

***An Introduction to the Music of Milton Babbitt* by Andrew Mead. Princeton: Princeton University Press, 1994.**

Review by Richard Kurth

I

Milton Babbitt is a professed “maximalist.” In his own self-estimation, he attempts “to make music as much as it can be rather than as little as one can get away with.”¹ It is no coincidence that the terminology Babbitt and others have developed for his music tends to emphasize all-encompassing totality: “all-combinatorial hexachords,” “all-interval rows,” “all-trichord rows,” “all-partition arrays,” and “maximal diversity” are typical mottoes.²

Perhaps this tendency to circumscribe some totality can be most immediately *heard* (rather than inferred from technicalities) in the endings of many of Babbitt’s pieces. They break off suddenly, often without fanfare; but even on first hearing, even before any deliberate attempt to determine why, many pieces do leave the palpable impression that something (not just the performance) is finished—that some sort of “*list*” (or combination of lists) has been fully enumerated. Babbitt’s “principle of maximal diversity” manifests itself in numerous types of “lists,” all of which exhaust some range of possibilities. The all-partition array (a sequence of aggregates, each one differently subdivided or “partitioned”) is a kind of list controlling pitch-class combinations and successions; the sequence of instrumental combinations (with each of the

¹Babbitt 1987, 183. This remark is also cited by Mead in the book reviewed here [296, note 22]. Another rendition of the same sentiment is cited by Joseph Dubiel (Dubiel 1991, 94 and 119, note 13).

²One is tempted to describe Babbitt—and not entirely tongue-in-cheek—as an “all or nothing” composer, remembering that, in general, *nothing* is left out.

available combinations typically used only once per composition) constitutes another type of list; the sequence of various combinations of registral strata (generally used to differentiate the pitch-class materials found in the “lynes” of the array) constitutes another sort of list; and so forth. But Babbitt’s music can not simply be reduced to the presentation of complete lists. Even more compelling are the ways in which such lists become *animate*—how they are made to break free of strict sequential mechanism to become actuated, vivified, and vitalized.³

No matter whether it arises from an initial audition or from reading much of the literature on Babbitt’s music, this impression—that his pieces involve the complete presentation of certain carefully circumscribed compositional possibilities—is also peculiar and surprising from another perspective. This impression better characterizes the endings of his pieces than it does their middles, during which few processes are yet complete (aside, of course, from the constant completion of individual pitch-class aggregates).⁴ The listener’s impression of completeness after a piece has concluded can be counterposed, in a constructive and perhaps even dialectical fashion, against the vigorous and constantly varied fabric of this music, which seems—in the thick of its progress—to suggest *unbounded* self-renewal and recombination, as opposed to carefully *constrained*

³The “animation of lists” is a central theme for Joseph Dubiel (see Dubiel 1990, 1991, and especially 1992). Indeed, the term “list” seems to have gained its currency in this context with Dubiel. It will be useful to compare Mead and Dubiel on various issues in the course of this review, for their approaches to Babbitt’s music are—in many senses of the word—complementary. Indeed, it is hard to resist reading their recent contributions on Babbitt’s music in tandem, and there is much to be gained from such a counterpoint. Since this is a review of Mead’s recent book, I will sometimes use Dubiel as a foil. (Of course, the roles could also be reversed, with Mead as a foil for an appraisal of Dubiel’s contributions.)

⁴Sometimes the endings of larger sections—involving, for instance, the unique appearance of a specific instrumental combination—are also accompanied by a sense of list-completion of some sort; often, however, the effect is attenuated by transitional linkages which promote continuity over closure.

obedience to some list or chart. The contrast between prodigious proliferation and careful circumscription not only distinguishes the middles and endings of Babbitt's pieces, but also affects how we should understand these pieces—in terms of their composition on the one hand, and in terms of our listening experience on the other.

There are at least two ways to encapsulate such a “dialectic” between proliferation and circumscription in general terms. One might imagine that certain generating materials “come first.” Through a process of presentation and continual combination they eventually circumscribe a world of possibilities. The generating materials in this scenario may be of numerous different types: they might include the intervallic contents and combinatorial properties of certain trichord or hexachord types; they might also include the instruments selected for the ensemble, as well as their registers, dynamic possibilities, modes of sound production and of articulation, and so forth. In this scenario, “pre-compositional” activity is essentially restricted to the choice of such materials, and only through the acts of composition does a list take shape. A list (or set of lists) *accrues* through the composition, is *animated* by the acts of composition, and only constitutes itself as a list upon its completion. The formation of a list (or lists) is a *process*. Assuming the generating materials to be directly perceivable aural objects, this scenario *might* conform quite well with a listening experience.⁵

Alternatively, one might imagine that a complete list (or set of lists) is somehow established “pre-compositionally.” The piece is then not a process which generates lists, but a process which *presents* (or enumerates) them. In this scenario, the *animation* of lists will play a different role and be of a different character: in the course of their enumeration, lists are animated through the manifold and *apparently* limitless combination and juxtaposition of list-elements (from the same and from different

⁵While the combinational strategies which inform *some* of Babbitt's lists may become predictable as a piece proceeds, many—if not most—will not. The unfolding formation of the list is usually not predictable, even though the contents of the list (the total of all available combinations) may be.

lists).⁶ This scenario *might* model a compositional process—not from the perspective of the composer in action, but from the after-the-fact perspective of the analyst, who wants to know “how the composition is made.”

In neither of these two scenarios is a list conceived as a kind of “genetic code” which determines all the external and internal features of the compositional “organism.” (More on this later.)

These two scenarios have very different implications as models of the compositional process than they do as models of the listening or analytical process. Of the two alternatives sketched above, the second may *seem* more allied with some “compositional process,” since certain of Babbitt’s lists—the pitch-class array is the pre-eminent example—seem to have taken on a kind of “pre-compositional” status.⁷ But it is easy to imagine that *both* scenarios give insight into the compositional process, not to mention the listening, analytical, and interpretive processes as well. The margin between “pre-composition” and “composition” is always hard to determine. An array, for instance, cannot be constructed without first engaging certain prior generating materials in specific and individual ways, and so the array is never exactly a “pre-compositional” entity.

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Such considerations are stimulated by reading Andrew Mead’s recent book, *An Introduction to the Music of Milton Babbitt*.⁸ However, these considerations are not the actual

⁶Of course, the combinations are *not* limitless, but it is easy to have the impression that the task of consciously perceiving them all as they speed by surpasses the limits of our ability.

⁷In fact, the superarray for *The Joy of More Sextets*, and the arrays for several other works, were not constructed by Babbitt himself, but rather by his former student David Smalley. See the volume reviewed here. [220, 228-29, 252]

⁸I wish to keep the discussion at the level of these broader issues for several more pages. I hope the reader will tolerate for the present some of the

subject of this book, for Mead tends to approach this music only on the assumptions of the second scenario. Mead's book is essentially about how Babbitt's music has been composed, rather than how it might be heard or approached analytically in any number of other ways. Even Mead's most detailed passages (and his accomplishments in deciphering and relating details in this dense and complex music are *very* impressive) serve more to demonstrate compositional methods than to interpret, question, or critique by way of analysis. The book's main purpose is expository, illustrative, and introductory—not critical, hermeneutic, or even theoretical.⁹ Mead is interested in Babbitt's compositional (and “pre-compositional”) techniques and strategies, in illustrating how they have been used, and in demonstrating the linkages they enable.¹⁰

The “techniques” at issue here are generally the larger-scale ones. First and foremost for Mead are Babbitt's pitch-class arrays, especially all-partition arrays and superarrays, because they structure much longer ranges of (pitch-class) continuity. Mead generally emphasizes how compositional “details” are determined by (or can at least be meaningfully related to) structures which are immediate products or implications of the array. Mead often begins with the array-list, as though *a priori* in status; detailed observations then show how the *presentation*

following selected remarks (both general and specific) about Mead's book, before moving on to an overall description and review of its contents in the succeeding sections.

⁹Surprisingly, Mead's important theoretical achievements, such as his work on mosaics (Mead 1988), play a quite small role in this book. Mead introduces mosaics in chapter 1 [17-18] and discusses them further at the beginning of chapter 2 [55-57]. Chapter 2 thoroughly details “the mosaic-forming properties of ... trichords and the all-combinatorial hexachords they may generate” [112], but rather little formal or theoretical development is given to the concept in this book.

¹⁰Since compositional technique is the main topic, Mead has little to say, for instance, about text-setting in Babbitt's vocal works (some of which, such as *Philomel*, seem to be his most “meaningful” and approachable works for the wider public). Likewise, Mead opts not to emphasize Babbitt's work with the synthesizer, “because the music he composed for that medium raises essentially the same problems ... as his compositions for more conventional ensembles.” [3]

of the array-list is a lively (“animated”) and interesting musical experience.

Approaching Babbitt’s music from a different angle, Joseph Dubiel has emphasized how an appraisal of the techniques themselves is not synonymous with, or even sufficient for, a critical appreciation of Babbitt’s music. Dubiel encapsulates the boundary between pre-composition and composition with the following remark:

The function of “serialism” ... is precisely *not* to “hold something together” but to force something apart. *Composition* holds it together; the function of “precomposition” is to create a field for composition—to present something *to* hold together.¹¹

The distinction between composition and pre-composition becomes even more crucial when Dubiel asserts, for instance, that “the general lesson of *Composition for Four Instruments* is that a list comes to life when uniformities of its construction are *tampered with—suspended, even eradicated—by its compositional realization.*”¹² Dubiel prods us to look and listen beyond technical structures such as the array in order to appreciate those aspects of Babbitt’s “technique” which have received less attention—those compositional decisions which come after the construction of the array and which may even work *against* it. Mead certainly takes such compositional decisions into account. His richly detailed book abounds with illustrations in which he finds some feature of the array *writ*

¹¹Dubiel 1991, 94. As an aside, we might gloss this remark in the spirit of our first scenario above. “Pre-composition” provides list-elements; while “composition” draws them together (and orders them) so that they come to constitute a list. If this scenario is taken as a model of listening, then listening is an act of “composition,” too; the piece presents list-elements, and the listener works to draw them together into a coherent whole. Parallels with literature—regarding the collaboration of writer and reader—are suggestive.

¹²Dubiel 1992, 92, emphasis added.

small; by contrast, Dubiel often concentrates on details in which he finds the array to be written *over*.

It may be Dubiel's dialectic between "forcing apart" and "holding together" (in the preceding citation) which yields the prodigious variety of Babbitt's music. The richness of this music also prompts Mead to conjure the activity of dialectical forces. This notion figures in the following citation, in which Mead also draws analogies between Babbitt's music and events in nature, even implicitly offering extra-musical associations:

Babbitt's music is not static, however. Listening to one of his compositions is akin to seeing nature in all its richness. All the immediacy and individuality of light falling through thick forest growth or the play of waves in a tidal rip derive from the interactions of simpler, more universal underlying forces, and it is the complexity of their interaction that causes the enormous wealth of variety in their manifestation. By understanding the principles guiding the growth of trees or the interactions of wind and water we can better appreciate the *dialectic* of singularity within the totality, the moment in the flow of time. So too it is with Babbitt's music. Its dynamic qualities depend on a series of *dialectics* between the surface moments of a piece and their source in its underlying structures, between a structure's compositional interpretation and its abstract properties, between particular abstract structures and Babbitt's habitual corners of the chromatic universe, and ultimately between Babbitt's preferred perspective of the chromatic universe and the chromatic universe itself. [8, emphasis added]

However, Mead's reference here to a "a series of dialectics between the surface moments of a piece and their source" functions (in this book) more as an informal and suggestive *analogy* than as a formal dialectic. The related concept of hierarchical levels is also suggested by the citation, and reappears in the later assertion that "surface detail in Babbitt's music

creates association and hierarchization through a variety of referential means, involving both collectional content and order.”¹³ [145] In fact, however, Mead does not develop a hierarchical model of Babbitt’s music, even though he more than amply illustrates how “background” properties of the hexachord, the row, and the array are manifested ubiquitously in the “foreground” musical continuity.¹⁴

Some of the analogies Mead draws with nature (e.g., “By understanding the principles guiding the growth of trees”) ought to be reconsidered, even though they may inspire novitiate readers to explore Babbitt’s provocative musical discipline. It is unlikely that Babbitt subscribes to the older mimetic aesthetic of “Art as the imitation of Nature.” Any suggestion of an organicist aesthetic of “growth” is probably also misleading.¹⁵ Mead also uses the metaphor of “genetic coding,” which varies the organicist theme:

It is helpful to think of his compositions themselves as built up of different combinations of musical genes. Each composition can be conceived as a new recombination of a rather small number of practices and predilections found throughout his career Each work moves like a living being through Babbitt’s compositional world, affording us its unique perspective on the chromatic universe. [7]

¹³Mead 1983 elaborates similar claims.

¹⁴Actually, it is Dubiel who is willing to go out on a limb (of a hierarchical tree!) and raise the specter of Schenker: “The unfolding of similar structures at different rates, with members of the faster ones figuring in the slower ones and, especially, with the slower ones more narrowly constrained by the system, is, moreover, a strikingly “Schenkerian” thing to have achieved within the twelve-tone system” (Dubiel 1990, 220.)

¹⁵Mead enjoys the verdant metaphor and occasionally repeats it in phrases such as “the incredible luxuriance of his musical growth” and “the flowering of Babbitt’s composition garden.” [265]

Conceits like these are probably more a matter of rhetoric than of carefully considered aesthetic evaluation, but they do convey Mead's enthusiastic wonder at this music's intriguing compositional techniques and its manifest sonic richness.

The notion of "expression"—an abused concept generally avoided by music theorists and sometimes even by historians—also gets spun occasionally into Mead's rhetoric. Even "beauty" and "emotion" make appearances.¹⁶ Here the concept of "expression" is reduced to compositional structure and strategy:

To appreciate fully the music's *expressivity*, we must be able to follow its structure. And while his musical surfaces revel in great sensuous *beauty*, they can only grant us incidental gratification unless we attempt to hear the ways they reveal the underlying long-range motion through the background structure that forms the lasting *emotional drama* of his compositions. [3-4, emphasis added]

The *expressive* natures of the two pieces [the Woodwind Quartet and the String Quartet No.2] arise from the ways their strategies for revealing their basic interval patterns interact with the collectional materials contained in those patterns. The earlier work's *trenchant striving* outward into increasingly longer segments of its interval pattern is always circumscribed by the constantly regenerated chromatic hexachord. In the string quartet, *our quest* for a single governing factor takes us through a wide and varied terrain. The underlying *drama* of each work depends on the *dialectical opposition* of its compositional *strategy* and the portion of the twelve-tone universe it occupies. The exchange of strategies and domains for

¹⁶I am not sure that Babbitt himself has ever used these terms in his own writings.

the two pieces would produce two remarkably different compositions. [106-107, emphasis added]

Such remarks are certainly not intended as salvos heralding an interpretive or critical response to Babbitt's music that would traffic in "beauty," "emotion," "expression," "trenchant striving," "quest," "drama," and so forth. These remarks, too, have a more rhetorical function: to convey Mead's own intellectual and musical resonance with Babbitt's music, and to animate his discussion of its compositional structures and strategies. Analogies like those cited above are as close as this book comes to what this music may "mean" or "express," beyond its manner of composition.

By and large, Mead's book is not about the aesthetic problems posed by Babbitt's music (regarding how it might be interpreted) or about its place in a broader musical or cultural context.¹⁷ Mead does engage some important perceptual problems, such as the audition of aggregates in twelve-tone music (discussed later). But while he would certainly acknowledge a broader range of aesthetic and critical issues, he does not examine them here as problems raised by Babbitt's music. Still, one of the most important traits of Babbitt's music is surely that it raises such striking challenges for performers, listeners, theorists, analysts, aestheticians, and others.

These are definitely *not* complaints. What Mead gives us is an impressive and detailed overview of Babbitt's compositional techniques, of their historical development, and of their employment in his extensive compositional output. And he does more than just survey, for he engages the musical detail at all sorts of levels. Mead's book will be an excellent—if not obligatory—starting point for the study of any piece by Babbitt, and it is sure to take its place as a standard reference on the composer.

¹⁷Of course, the most immediate context—the ways in which Babbitt's techniques extend and develop Schoenberg's "epochal insight" [7]—is clearly elaborated here.

II

Mead's book is divided into four very substantial chapters, plus a brief prologue and a short epilogue. In Chapter 1, entitled "Milton Babbitt's Compositional World" [5-53], Mead begins with an elegant synopsis of the intervallic properties which differentiate the diatonic collection from the aggregate, draws some essential distinctions between tonal music and twelve-tone music, and lucidly identifies some of the compositional constraints and consequences pertinent to twelve-tone composition. Mead then quickly surveys the most characteristic features of Babbitt's approach to the pitch-class aggregate (all-combinatorial hexachords, arrays and lynes, trichordal arrays, partitions, all-partition arrays, and superarrays). This survey is followed by an overview of Babbitt's methods of working with rhythms or durations (duration rows, time-point rows, and other rhythmic practices).

The other three chapters divide Babbitt's career into chronological periods. Chapter 2, entitled "Mapping Trichordal Pathways (1947-1960)," indicates how Babbitt first implemented his particular interpretation of Schoenberg's twelve-tone practice. [54-123] The discussion works mostly by example and is organized into three sections. The first section [55-76] contains very substantial analytical commentary on the *Composition for Four Instruments* (1948), which is offered as a model of Babbitt's early practice. The second section [76-105] explores Babbitt's immediate development of this model by describing similarities and differences among the *Composition for Viola and Piano* (1950), the *Woodwind Quartet* (1953), and the *String Quartet No.2* (1954). The third section [105-23] discusses new and contrasting techniques Babbitt uses in the song-cycle "*Du*" (1951), the piano piece *Partitions* (1957), and *All Set* (1957) for jazz ensemble. In this chapter, we also occasionally encounter remarks which treat the topic of large-scale progression and form in this music. In such cases, Mead's

striking rhetoric sometimes suggests a narrational (if not narrative) approach to the matter of progression and form:

Partitions, in a move that is the reverse of the revelatory compositions [such as the *Composition for Four Instruments*], seems downright confessional with its initial divulgence of the most concentrated versions of its compositional premises in the form of the registrally distinct ordered hexachords. ... The background progression of confession, scrutiny, and purification is counteracted by the composition of the surface details, however. [115]¹⁸

The idea offers an interesting approach to long-range strategies in Babbitt's compositions. It is a pity that its critical and interpretive ramifications are not explored as fully as are some of its technical aspects.

Chapter 3, "Expansion and Consolidation (1961-1980)," is organized more around topics than around pieces. Approximately half of the chapter falls under the subheading "Effects of All-Partition Arrays." [127-162] Illustrations are freely chosen from numerous works, with particular emphasis given to *Sextets* (1966), the String Quartet No. 4 (1970), *Arie da Capo* (1974), and *My Complements to Roger* (1978).¹⁹ Within this section, Mead concentrates on four principal concerns regarding all-partition arrays: abstract array structure, lyne projection, composition of details, and rhythmic structure (by far the shortest of the four). The second half of chapter 3 tightens

¹⁸Another interesting instance of the same sort of narrative typology occurs near the end of chapter 4: "Both works [*Soli e Duettini* for Two Guitars, and *Soli e Duettini* for Flute and Guitar] can be heard as dealing with the same issues— disclosure and reconciliation—filtered through their more obvious constitutional differences." [261] A survey of various author's remarks on what Mead calls the "revelatory" character of *Composition for Four Instruments* can be found in Dubiel 1990 (252-53, note 29). Brief appeal to the notion of narration can also be found in Dubiel 1992 (94).

¹⁹Mead 1983 discusses *My Complements to Roger* in even further depth.

the analytical focus. "A Brief Venture into Comparative Anatomy" [162-171] examines five pieces: *Tableaux* (1972), *Arie da Capo* (1974), *Playing for Time* (1977), *An Elizabethan Sextette* (1979), and *Melismata* (1982). All of them are based on different transformations of the same "six-part" (six-lyne) all-partition array of fifty-eight aggregates. [163] "Two (Short) Analyses" [171-203] concentrates on the piano piece *Post-Partitions* (1966) and the solo clarinet piece *My Ends Are My Beginnings* (1978).

Chapter 4, "The Grand Synthesis (1981-)," is devoted generally to Babbitt's use of superarrays. [204-63] A wide range of pieces—including *About Time* (1982), *Groupwise* (1983), *Four Play* (1984), the Piano Concerto (1985), *The Joy of More Sextets* (1986), *Whirled Series* (1987), and *Soli e Duettini* (1989-90)—receives attentive analytical insights. The discussion concentrates almost entirely on how the pitch-class dimension has been composed, extending to the ways in which superarrays are used to organize larger formal spans in the music. Consideration (though sometimes only brief) is also given to meter and to features related directly to the choice of instrumentation.

Readers familiar with Mead's writings will be accustomed to his impressive command of the literature and his thorough documentation of the work of other authors. This book is no exception. The notes are copious and very useful, and the bibliography is extensive. Helpful for reference are the all-partition arrays which Mead publishes here, from *My Ends Are My Beginnings*, *Post-Partitions*, *The Joy of More Sextets*, *Ars Combinatoria*, the Piano Concerto, and *Consortini*. He also specifies how several other compositions use transformations of these same arrays and locates additional arrays in the published literature. The book includes a catalog of Babbitt's compositions through early 1994, a discography, and a short but useful index.²⁰ The volume is handsomely designed, and no evident

²⁰The index does not always cite every occurrence of a given index-heading, but sometimes only the more significant (or introductory)

restriction has been placed on the very plentiful musical examples. The editorial work is generally good (although there are a few typographical errors, mostly very minor, and mostly in the last chapter).²¹

Already evident from this brief description is Mead's commanding view of Babbitt's music, as well as the scope and range of informative particulars this book offers. The generous breadth of Mead's study, ranging over Babbitt's entire compositional output, is complemented by its depth and detail; but this breadth also inclines the book to concentrate on "facts" rather than issues. Of course, that is the nature of an extensive survey or comparative account, and the book is appropriately titled an "Introduction" (not a "Critical Assessment").

III

In his prologue, Mead declares that the book "is addressed to anyone enthusiastic or curious about contemporary music and is conceived as a guide to a more informed hearing of Babbitt's work." [3] As already mentioned, chapter 1 (which is pitched as a primer for the technical demonstrations in the following

discussions. For example, mosaics are used in an example from *Composition for Viola and Piano* [78-79], but those pages are not cited in the index, although the more formal discussions of mosaics are. [17-18 and 55-57].

²¹Two errors that might cause confusion are worth mentioning. There is an omission in the phrase "all *fifty* partitions of twelve made of segments containing six or fewer elements." [205, emphasis added] The correct number is fifty-eight. Mead uses this selection of partitions several times in earlier chapters, and everywhere else the correct number is given. In another place, a mosaic is incorrectly identified. Example 2.21 [79] shows a passage from the *Composition for Viola and Piano* and lists two mosaics. One of these mosaics is { {C,A,C[#]}, {E,A^b,F}, {B,D,E^b}, {G,B^b,F[#]} }, which we will call W. (W is written in musical notation on the example.) The example claims that W = [mosaic] W2 of Example 2.20." Now, W2 = { {C,C[#],E}, {F,G[#],A}, {B,B^b,G}, {G^b,E^b,D} }, so, to be precise, W = T4(W2). The error is a minor one—perhaps even a typographical omission—but it is potentially quite confusing. It is certainly worth noting that since W = T4(W2), these two mosaics are closely and specifically related: they are not "equal," but they are "equivalent," as members of the same *mosaic [equivalence] class*. [18]

chapters) is a whirlwind tour of the principal monuments in Babbitt's pitch-class universe. A listing of topics with page numbers indicates how rapid is the pace: maximal diversity [19-20]; hexachordal combinatoriality, the six all-combinatorial hexachord types, arrays, lynes, and blocks [20-25]; trichordal arrays [25-30]; subsets and partitions of four elements [30]; all-partition arrays [31-37]; and superarrays [37-38]. The pace of Mead's summary of Babbitt's rhythmic techniques is just a bit more leisurely: duration rows [38-44]; time point rows [45-51]; and additional rhythmic practices [51-53].

Mead's coverage of these topics is generally thorough and astute, and provides a convenient reference for readers already familiar with the concepts. However, some of it will be much too condensed for untutored readers (such as the undergraduate who first encounters *Semi-simple Variations* in Burkhart's anthology, or the listener who is enraptured upon first hearing the striking novelties of *Phonemena* and wishes to know more about Babbitt's music). Those who are not yet comfortable with the vocabulary and rhetoric of music theory, as it developed under the pervasive influence of Babbitt himself, may find the walk quite easy at first, but the path quickly steepens and sometimes even becomes hard to follow. Mead's assumption, for instance, that the type of inversional hexachordal combinatoriality practiced by Schoenberg "will no doubt be familiar" [20] should cause no discomfort for readers of this journal, but Mead's tone may make other readers nervous, even though an example from Schoenberg's Violin Concerto makes the concept clear enough [21]. The assertion that "retrogression can be seen to be the same concept as inversion using index number eleven (1e) applied to a row's order numbers" [18-19] is simple enough, but it will also throw some readers off, since it is not demonstrated; in fact, nowhere in this book is a row explicitly written out with order numbers.²² Similarly, readers who have never encountered the "hexachord theorem" will find the almost casual remark that

²²The concept of order-number inversion is treated at considerable length in Mead 1988.

“since each of these [six all-combinatorial] hexachordal types has the capability of being transposed onto its complement, each must therefore exclude at least one type of interval from its makeup” [25] somewhat cryptic. These examples indicate clearly enough the sort of readership Mead actually assumes.

In some places, Mead overshoots his technical summary in minor but important ways which may fluster some readers. For instance, midway through chapter 2, he refers to inversive cycles [69] without having defined or listed them earlier. Similarly, his first reference to the “first-order” hexachords [81] is prepared only by much earlier passing mention that hexachord-types D, E, and F are the “higher-order hexachords.” [23] Such oversights would be easy to remedy. Mead might have been as deliberate and explicit about certain technical foundations as he is about others. (His successful avoidance of a pedantic tone has some disadvantages.) Explanatory notes or informal “proofs” for the uninitiated would be a useful addition, along with a glossary of technical terms and simple demonstrations. To be sure, the concepts of twelve-tone music are not difficult to grasp, but many people could be intimidated or negatively biased from the start. Unfortunately, despite Mead’s pervasive enthusiasm, this book is not likely to convert recalcitrant critics already indisposed to Babbitt’s music.

The author has provided extensive musical examples, many of which also contain additional graphical information. These examples carry tremendous freight, but the accompanying text is sometimes dense or condensed, and does not always describe or explain the graphical content as clearly as it might. Describing musical relationships in words is always difficult, and the complex structures in Babbitt’s music pose special challenges. The devoted reader who is willing to study the musical examples at length will find much to reward the effort, but Mead’s discourse might be adjusted to correlate more easily with the examples. He habitually refers the reader to a musical example only *after* a compact and concentrated summary of its contents and purpose, and one must generally look ahead to the end of a paragraph for an example reference in order to synchronize one’s reading with the pertinent example. Readers who wish to

examine musical citations in the broader context of a piece will also be disappointed to find that many of the musical examples are missing measure numbers.

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Mead has been careful to formulate and describe the aggregate's role in twelve-tone music and its relation to twelve-tone rows. The next citation illustrates how Mead's approach *avoids* "twelve-counting" and concentrates instead on interpreting pitch-class repetitions:

Can we hear aggregates—and if so, how? Chromatic enrichment of the diatonic scale ... reduces the vividness of the pitch classes not included in the collection. What does remain vivid is the recognition of pitch class membership in a highly chromatic context. Thus, given a collection of a large number of different pitch classes, each represented once, we *can* recognize—although we are not able vividly to determine what pitch classes we have not yet heard—whether or not any additional note represents a new pitch class. By interpreting the recurrence of a pitch class as a signal that we have crossed a boundary, we can parse a highly chromatic undifferentiated musical surface into a discrete series of large bundles of pitch classes that we might call *perceptual aggregates*. Perceptual aggregates may or may not contain all twelve pitch classes, but because of their size this will not be a particularly vivid aspect of our hearing. Their pitch class content is not vivid, but our awareness of their boundaries will be. [12-13]

It is worth adding that Babbitt's aggregates do involve a considerable amount of pitch-class repetition (in part because of the nature of his rhythmic techniques). The listener must *actively interpret* pitch-class repetitions to determine which ones actually signal aggregate boundaries.

The relationship of rows to aggregates is an important one, and is clarified by the next two citations:

It is fundamentally important to realize that any compositional representation of a row contains a great deal more musical structure than is specified by the row itself; musical realities are aggregates, with their identifying distributions of pitch classes; rows are compositional tools used to control the structure of aggregates. [15]

Twelve-tone rows are *abstractions* that determine the nature of relationships found within a composition over a wide variety of time spans. They do not necessarily have to be fully embodied within the surface aggregates of a composition in order to exert a strong influence over their structure and progression. [65, emphasis added]

Mead approaches the perception of hexachords (within aggregates or rows) in a manner similar to the way in which he approaches the perception of aggregates:

In rows built from segmentally discrete pairs of all-combinatorial hexachords (or [0,1,3,4,5,8]), excluded intervals are only available *between* discrete segmental hexachords and therefore can function to signal boundaries between complementary hexachords within aggregates, in a manner analogous to octaves and unisons signaling boundaries between aggregates themselves. Thus, the selection of a hexachord type for the construction of a row can have an immediate effect upon the different functional roles to be played by the different types of intervals. [25]

The point is a very good one, theoretically. However, if the perception of aggregates consists not in counting different pitch-classes but in perceiving repetitions of pitch-classes, the analogy

between aggregate and hexachord perception does not quite follow. If one does not already know the row's construction (and, in Babbitt's music, "the" row is rarely presented at the outset), one *will* have to count pitch-classes, parse the texture into various hexachords, and *also* apprehend the interval content of those hexachords, in order to comprehend the fact that an interval absent from the chosen hexachords does signal a hexachordal boundary in the way Mead proposes. The process does not appear to be a simple one. In an array with numerous lynes projected in various registers, it may require numerous listenings to determine aurally—in the absence of any score analysis—which hexachordal parsings to choose, or which intervals tend to happen only about every six notes, in order to comprehend which intervals are therefore signals of the sort described. All the same, once one determines which intervals have this function—however one does so—they will indeed be an effective and vivid listening tool and *aide-memoire*. However, it may be that Mead is assuming the listener's familiarity with the array or at least the row—structures not always easy to perceive without a score, or even to determine with one in hand.

Perceiving aggregates becomes more problematic when they are "weighted" and already incorporate a certain amount of pitch-class repetition. Mead's claims then become a bit harder to accept, from the auditor's perspective:

While his recent compositions are full of unison and octave doublings, the aggregate is still the underlying structural unit, despite its distance from the surface. It is still possible to hear such pitch class duplications as structural boundaries, separating the different strata of the underlying superarray, while at the same time noting the ways they group details in the surface. [210]

Clearly the treatment of the constituent arrays of *Whirled Series* pushes the aggregate very far from the surface in most places in the work, but nevertheless it informs the music at many levels. [226]

Mead's initial definition of weighted aggregates in chapter 1 is very condensed and also somewhat too general. [35] We have to wait a long time for an example of an *entire* weighted aggregate [207, Example 4.2], and even then the way in which the weighting comes about remains somewhat obscure. (*Part* of another weighted aggregate is shown somewhat earlier [135, Example 3.5], but again the derivation is not specified.) A really simple and clear example demonstrating how weighted aggregates are constructed and how they are to be perceived—perhaps even an ear-training exercise with careful and explicit instructions—would dispel some suspicions and make Mead's assertions more convincing. It may still be possible to hear “pitch-class duplications as structural boundaries,” but in the abstract, with no clearly demonstrative examples, it is hard to know *which* ones to hear as such, without already knowing the array or making the effort of “twelve-counting.” Undoubtedly there are effective strategies for such a determination; it would be profitable to have them explored here.

* * *

The concept of “partition” (as Babbitt, Mead, and some others use it) might also have been introduced more clearly. Mead does not formally *define* what he means by “partition,” and there are presently two competing senses for this term, both of which have mathematical pedigree. The concept deserves careful delineation, for there is potential confusion between “mosaics” and “partitions” in the literature. In what follows, I will offer an alternative terminology.²³

²³Morris and Alegant 1988 use “partition” in a different sense from Mead 1988. In fact, their “partition” is essentially equivalent to Mead's “mosaic”; their “mosaics” are similar to his “mosaic-classes”; and their “partition class” is similar to his “partition.” In what follows, I will proceed in a fashion somewhat similar to Morris' and Alegant's, but with some alterations which aim at greater consistency and less confusion between the two systems.

Mead's term "mosaic" is derived from Donald Martino's demonstration of how various "source" hexachords, tetrachords, and trichords—along with their transformations—can combine to form aggregates.²⁴ The original concept of "mosaic" was oriented more toward how aggregates can be *put together*, than with how they can be *taken apart*. This distinction is an interesting one, for it underscores a differentiation between "composing" an aggregate and "analyzing" an aggregate. As mentioned in the preceding note, Morris and Alegant use "partition" in the same sense as Mead's "mosaic."²⁵ In an analytical context, there are benefits (terminological ones among them) to conceiving "mosaics" as compositional entities and "partitions" as analytical entities, even though the two concepts are defined in essentially the same way. We will proceed along those lines.

One might define a "partition" something like this: For any set *X*, a *partition* of *X* is a collection whose elements (its *membersets*) are disjoint subsets of *X* which exhaust all the elements of *X*. (That is, every element of *X* is contained in one—and only one—memberset of the partition.)²⁶

We can elaborate our terminology a bit further. Suppose two partitions, *p* and *q* (of some set *X*), are transformations of one another—that is, suppose there exists some transformation *K* such that *q* = *K*(*p*).²⁷ In that case, we will say that *p* and *q* are

²⁴Mead 1988; Martino 1961.

²⁵Morris and Alegant 1988.

²⁶As the foregoing suggests, this definition of *partition* is essentially identical to Mead's *mosaic*: "A mosaic may be defined as an unordered collection of discrete unordered pitch-class collections dividing up the aggregate." [17] The advantages of using "partition" instead of "mosaic" will soon become apparent in the greater terminological clarity that results.

²⁷Here we use lowercase letters to abbreviate partitions, since uppercase letters are often used to abbreviate pitch-class sets or twelve-tone rows.

members of the same "*partition-class*."²⁸ This use of the concept of "class" is consistent with other current uses, in which two elements belong to the same class if (and only if) they are transformations of one another: two pitches are members of the same pitch-class if they are octave-transforms, two rows are members of the same ("classical") row-class if they are transpositions or inversions of one another, and so forth. (Each defined notion of "class" implies as well the definition of a restricted set of available transformations.)

We can also compare the "external shape" of different partitions, by examining the number and size (or cardinality) of their membersets. I will finesse further terminological problems by simply adducing a new term: for any given partition, the corresponding "*partition-format*" lists (in square brackets) the size and number of its membersets, *without regard for their content*.²⁹

A few examples will help to clarify these distinctions. Consider the partitions p, q, r, and s listed below; each one is a partition of the conventional aggregate of twelve pitch-classes:

$$\begin{aligned} p &= \{ \{C, C\sharp, E\}, \{F, G\sharp, A\}, \{B, B\flat, G\}, \{G\flat, E\flat, D\} \} \\ q &= \{ \{C, A, C\sharp\}, \{E, A\flat, F\}, \{B, D, E\flat\}, \{G, B\flat, F\sharp\} \} \\ r &= \{ \{C, C\sharp, E\}, \{F, G\sharp, A\}, \{E\flat, D, B\}, \{B\flat, G, F\sharp\} \} \\ s &= \{ \{C, A\}, \{C\sharp, E, A\flat\}, \{F, B\}, \{D\}, \{E\flat, G, B\flat, F\sharp\} \} \end{aligned}$$

Partitions p, q, and r all have the same partition-format, [3333]. However, the partition-format of s is different:

²⁸This idea is identical with Mead's "mosaic-class." It is *different*, however, from Morris' and Alegant's "partition-class"; more on the distinction in a following note.

²⁹This is what Morris and Alegant call a "partition-cardinality-list." Their "partition-class" is a set of partitions which have the same partition-cardinality-list (Morris and Alegant 1988, 76). Consequently, their "partition-class" is different from the one I have defined. In their use of "class," the notion of transformational equivalence is effectively absent (since the *identity* transformation is the only one which is applied to partition-cardinality-lists).

[12234].³⁰ Since $q = T4(p)$, p and q belong to the same partition-class. However, despite the fact that p and r have the same format, and even the fact that they have two membersets (trichords) in common, they are not members of the same partition-class. (Consequently q and r must also be in different partition-classes.) Because s has a different partition-format from p , q , and r , it must also be a member of a different partition-class from p and q , or r .

It is worth noting that the concept of partition-class is logically “inclusive” of the concept of partition-format. If two partitions are both members of the same partition-class, they must also have the same partition-format. (If two partitions are twelve-tone transformations of one another, they will have the same number and size of membersets.) However, as the examples have just shown, the converse is not true: two partitions which have the same partition-format will not necessarily be transformations of one another (members of the same partition-class). On the other hand, if two partitions have different partition-formats, they must also be members of different partition-classes. The concept of partition-format distinguishes only the *external form* of partitions; the concept of partition-class also distinguishes the *internal content* of partition-membersets.

In twelve-part equal-temperament, the pitch-class aggregate has $2^{12} = 4096$ different subsets of various sizes, ranging from the empty set (\emptyset) to the entire aggregate itself. These subsets may be combined to yield the rather large number of 4,213,597 distinct partitions, which will fall into thousands of different

³⁰One can also write partition-formats using the conventional “exponential” notation, in which an exponent indicates the frequency of each memberset size (and the exponent “1” is often suppressed). Then the partition-format [3333] would be written “3⁴” and the partition-format [12234] would be written “1²2³4.” The advantage of using the “square bracket notation” is that the *number* of membersets in the partition (as well as their sizes or cardinalities) is a bit more immediately obvious.

partition-classes.³¹ However, there are only 77 different partition-formats.³² What I have here called “partition-format” is what Mead means by his use of the term “partition.”³³

All this said, Mead’s first use (according to the book’s index) of the term “partition” is certainly not clear enough:

Trichordal arrays naturally divide their aggregates each into four parts. There are fifteen subsets of a set of four elements (sixteen if the null set is counted), and these can be combined into eight partitions of a set of four distinct elements. [30]

Here “partition” is not used correctly in either my sense *or* his. (And, as we will see shortly, it is actually used in a sense closer to mine than his.) A specific enumeration of the sixteen subsets mentioned in the citation could have clarified matters and would have offered a chance to define “partitions.” Doing so would have prevented some confusion: in fact there are *fifteen* (not eight!) partitions of four elements (in my sense of the term “partition”), and only *five* corresponding partition-formats (Mead’s sense of “partition”). These distinctions are illustrated in Figure 1, which examines a set X containing the four elements A, B, C, and D.

³¹So far as I know, no one has determined how many distinct partition-classes exist for all the various partition-formats. However, Morris and Alegant (1988, 77) have indicated how many different partition-classes exist for the six “even” partition-formats [their “partition-cardinality-list”]—that is, 1^{12} , 2^6 , 3^4 , 4^3 , 6^2 , and 12^1 . We can at least determine a lower limit for the total number of distinct partition-classes. Given that there are 4,213,597 distinct partitions, if we assume only the 24 “classical” twelve-tone operations (transpositions and inversions), then there must be *at least* $4,213,597 + 24 > 175,566$ distinct partition-classes.

³²Morris and Alegant (1988, 101) also provide a listing of the 77 partition-formats, which they call “partition classes of the aggregate.”

³³If Mead had used “mosaic-format” instead of “partition,” his terminology would be consistent with the one sketched here: “partition” would correspond with “mosaic,” “partition-class” with “mosaic-class,” and “partition-format” with “mosaic-format.”

Figure 1. The sixteen subsets, fifteen partitions, and five partition-formats of the set $X = \{A,B,C,D\}$.

Sixteen Subsets of X	Fifteen Partitions of X	Corresponding Partition- formats
1. \emptyset	1. { {A,B,C,D} }	[4]
2. {A}	2. { {A}, {B,C,D} }	[13]
3. {B}	3. { {B}, {A,C,D} }	[13]
4. {C}	4. { {C}, {A,B,D} }	[13]
5. {D}	5. { {D}, {A,B,C} }	[13]
6. {A,B}	6. { {A,B}, {C,D} }	[22]
7. {A,C}	7. { {A,C}, {B,D} }	[22]
8. {A,D}	8. { {A,D}, {B,C} }	[22]
9. {B,C}		
10. {B,D}	9. { {A,B}, {C}, {D} }	[112]
11. {C,D}	10. { {A,C}, {B}, {D} }	[112]
	11. { {A,D}, {B}, {C} }	[112]
12. {A,B,C}	12. { {B,C}, {A}, {D} }	[112]
13. {A,B,D}	13. { {B,D}, {A}, {C} }	[112]
14. {A,C,D}	14. { {C,D}, {A}, {B} }	[112]
15. {B,C,D}		
16. {A,B,C,D}	15. { {A}, {B}, {C}, {D} }	[1111]

Figure 2. Mead’s Example 1.12 (transcribed).

$\begin{array}{c c} A & B \\ C & D \\ B & C \end{array}$	$\begin{array}{c c} B & C \\ A & D \\ C & B \end{array}$	$\begin{array}{c c} C & A \\ D & B \end{array}$	$\begin{array}{c c} D & B \\ A & C \end{array}$	$\begin{array}{c c} B & A \\ D & C \end{array}$	$\begin{array}{c c} A & C \\ B & D \end{array}$	$\begin{array}{c c} D & C \\ B & A \\ A & B \end{array}$
(5)	(6)	(2)	(8)	(3)	(7)	(4) (1)

The sixteen (2⁴) *subsets* of *X* are listed in the left-hand column of Figure 1. The fifteen *partitions* of *X* are listed in the middle column; they are constructed by taking all possible aggregate-forming combinations of the subsets in the first column. Finally, the right-hand column indicates that these partitions fall into five different *partition-formats*.³⁴ Vertical spacing in each column helps to isolate subfamilies with similar structural features. The entries in the second and third columns correspond with one another but not with the entries (subsets) in the first column. (A double vertical line on the figure indicates this distinct ordering.)

Mead's Example 1.12 (to which the reader is referred ten lines after the citation above) shows only the *eight* partitions which result from constraining the number of membersets in the partition to two or fewer. (These are the first eight partitions listed on the middle column of Figure 1.) Unfortunately, this constraint is not evident from the citation above. Figure 2 transcribes Mead's Example 1.12, which arranges these eight partitions in a graphical format more analogous to a musical score. "Barlines" on the figure separate the pertinent partitions of *X*. Within each partition, elements that are vertically aligned belong to the same partition-memberset. Parenthesized numbers added below each partition on Figure 2 correspond with the listing in the middle column of Figure 1.³⁵

Despite these serious and confusing ambiguities, Mead henceforth uses the term "partition" (in the sense of my *partition-format*) as though it had been defined. The reader not already familiar with the idea will have to infer it from a number of examples. Mead's Example 1.14 [32] (which is not reproduced

³⁴Without defining any transformations of the set *X* onto itself, Figure 1 says nothing about the partition-classes into which the partitions (of comparable partition-format) will divide.

³⁵The ordered presentation of these eight partitions is *in part* determined by the ordering of elements in the horizontal parts (or "lynes"): the top two lyne are retrograde-related, as are the bottom two. However, the memberset ordering within each partition is differently determined—the lyne rhythms are not "retrogrades."

here) is helpful in this regard and gives a graphical listing of “The seventy-seven partitions [partition-formats] of [a set of] twelve [elements] into twelve or fewer parts [membersets].” The example shows the number of “parts” along one axis, and “segment length” along another. The terminology is not ideal; I would prefer “membersets” for “parts,” and “memberset size” or “memberset cardinality” for “segment length”—since “length” suggests something linear (even melodic) rather than something unordered (loosely harmonic). The concept also becomes clearer later on, when partitions are put to excellent use in an exciting analysis of the four solo passages from *Compositional for Four Instruments* which draws striking parallels between the aggregate partitions and the instrumental combinations. [57-63]³⁶

* * *

Given the preceding considerations, the term “all-partition array” would have to be construed as “all-partition-format array.” The difference is important, since there are 4,213,597 distinct partitions, but only 77 partition-formats, and, in fact, Babbitt often works with fewer than 77 formats. In arrays which involve six (as opposed to twelve) “lynes,” partitions with more than six membersets cannot be used. In such a situation, only 58 partition-formats are available (those formats which have six or fewer membersets).

The degree to which such arrays can be said to convey a sense of large-scale progression is debatable. Mead acknowledges the problem to a certain extent:

Before discussing how all-partition arrays are transformed, it is worth making a few remarks on their perceptual implications. At first blush it might seem that using all partitions in an array is an intellectual conceit, that no listener could be expected to count up

³⁶Dubiel (1992, 82-91) also offers some interesting commentary on the instrumental partitions in *Composition for Four Instruments*.

a list of partitions, recognizing what has yet to be heard. Indeed, this is not the point of the all-partition array, just as counting to twelve is not the point of hearing aggregates. The desired goal is the construction of a long string of aggregates, each with a different partitional shape. All-partition arrays maximize this end. [34-35]³⁷

Here the “principle of maximum diversity” is offered as an end in itself. To be sure, the principle guarantees the exhaustiveness of the list (the array’s partition-format-list in this case). But the principle does little to ensure the *animation* of the list—to forge *progression*. Indeed, Dubiel takes the principle of maximum diversity to task:

The systematic pursuit of *maximum* variety seems to be a conceit (however consistent with other of Babbitt’s aggregate-seeking techniques): the kind of completion it secures is extremely abstract, as is the kind of repetition it excludes.³⁸

The problem of large-scale progression in Babbitt’s music is extremely interesting and difficult. While Mead has many insights to offer on the issue, the broad overview that determines the format of his book unfortunately does not lend itself to a concentrated study of this crucial matter as a topic in itself.

* * *

As might be expected—given that the fashionable analytical physique generally boasts strength and agility with pitch-classes but remains somewhat underdeveloped in other parameters—

³⁷Throughout the citation, the word “partition” should be construed in the current sense of “partition-format.”

³⁸Dubiel 1990, 255, note 42.

most of the detailed discussions in Mead's book concentrate on Babbitt's pitch-class structures and strategies. Rhythmic matters generally take a second place, and while astute observations about instrumentation, registral placement, dynamics, playing mode, articulation, and other factors are also brought into the picture, they are usually found in discussions which focus on the "composition of details" and are made secondary to the pitch-class array. Mead's only extended commentary on the use of dynamics in Babbitt's music is very worthwhile, but also very brief. Mead debunks the problem of performing and hearing various *absolute* dynamics by instead emphasizing the importance of *relative* dynamic contours, which can also be made subject to inversion and retrograde. [175-77] Likewise, some enticing remarks about meter are found in a brief paragraph towards the end of chapter 4 [257], but here, too, one wishes for further elaboration.

While Mead does accord some attention to Babbitt's rhythmic practices, rhythm still comes off more as a feature of the surface than as a factor in the long-range organization of entire pieces. This impression does not entirely reflect Babbitt's rhythmic technique (so far as Mead explains it), since Babbitt often composes the rhythmic domain using a time-point array of the same type as the pitch-class array. Why, then, the possible implication that rhythm in Babbitt's music does not *appear* to structure continuity in the ways that pitch-class does? It is peculiar that Babbitt's independent treatment of rhythm—autonomous from pitch-class, though often organized in a similar manner—may not yet have resulted in the rhythmic dimension realizing its own full potential as an acknowledged determinant of form. Are the time-spans of the time-point array "filled" by the contents of the pitch-class array? Is the pitch-class array "unfurled" by the time-point array? Or do these two dimensions independently and collectively determine the large- and middle-scale aspects of form? Mead does not explicitly clarify these important questions. He is content to demonstrate how the two dimensions are each composed and how other parameters are used to unveil their specific structures and features. Because the pitch-class array is made pre-eminent in this presentation, time-

point arrays almost come off as mere sequences of durations and rhythms, for while the *relations* between time intervals are treated in general terms [49-51], they usually go unexplored in the analyses.

Mead's concentration on pitch-class structures, outflanking and dominating his commentary on other matters, has some disadvantages from an analytical perspective. In Babbitt's music, the various distinct combinations of instruments or of registers often correspond with formal sections (of the piece, and of its pitch-class array). Dubiel would probably argue that "brute" and "relatively untheoretical" factors such as instrumentation and register can provide a productive starting point for the analysis and appreciation of Babbitt's pieces—an alternative to starting with the array.³⁹ Mead, by contrast, places more stress on how the pitch-class lynex in the array are distinguished by instrumental and registral characteristics, implying that the latter are subsidiary to the pitch-class domain in general, and to the array in particular. Likewise, Mead treats dynamic levels as subsidiary to the rhythmic structure, showing how they are frequently used to distinguish time-point lynex (but not examining how they *might* be perceived in other connections). For this reader, Babbitt's use of dynamics receives too little consideration in Mead's book. Aside from the discussion of dynamic contours mentioned in the preceding paragraph, one has to be content with general remarks like the following:

Pitch class lynex or lyne pairs are frequently distributed registrally within an instrument. Similarly, time point lynex or lyne pairs are usually carried by dynamic levels. Pitch class lynex projected by

³⁹The array is evidently much more problematic for Dubiel than for Mead. In a discussion of *Canonical Form*, Dubiel says "the fact remains that the array is a more remote abstraction *from* the music than it once was" (Dubiel 1990, 225-26, emphasis added). Regarding *Sextets*, Dubiel asserts that "[t]aken as an analysis the array once more offers a mixture of the unmistakable and the scarcely credible" (240; for further critical opinions about the array, see also 242-47).

registers from low to high often have their counterparts in the temporal domain carried by dynamics ranging from soft to loud. The results of these dispositions are analogous contours within the registral and dynamic dimensions of a composition, frequently unfolding at different rates. [48]

As mentioned earlier, many compositions use dynamic levels to project time point lynes, and frequently the registral distribution of lynes in the pitch class array is echoed by the distribution of time point lynes from low to high dynamics. [160-62]

By taking Babbitt's compositional (or "pre-compositional") techniques as a starting point, Mead demotes textural factors (instrumentation, register, dynamics, and so forth) to subsidiary status; they help to articulate the array, but otherwise have rather little "content" of their own. Matters appear very different when one considers "what it is," rather than "how it is made," but Mead definitely concentrates on the latter of these questions. Mead seems to suggest that instrumentation, register, and so forth give the listener helpful clues about the purported "real" compositional content: the pitch-class and time-point arrays. It is difficult to determine the precise degree to which Mead associates the music's "real content" with its arrays, but the following citation suggests the association (even though it is cast ambiguously):

There is no one correct level on which to hear Babbitt's music. The surface details are not simply a way of dressing up the "real music" or the array, nor is the array simply the hidden mechanics behind the surface dazzle: we are not asked to "pay no attention to that array behind the curtain." Babbitt's music depends on the tension between levels [263]

By contrast, Dubiel suggests something quite different, and advocates concentrating on more obvious textural factors such as instrumentation and register:

It has become customary to represent such changes [in “texture”], therefore, as reinforcing the twelve-tone articulations—in which capacity they are considered to help identify stages in a pitch-class progression, but not themselves to progress. But this hierarchization is certainly not mandatory, nor even obviously desirable; for by such assimilation of texture to array, disappointingly little is made of the slowest, most obvious thing that happens in this not very slow or obvious music And so the chance is missed to open a path into the music starting from what is plainest in it.⁴⁰

Dubiel argues that this problem is even more urgent for Babbitt’s music since about 1979, in which two or more arrays are employed simultaneously:

Twelve-pitch-class aggregates formed within the individual arrays come to be combined several at a time; and since such superimposition is no part of the array’s organization, there is even less justification than in the earlier music for considering textural change subservient to the pitch-class structure—and consequently an even more urgent need to interpret it as progressing in its own right.⁴¹

On the other hand, there is a point of convergence between the different perspectives taken by Mead and Dubiel:

⁴⁰Dubiel 1992, 83.

⁴¹Dubiel 1992, 91-92.

Popular outcry against the complexity of Babbitt's pitch-class plans ... misses the point that the qualities by means of which these plans are articulated are in some sense the simplest possible.⁴²

Here Dubiel is reinforcing the notion that more obvious factors like registral layout and instrumentation help to articulate— even animate—the greater complexities of the array. No doubt Mead would agree. The two authors would then have arrived from opposite directions: Mead starts with “how it is made” in order to examine “what it is,” while Dubiel examines “what it is” and engages “how it is made” along the way. The most important difference in approach is Dubiel's apparently more skeptical view of the importance and meaning of “how it is made” for the question of “what it is.” Dubiel is not unsympathetic to technique, but he places it in a different perspective. For Dubiel, procedures and techniques are “problematic starting points for analysis”; however, “the fascination these constructs have held over analysts is due not only to the composer's example ... but, much more, to their deep, extensive, and genuine originality.”⁴³ It is no wonder, then, that Mead engages them with such vigor and enthusiasm.

IV

Ultimately, for Babbitt's listeners to appreciate that his music is “as much as it can be,” we will have to ask whether it is more than the sum of its parts, and we will have to demonstrate how it is so. Otherwise, we will not have discovered how its wealth of techniques results in an animated and vibrant musical entity. One closing citation (which again illustrates how informal notions, such as a dialectic among hierarchical levels,

⁴²Dubiel 1992, 120.

⁴³Dubiel 1990, 219.

continue to surface in this book's most important moments) will indicate how Mead's book is already an important step on the way to that goal:

Nothing is unconnected: twitch the web at any point, and the whole will vibrate. And this is true for Babbitt's music as a whole. Compositional decisions at any level ramify into every level, so that our sense of progression invokes not just our immediate sense of the moment but how that moment is echoed and reflected through the depths. There is no one correct level on which to hear Babbitt's music. The surface details are not simply a way of dressing up the "real music" or the array, nor is the array simply the hidden mechanics behind the surface dazzle: we are not asked to "pay no attention to that array behind the curtain." Babbitt's music depends on the tension between levels, the interplay between the specifics of a moment, or a passage, or a piece, and their contexts within a passage, a piece, or his work as a whole, and ultimately within the chromatic world of the twelve-tone system. It is this inclusiveness that makes his works most deeply and affectingly human. [263]⁴⁴

With a few criticisms aside—and the length of this review may make those criticisms seem more severe than they really are—the experienced or devoted reader will find in this book an incredible wealth of information and insight. It explains numerous aspects of Babbitt's compositional practice and provides many additional references for the further exploration and substantiation of the claims it makes. For readers interested in Babbitt's compositional techniques, this book is indispensable. And, as this review has indicated, it will also be an important stimulus—perhaps even a provocation—for readers interested in examining Babbitt's music analytically and critically, along lines

⁴⁴Part of this citation already appeared earlier.

distinct from its composition. In many different ways, Mead's book marks an important step toward the *animation of listening*!

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