial hierarchy. Indeed, Babbitt claims, "it should be obvious that there are no aspects which are not serially conditioned either as primary determinants or as supporting, delineating factors."[1] The series is "continuously, thoroughly, and utterly influential"; in "constantly different ways and in constantly different degrees of explicitness" to be sure, but nonetheless "always throughout the piece . . . in a very decisive way."[2] This notion of a binding force, the ubiquitous influence of the series decisively and continuously unifying the various aspects of a piece, is disrupted by a curious fact about Babbitt's music: in nearly every piece, there are several, apparently deliberate, violations of serial structure.

Babbitt mentioned these "serial anomalies" in his Madison lectures:

> I have never written a piece within the last twenty years that I didn't get letters about in which people say, "I'm sorry but there are 4,892 mistakes in your piece" . . . . Maybe one or two of them are right; there are misprints or miscopying or something. But mainly they incorrectly assume if the piece starts a certain way, it has to go that way, that's all. Part of the notion of the piece may have been that certain things change their

[1] Babbitt and Wuorinen (1998, 35).
[2] Babbitt (1987, 27).

> dependencies, their contingencies, and their relationships in the course of the piece. Things change![3]

The mention of changing relationships, the hint of multiple compositional concerns, and the whiff of spontaneity found in this quotation challenge the vision of orderly outgrowth from an initial impulse. Indeed, these serial anomalies will lead to a reevaluation of the role of the twelve-tone system as a whole in Babbitt's music. For the "things" that "change" are not a matter of one twelve-tone scheme replacing another—indeed, the vast majority of serial anomalies affect only a few, typically three or fewer, notes at a time, after which the previously established twelve-tone plan continues apace.[4] Most often, the apparent motivations for these anomalies touch on twelve-tone concerns tangentially, if at all.

Babbitt is far from the only twelve-tone composer to deviate from his serial plans. As Joseph N. Straus has noted in a discussion of the music of Stravinsky, "contradictions of this kind—notes in the published score that are 'row-incorrect'—are a persistent feature of music by all serial composers."[5] Despite this persistence, proposed analytical explanations for these anomalies are as varied as the composers discussed. Straus proposes that serial "mistakes" in Stravinsky usually arise from unintentional errors made in the course of composition, either in the preparation of serial charts or in the use of these charts during the compositional process. Although Straus suggests that it is plausible that serial anomalies may "create other kinds of appealing musical patterns and

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[3] Babbitt (1987, 35).
[4] Perhaps for this reason, Dubiel (1992, 118) also questions "whether these instances are best described as . . . developmental change," as Babbitt seems to suggest.
[5] Straus (1999, 232).

structures" that justify their deviation from the serial plan,[6] there are only two places in which he finds this model to hold, one in *Three Songs from William Shakespeare* (1953),[7] and one in *Requiem Canticles* (1966).[8] All of the remaining anomalies in Stravinsky's music are found to be most likely errors, to be corrected if possible.[9] Many serial anomalies in Babbitt appear to be similarly unintentional, arising as typographical errors during composition or in the copying or engraving of the score.

Indeed, as Babbitt forthrightly declares in the quotation above, there are certainly misprints in his music. Many of the folders in the Milton Babbitt Collection in the Library of Congress contain lists of errata or lists of questions about possible errata prepared by the composer or by performers, copyists, or, in several cases, analysts. The lists of errata prepared by others were carefully checked, and sometimes augmented, by the composer, who added notations as to how, or whether, to fix suggested misprints. These lists are often quite extensive: the errata list for *Ars Combinatoria*, for instance, runs to eighteen pages. Some of these lists were prepared following the publication of the score; these scores were not subsequently revised, and therefore the errors, unfortunately, remain in print. Babbitt's scores that were published as reproductions of his manuscripts are plagued by a number of characteristic notational omissions, such as missing time-signature changes, *octava* signs, ledger lines, clef changes, and indications of changes in

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[6] Ibid., 233.
[7] Ibid., 259–60.
[8] Ibid., 271. The anomaly in *Three Songs from William Shakespeare* is noted in Babbitt ([1964] 2003, 147), where it is explained as word painting, the offending serial dislocation supporting the text "do offend thy ear."
[9] As discussed in Straus (1999), some Schoenberg scholars (e.g., Cone [1972] and Haimo [1984]) have come to broadly similar conclusions about serial anomalies in Schoenberg's music. Others (e.g., Hall [1975], Glofcheskie [1976], and Boss [2014, 259–60 and 270]) disagree, finding, as Hall (1975, 182) puts it—and as I find is the case with Babbitt—that "some of the deviations apparently result from the precedence of other musical factors over serial procedures."

playing technique. His typeset scores, prepared by copyists, tend to correct these readily visible problems while adding others, particularly wrong notes, as is evident when comparing them with archival materials. Therefore, as much as one is inclined to agree with Babbitt's stern confidence in intentionality—"I assume that a composer intended what he presented, since I could never establish that he had not"[10]—one must approach Babbitt's scores with a degree of circumspection. Certainly, there are numerous deviations from serial expectations that are results of mistakes on the part of the composer or copyist—mistakes that should, ideally, be corrected.

Nonetheless, there remain serial anomalies that are quite clearly intentional. Their intentionality can be confirmed (or, at least, reasonably suspected) because they contrast dramatically with the expected material they replace, they cannot easily be fixed with minor notational changes (e.g., correcting one of Babbitt's characteristic notational omissions or shifting a pitch up or down a space on the staff), are supported by evidence in the sketches, or because they appear to be motivated by a non-serial—"extra-systematic"—criterion common to Babbitt's practice. The quotation above from Babbitt (1987) adds credence to this view, as does a curious comment found in an errata list for *Canonical Form* in the Milton Babbitt Collection. This list was prepared by an analyst who had worked through the piece's twelve-tone structure and includes various suggestions for bringing the piece back in line with its serial hierarchy, usually through minor notational corrections such as the addition of a ledger line. Babbitt takes many of these suggestions. But about one, the analyst asks: "P. 13, m. 103. Is r.h. G♮ correct? (violates set, but sounds ok – better than G♯!) (But A♯?)." Above both G♯ and A♯, either of which would

[10] Babbitt ([1963] 2003, 145).

emend the anomaly (as is evident in the array prepared for the piece, also in the Milton Babbitt Collection), Babbitt writes: "No! No!" The anomaly is confirmed.[11]

Beyond the question of textual accuracy is the possibility of misconstruing a piece's serial structure. To take one example, *Post-Partitions* has been described as having registers that precisely span an octave,[12] or as having registers "with a certain amount of overlap."[13] It has neither: its six discrete registers each span fourteen notes, as is evident in the sketch for the piece, and understanding this is essential to correctly identifying the piece's registral anomalies.[14] In the examples that follow, only serial anomalies about which I have confidence that they are textually accurate and serially anomalous will be discussed. When possible, my judgments about accuracy and anomalousness have been facilitated by archival materials, but in many cases archival materials are either not available or are not illuminating about the passage in question.[15] Therefore, in all cases, a certain measure of prudence will be applied.

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[11] Mead (1983, 109) presents an errata list for *My Complements to Roger* (1978), prepared by comparing the published score with the composer's fair copy and original manuscript. About one emendation, Mead writes: "Although this correction was not born out [sic] by either the fair copy or the manuscript, the composer was sufficiently intrigued by my reasons to change the score." At the very least, this suggests that Babbitt's refusal to take the advice of the anonymous analyst of *Canonical Form* was not obstinance. For some amusing context on that emendation, see Mead (2012b, 18).

[12] Hanninen (2001, 361).

[13] Mead (1994, 172).

[14] This sketch page is in the folder marked "Philomel" in the Milton Babbitt Collection. It is unmarked, but on it Babbitt clearly works out the registration and some of the opening array structure for *Post-Partitions*. The "Philomel" folder contains sketch materials for a number of different pieces Babbitt composed in the 1960s.

[15] Sketch material is not available for every piece discussed here, but in every available sketch it appears that Babbitt prepared a complete, intact array at an early stage of the compositional process. As with the truncation of the array for Piano Concerto no. 2 discussed in Chapter 4, this suggests that serial anomalies were probably not anticipated at the time the arrays were composed or selected.

As the examples below indicate, serial anomalies in Babbitt's music often seem to reflect compositional concerns extrinsic to the twelve-tone system. This has been observed previously by William E. Lake,[16] Dubiel,[17] and me.[18] In discussions of String Quartet no. 5, *Canonical Form*, *Allegro Penseroso*, and *It Takes Twelve to Tango*, these authors propose that serial anomalies exist in order to produce cross-references to the array or to facilitate registral gestures. This model is, generally, convincing—although the claims about cross-references will be revisited below—but it is incomplete. As will be shown, Babbitt also uses serial anomalies for the promotion of several other extra-systematic criteria, including the creation of segmental references extrinsic to the regular program of cross-references, programmatic allusion to tonal sets, regulating connections between performers in an ensemble, and all four of the closing signals discussed in Chapter 4.

A WEB OF SEGMENTAL REFERENCES: *DANCI*

An early analytical treatment of serial anomalies that recognizes them as both intentional and motivated by criteria extrinsic to array construction can be found in Lake's (1986) analysis of String Quartet no. 5. Lake explains the anomalies he finds as motivated by Babbitt's technique of cross-references to the array: "[anomalous pitches'] sole reason for existence is to create cross-references to the underlying structure."[19] This argument is echoed by Dubiel: "There are many instances that can be identified of Babbitt disrupting the progress of the planned lines for the sake of a segmental reference that the plan would not accommodate—dozens of them in *Allegro Penseroso*, perhaps

[16] Lake (1986, 103–6).
[17] Dubiel (1992, 118–19) and Dubiel (2008, 134–35 and 139).
[18] Bernstein (2011).
[19] Lake (1986, 103–4).

hundreds."[20] As discussed in earlier chapters, the arrangement of aggregates into cross-references to other aggregates in the array is a central aspect of Babbitt's practice, becoming ubiquitous in his music after around 1980. Indeed, in the "pulse pieces," of which String Quartet no. 5 is one, cross-references regulate dynamics, which are assigned as an index measuring distance (measured in blocks of the array) between the reference and the referent.[21] In both the pulse pieces and the time-point pieces that follow them, such as *None but the Lonely Flute*, cross-references also regulate rhythm: the specific subdivision of either the pulse or the time-point interval, in the pulse pieces and later time-point pieces respectively, is determined by the array segment being referred to. Cross-references in these pieces are therefore systematically demanded: were they absent, the rhythm and possibly the dynamics would be undetermined. Accordingly, there is an attractive logic to Lake and Dubiel's line of argument. Even if anomalies violate the hierarchical derivation from the series embodied in the array, they can still be considered as motivated by twelve-tone concerns in some capacity.[22]

However, on closer examination, the argument that serial anomalies exist in order to facilitate Babbitt's cross-references to the array is unconvincing. Although Babbitt's approach in his later years requires cross-references, there appear to be few if any limitations on which array segments are being referred to. As seen above in *None but the Lonely Flute* (see Examples 1.4 and 1.6), cross-references can refer to segments as short

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[20] Dubiel (2008, 139).
[21] See Mead (1987, 215–218). *It Takes Twelve to Tango*, although not a "pulse piece," also uses dynamics as an index of distance between reference and referent, as discussed in Bernstein (2011).
[22] This argument—specifically, the claim that Babbitt's music is more heavily concerned with the projection of segments of the series on the surface than the presentation of complete iterations of the series in the array—is explored extensively in Dubiel (2008, 135–39).

as one note. Although certain pieces from the '90s require that aggregates presented in one instrument or register systematically refer to arrays in another instrument or register, in all other cases an aggregate may simply cross-reference itself. (Indeed, this is quite common.) Accordingly, situations in which anomalies are necessitated simply in order to facilitate the systematic requirements of cross-references to the array do not arise. While it may be the case, and is the case in the examples shown by Dubiel and Lake, that certain anomalies participate in cross-references, it cannot be said that the cross-reference technique itself demands anomalies. The passages Dubiel and Lake present could easily be recomposed to satisfy the requirements of both the array and the system of cross-references.

It may, however, still be said that an anomaly appears in order to facilitate a particular reference, in certain situations in which the appearance of a particular reference appears to be motivated in a particular situation. This will, necessarily, invoke criteria extrinsic to the basic systematic concern with cross-references to the array, criteria that define particular references as significant. That is, evaluating the role of a reference created by a serial anomaly requires consideration of what the reference accomplishes in the piece.

Danci contains several anomalies that create references and uses these references to create an interesting network of associations. As described in Chapter 4, *Danci* uses a superarray composed of three simultaneous trichordal arrays; this is reprinted in Figure 5.1. At three points throughout the piece, *Danci* deviates from its pitch-class array, as is indicated in Figure 5.1 using parentheses for inserted notes and brackets for a missing note. The two inserted notes in the second and third composite aggregate are "late" reiterations of notes already presented in that aggregate, reappearing after the note that

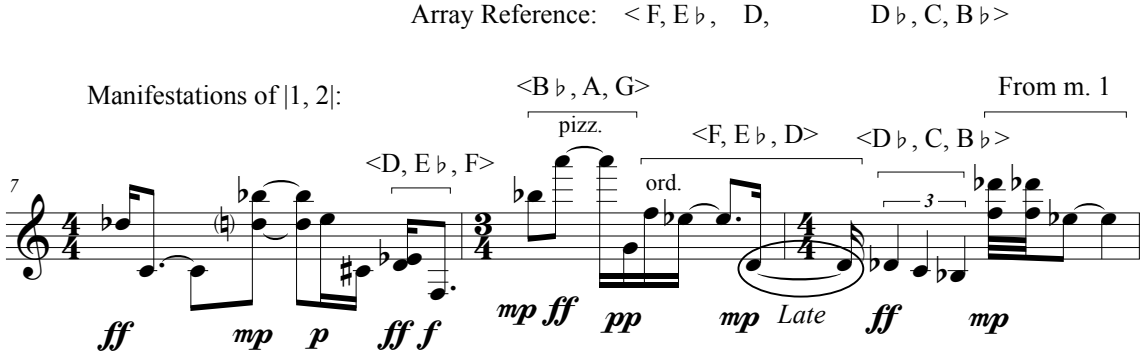
should have serially displaced them.[23] The two "late" notes together form an associative web that ties together various significant aspects of the piece.

As discussed in earlier chapters, trichordal arrays can be considered as having been derived from an underlying, often unstated, series of six or twelve notes. Accordingly, trichordal arrays have a more expanded potential for reference than all-partition arrays do: they can refer to either the array itself or to the underlying series. Unlike in all-partition arrays, whose array lines are themselves iterations of the series, this presents distinct possibilities. Given the trichordal intervallic orderings |1, 2|, |1, t|, |2, 8|, and |1, 8| used in *Danci*'s arrays, the only possible all-combinatorial series class that includes these orderings is <023154>. That Babbitt considered this series class as generative of the piece's arrays is evident in the sketches for this piece, included in the Milton Babbitt Collection.

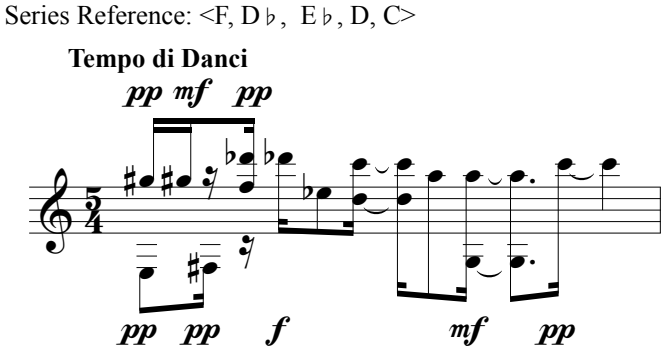
[23] The appellation "late" is admittedly a bit of an over-simplification because it is usually impossible in these situations to determine whether, e.g., the D4 in measure 8 of *Danci* is "late" or the E♭4 and F3 in measure 7 are "early." From the perspective of the array, all that can be said for sure is that the sequence <D, E♭, F> has been disrupted.

	Measure:	1–2	3–7	7–10	10–13	14–17	17–20	20–24	24–26	26–29	29–33	34–38	38–41	41–46	47–48	48–50	50–56
III	A♯5–A6 |1, 8|		734 265	t91	 e08	 734	265	e08 t91		80e	 19t	 437	562		19t 80e	562 437	
	G♯5–G6 |1, 2|	10t 89e			532 467	 10t	89e	467	 532		235 764	t01	 e98	764	 235	e98 t01	
II	G♯4–G5 |1, 2|	532	 467		10t 89e		467 532	89e	 10t	 e98	t01	 764	235	e98 t01		764 235	
	F♯4–F5 |1, t|		0e1 9t[8]	243 756		 0e1	9t8	 243	756	 657	342		1e0 8t9	657 342		 1e0	8t9
I	F♯3–F4 |2, 8|		513 t20		684 97e	t20	 513	97e	 684	 e79	486	315 02t		e79 486		02t	 315
	E3–D♯4 |1, 2|	 467	e98	10t 235(2)		467 e98(9)		235	 10t	t01	 532	 764	89e	532 t01			764 89e

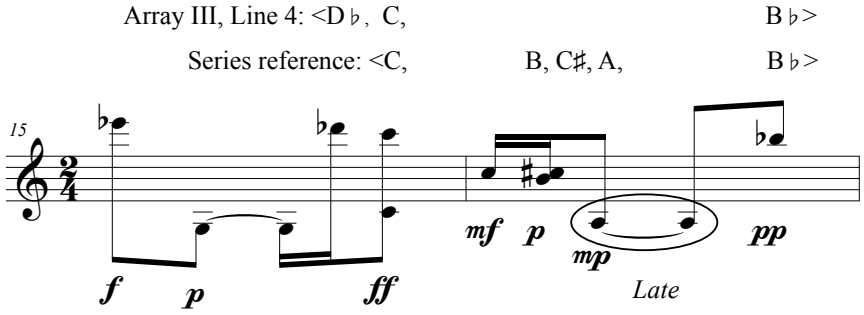
Figure 5.1. Pitch-class superarray for *Danci*. Parentheses indicate serially anomalous inserted notes ("late" reiterations of a note already presented in those aggregates); brackets indicate a "missing" note expected in the array.



Example 5.1. *Danci*, mm. 7–9



Example 5.2. *Danci*, m. 1



Example 5.3. *Danci*, mm. 15–16

Example 5.1 includes the first "late" note. This reiterated D is embedded within a series of surface trichords that realize various iterations of trichord ordering |1, 2|.[24] The last two of these trichords, the first of which is made possible by the "late" D, create <F, E♭, D – D♭, C, B♭>. This sequence of pitch classes appears three times in the piece's superarray, as can be seen in Figure 5.1: in two lines in Array II and in the lower line-pair of Array III. The most proximate instance of this referenced succession begins in the partition immediately following this passage, unfolding across measures 10–16.

The piece's underlying series class is never referred to in full. However, at two points in the piece, there are five-note segments of the series. As shown in Example 5.2, one of these segments is in the first measure (in what may be taken as an instance of Babbitt's characteristic opening technique, discussed in Chapter 4, of beginning with important materials presented in a simplified or clarified form). As can be seen in Example 5.1, a pitch-exact reference to this series segment appears immediately following the array reference created by the anomaly in measures 8–9. The second five-note series segment appears in measures 15–16, shown in Example 5.3. This segment, <C, B, C♯, A, B♭>, is facilitated by the second and final "late" note in the piece. The C and B♭ that begin and end the second anomalous segment are the final two notes of an array source to which the first anomaly, appearing in measures 8–9 and shown in Example 5.1, refers. The "late" notes, that is, form references that link both of the passages in which they appear and are associated with both of the longest series segments in the piece. The result is a manifestation of "relational richness," of the principle of making music "as much as it can be," discussed in Chapter 1, according to which individual moments should be

[24] Simultaneities in this example, as in Babbitt's practice generally after 1960, should be understood as ordered from bottom to top.

maximally referential. But unlike the instances of this principle discussed in earlier chapters, in which it is integrated into serial hierarchy, here the associative web appears to take priority, leading to the dislocation of two expected pitches.

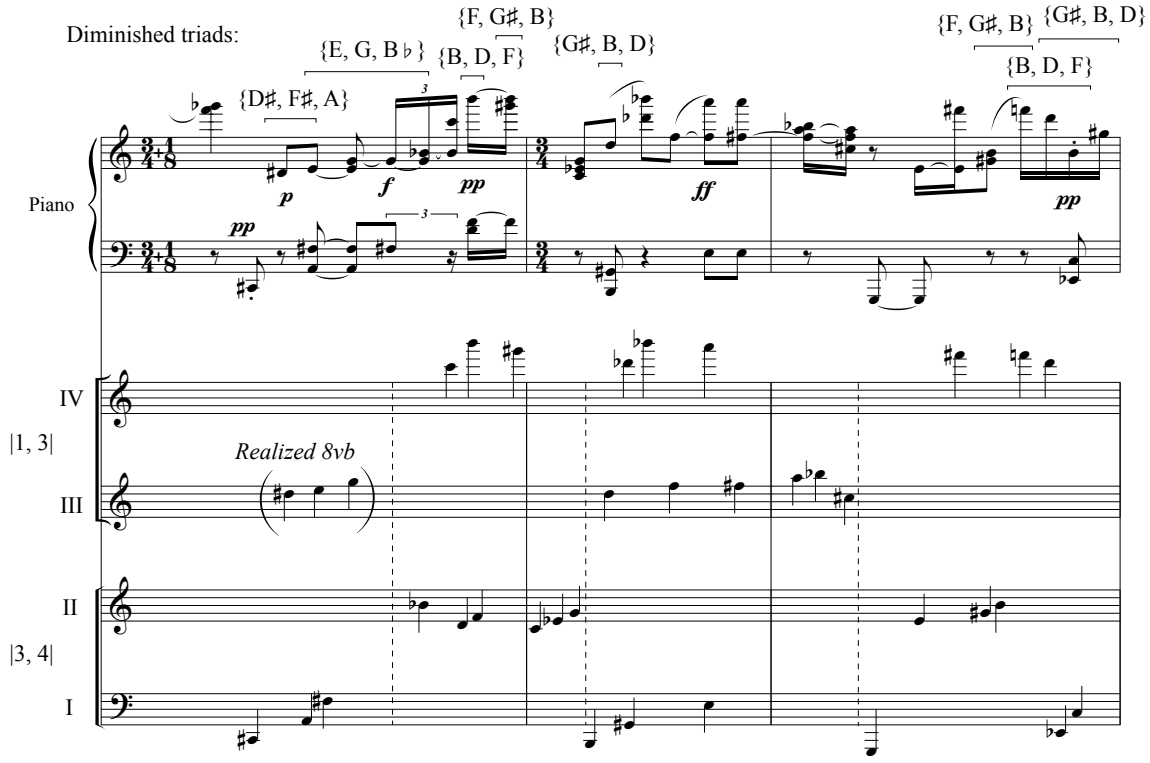
TONAL ALLUSION AND REMINISCENCE IN *MINUTE WALTZ* AND "THE VIRGINAL BOOK"

The *Minute Waltz*, as its title suggests, is full of allusions to the waltz specifically and to tonality generally. Its subtitle—*(or) 3/4 ± 1/8*—suggests what a quirky waltz this will be. (Although the piece's rhythm is beyond the scope of this study, it is worth recalling Babbitt's claim that the *Waltz* presents an "encyclopedia containing every possible form of oom-pah"[25]—some exhaustive list, that!) Notable among these allusions to tonality are the striking tonal sonorities that appear throughout the piece. Although the E-type series class that underlies the piece's trichordal arrays, <0743e8>, is not itself diatonic, both of its discrete trichords are perfect triads, and thus the piece's arrays features many of these characteristic tonal sonorities, most prominently in the first section of the piece, to humorous effect.[26]

This focus on diatonic sonorities has important effects on the piece's surface: the simultaneities, direct successions under slurs, and other closely proximate and readily

[25] Qtd. in Blaustein and Brody (1986, 31).
[26] Blaustein and Brody (1986) substantially mischaracterize the structure of the *Minute Waltz* (among other things, not recognizing it as a trichordal array), which leads them to impute many serial anomalies that are not, in fact, anomalous. But they do recognize the importance of the E-type hexachord and suggestively note that "of all the all-combinatorial hexachords, this one contains the maximum number of (037) subsets: 6" (36). (They could have left out the modifier "all-combinatorial.")

audible collections of notes in the piece. As discussed in earlier chapters, it is a general principle of Babbitt's practice that arrangements on the surface, particularly simultaneous attacks, are ordinarily derived from (or, at least, reflect) the series. However, throughout *Minute Waltz*, there are numerous surface arrangements, most notably simultaneous attacks, that are not subsets of the series. *All* of these simultaneities are subsets of the diatonic collection.



Example 5.4. *Minute Waltz (or) 3/4 ± 1/8*, mm. 27–29

Perhaps the most notable "surface" arrangement in the piece that deviates from the series—although it is not the most frequent of these collections, there are numerous prominent instances of it throughout the piece—is the diminished triad, (036). Not a

subset of any all-combinatorial hexachord, (036) appears rarely in Babbitt's output,[27] and thus its appearances in *Minute Waltz* are particularly striking. The densest cluster of instances of this sonority appears in measures 27–29: as shown in Example 5.4, at least eight distinct instances of (036) are audible in this brief passage, including a punning pitch-class-correct resolution, vii°7–i in C minor, into the downbeat of measure 28—one of the more striking tonal allusions in the piece. This passage also features one of the piece's only serial anomalies: as indicated in Example 5.4, the notes D♯, E, and G appear an octave lower than expected.[28] The result is the isolation of two further diminished triads: because of the transposition, {D♯, F♯, A} and {E, G, B♭} are distinguished by register. Furthermore, the particular diminished triads created by this transposition are significant because they mean that this climactic passage contains at least one salient diminished triad from each diminished seventh chord. The anomaly thus facilitates the climax of this sonority, a sonority that is significant both contextually—in that it is a relatively distinctive aspect of the piece—and programmatically, in that its tonal resonances contribute to the off-kilter waltz conceit.

Another occasion for diatonic reference arises in "A Virginal Book" (1988). The text of the song—a poem drawn from the cycle *In Time and Place* (1986), by John Hollander—depicts a man playing *Loath to Depart*, a piece by Giles Farnaby in the

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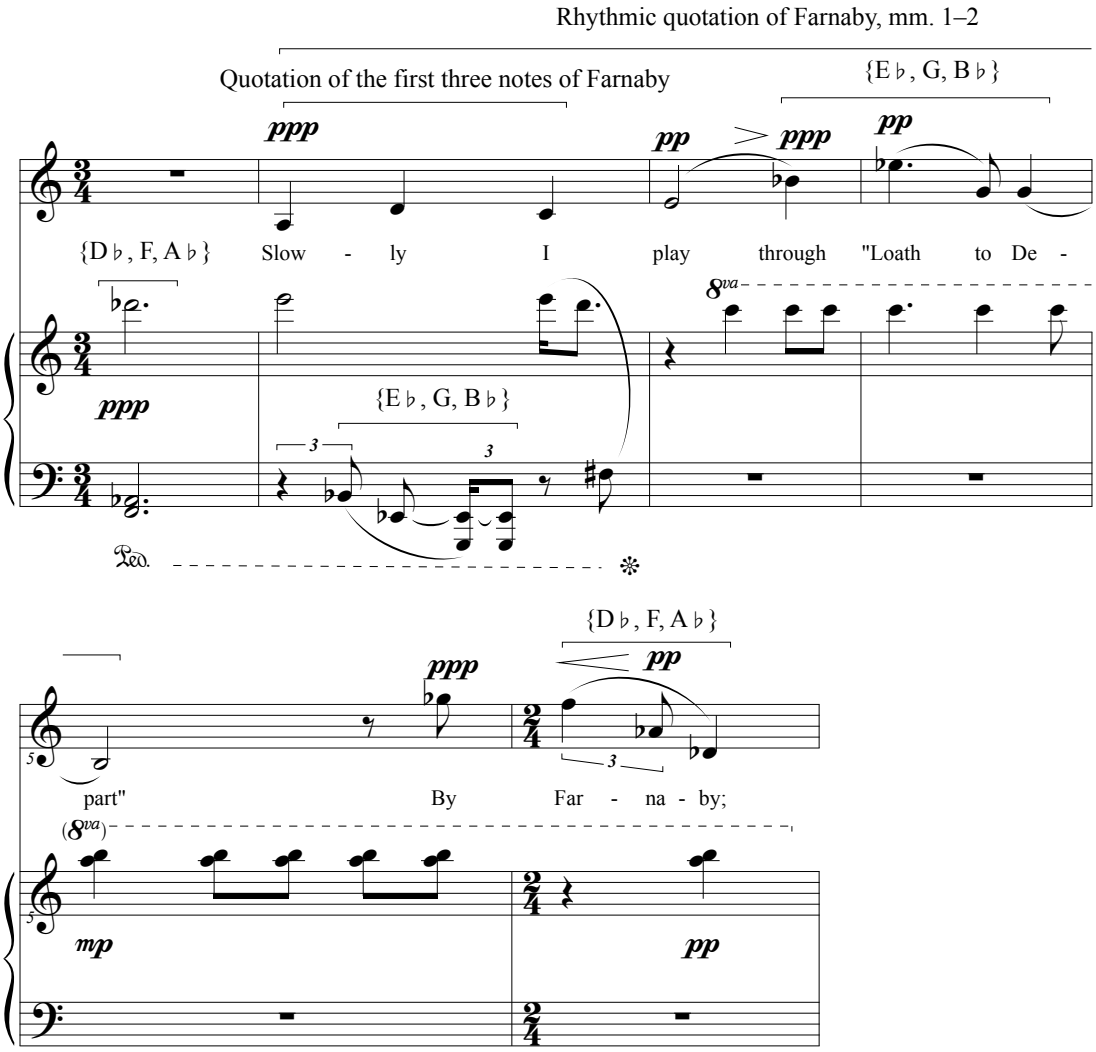
[27] An exception to this pattern are the pieces built using the array initially designed for *Reflections*, including *Reflections*, *A Solo Requiem,* "Now Evening After Evening," and *Concerti for Orchestra*. (036) is not a subset of the series used in that array, but (0369)—whose only trichordal subset is (036)—appears as the union of the fifth and sixth notes of each member of each combinatorial pair of series in the array. The first measures of *A Solo Requiem*, shown in Example 4.3, exemplify the importance of (0369) in that piece.

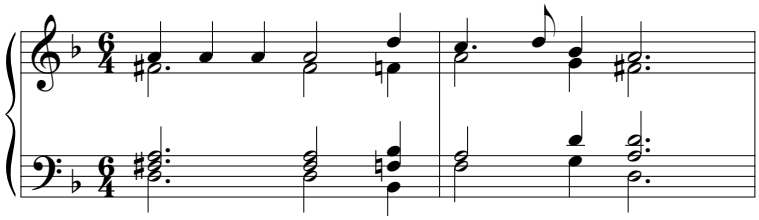
[28] The piece's registers are as follows: IV=C6–B6, III=C5–B5, II=C4–B4, and I=anything below middle C. The uneven registration (which may be unique in Babbitt's later practice) is suggestively described by Blaustein and Brody (1986, 35) as "mimic[king] a characteristic waltz texture."

Fitzwilliam Virginal Book.[29] Like the *Minute Waltz*, "The Virginal Book" generally uses only references to the array when forming simultaneities or other surface groupings, except when it comes to diatonic sonorities and, above all, triads, which are not in the series or array but color the piece from its first measure onward (as indicated in Examples 5.5 and 5.8–5.10). Babbitt heightens the retrospective association even further by quoting Farnaby himself, beginning the vocal part of his song by quoting the opening rhythm and notes of *Loath to Depart*. The opening measures of "The Virginal Book," the relevant measures of *Loath to Depart*, and the text of the Hollander poem appear in Examples 5.5–5.7.

[29] In the Fitzwilliam Virginal Book, the first word of the piece's title is spelled "Loth."



Example 5.5. "The Virginal Book," mm. 1–6, with quotations of Farnaby and prominent (037) trichords indicated



Example 5.6. *Loath to Depart*, by Giles Farnaby, mm. 1–2

Slowly I play through *Loath to Depart*
By Farnaby: the now-in-tune
Piano saves, from my rough hewn
Graces and runs, the fragile art

Of varying a common theme
While keeping on familiar ground
(Mine based on loss.) I have not found
What variation might redeem;

So these divisions weep out woe,
A false relation here and there,
A sharp pain after natural care
From whose plain text these fancies grow.

Example 5.7. "The Virginal Book," by John Hollander[30]

The setting of the poem presents an act of playing *Loath to Depart* at two levels of remove: the singer represents a persona reflecting on his playing.[31] As shown in Example 5.5, even though the reflection is of an act of playing the piano, the quotation of the Farnaby takes place in the vocal part. The piano part, although contributing to the piece's air of nostalgia with its triadic sonorities, stands apart.[32]

[30] Hollander (1986, 11). In a footnote to this poem, Hollander writes, in music notation, the rhythm of the opening measuress of the Farnaby. These are the same rhythmic values that Babbitt quotes.
[31] Although the text of "The Virginal Book" does not specify the gender of the poetic persona, the remainder of Hollander's *In Time and Place*—see, for instance, "Forms of Address"—clarifies that the cycle is autobiographical.
[32] The piano does not quote the Farnaby here, but it might still be engaging it through an act of word painting. The piano described in the poem was recently out of tune. In Babbitt's setting, the piano part begins with a D♭ major triad, a half step lower than the D major triad that begins the Farnaby, before over-correcting upward to an E♭ major triad.

The piano stands apart in the projection of its array, too. As shown in Figure 5.2, both the piano and voice present a trichordal array, in a curious registral configuration.[33] The upper two lines in the piano are fixed above the voice, while the lower two lines are fixed below it. Although the piano surrounds the voice, it remains at some level of remove—distant, perhaps, or at least detached. One might easily conceive of this distance as an analogue for the various kinds of distance expressed in the poem and its setting: the distance between the present and the past (the remote past of Farnaby; the more recent, painfully recollected past preceding the "loss" expressed in the poem), and the distance between the poem's persona and his lost lover,[34] the separation that presumably motivated the playing of *Loath to Depart*.[35]

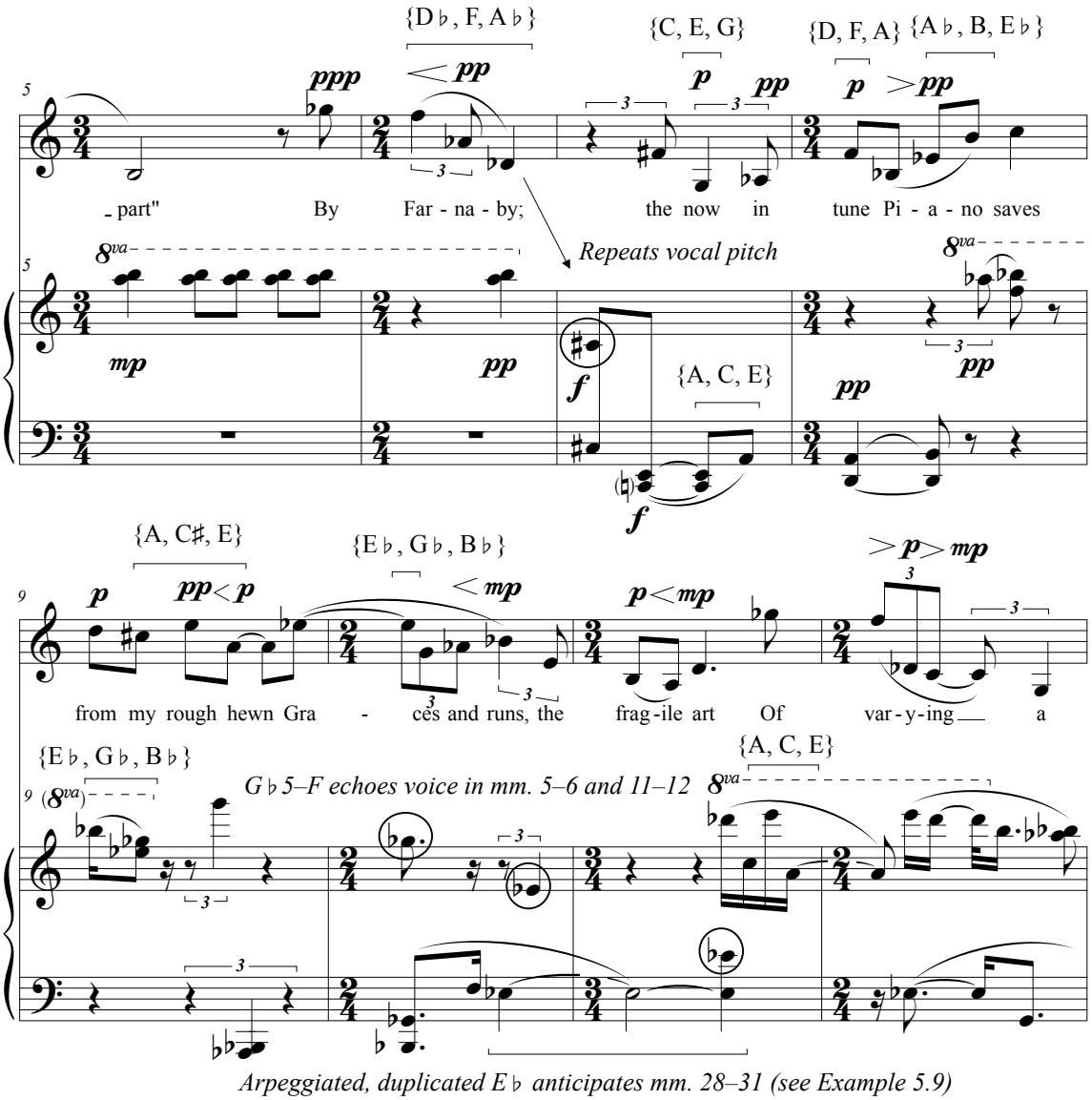
[33] As can be seen in Figure 5.2, the vocal lines within each register are distinguished by relative dynamics, the upper line always one dynamic level higher than the lower. I am grateful to Alison Maggart for this observation.
[34] That the loss mentioned here is romantic in nature is clarified in the remainder of Hollander's *In Time and Place*.
[35] Chappell (1855, 173) explains: "A *Loath to Depart* was the common term for a song sung, or a tune played, upon taking leave of friends."

Measure			1–2	3–6	7–8	8–9	9–10	10–12	12–14	14–15	15–17	17–19	19–22	22–23	23–27	27–31	31–32
Voice IV |1, 4|	G4–F♯5	Louder		378		219		t65		e04	912		873		40e		56t
Voice III |1, 4|		Softer		t65		e04	378		219			40e	56t		912	87**3**	
Voice II |2, 7|	G3–F♯4	Louder		4e1	75t			920		683		t57		1e4	386	02[9](3)	
Voice I |2, 7|		Softer	920		683			4e1	75t		386		029		t57	1e4	
Piano IV |2, 9|	G6–F♯7			09e		8t7		142		536	7t8		e90		635		241
Piano III |2, 9|	G5–F♯6		142			536		09e	8t7			635		241	7**t**8		3**90**(9)0
Piano II |2, 8|	G2–F♯3		8t6		**1**9e			5**3**7		042		e91	**6t**8		24**0**	7**35**	
Piano I |2, 8|	G1–F♯2		537		042		8t**6**		19e		240		735		e91		6t8

Figure 5.2. "The Virginal Book"'s superarray. Doubled notes are in boldface. Brackets indicate anomalous omission; parentheses indicate anomalous insertion.

Despite the discrete registral assignments of the voice and piano's arrays, eleven of the piano's notes are doubled such that the piano's pitch classes are projected into the register occupied by the voice; these doublings are indicated in Figure 5.2. In many cases, this results in a direct coincidence or close adjacency of two instances of a single pitch sounded by both performers: a unison doubling between the parts, an echo, or a preparation. Accordingly, the most immediate effect of these doublings is to work across the discrete division of the registers, creating a common ground between instruments otherwise set apart from each other. This effect begins rather strikingly with the first doubling, at the beginning of the second composite aggregate (Example 5.8), continues in a subtler fashion over most of the rest of the piece, and culminates in the final composite aggregate (Example 5.9).

In light of this blurring of the registral divide otherwise fixing the performers apart from each other, the metaphors of distance suggested above need to be revisited. It seems clear that the separation between the poetic persona and his lover is not being repaired. But these duplications may suggest that the persona's retrospection is helping bridge the temporal divides that are also present here. The act of mourning carried out by playing *Loath to Depart*, while not leading to "what variation might redeem," might lead to a modicum of understanding. In reaching into the distant past of Farnaby, the persona may gain a perspective on his own past.



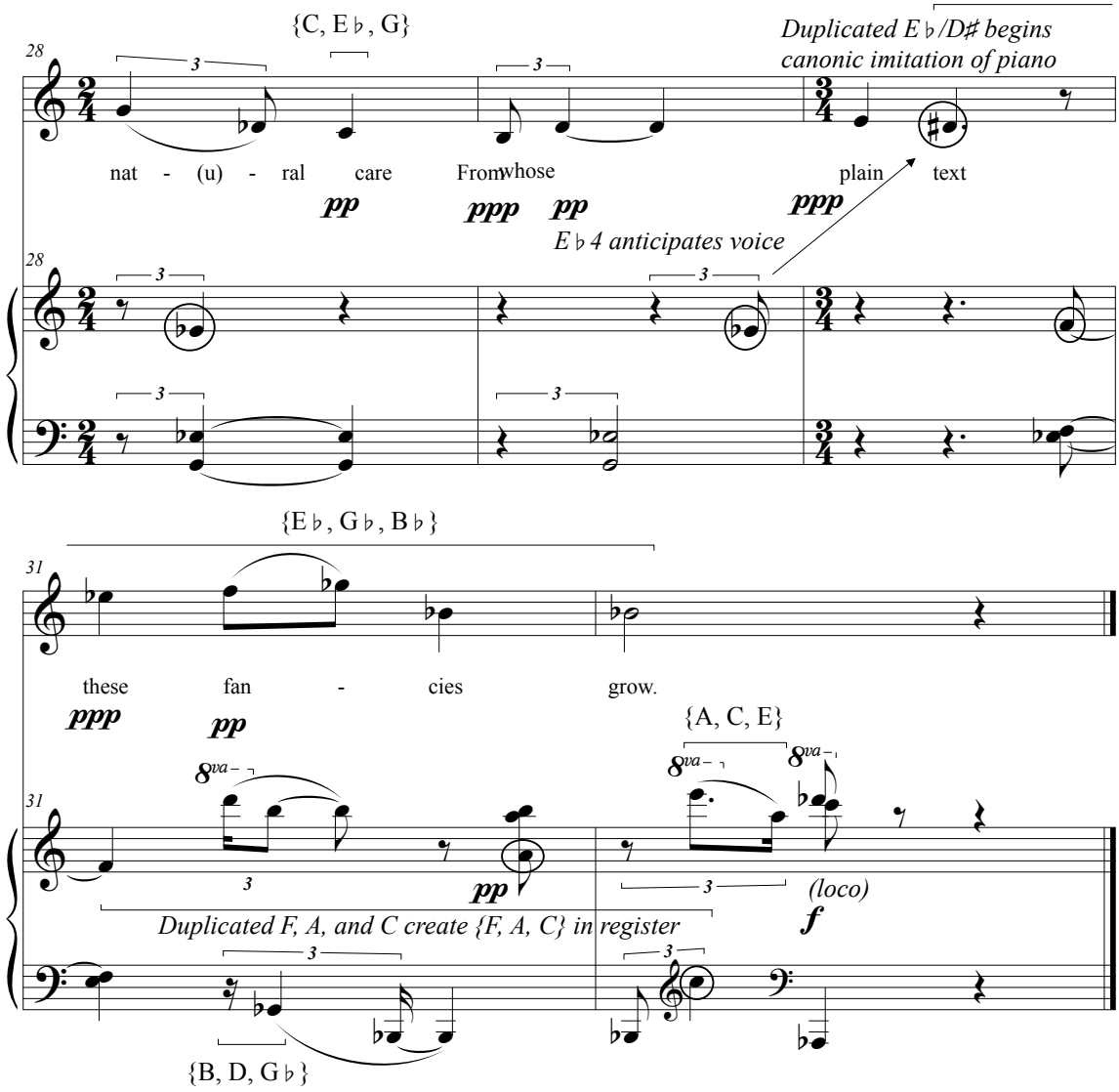
Example 5.8. "The Virginal Book," mm. 5-12.[36] Out-of-register duplicates are circled. Prominent (037) trichords are indicated.

The first octave comes in measure 7, as the piano suddenly breaks the placid calm of the opening measures with the piece's first ***f***. The piano's C♯4, the serially anomalous doubling of C♯3, immediately, and jarringly, repeats the D♭ just heard in the voice. The next doubling, the G♭5 in measure 10 that doubles G♭2, might also be heard as linking

[36] According to the piece's dynamic scheme, the last vocal note in measure 10 should be marked ***p***. It is unclear whether this is an intentional anomaly.

the piano and voice parts, although somewhat more distantly. This G♭5 appears in the second composite aggregate; the voice uses G♭5 in both the first and third composite aggregate, in measure 5 and measure 11; and in all three of these passages, G♭ immediately precedes F.

In measure 10, E♭3 arpeggiates up to its duplicate, E♭4. Both E♭s are then reiterated over the next two measures. This doubling does not seem to immediately echo any vocal pitch. Rather, it seems to be motivated by (or, at least, relate to) what happens in measures 28–30, as shown in Example 5.9. There, at the only other instance of E♭3 in the piece, E♭4 sounds again, at which point there is indeed a strong connection between the piano and voice. Accordingly, it appears that the earlier doubling of E♭3 at E♭4 in measure 10, although not connecting the piano to the voice immediately, is proleptic of a passage that more explicitly binds the parts.



Example 5.9. "The Virginal Book," mm. 28–32. Out-of-register duplications are circled. Prominent (037) trichords are indicated.[37]

Each of the first seven composite aggregates in "The Virginal Book" presents at most one or two doublings. The final composite aggregate, most of which is shown in Example 5.9, however, presents five doublings, including the only vocal octave doubling

[37] To my ears, {E♭, G♭, B♭} is projected prominently in the last three measures of the voice part despite the intervening F. As E♭, G♭, and B♭ are all marked by repetition, duration, metric placement, or as a registral extreme, the F sounds to me like a passing tone in the sense of Buchler (2014).

in the piece. Three of these enact the tightest connection between the voice and piano presented in the entire piece. The piano begins these doublings with the doubling of E♭3 and E♭4, first simultaneously in measure 28 and then arpeggiated, low to high, in measure 29, the array-correct E♭3 reaching up to the duplicated E♭4. The voice picks up that E♭4 (spelled as D♯)—in what is, for itself, an octave duplication—before ascending to the array-correct E♭5. That is, the duplications in both parts effect a pitch coincidence on E♭4 as well as an immediate imitation of the octave ascents on E♭.[38] The voice continues with its imitation of the piano's lower lines, with its final notes <F, G♭, B♭, B♭> all closely following the piano part; indeed, increasingly closely, with the voice's final, repeated B♭ coinciding with the piano's low, repeated B♭. The piano's doubled F in measure 30 might be considered as contributing to this canonic pattern: the doubling means the piano, like the voice, ascends by step to F after its second, higher E♭. The result is that the piano and voice appear relatively united—more than they had been at any other time in the piece. The voice almost seems to "grow" out of the piano. Although the projection of the array structure fixes the performers apart from each other, the anomalous doublings—and, finally, a touch of canonic imitation—gradually, and partially, bridge the gap.[39]

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[38] The lower note in the voice's octave, D♯ in measure 30, appears to come in place of the expected A3, which is the only "missing" note in the piece. Although it is not clear why A is missing—the A could easily be fit in without disrupting the imitation of the piano that the octave achieves—compare the passage from *Fanfare for All* (1993) discussed below. There as well, inserted notes are balanced by omitted notes.

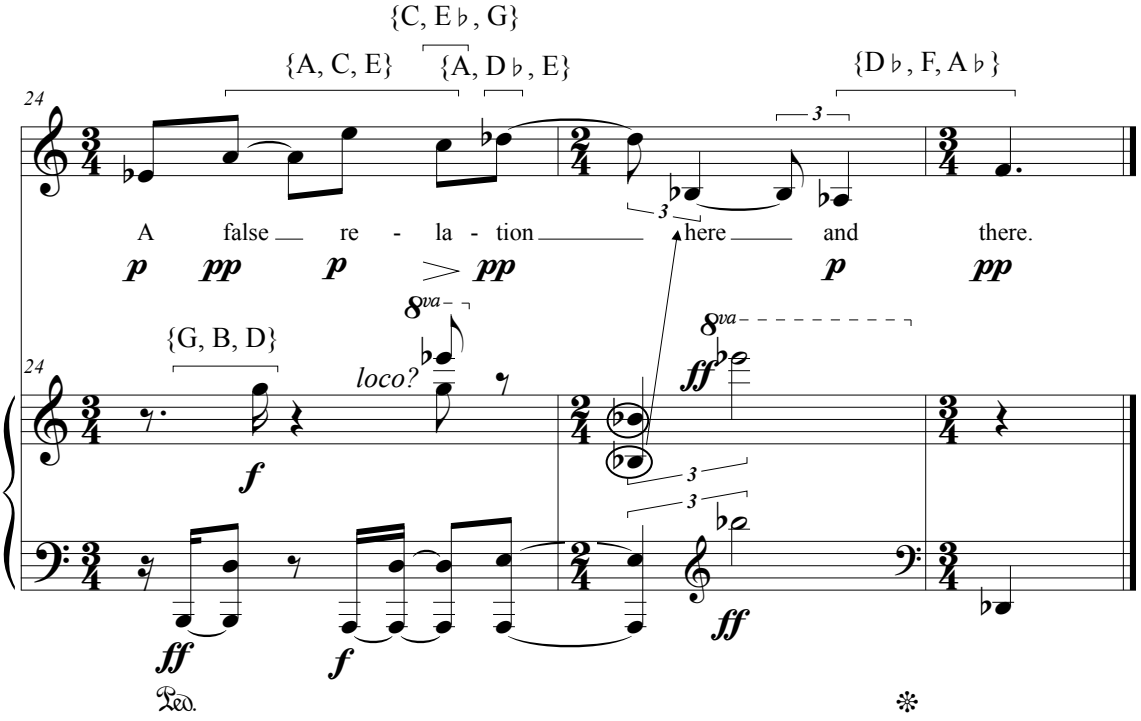
[39] Although the canonic imitation discussed here is undoubtedly the most salient example of imitation in the piece, there are several other spots in the piece that might be considered imitative. The most striking of these is right at the beginning of the piece: the piano's <E♭, B♭, G, G> in measure 2 anticipates the voice's pass through the same pitch classes in measure 3–4 with precisely the same durational pattern, three times as slow.

The doubling of A and C in measures 31–32, which results in the anomalous A4 and C5, does not similarly contribute to the connection between the voice and the piano. Rather, it seems the most likely explanation for these duplications lies in their connection to the previous duplication of F, which resulted in F4 in measures 30–31. With these three duplications, drawn from both the upper and lower halves of the piano's registers, F, A, and C are arpeggiated in the middle register of the piano, creating yet another statement of the perfect triads so prevalent in the piece (the final C5, in fact, forms yet another salient triad, the last in the piece, with the A and E of measure 32). The technique is similar to that seen above in *Minute Waltz*: octave dislocation results in a registrally discrete statement of a contextually significant set class.[40]

Yet another tonal allusion can be understood by considering the duplications as a whole. As can be seen in Figure 5.2, although there are twelve duplicated pitches in the song, only seven distinct pitch classes are duplicated (a consequence of several pitch classes that are duplicated multiple times): {A, B♭, C, D♭, E♭, F, G♭}; in other words, the B♭ harmonic minor scale. Furthermore, and perhaps not coincidentally, B♭ is arguably the most emphasized of the duplicated pitches. Not only is it duplicated in two different places (in measures 21 and 25), but in measure 25, B♭5 becomes the only pitch in the array to be duplicated simultaneously in two different registers (B♭4 and B♭3), all while B♭ is also being heard in the voice; see Example 5.10. (The result creates something of a "false relation" with the prominent A in the bass, which supports both an A minor and, particularly, an A major triad.) In addition, as was discussed above, B♭ is prominent

[40] As noted in Figure 5.2, there is an ordering anomaly in the final piano aggregate: register III proceeds <A, C, A, C>, presenting either an "early" C or a "late" A (or both). The motivation for this is unclear. However, note that within each register (that is, within the proper register III and its duplication an octave lower), A still proceeds to C.

at the piece's close, the piece's final downbeat presenting simultaneous B♭s in both the voice and piano. Nonetheless, all of these observations should be interpreted, at most, as subtle allusions to tonality. B♭ is not the tonic of the piece in any meaningful sense of the term.



Example 5.10. "The Virginal Book," mm. 24–26. Out-of-register duplications are circled. Salient (037) trichords are indicated.[41]

"The Virginal Book," both the original Hollander and the Babbitt setting, is subtle, almost cold. Hollander's persona "weeps out woe" not through surging strings, but with a private pass through an ancient virginal tune, his "sharp pain" reflected in not much more than "a false relation here and there." Babbitt sets the persona's isolation

[41] As shown in the example, the second G in the piano part of measure 24 should probably be G5. While it could be another duplication, it would be unlike the other duplications of piano notes in the piece, all of which project the piano part into the vocal register. Moreover, the *loco* indication would explain the downward stem, as in the last measure of Example 5.9.

through a technique that is also subtle. The registral separation of the voice and piano might be scarcely noticed at any given moment, although, over time, the creeping intimation that the voice (like the persona) is not quite "accompanied" steadily grows. The duplications that unite the performers (however partially) work to ameliorate this isolation, demonstrating the persona slowly gaining understanding of his loss. The concluding duplications of F, A, and C, with their projection of a registrally discrete triad—and, less overtly, the scalar content of all of the duplicated pitch classes—project, along with the many surface triads, the nostalgia at the heart of the enterprise.

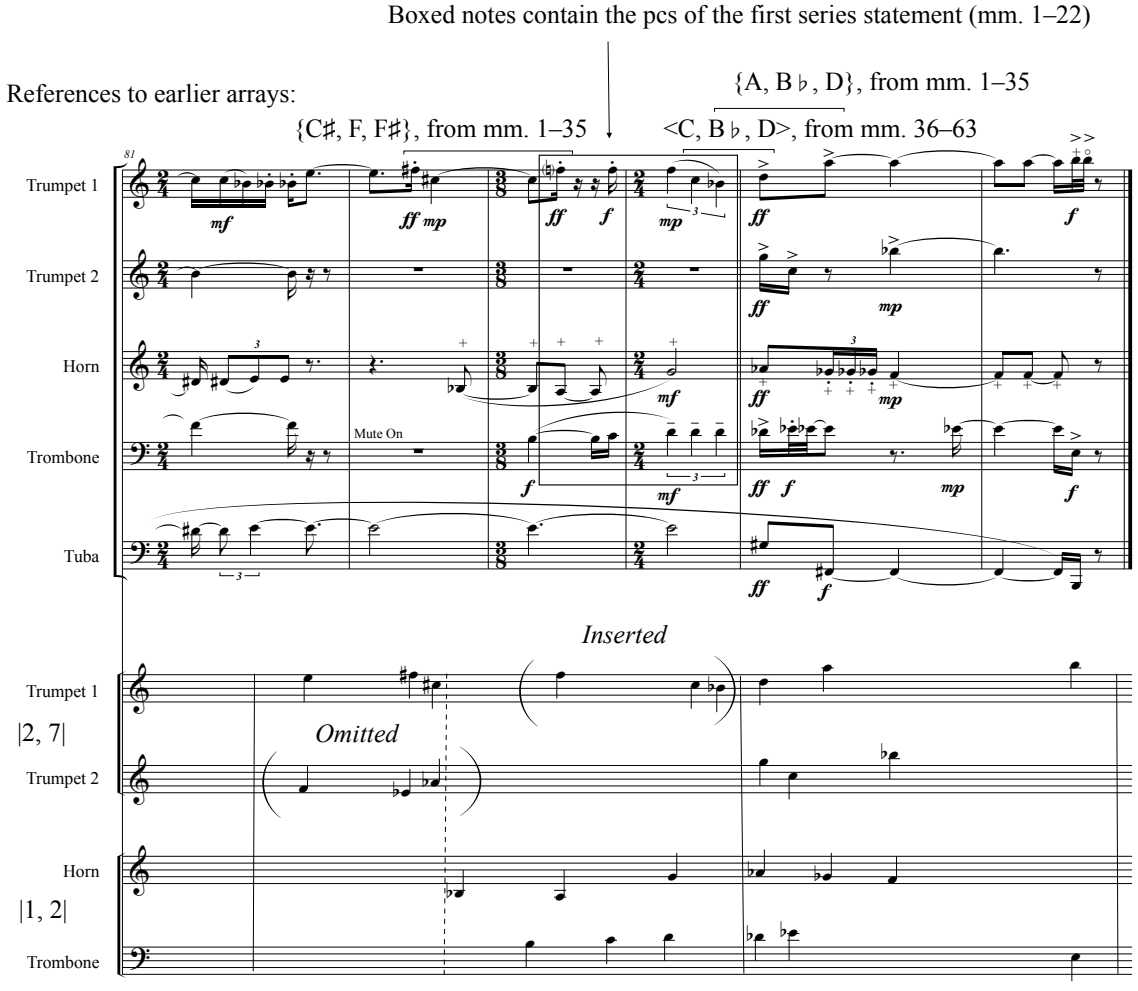
CLOSING SIGNALS (1): SUMMING-UP IN *FANFARE FOR ALL*

Fanfare for All, a 1993 piece for brass quintet, is also constructed from trichordal arrays, here presented successively. The upper four instruments each present a line from the array. The tuba, reviving a technique first used in *All Set*, does not participate in the array. Instead, it enters once every few measures to double a note in one of the other instruments. These doubled notes express iterations of the piece's underlying six-note series, one note at a time. The tuba, from outside the array, thus makes the series class that generates the array explicit (perhaps, in the spirit of the cheekily elitist title, reminding us that not all are, in fact, common[42]).

The penultimate aggregate of *Fanfare for All*, shown in Example 5.11, contains an anomaly. F, E♭, and A♭ are omitted from the second trumpet's line; this omission is balanced by the insertion of F, C, and B♭ into the first trumpet. The result is a network of segmental associations created by the inserted notes. As the trichords referenced come

[42] Babbitt is quoted criticizing Aaron Copland's politics in Brody (1993, 171).

from the second and third trichords of the series, used in arrays earlier in the piece, they complement the use of the series's first and fourth trichords, which are already active in this passage. That is, because of the anomaly, the passage uses all four of the piece's array-generating trichords. In addition, the boxed notes in the example, comprising the added notes and the three other notes sounding concurrently, recall the pitch content of the very first statement of the series class, heard in the tuba in the first twenty-two measures of the piece.

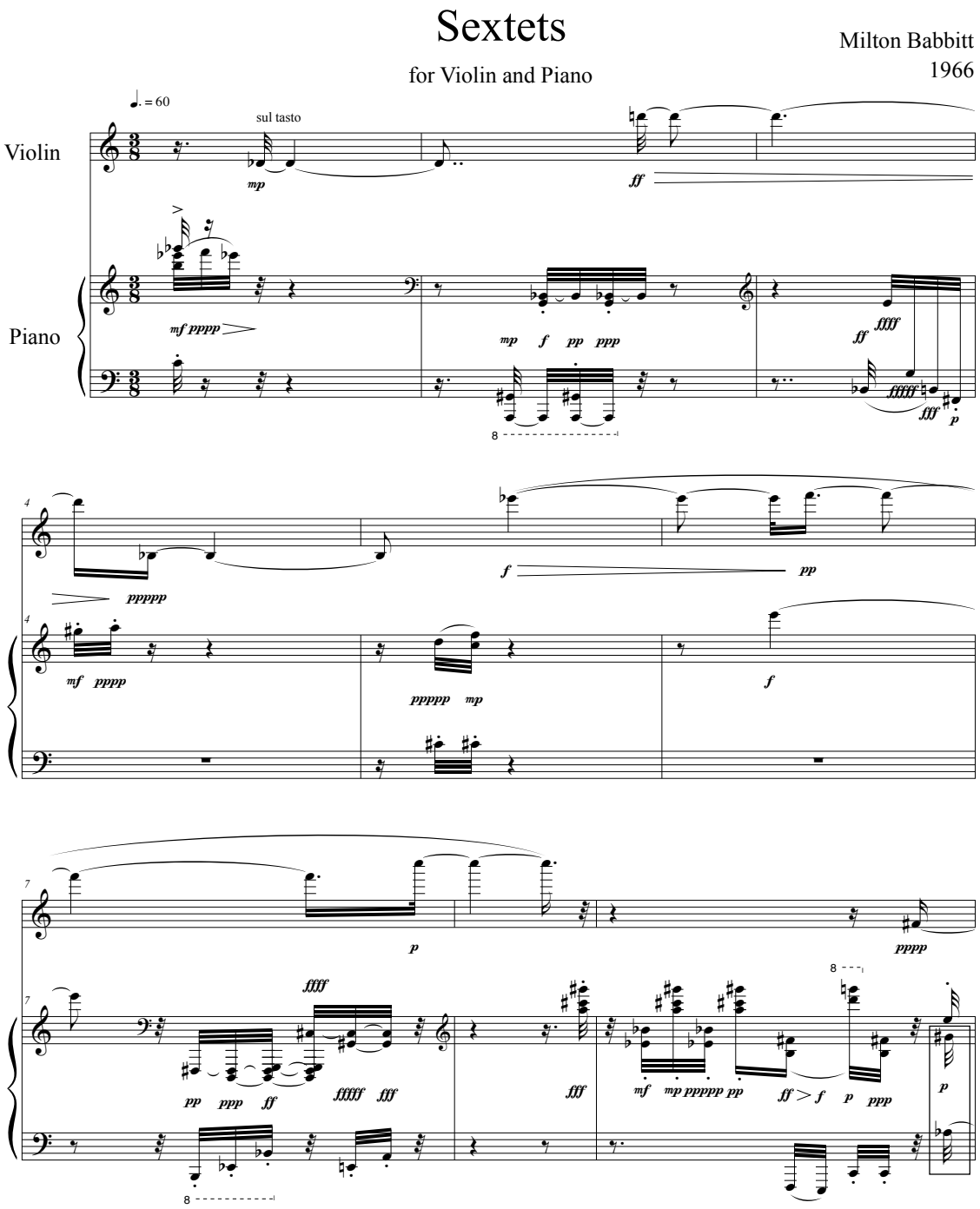


Example 5.11. *Fanfare for All*, mm. 81–86

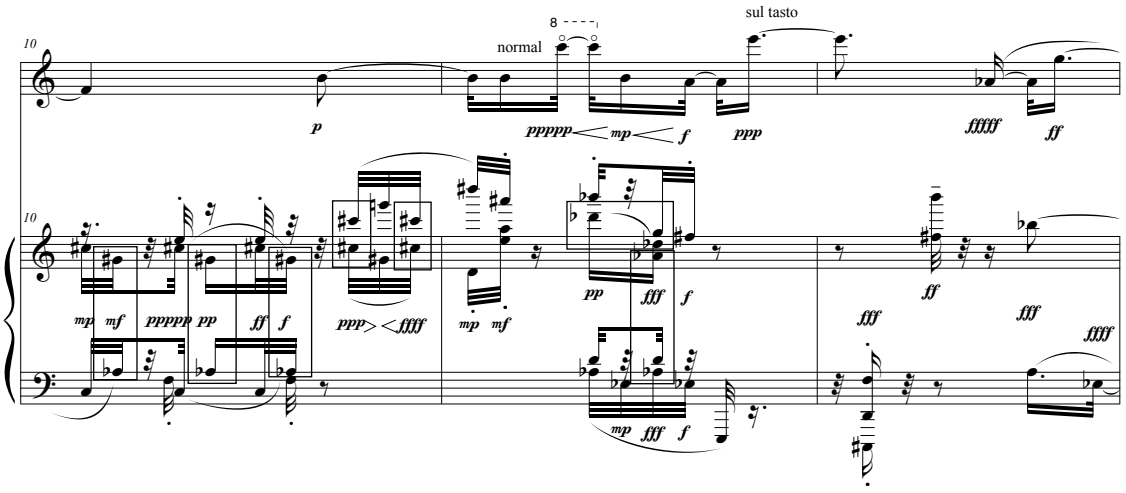
These significant retrospective associations suggest a rhetorical function for this anomaly. They summarize most of the major harmonic components of the piece, just before the piece ends. The anomaly can therefore be said to be motivated by one of Babbitt's favored closing techniques, discussed in Chapter 4: a retrospective summing up of a piece's most important materials.

CLOSING SIGNALS (2): REMINISCENCE AND CULMINATION IN *SEXTETS*

Sextets (1966) gives us Babbitt at his most severe, his most jarring, and—for much of the piece—his most fragmented and even pointillistic. The opening, however, abrupt as it is, presents an unusually continuous progression spanning its first twelve measures. These first twelve measures, shown in Example 5.12, present ten iterations of a gesture, a string of thirty-second notes in the piano leading directly into a sustained tone in the violin. In general, despite a brief retrenchment in measures 5 and 6, the various presentations of this gesture gradually get longer and cover more of the keyboard, so that its final appearances, in measures 9–11, have a feeling of culmination.



Example 5.12. *Sextets*, mm. 1–12, with anomalous octaves boxed



Example 5.12, cont.

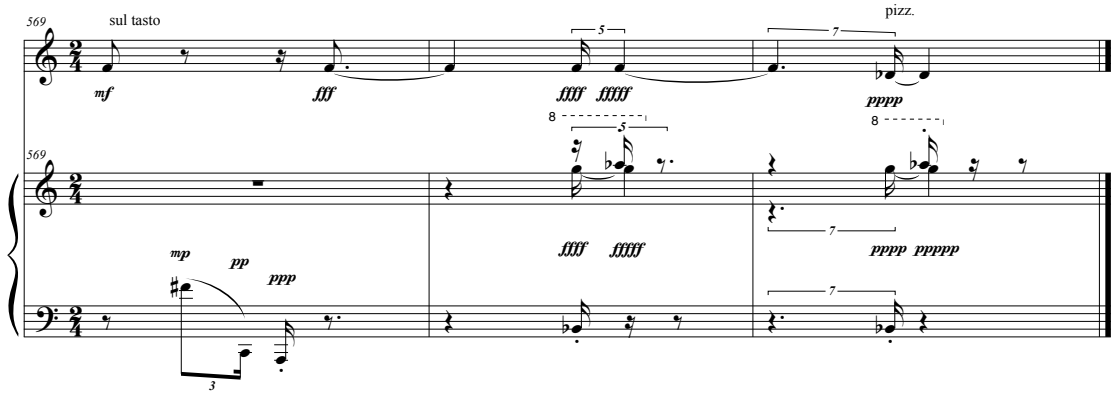
It is surprising to encounter multiple appearances of octaves in measures 9–11.[43] Repeatedly throughout these measures, first G♯/A♭ and then C♯/D♭ are doubled at the octave. As these octaves are repeated in various different spellings and are presented several times in isolation, it appears quite certain that they are not errors. But these are the only two octaves in the piece, in the ninth through eleventh of nearly six hundred measures. The appearance of these octaves coincides with the culmination of the opening gesture. Accordingly, the placement of the octaves on C♯/D♭ and G♯/A♭ at the conclusion of this passage associates those pitch classes with the culminating quality of measures 9–11.

Indeed, these pitch classes have been becoming increasingly prominent and increasingly linked since the beginning of the piece. The first violin note is D♭4. In measure 5, the piano repeats the violin's opening pitch (now spelled C♯4), making it the first pitch that has been played by both instruments. The piano's C♯ in measure 5 is also

[43] These octaves are mentioned, though not much discussed, in both Dubiel (1990a, 236) and Hartscock (2002, 19). The array for this passage can be found in Dubiel (1990a, 241).

the first note to be immediately reiterated. In measure 7, C♯ and G♯ become joined: in that measure, they are the highest notes in the piano, as they continue to be in measure 8 through the first half of measure 9. The first octave—on G♯—appears at the end of measure 9, beginning a *tremolando* figure in the right hand, oscillating between C♯ and G♯, that continues through the introduction of the C♯ octave at the end of measure 10. Finally, in measure 11, the C♯ octave (now spelled with D♭s) is broken, and its last note appears with the final appearance of the G♯ octave (now spelled with A♭s). All of the foregoing details raise the prominence of C♯ and G♯ and make the culminating effect of the octaves even more striking.

However, following measure 11, this story seems to be dropped. There are no further octaves, or any analogous marking of those pitch classes for most of the rest of the piece. The problem presented by those octaves seems not to be answered or even addressed. But as can been seen in Example 5.11, the culminating promise of C♯/D♭ and G♯/A♭ *is* eventually realized, for those two notes are the final notes played by each instrument. The return to the culminating pitch classes of the opening passage is confirmed by the violin's return to D♭4, its opening pitch.



Example 5.13. *Sextets*, mm. 569–71

CLOSING SIGNALS (3): REGISTRAL EXTREMES IN *ABOUT TIME, CANONICAL FORM,* AND *TUTTE LE CORDE*

As discussed in Chapter 4, quite often, in the midst of the wide leaps and registral saturation that characterize much of Babbitt's music, a passage will coalesce around a determinate registral gesture, gradually rising or falling or condensing or expanding over a period of several measures or more. These gestures can even instantiate one or more of Babbitt's favored closing techniques. As shown in Example 4.1, *Allegro Penseroso* finishes with a gradual progression from complete registral saturation to the lonely isolation of the very top of the keyboard, realizing the closing technique of motion to an extreme.

About Time (1982)*, Tutte le Corde,* and *Canonical Form* all project their arrays using identical registers, as shown in Figure 5.3. All present twelve lines arranged into six discrete pairs, each pair spanning fourteen pitches. Resulting in a total gamut of eighty-four pitches, this arrangement is apparently used because eighty-four is the largest multiple of six within the eighty-eight keys on the piano keyboard. Most of Babbitt's pieces for piano from 1966 on use an eighty-four-note range divided into six. A division into six is convenient, since it can present the six line-pairs of a twelve-part array (e.g., *Post-Partitions*, *Envoi* [1990], and *Preludes, Interludes, and Postlude*), or superarrays built from two six-part arrays (e.g., *About Time*) or three four-part arrays (e.g., *Tutte le Corde* and *Canonical Form*), or even simply six discrete line-pairs (e.g., *Allegro Penseroso* and *The Old Order Changeth* [1998]). Nearly all use the piano's middle eighty-four notes, as shown in Figure 5.3; the sole exception is *Post-Partitions* (also the first of Babbitt's piano pieces to use an eighty-four-note range), which uses the piano's lowest eighty-four notes.[44]

[44] It is tempting to ascribe this unusual registration to the stunning ***fffff*** A0 that concludes the opening salvo of *Post-Partitions*' first measure.

Line Pair	Registers of lines
VI	B6–A♯7
	A6–G♯7
V	A5–G♯6
	G5– F♯6
IV	G4–F♯5
	F4–E5
III	F3–E4
	D♯3–D4
II	D♯2–D3
	C♯2–C3
I	C♯1–C2
	B0–A♯1

Figure 5.3. Registral distribution of most of Babbitt's late piano music, including *About Time*, *Tutte le Corde*, and *Canonical Form*

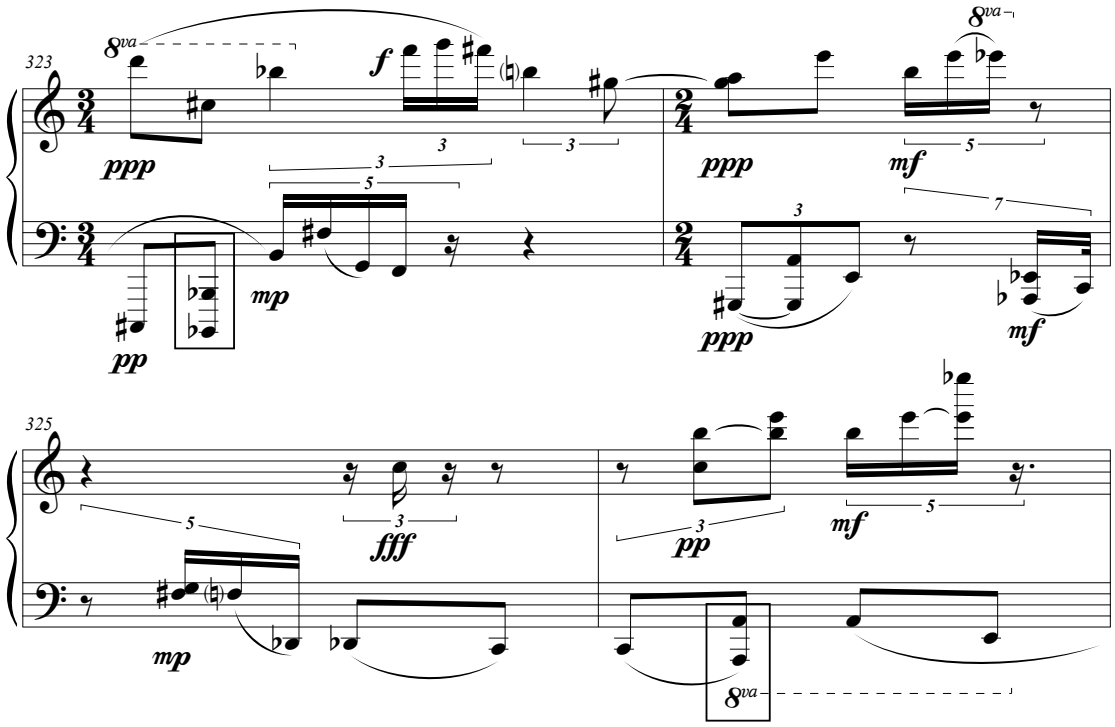
Although the registral arrangement shown in Figure 5.3 maximizes the available gamut that is divisible by six, there remain four notes left out of this scheme: the two highest and two lowest notes on the piano. But in *About Time*, *Tutte le Corde*, and *Canonical Form*, these notes appear toward, or at, the very end of each piece, breaking the bounds of the registral scheme. In this anomalous violation of registral structure—as much of a violation as there can be, given the generous gamut already allotted—these pieces reach toward registral extremes and thus enact one of Babbitt's preferred closing techniques.

In each case, these highest and lowest notes double expected notes in adjacent registers. This doubling solves a technical issue: given that serial counterpoint throughout each piece is presented within strictly defined registral boundaries, these outermost pitches have no meaning in the pieces' operative syntax; thus linking them to array-correct pitches gives them contrapuntal significance. (The duplications in the piano part of "A Virginal Book" behave similarly.) It also simply draws attention to these unusual sounds: whether or not a listener recognizes that C8 had been excluded from *About Time*,

for instance, the concluding C7–C8 octave is quite obviously an unusual, marked event in the piece.

About Time uses a superarray with two six-line arrays projected, respectively, using the three upper and three lower line-pairs shown in Figure 5.3. The piece presents the blocks of these arrays either together or, sometimes, separately, in registral "solos" that, accordingly, use only the upper or lower half of the piano.[45] The last section of the piece is an upper-register solo. Therefore, the concluding use of the two lowest notes, shown in Example 5.14, appears in the penultimate section, with B♭0 appearing in measure 323 and A0 coming in measure 326. The highest notes appear only later, at the end of the piece as a whole, as shown in Example 5.15. B7 appears in measure 340. C8, the final extreme, is the last sound heard in the piece. Following the successive expansion outward, the extremes have been reached, the registral possibilities of the piano exhausted, and thus the piece ends.

[45] The piece's registral progression is shown in Mead (1994, 213).

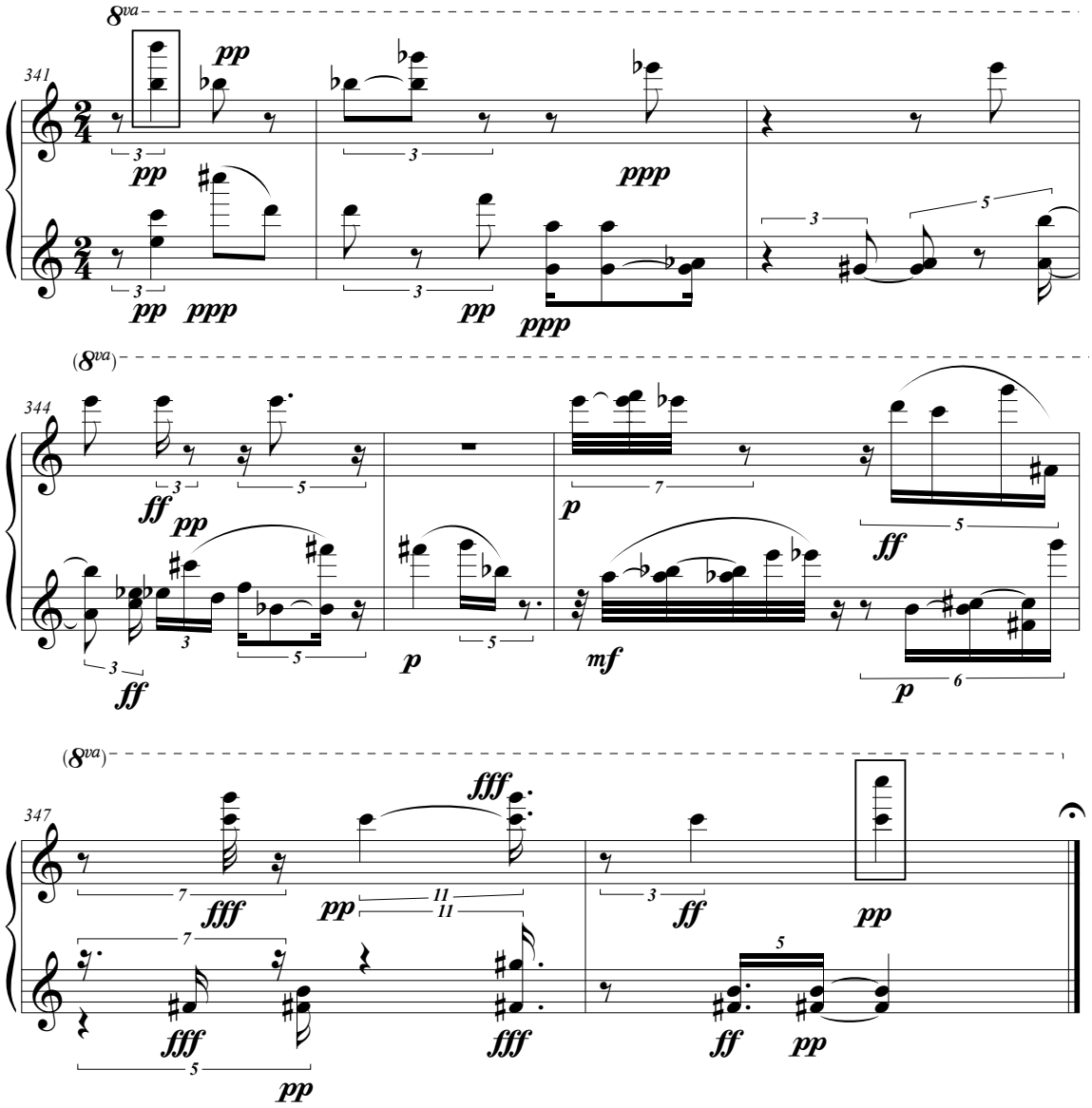


Example 5.14. *About Time*, mm. 323–26, with anomalous octaves boxed

With C8 concluding the piece, *About Time* presents in some ways the most explicit example of the technique of using excluded registral extremes to signal closure. Nonetheless, note that all four extreme notes—A0, B♭0, B7, and C8—are ***pp***. The effect, even in this relatively overt instance, is rather non-demonstrative.[46]

The end of *Canonical Form* presents a quite different circumstance. *Canonical Form* also ends with a registral solo, in this case the lowest of the piece's three primary registers (encompassing the lowest two line-pairs of the scheme shown in Figure 5.3); this final section is shown in Example 5.16. *Canonical Form*'s last three sections push downwards,

[46] See Dubiel (2012) on the typically non-demonstrative nature of Babbitt's musical rhetoric.



Example 5.15. *About Time*, mm. 341–48, with anomalous octaves boxed

from the use of all three registers, to just the lower two, to the concluding solo of the lowest register.[47] Perhaps accordingly, only the two lowest of the four notes excluded from the piece's registral plan play a role in the piece's closing rhetoric: the final section features B♭0 and A0, but B7 and C8 do not appear in the piece. B♭0 and A0 are each

[47] The registral scheme of *Canonical Form* is given and discussed at length in Dubiel (1992).

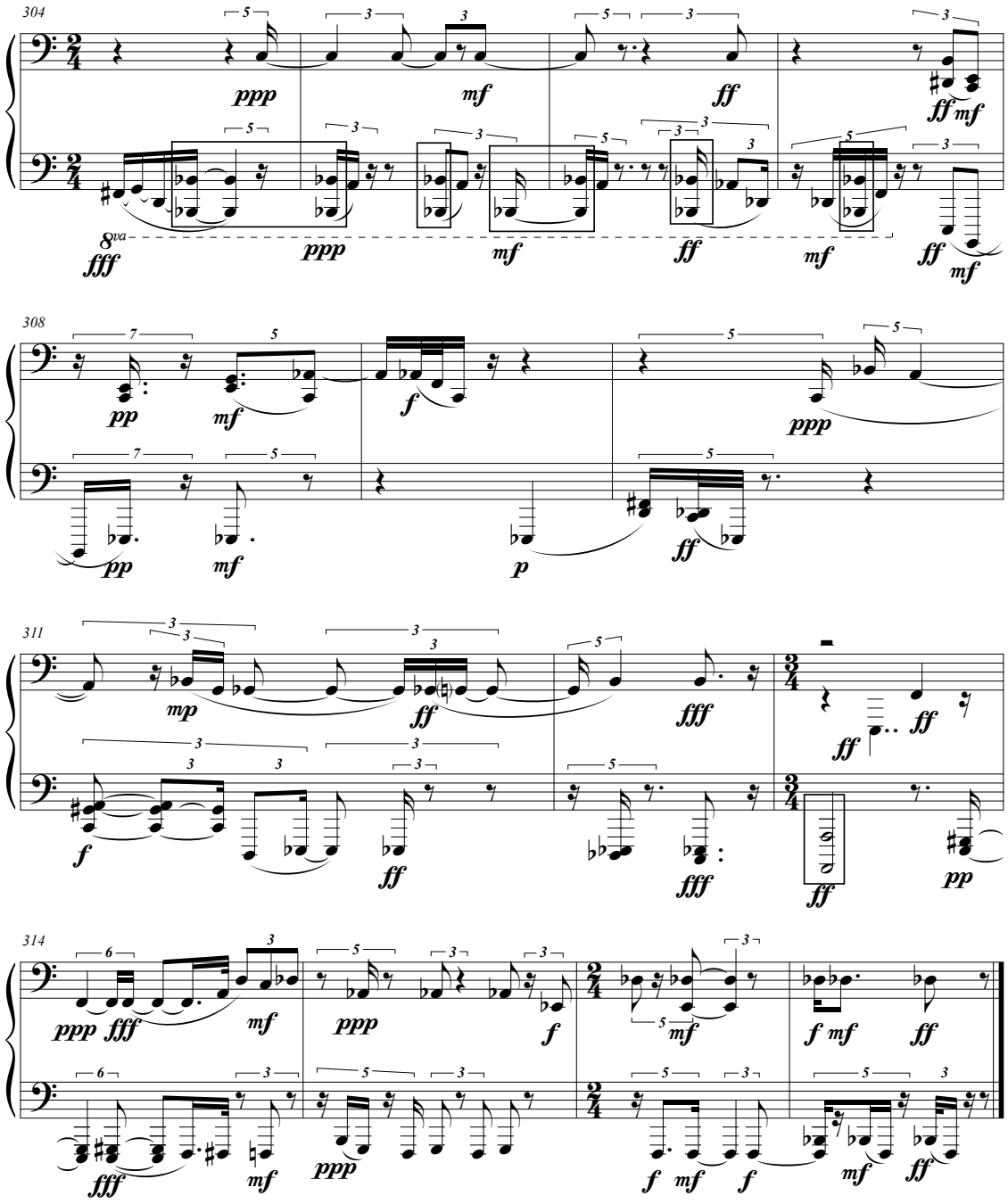
presented to dramatic effect. B♭0 is continuously repeated for the first four measures of the passage. A0 occurs only once, in measure 313, but isolated—heard alone, except for its octave partner—and ***ff***. Unlike in *About Time*, however, neither of these extreme notes appears precisely at the end of the piece. Following the attainment of A0, the conclusion of the descending motion to an extreme, there is something of a reversion to the mean: the piece ends with repeated D♭3s, the second-highest note in the register. In a manner rather differing from his usual practice, having achieved the extreme, Babbitt backs away from it in the piece's final measures.

Dubiel (1992) presents a different interpretation of the octaves at the end of *Canonical Form*. Dubiel's analysis of *Canonical Form* presents a sort of narrative of the piece's overall registral progression, with the piece's three main registers granted an agential sense of independence and volition. The B♭0–B♭1 and A0–A1 octaves that appear toward the end of *Canonical Form* are explained accordingly, as a response by the lowest register to the piece's registral progression.

> The bass is not alone at the end in the senses in which it was in the beginning, even though it plays alone. Its doubling of B♭ and A is not simply downward expansion by way of self-aggrandizement, after all, but specifically its internalization of what hitherto been possible only between registers; it is, in a word, changed by its contrapuntal encounters with what had begun as only its own aspects.[48]

In some respects, this is an appealing analysis: the claim that the final section of the piece presents not just a return to the opening bass solo, but a sort of synthesis in which a registral solo—which until this point in the piece would not contain octaves—incorporates within itself the octaves that characterize the bulk of the piece, provides a

[48] Ibid., 117–18.



Example 5.16. *Canonical Form*, mm. 304–17, with anomalous octaves indicated

strong peroration to Dubiel's registral narrative.[49] However, on the whole I find this analysis unconvincing, for two reasons. First, the extremely low notes are properly extrinsic to the bass register. As in almost all of his other pieces after around 1966, the registers in *Canonical Form* are strictly defined, and thus the fact that A0 and B♭0 abut the bass register does not mean they are part of it. That is, the bass register has not been "expanded"—registers in Babbitt's music do not expand—but exceeded. (Moreover, had the goal simply been the "internalization" of octaves, there are numerous possibilities within the span B0–D3.) It is the fact that the registral constraints have been broken that creates the motion to an extreme that signals the end of the piece. Secondly, Dubiel presents these octaves as a product of the registral narrative he traces throughout the piece. This makes sense within *Canonical Form*—which, as he demonstrates at length, certainly is heavily concerned with an overarching progression of registers—but does not explain the presence of the same phenomenon in *About Time* or *Tutte le Corde*, both of which use their entire registral gamut nearly throughout, including in passages that contain these concluding octaves. Accordingly, this phenomenon is best understood not as the result of a long process, but as an example of the closing techniques discussed in Chapter 4: it should be considered a local rhetorical effect, generally apart from the overall span of the piece, even if it may suggestively intersect with broader patterns.

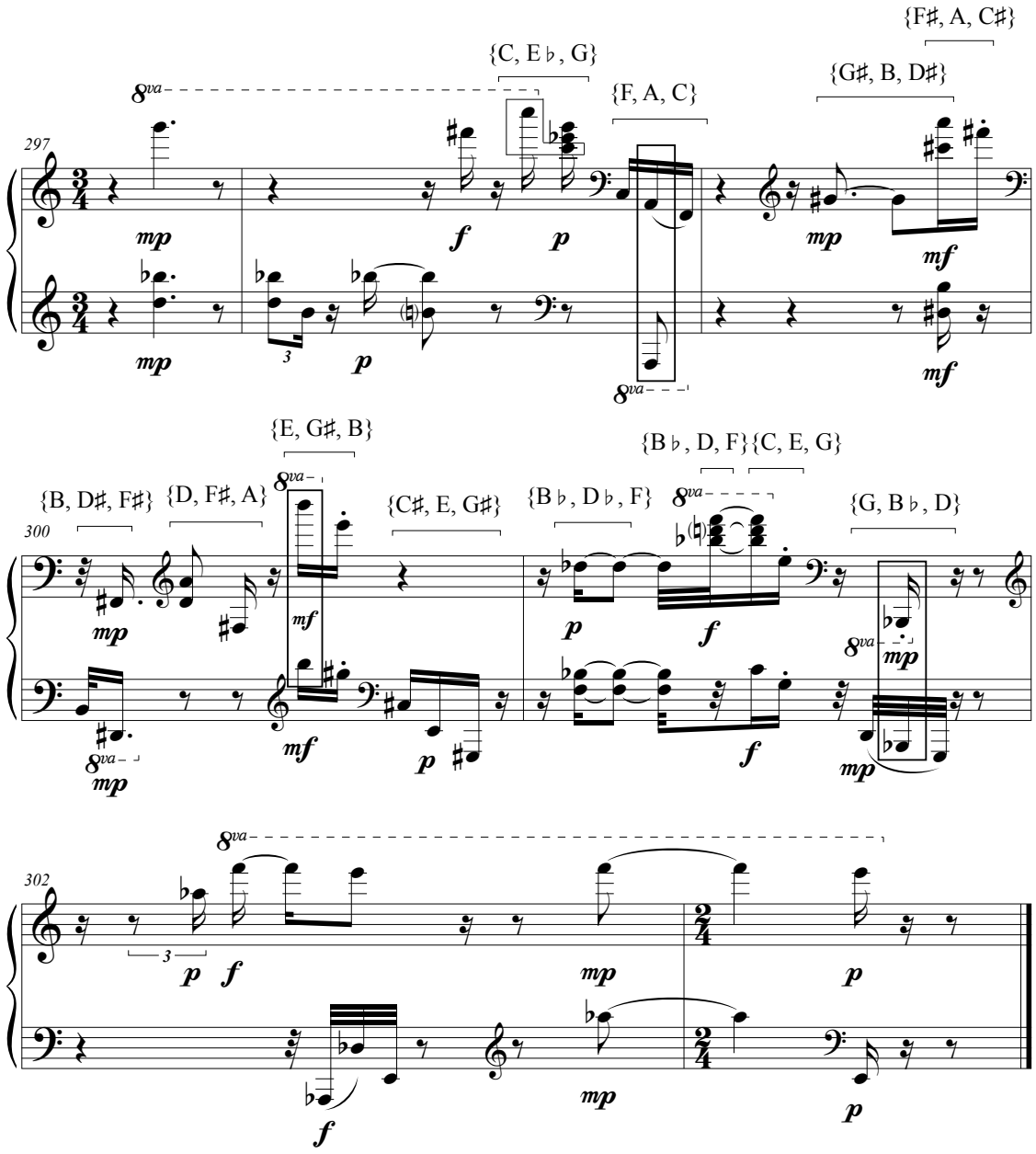
Tutte le Corde, written over a decade after *About Time* and *Canonical Form*, does not conclude with a broad gesture resulting in a registral solo as both of the earlier pieces do; perhaps for this reason, the technique of signaling closure using excluded registral extremes is presented differently and less dramatically than in either earlier piece. The

[49] Another aspect of his analysis that I find appealing, and less problematic, is Dubiel's (ibid., 117) description of the two low octaves as presenting a "more thunderous version of the shape of the opening's first aggregate."

final measures of the piece, shown in Example 5.17, contain the excluded notes in quick succession. The first to appear is C8, in measure 298. Like all of the extreme notes under discussion in *About Time, Canonical Form*, and *Tutte le Corde*, it appears with a non-anomalous instance of the same pitch class. Unlike the earlier examples, however, C8 arpeggiates down to the array-correct C6, rather than sounding with it.[50] Also new is that the interval between C8 and the expected C is two octaves, not one. The A0 that immediately follows is similar—it is linked to A2, not A1—as is the B7 in measure 300, which is paired with B5.[51] The final extreme note, B♭0, is heard in measure 301, in a figure echoing the presentation of A0. The extreme notes in *Tutte le Corde* do not describe a clear registral gesture, as they had in the earlier pieces. That is, while the earlier pieces successively expanded from B♭0 to A0 and from B7 to C8, *Tutte le Corde* does not. The move to registral extremes, here, is not gradual but sudden; a leap in measure 298 to C8 followed by the swift filling in of the remaining excluded notes.

[50] The {C, E♭, G} simultaneity in measure 298 that includes this C6 is indicated *8va* in the score, contained under the *8va* bracket that had begun in measure 297. I believe this to be a misprint and have corrected it in Example 5.17. It is not supported by the array or by the sketch in the "Tutte le Corde" folder of the Milton Babbitt Collection. It seems that Babbitt, while preparing the manuscript, misinterpreted as an *8va* bracket the hyphen in the indication "II-34," written above the sketch for the second half of measure 298 to indicate that he was beginning the thirty-fourth composite aggregate of the piece's second set of arrays. This is unlike the C8 just preceding, which varies from the array (like all serial anomalies) but is clearly indicated in the sketch (as a C6 marked *15va*), as are the other registrally extreme notes in *About Time*, *Canonical Form*, and *Tutte le Corde*.

[51] The choice of paired notes, and the resultant intervals of two octaves, appears to arise from the desire to include the extreme pitches in the final composite aggregate. The highest possible B and C in the array, and the lowest possible A and B♭, are used to support A0, B♭0, B7, and C8, and it so happens that in three of four cases this results in intervals of two octaves.



Example 5.17. *Tutte le Corde* mm. 297–303, with anomalous octaves boxed and the string of (037) trichords in mm. 298–301 indicated

The presentation of the extreme pitches is almost precisely coextensive with another oddity. From the high C through the note after the low B♭, the entire passage presents a straightforward sequence of (037) trichords, as indicated in Example 5.17. This outpouring of perfect triads might be ascribed to tonal reminiscence, but *Tutte le Corde*

does not present any obvious programmatic motivation for this sort of nostalgia. It may be better to describe this as another sort of motion to an extreme—an extreme focus on a particular harmony—precisely coincident with the registral extremes also employed in the passage. In this case, the harmony is not anomalous or in any way extrinsic to serial hierarchy: two of the discrete trichords of the piece's series are members of (037).

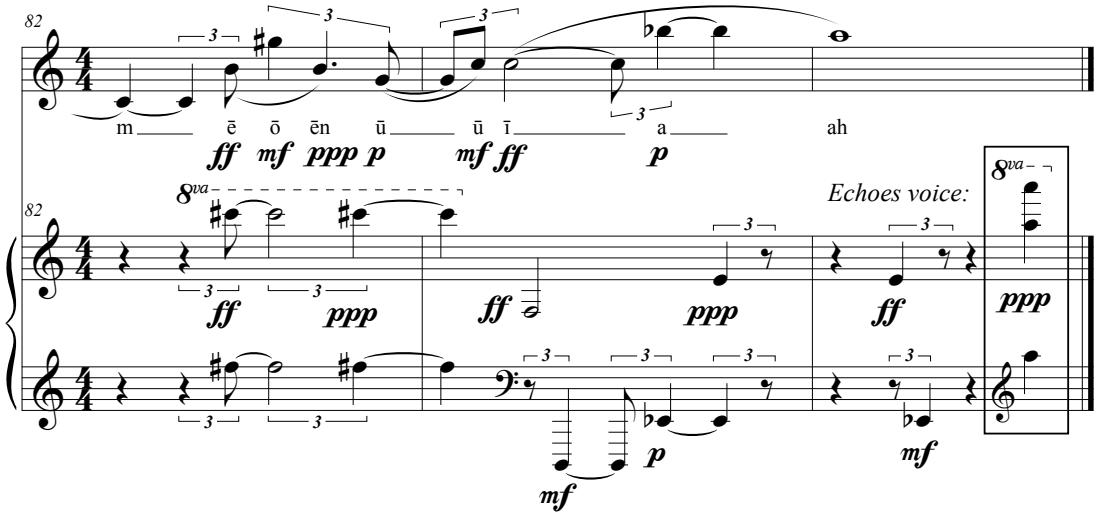
CLOSING SIGNALS (4): AN ECHO IN "SOUNDS AND WORDS"

The octaves that close *About Time*, *Canonical Form*, and *Tutte le Corde* are anomalous in the sense that their outermost notes exceed the pieces' established registers. Nonetheless, each of these octaves contains one note that is both within the defined registers and expected as part of the pieces' arrays. The extreme notes represent anomalous pitches, but perfectly regular pitch classes. In at least one instance, however, the end of a piece is marked with an octave completely unprepared by the piece's array.

In "Sounds and Words," for soprano and piano, the voice and accompaniment proceed throughout the piece without pitch-class intersection. A surprising exception to this rule occurs at the very end of the piece, shown in Example 5.18. As seen in the example, the last sound of the piece is not explained by the piece's array. The piano, in double octaves, echoes the final vocal pitch. Inexplicable serially,[52] essentially unrelated to any previous event in the piece,[53] the motivation for this event seems to be the realization of yet another of Babbitt's favored closing techniques. Luminously, and perhaps

[52] The work's array structure is discussed at length in Dubiel (1990b, 62–75). The concluding As are not mentioned.
[53] There are other octaves in the piano part of "Sounds and Words," as can be seen in Example 2.1, but they always appear as duplications of array-correct pitches.

somewhat mischievously, the piano echoes the final vocal pitch.[54]



Example 5.18. "Sounds and Words," mm. 82–84

CONCLUSION

The fact that serial anomalies are employed in order to produce effects separate from the hierarchical logic of the twelve-tone system presents a challenge to the organicist program that had motivated Babbitt's reconstruction of the system. Organicist concerns can be overridden, the system superseded, for local—often seemingly spontaneous—reasons. It appears that a variety of criteria, serially motivated and otherwise, have shaped Babbitt's music, and these criteria interact in an unpredictable, and anti-hierarchical, fashion.

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[54] The mischevious wit on display here, in which the final note upends the scheme otherwise developed so carefully throughout the piece, might lend itself to the psychological explication suggested in Babbitt (1997, 132): "One can reconstruct the personality of a composer who would choose his final note in order to confound any known construal of the piece until that point." It is impossible to know whether the quip is self-effacing, but one hopes so.

During the anomalies, the most that can be said of the twelve-tone system is that it creates a situation in which the anomalies can be understood as anomalous. This suggests that the twelve-tone system might be understood as a system of norms, standards against which anomalies may be measured and compared. The system defines an interpretive context within which the various non-twelve tone concerns, when they happen to create anomalies, can be understood as standing in marked relief against a suppressed background.[55] As Dubiel notes, "a perception of serial 'irregularity,' if it can be managed, would presumably only enhance the impression made by an alternative criterion."[56] The series may still be "continuously, thoroughly, and utterly influential," but its influence is sometimes only felt through its absence.

The degree to which these perceptions can be "managed" is, of course, variable. The concluding echo in "Sounds and Words" strikes me as obviously, even blatantly, anomalous; the extreme pitches in *About Time*, *Canonical Form*, and *Tutte le Corde* only slightly less so (mostly because the octaves that accompany them provide crucial support); and many of the duplications in "The Virginal Book" still completely apparent, even if noting the connections they create takes a bit more work. The anomalies in *Fanfare for All* and *Minute Waltz* are tougher: the presence of anomalies is more available to me because of textural imbalances than because of serial violations per se, and the connections created (particularly in *Fanfare for All*) are a genuine challenge to hear. *Sextets* is tricky: the octaves happen very, very quickly, and the recurrence of their pitch classes at the end of the piece is well beyond my powers of recall, although presumably that connection would

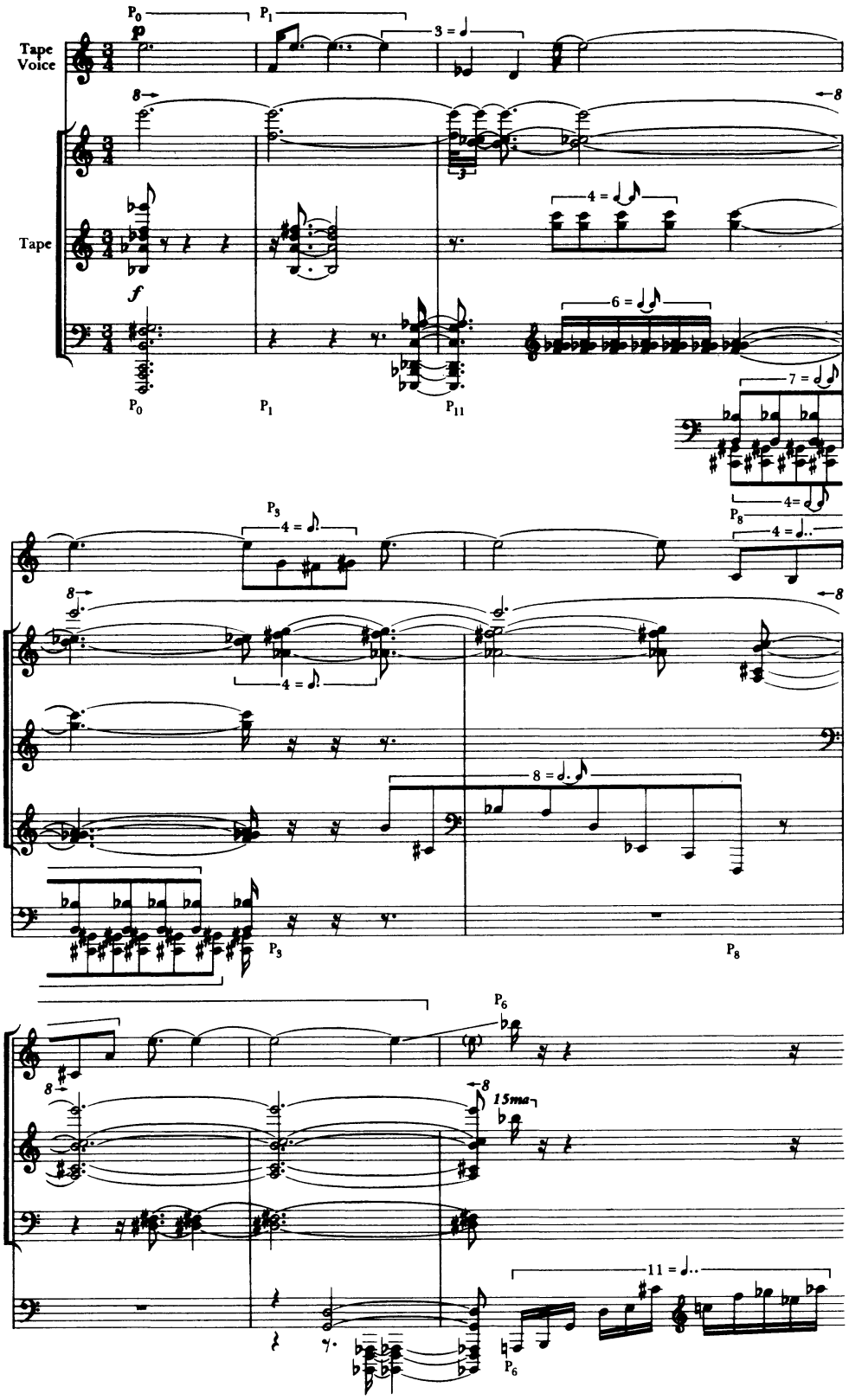
[55] For more on the sense in which systematic norms define an interpretive context, see Bernstein (2011). For a related study on suppressed structure, see Rothstein (1991), in particular the claim (and attendant analytical discussions) that implied tones' absence may be "motivated . . . by considerations lying outside the musical structure" (293).
[56] Dubiel (1992, 118).

be easier to make for a listener with absolute pitch. The anomalies that have been discussed here or elsewhere in *Danci*, String Quartet no. 5, *Allegro Penseroso*, and *It Takes Twelve to Tango* are essentially beyond my perceptual abilities, at least for now. In each example, however, I have found that score study has made me more sensitive to the extra-systematic criteria that motivate these anomalies, and thus listening for them, to the extent possible, has been an enriching experience.

A result of this sensitization has been the recognition that the extra-systematic criteria that motivate anomalies are general features of Babbitt's practice. Chapter 4 provides a number of examples of Babbitt's closing signals, and although these signals are sometimes enhanced by serial anomalies, they appear in numerous serially regular instances. This is true of all of the other extra-systematic criteria discussed here, too. For instance, the density of references (whether to collections related to the series or not) created by anomalies in *Danci, Minute Waltz*, "The Virginal Book," and *Fanfare for All*, relates not only to Babbitt's usual practice of saturating the musical surface with cross-references to the array but to other, more specific kinds of surface arrangements. The many (037) trichords at the end of *Tutte le Corde* (see Example 5.17), for instance, although non-anomalous, present a referential explosion not unlike the anomalous passages discussed. Programmatic references to tonality inspired anomalies in *Minute Waltz* and "The Virginal Book," but the most striking references to tonality in both pieces—the oom-pah-pah triads in measures 1–8 of *Minute Waltz* and the many triadic sonorities in "The Virginal Book"—were created without anomalies. Finally, the registral gestures in *Canonical Form*, *Allegro Penseroso*, and *It Takes Twelve to Tango* that have been written about elsewhere inspire anomalies, but as discussed in Chapter 4, these gestures are a widespread feature of Babbitt's music.

The connection between the performers formed by the duplications in "The Virginal Book" is basically *sui generis*, prompted by the particular exigencies of the poem. But one related, non-anomalous passage occurs at the beginning of *Philomel,* as shown in Example 5.19.[57] Before the soprano enters in measure 9, the synthesizer presents six series forms in succession. The taped voice presents the beginning of each of these series: first just the opening E of the first series, then the first two notes of the second series, and so forth, weaving its way through the piece's matrix, as David Lewin has it.[58] High above—at first two octaves, then one or two octaves higher—the synthesizer duplicates the same pitch classes. This sort of doubling is no anomaly: the effect is essentially orchestrational, and not outside of the piece's norms. But as in "The Virginal Book," the doubling is heavily bound up with identity and the expressive possibilities of registral isolation. As Mead evocatively describes it, following an opening "clink," "the voice [is] frozen alone in a vast registral space, the top of which is a distant E, barely hearable as a pitch, and the bottom of which is a thick, soft sound that fades away."[59] The taped voice's slow emergence (which leads, ultimately, to the entrance of the live singer singing a part not doubled by the synthesizer) is supported by the fact that the duplication gives it a foundation, within the synthesizer's music, from which it may emerge. The effect is different from anything that happens in "The Virginal Book," but the technique is not altogether foreign.

[57] Example 5.19 is reproduced from Swift (1976, 242).
[58] Lewin (2006, 391–95).
[59] Mead (2004, 263–64).



Example 5.19. *Philomel*, mm. 1–8, with series forms indicated, as shown in Swift (1976)

To the extent that serial expectations form a context within which anomalies can be felt as anomalous, and thus extra-systematic criteria can be recognized, the serial hierarchy retains a special kind of significance. While it is an exaggeration to claim that every element of the music is "serially conditioned," a system designed to make such conditioning possible has provided a means to understand many aspects of Babbitt's music, including aspects having little, if anything, to do with serialism. That Babbitt's compositional designs are generally not directly available to a human listener has led numerous analysts in the past three decades—Dubiel foremost among them—to argue for an analytical approach that forgoes serial decipherment. Essentially, these analysts are looking for extra-systematic criteria as they present themselves to a naïve listener. To the extent that they have had considerable success with this approach, I celebrate their achievement. But Babbitt's defense of Schenker provides a welcome retort:

> The test of the validity of Schenker's conceptions is not whether "one hears it that way" but whether, after having become aware of these conceptions, the listener does not find that they may not only codify his previous hearing but extend and enrich his perceptive powers by making listening more efficient and meaningful, by "explaining" the formerly "inexplicable," and by granting additional significance to all degrees of musical phenomena.[60]

In short, to the degree that an attempt to understand a piece's serial structure illuminates the obscure, granting meaning to the mysterious, it is worthwhile, even if the things it illuminates are unexpected. Babbitt's music is often described as challenging,[61] and I can only agree: it is challenging in the best of senses, in that no means of construal is completely adequate and a listener is constantly prodded to find a better one. In facing these challenges, I refuse to abjure any approach that might help me along my way.

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[60] Babbitt ([1952] 2003, 24).
[61] E.g., Hajdu (2011).

Afterword

"Anything Vital is Problematical"

We are left with more questions than answers. The most pressing, the question of whether Babbitt's music realizes the organicist program of his writings, turns out not to be readily answerable: organicism plays a part in his music, but it is evidently only one of a number of compositional matters that concerned him. One listening to Babbitt's music would do well to consider organicism, but should not feel limited by it. Its composer evidently was not.

In short, one should study Babbitt's theoretical writings not because his theories are a guide to his music as a whole, but because they propose one particular mindset, along with a certain set of techniques, that has the potential to illuminate certain aspects of his music. The remaining aspects, some of which conflict with organicism and some of which are merely orthogonal to it, require other mindsets and other techniques. In this light, one can understand why Babbitt's theoretical writings seem, in some respects, to present an incomplete picture of his music. He did not claim otherwise: in his few extended comments about his own music, he never promised a comprehensive account—indeed, he never claimed to give a comprehensive account of any piece in any of his analytical writing.

One might ask, then, why Babbitt chose to speak about those elements he did and elide or obscure those he did not. Two possible answers come to mind. First, like that of many twentieth-century composers, Babbitt's career can be read as an attempt to piece together a new musical practice by radically focusing on certain elements of the inherited

tradition.[1] In Babbitt's case, this meant a thoroughgoing serial re-imagination of Schenkerian organicism. Given that this aspect of his practice connects him to his predecessors, such as Schenker and Schoenberg, it is no surprise that he focuses on it in his writing and speech.[2] The second answer lies in Babbitt's deep concern for theoretical language and methodology. There are certain things in Babbitt's worldview that are quite literally inexpressible, in the sense that they cannot be expressed in the empirically verifiable language that Babbitt felt was the "one kind of language" in which meaningful statements can be made.[3] Organicism, once recast axiomatically or in the language of cognitive science, is relatively amenable to explication in that language. Nonetheless, there is no reason to infer (as many have) that Babbitt's meta-theoretical views limit his *music*—he certainly never claims they do—in the same way they limit his discourse.

For as a practical, working musician, Babbitt chose to supplement (or, at least, articulate) his organicism with a variety of compositional means, ranging from the rhetorical (how does one signal the end of a piece?), to the expressive, to the technically clever, to the witty. If the results fail to look logical or unified—if they cannot be analyzed in light of a single ideology such as organicism—it is because they are not. To me, this is

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[1] Schoenberg's motivic practice, and its generalization in his twelve-tone music, is another example. Joseph Kerman's (1980, 318) statement on Schoenberg is apropos: "Schoenberg's really decisive insight, I think, was to conceive of a way of continuing the great tradition while negating what everyone else felt to be at its very core, namely, tonality. He grasped the fact that what was central to the ideology was not the triad and tonality, as Schenker and Tovey believed, but organicism."

[2] Babbitt justifies this choice propaedeutically: "to direct a listener's attention to the unique aspects of a work, particularly when he probably knows the work little or not at all . . . is to emphasize that which will least aid initial comprehension, for—to such a listener—uniqueness is far less significantly helpful than is communality . . . . Indications of the procedural sources, the technical traditions . . . provide not only a point of entry but, eventually, the bases for determining the depth, extent, and genuineness of the work's originality" (Babbitt [(1970) 2003, 237]). This remark is reiterated in Babbitt (1987, 3–4).

[3] Babbitt ([1961a] 2003, 78).

evidence of richness, if of a very different kind of "richness" than that Babbitt intended by the term.

In 1950, at the dawn of his career, Babbitt posed a remarkable criticism of René Leibowitz. Leibowitz, Babbitt claims, failed to recognize "the extremely problematical nature of the twelve-tone system."[4] Astonishing words from one who also felt that the twelve-tone system "cedes nothing to any musical system of the past or present"![5] But, he continues, "Anything vital is problematical; the nonproblematical is static."[6] The term "problematical," that is, as the ensuing discussion clarifies, is not used in the sense of containing flaws, but of posing questions—of occasioning thought. Leibowitz had underestimated just how much reconsideration of basic principles the twelve-tone system requires. Nor, for that matter, was that reconsideration a finite pursuit—Babbitt does not imply that the twelve-tone system would at some point become adequately theorized and, thus, nonproblematical.

Babbitt's music, too, resists satisfying, logically consistent, bounded theorization. It will continue to occasion thought. His exegetes have the pleasure—and the responsibility—to revel in the problematical issues it raises. For whatever Milton Babbitt's music is, it is not static.

[4] Babbitt ([1950] 2003, 12).
[5] Babbitt ([1960] 2003, 67).
[6] Babbitt ([1950] 2003, 12).

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