Ear Training for Twentieth-Century Music
(New Haven: Yale University Press, 1990)

by Michael L. Friedmann

Reviewed by Steven Block

The publication of Michael Friedmann's *Ear Training for Twentieth-Century Music* must be hailed as a major event in music theory simply because it is the first published attempt to present a pedagogical method for coordinating nontonal music and music theory with ear training and musicianship skills.[1] As the opening paragraphs of the introduction to the book point out, this work arrives at a time when the approaches to listening to the music of this century are almost as "compartmentalized" as the number of people involved in the performance and composition of this music. Although Friedmann never addresses this point, it should certainly be noted that it is scandalous that such a comprehensive approach to listening to music, some of which is now ninety years old, is only first being attempted at the close of the century. One merely

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[1]Lars Edlund's *Modus Novus* (Stockholm: Nordiska musikförlaget, [1963]) should be cited as an attempt to come to grips with aspects of twentieth-century ear training; however, because of its lack of pedagogical reinforcement and explanation, I consider this not so much a comprehensive source as an ear-training thesaurus. The book's other weaknesses, such as an ungraduated and undifferentiated approach to nontonal melody and the use of highly unmemorable original melodic material based on intervallic generation, are manifest. Samuel Adler's book, *Sight Singing* (New York: W. W. Norton, 1979), presents melodic material organized by interval size and has some of the same weaknesses.

has to imagine the late-nineteenth-century student unable to grasp classical materials, taught only how to listen to fugue and other contrapuntal music, to begin to understand the vast lack of relevant training that the musician has encountered in this century. Naturally, such an impasse is self-perpetuating and must be accounted as part of the juggernaut which threatens the existence of art music as anything other than a quaint antiquity. In light of the above, it seems necessary to state at the outset that while I am one of the readers of this treatise who finds "the intellectual scope overly modest" (as Friedmann himself anticipates, p. xxvi), its defects are far outweighed by the fact that it represents the *only* current and viable source as a primary text for twentieth-century ear training. Moreover, Friedmann has made a pioneering effort and he deserves much praise for a work that begins to bring a real comprehension of twentieth-century music and musicianship skills to many more musicians. It demands close consideration by all music theorists and composers who are interested in promoting their art. Friedmann's work has laid the foundation for bringing these skills to the "average" musician; the simplicity of the exercises continually makes clear that these skills are meant to be mastered by any musician worthy of the title.

In considering this book, one must try to understand the intentions of the author. Clearly, Friedmann's work is an unabashed attempt to incorporate current set-theoretic thought as a means to aural comprehension. This is likely to estrange a number of individuals who might otherwise feel the need for a pedagogical tool to cope with twentieth-century ear training concerns.

Nonetheless, I do not think it reasonable to criticize the author for using this approach as a foundation for ear training so much as it is reasonable to determine whether this approach succeeds, even within its own limitations. However, the omission of rhythm and timbre from this study are too glaring not to mention since one could argue that these areas of musical development separate twentieth-century music from that of all previous centuries. In the case of timbre, while a number of recent studies provide a theoretical basis with which to develop some ear training exercises and musicianship criteria, it is understandable that the relative newness of the field would limit the ability to devise successful listening strategies. The study of rhythm, on the other hand, should not present such difficulties and is certainly as important to the comprehension of twentieth-century music as pitch. (Ask anyone who has tried to teach initiate composers about twentieth-century rhythm.)[2] Example 1 consists of a single measure from Milton Babbitt's *Partitions*, music which would require some planning on the part of the performer. After working through the exercises in this book, however, the sight-reader would not be the wiser with respect to *rhythmic* performance strategy. Furthermore, the example only hints at some of the more difficult rhythmic problems inherent in much twentieth-century music. Thus, the use of "ear

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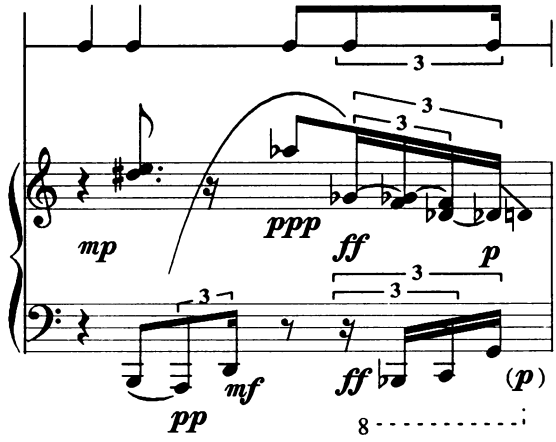
[2]Paul Hindemith's *Elementary Training for Musicians* (New York: Associated Music Publishers, 1946) is an excellent source for the study of rhythm and perhaps could be coordinated with a more comprehensive effort devised by Friedmann. Naturally, though, some material is dated and Hindemith's book does not address the necessary literature.

Example 1. Milton Babbitt's *Partitions*, m. 39



training" in the title of this book is misrepresentative and only reinforces a common prejudice about the hierarchical importance of various musical parameters (especially pitch and pitch class) which much of the music of this century has, in fact, sought to transcend.

Within the limited range of the ear training issues the book addresses, however, Friedmann's organization is meticulous and logical. Chapter 1 is concerned with approaching the music literature of this century and is the only chapter which deals primarily with the small appendix of musical examples. These examples, generally 4 to 10 measures long, are divided into groups of increasing complexity. The first three groups consist solely of melodic material, the fourth group of two-part examples, and the fifth group of examples with more than two voices. Friedmann terms the exercises "calisthenics" and stresses that the material in this chapter must be practiced simultaneously with the ensuing chapters so that the student is always in contact with real music from the literature. His approach is admirable in that he first generates six exercises which involve only aural reporting (imitation, repeating spatially adjacent material, memorization, singing verticalities as melodies, singing melodies as verticalities, duets) and only then does he turn to examples requiring written manipulation of material through dictation. Although the concepts here are not entirely original, this chapter does represent the first organized methodology towards learning such material with specific examples of the literature included.

Unfortunately, Friedmann's appendix of musical examples is a mere sixty-three pages long and encompasses a deliberately

limited selection of music composed by Schoenberg, Stravinsky, Bartók, and Debussy. No real rationale is given for this choice, save that Friedmann states that "the activities of this book immerse the student in the radical music of the first half of the twentieth century" (p. xxv).[3] Leaving aside the polemic of what constitutes "radicalism" in pre-World War II music, or even the conscious or unconscious bias imposed by Friedmann (which I probably share) as to which twentieth-century composers are important, the restriction of material to a few examples by a few composers will likely undermine the efficiency of this book for a wide range of students and professors. Those students who are knowledgeable and aggressive, who seek to master this material quickly, will find that there is not enough music to practice (and there are no further directions given), while those who are uninformed and uninspired with respect to twentieth-century literature will acquire "tunnel vision" in learning the music through this book. I see no reason why the material here should not be expanded tenfold to include other acknowledged later twentieth-century composers such as Babbitt, Berio, Boulez, Cage, Carter, Dallapiccola, Feldman, and Stockhausen. An acceptance of Friedmann's first-half-century restriction would still merit including the music of Berg, Copland, Hindemith, Ives, Messiaen, Prokofiev, Shostakovich, Varèse and Webern, for instance. The inclusion of such material, assuming the publisher would accept a much larger volume, requires only a little more presentational effort in the context of this first chapter, where

[3]Friedmann contradicts this statement by using a number of selections from Stravinsky's music of the 1950s and '60s.

the emphasis is on acquiring a general technique.[4] Later on, in the context of applying set-theoretical tools to the music, a greater variety of music would enhance the argument being made as to the efficacy of this analytical approach (although in these later chapters the analytical work now required to utilize a larger body of diverse material would certainly spawn a substantial increase in text as well).

Following this initial "calisthenic" chapter, the five chapters which comprise the rest of the text largely, though not exclusively, expound theoretical principles (including notation) utilizing John Rahn's procedures.[5] Chapter 2, "Dyads," introduces the basic methodology for dealing with pitch and pitch-class sets which are further developed in later chapters. Ear training tools such as completion (of dyads), comparison (of dyad pairs), identification (of intervals and interval classes), improvisation (of dyad progressions), and identification of dyads by specific segmentation eventually become the basis for later exercises of completion, comparison, improvisation, and identification of larger sets and set classes.

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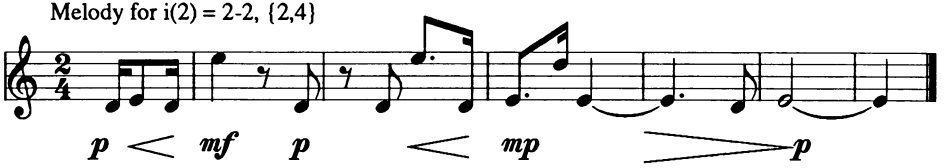
[4]I fondly remember my own undergraduate years when the class would sing melodies such as the opening of Webern's Second Cantata, Dallapiccola's *Goethe Lieder*, or the opening of the second movement of Stravinsky's *Symphony of Psalms*, or Ives's Songs. These melodies would be compared for their structural characteristics as well as their melodic characteristics (for instance, how singable is the tune?). The usefulness of comparing a great variety of musical and melodic materials cannot be understated. Most important, these melodies remain embedded in my memory for instant recall as a result of such an ingenuous method.

[5]John Rahn, *Basic Atonal Theory* (New York: Longman, 1980).

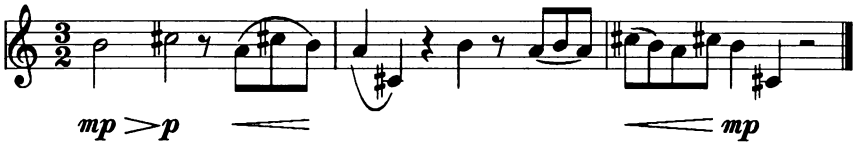
The heart of Chapter 2 is Friedmann's invented dyad melodies (pp. 16–17). Several melodies, using only two pitch classes per melody (*not* limited by register), are the foundation for teaching the skills of memorization, dictation, reading of solfège (by pitch-class number: 'oh' [0] through 'el' [11]), sight singing, and the reading of interval classes. Chapter 3 introduces transposition, inversion, retrogression, and invariance which, in turn, are also applied to the dyad melodies. In each successive chapter, similar didactic melodies are invented for each trichord, tetrachord, and larger featured set class. These melodies, besides being subject to the same basic approaches, also incorporate newer techniques learned in each chapter. Example 2 features two such invented dyad and trichord melodies. In limiting the number of pitch classes used for these invented examples to that of the cardinality of the set class illustrated by the example, Friedmann avoids problems associated with segmentation. Nevertheless, segmentation is so central to twentieth-century analysis that it is important for the student to gain some rudimentary analytic tools to deal with this problem. In addition, using multi-purpose examples to demonstrate the manner in which larger sets might be heard to include smaller ones as well would seem to be a step needed for full aural comprehension. Example 3, based upon Friedmann's own rendering of dyad melodies, is comprised of a melody that could be heard as utilizing several 2-2 dyads in succession. At the same time, the larger 3-6 set is also present in the lower register and the larger 4-21 set present in the higher register. Were this type of illustration additionally to be used as an elementary sight singing exercise, the

Example 2. A dyad melody and trichord melody by Friedmann (p. 16)

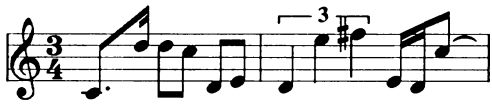
Melody for i(2) = 2-2, {2,4}



Melody for 3-6 [0,2,4]. {1,9,11} = {9,11,1} (p. 62)

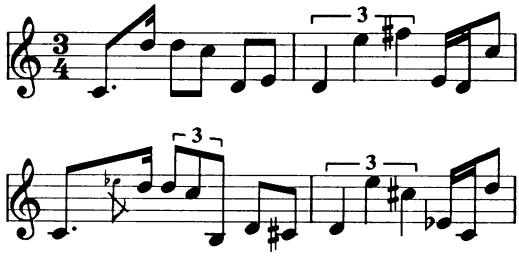


Example 3: A melody consisting of successive whole-tone dyads and larger whole-tone sets by the reviewer.



student would still be exposed, in chapter 2, to the singing of whole-tone dyads, but in chapters 4 and 5 would then learn how these whole-tone dyads can accumulate into larger structures. Suitable emphasis (e.g., separating registers on the keyboard) might form an extension of such an exercise. Obviously, such multi-purpose examples must be carefully composed to avoid certain ambiguities, but the dividends they yield in teaching the comprehension of structure by ear would make the addition of a melody of this type (i.e., illustrating each trichord and tetrachord) a valuable expansion of the extant text. I would proceed still further in each chapter to melodies which might have divergent analytical readings so that students also would learn to listen for passages in which interpretation may be dependent on context. In example 4, the same previous melody now forms mm. 1–2, and mm. 3–4 are a variation of that melody. At the very least, a reinterpretation would require hearing successive (as well as registral) imbricated 3-2 trichords in mm. 3–4 along with the larger chromatic set classes present. Certainly the issues of how to interpret the previous whole-tone measures in light of mm. 3–4 and whether to emphasize the embedded whole-tone trichord in mm. 3–4 in which the same pitch classes were previously heard, must be addressed. Why not have the student try variant emphases? I cannot stress enough the importance of presenting segmentation and structural issues early on within a text of this type, and I do not see why such a melody could not be introduced at the same time that the study of trichordal set classes (in this case, 3-2 and 3-6) is being initiated.

Example 4: Variation and expansion of whole-tone melody
now transformed to more chromatic melody.



In chapter 3, "Processes," Friedmann tries to set up the explanation of pitch-class inversion by first explaining pitch inversion in an analogous manner. As part of this definition he writes (p. 26):

> We define $I^{p}_{+/-n}$ as pitch inversion where the sum of each pitch and its inversion is +/-n. The axis will be found to be $\frac{(+/-n)}{2}$. We call the sum +/-n the *index number*.

Thus, assuming middle C as 0, a pitch inversion of A above middle C (+9) around the axis D above middle C would yield G below middle C (-5); the process would be represented as I^{p}_{+4} with the sum $\frac{4}{2}$ giving us the axis of inversion +2, or D above middle C. Example 5 shows one of Friedmann's illustrations of this process. (The example in the book shows the process as I^{p}_{+3} but this should really be labeled I^{p}_{+24} since the issue is pitch rather than pitch-class inversion.) I find this entire presentation needlessly confusing, especially for the beginning student of twentieth-century music whom this text is trying to reach. The use of such an "index number" and the labeling of the process is never delineated—even to the extent of explaining in simple prose the importance of the index number in finding the axis of symmetry; thus the connection to how this idea is further developed in pitch-class space is lost.

For the most part, however, the ideas in this chapter with respect to hearing transformational processes are essential and perhaps the most significant contribution that Friedmann makes in this text. Students are requested to practice performing and hearing

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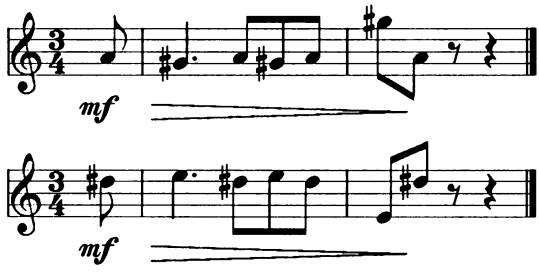
Example 5: Dyad melody and I + 24 transformation (p. 27)



transformations and also hearing invariance. It is significant that Friedmann does not neglect basic principles here: in one exercise, in which he cautions the student not to be put off by its simplicity, the student is asked to sing a melodic dyad which maintains pitch-class invariance as a result of some operation. Thus, a student is taught from the very outset that the pitch classes of an ascending whole-tone dyad, for instance, will be invariant if inverted and transposed up a whole tone. (At this juncture the process is intuitively simpler to perform than to explain, but it lays the foundation for invariance with larger pitch-class sets.)

Chapter 3 closes with an introduction to contour relations. While experimenting with a group of sophomores with humble ear training skills, I found the exercises in this section to be the most effective and most quickly learned. Thus, it was surprising to me to find Friedmann writing of contour relations as an intermediate step for the hearing of pitch relations, and to find the explanation of contour relations so late in the text. The use of contour as an ear training tool was so efficacious that students who had had difficulty hearing transformations described earlier in the text, such as pitch and pitch-class inversion, were quickly able to grasp such relations by first hearing corresponding contour changes. I am convinced, therefore, that this area should be more fully developed with a greater number of exercises, and should appear much earlier in the text—at least at the opening of this chapter on processes, if not before.

The approach to the enumeration and explication of set classes in chapters 4 (Trichords), 5 (Tetrachords), and 6 (Sets of

more than four elements) is similar and incrementally developed. Trichords are identified by their included dyads as tetrachords are identified by their included trichords, etc. In addition, new concepts are distributed among these chapters so that, for instance, normal order and interval vectors are introduced in the trichord chapter, multiplication (transpositional combination) and Z-relations are introduced in the tetrachord chapter, and combinatoriality and modal relations reserved, largely, for the final chapter.

A major feature of the chapters on trichords and tetrachords is a taxonomy aimed at grouping the twelve trichords and twenty-nine tetrachords into more manageable units, thus making the aural differentiation of these set classes simpler. *Family* is the category used to describe whether a trichord/tetrachord contains ic 1 (Family 1), ic 2 but *not* ic 1 (Family 2) or neither (Family 3). I've found this grouping useful and important for the discrimination of smaller set classes.

The next distinction made by Friedmann is the *superset group*. Preliminary to this, Friedmann defines diatonic, whole-tone, and octatonic as the primary pitch-class collections, and then categorizes superset groups as follows: group 1 includes trichords that are solely diatonic with a subcollection of pentatonic set classes; group 2 includes solely octatonic trichords; group 3 includes trichords belonging to both collections above; and group 4 consists of trichords belonging to neither. Naturally, this concept is dropped for pitch-class collections of greater cardinality but appears in amended form for tetrachordal set classes. Friedmann groups all tetrachords into five categories: 1) those belonging to the

diatonic collection with pentatonic subsets as a further distinction; 2) those belonging to the octatonic collection; 3) those belonging to the whole-tone collection; 4) supersets of the chromatic trichord; and 5) supersets of the augmented trichord. Considering that several tetrachords appear in more than one grouping, the taxonomy begins to become forced at this point. Moreover, since the ear training exercises are so thoroughly centered on making these distinctions, one needs seriously to question whether the hearing of a collection as "diatonic" is entirely relevant in many contexts. Returning to example 4, the knowledge that the "chromatic" hexachord in mm. 3-4 contained chromatic subsets might not be as significant, in performance, as the included whole-tone trichord reference to the previous two measures. As my own previous analyses of music by Ornette Coleman and John Coltrane have shown,[6] the fact that some of the surface of Coltrane's and Coleman's music *may have appeared diatonic* was secondary to the transformational processes being utilized. The problems inherent in facile categorizations are compounded when Friedmann makes such classifications as calling 5-31 <0,1,3,6,9> the "diminished seventh plus one pentad" (p. 107). Friedmann's aim, I suppose, is to show the relation of 5-31 to the octatonic collection; however, even in the invented melody which he includes, it would be just as appropriate to term this chord "the complete dominant flat ninth," and surely different contexts would require other more informative

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[6]See "Pitch Class Transformation in Free Jazz," *Music Theory Spectrum* 12/2 (1990): 181-202 and "Pitch Class Transformation in the Music of Ornette Coleman," College Music Society National Meeting, Santa Fe, New Mexico, 1988.

descriptions. I do not denigrate the use of the groupings *per se*, but the concentrated focus on these groupings in this text is a disservice, considering the plethora of other ways in which trichords and tetrachords can and should be heard. The quandary, of course, is in balancing the need to help the student grasp new material with the need to reflect accurately a method of aural comprehension for twentieth-century music. I think a greater stress needs to be placed on the hearing of set classes as abstract entities as well as part of ongoing compositional processes, and that, in essence, the continued perseverance in getting students to classify chords as "diatonic" (but then, why not a subset of the melodic or harmonic minor as well?) only subverts the good intentions of a novice listener when trying to understand more complex twentieth-century music. Since Friedmann resolves the problem of hearing Z-related hexachords (chapter 6) by differentiating included trichordal content, it would seem that an examination of set-class relations, networks, and the operations which map one to another would be more useful and congruent to the broader aims of this text than the "labeling" fascination which Friedmann imposes on the student.

This problem is even more apparent when Friedmann uses another category, with respect to trichords and tetrachords only, consisting of the means of their inclusion in whole-tone collections.[7] With respect to trichords, a distinction is made as to

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[7]Friedmann notes the origin of this approach in Andrew Mead, "Pedagogically Speaking: A Practical Method for Dealing with Unordered Pitch-Class Collections," *In Theory Only* 7/5 and 6 (1984): 54–66.

whether the trichord belongs completely to a whole-tone collection or whether the division of the three pitches is 2+1 with respect to a whole-tone collection. For tetrachords, the categories become total inclusion, 3+1, and 2+2. Friedmann states (p. 57):

> Hearing through the "whole-tone filter" is by no means a natural skill, or one reinforced through most performing or listening experiences. It is a useful tool for characterizing the harmonies of any number of pitches, and for perceiving harmonies with similarities that might otherwise go unnoticed.

This type of "it's good for you" reference is the only manner in which this category is presented; no arguments are ever offered as to how such a reference can be useful (note that the relation to whole-tone collections is also dropped for larger sets). Thus, the student ends up with a poorly-defined game of dubious merit and might actually surmise this whole-tone segmentation profitable for all twentieth-century music.

Lest one think that the total expanse of exercises is dependent upon the above classifications, Friedmann is both ingenious and elaborate in the invention of all manner of exercises emphasizing key concepts such as interval-class and/or set-class content and inclusion, symmetry, aural manipulation of given material by defined processes, and relating and processing sets belonging to any single given set class. In that sense, the material provided throughout the book and in the final chapters is invaluable both as a specific tool and as an inspirational tool for the pedagogue who seeks to fill in various ear training gaps not detailed in the text.

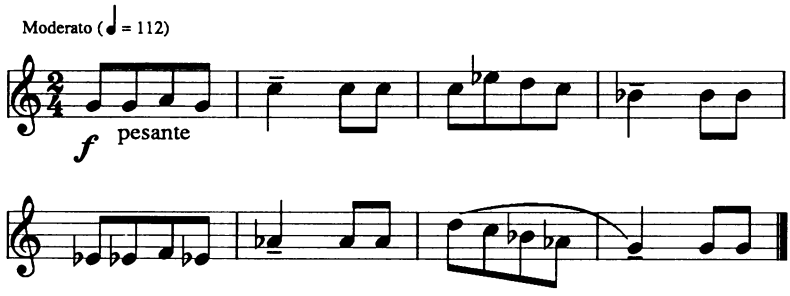
The final chapter, dealing with chords of cardinality greater than four, approaches this subject by teaching "important" and distinctive set classes, grouping these by interval-class content and superset/subset content, and treating larger set classes as modes. Obviously, one person's distinctive "large set class" is another person's alien pitch world, and the choice of set classes deemed here to be important is defensible but nonetheless subjective. The inclusion of the 6-Z44/19 pair as part of this study, for instance, is based only on the fact that it is the Schoenberg signature hexachord. This approach represents a cop-out, albeit an understandable one considering the volume of material that would be covered in dealing with so many set classes. If Friedmann could not go on and detail a methodology for approaching all pentachords and hexachords, I would prefer that this book be represented as an elementary study and conclude after chapter 5.

An important contribution to the literature which is made in this final chapter (though mysteriously undeveloped) is the defining of how to hear modal relations with respect to order, modal interval, transposition, and inversion. The construct here is the ordering of a pitch or pitch-class collection towards some central pitch or pitch class. This enables the listener to apply simple operations to all types of twentieth-century music and to begin to understand the usefulness of set-theoretic ideas to music that might otherwise be too broadly categorized (e.g., diatonic music, "wrong-note" music, etc.). It is troubling, however, that the literature which can support such usages is so sparingly examined. Example 6 shows a selection from Bartók's

Mikrokosmos which Friedmann works into the following exercise: "Listen . . . there are two 'versions' of one modal degree. Which [modal order] is presented in mm. 5–8? In mm. 9–12?" (p. 116) This is the total extent of the incorporation of this example, and the concept Friedmann is presenting here is not completely clear. Why not stress the fact that the second half represents a near modal transposition (surely a compositional avoidance of redundancy) as well? One might argue that the above is implied by the example, but the lack of reinforcement of these ideas in the text undermines the stated purpose. In addition to needing a greater explanation and body of supporting material, these few pages asserting modal relations, though placed here in the final chapter because of the larger set classes involved, also would benefit by being approached much, much earlier in the text, for these are simple and beneficial devices, and should probably be introduced with contour relations.

Ultimately, despite the reorganization, clarification, and filling out (with respect to musical examples and ear training for larger set classes) that is needed to make this a more complete text, *Ear Training for Twentieth-Century Music* is still among the most significant pedagogical contributions of the last ten years. At last there is a book with the potential to bring material heretofore reserved for graduate and upper-level undergraduate students down into the lower undergraduate levels where students are presumed to be acquiring a fundamental background. Furthermore, the introduction of some more difficult (though still basic) concepts is

Example 6: Bartók, *Mikrokosmos,* vol. 5, no. 128, mm. 5-12, right hand.



achieved in the best way possible—through the musical/aural senses of the novice. Dealing with a body of theoretical literature which is still considered controversial and often invokes contradictory views and fine distinctions of similar concepts is a formidable task and, as a result, the decisions Friedmann makes in presenting these ideas will likely be viewed through a microscope. We owe Friedmann a debt of gratitude for putting these issues on the table and beginning the process of educating the ears of our twentieth-century-cusp students. At last an individual has sought a more comprehensive, ordered, and viable method to bring musicians into the twentieth century. It's about time.