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A Pedagogical and Psychological Challenge: Teaching Post-Tonal Music to Twenty-First-Century Students

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Post-tonal music has a PR problem among young musicians, and many not-so-young ones. Anyone who has recently taught a course on the theory and analysis of post-tonal music to a general music student population mostly made up of performers, be it at the undergraduate or master's level, will probably immediately understand what the title of this article refers to. For the most part, these students will have been minimally exposed to post-tonal music, if they have been exposed at all. They will perhaps be familiar with some music by Debussy and Ravel, some Stravinsky, perhaps other isolated composers, but even the music of Bartók is often strange to them. They have not listened to post-tonal music, neither have their friends. Allowing for possible rare exceptions, they have never performed it, neither have they heard their teachers perform it, much less assign it to them for study and performance. They are likely to never have been in an orchestra or wind ensemble that has performed post-tonal music. The little they know about it, often through hearsay, is that they don't, or won't, like it, that it's different (translate as weird), incomprehensible, and not exactly pretty. In other words, we face a clear disconnect between post-tonal music and our present-day core students. So when we walk into that classroom ready to teach post-tonal theory and analysis for a semester, we need to be aware of their predisposition to not like that music, to not accept a lot of it, to question why they are supposed or meant (or made) to study it for a whole semester, or even to wonder what the purpose and point of such a futile exercise could be. In other words, we face a true pedagogical challenge, and if we have any chance at succeeding

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(which we do, and we want to), we also have to accept the fantastic psychological (and marketing) challenge we are embarking on to change the image of the product we are going to present to students.

This article will provide some suggestions to turn such a challenging classroom situation into one of discovery, acceptance, open learning, understanding, and yes, hopefully also fun. I will discuss the following twelve approaches to the pedagogy and organization of such a course: (1) focus on the music and the repertoire; (2) value of understanding the music through analysis; (3) value of understanding the historical and social contexts of artistic movements and styles; (4) preference for a roughly chronological organization; (5) avoiding the linear historiographic model; (6) broadening the repertoire; (7) introducing difficult theoretical topics with more easily accessible music; (8) addressing the multiplicity of styles in the second half of the twentieth century and early twenty-first century; (9) the lack of a unified methodology; (10) the need to rely on existing theoretical and analytical scholarship; (11) the need to be aware of the interpretive and generative approaches to analysis; and (12) the importance of helping students enjoy the material and the music, and of having fun in the process of presenting it. These basic pedagogical principles can make a very positive difference not only in the learning experience of students, but also in their comprehension of post-tonal music by the time they leave the course.[1]

(1) *Focus on the music and the repertoire.* I believe in repertoire-oriented courses in which the music is the main focus. Rather than teaching post-tonal theory and showing brief examples to illustrate our points, students will be much more interested and engaged if we study compositions, preferably complete pieces or large segments of larger pieces, and if we derive the theory, or the need for the theory, from our study of the music. Start from the music. Begin with what students can hear and figure out without the need of a theoretical apparatus. That would include, for instance, phrases, sections, form, texture, rhythm, pitch, or motivic structures. At some point you will get to something in the music that students cannot explain, such as complex rhythmic

[1] The pedagogy presented in this article is the same that generated the organization, philosophy, and expository style of my post-tonal textbook, *Understanding Post-Tonal Music* (New York: McGraw Hill, 2008). The pedagogical principles outlined here can thus be found practically developed in my textbook. I was first exposed to some of these pedagogical principles in the first course I ever took on the analysis of post-tonal music, in the summer of 1986 as a graduate student at Indiana University: Professor Mary Wennerstrom's "Musical Structure and Style 4."

structures for which they don't have the vocabulary, or pitch structures for which their knowledge of tonal concepts is insufficient. That will be the moment to introduce some new theoretical concepts, given that the students can already see the need for them.

(2) *Understanding the music through analysis*. We cannot force students to like a certain type of music we teach them. For the most part I avoid opening up aesthetic discussions on post-tonal music in my classes. A student or any musician for that matter is free to like or not like, as well as to perform on not perform, any particular kind or style of music. How each of us perceives, absorbs, and processes a piece of art, be it modern or not, is part of a subjective process which allows for endless experiential possibilities. Our role as teachers of theory and analysis is not to teach students how to "like" or "not like" music emotionally, but rather how to "understand" music in a deep sense. If in particular cases "understanding" leads to some level of "liking" that did not take place before the analytical study of the piece (as it often does), that will be a welcome icing on the cake of understanding. But such a cake is a sufficient, and sufficiently attractive, end in itself. And understanding can, and hopefully will, lead to our being better listeners, as well as to better performances of the analyzed piece, should we want to perform it.

(3) *Understanding the historical and social contexts*. I have found repeatedly that students better understand a piece of music, its style, and the possible motivation of an artist, if they know the social and historical context in which that piece was composed. The context can range from very particular facts about the circumstances of a piece, to the general context of a period or a generation of composers during a specific span of years. Examples of the first type would be the awareness that Luigi Dallapiccola's *Quaderno musicale di Annalibera* was composed as a collection of pedagogical pieces for the composer's young daughter, that Olivier Messiaen's *Quartet for the End of Time* was created while the composer was a World War II prisoner of war to be performed by himself along with three fellow prisoners, or that the erotic poems that Karlheinz Stockhausen included in his 1968 piece, *Stimmung,* were composed by himself while staying in Sausalito, California, in summer of 1967, often referred to as the "summer of love."

Perhaps more important, however, is the understanding of a period's general social context. Students are fascinated by the realization that the two major modernist movements in the twentieth century took place in the years around World War I, and then in the years after World War II, respectively. This is not a coincidence. The early decades of the twentieth century saw the decadence and dissolution

not only of an old historical geopolitical order—including the end of four European empires (the Austro-Hungarian, Prussian, Russian, and Ottoman empires, respectively)—but also of a way of understanding life and social relationships that had permeated the nineteenth century. This decadence and dissolution was anything but peaceful, and resulted from powerful and certainly violent events such as World War I and the Russian revolutions of 1917 and the ensuing civil war. There is no question that this was a painful and traumatic time for Europe, and art could obviously not be oblivious to these developments.[2]

Similarly, the generation of young artists and composers who led the modernist avant-garde movements in the 1950s and 60s was a generation who had lived the painful years of World War II as young adolescents, and for whom the immediate past represented a painful time of violence, death, and destruction. These are precisely the composers of two generations (which flourished in the early and mid-twentieth century, respectively) who often did not look back to the past as their point of compositional departure, but, rather, looked toward a musical future they were building, which often brought with itself a more-or-less radical break with the past. Students cannot help but notice the feelings of pain and anguish often transmitted by modernist music from both of these periods. If students understand the painful and violent social and historical contexts that these generations emerged from, they are more likely to understand the avant-garde emphasis on new and original artistic creation, and to appreciate the expressions of psychological darkness and complexity we often find, for example, in expressionist music of the early years of the century (Arnold Schoenberg's *Pierrot Lunaire*, for instance, or such a pedagogically useful song as his "Angst und Hoffen," no. 7 from *Book of Hanging Gardens*, op. 15), or in sound-mass compositions of the 1960s (such as Krzysztof Penderecki's *Threnody* or *St. Luke Passion*, Stockhausen's *Momente*, or György Ligeti's *Athmospheres*). Understanding how the past had been a source of pain and destruction for these generations can help students understand the composers' possible motivation for wanting to break with the past artistically, and for their wanting to project their art toward the future in the form of original new music.

[2] An interesting depiction of the crumbling world of the Austro-Hungarian Empire and its effect on art and culture can be found in the book *Wittgenstein's Vienna*, by Allan Janik and Stephen Toulmin (New York: Simon and Schuster, 1973).

(4) *Preference for a roughly chronological organization*. Linking theoretical and analytical work with a historical overview of the cultural and social contexts of the corresponding periods reinforces the learning and understanding of post-tonal music. An exact chronological organization of a post-tonal analysis course is not quite possible or necessary. But ordering general topics in a roughly chronological sequence, following what we can call "stylistic modules," goes a long way toward helping students make sense of the very complex world of both the twentieth century and its post-tonal music. For music before 1945, pitch centricity is a particularly effective module to begin with, particularly because it can be organized around the music of Claude Debussy, Igor Stravinsky, and Béla Bartók, a repertoire against which students are less likely to react from an aesthetic point of view. Subsequent modules would be atonal music (as represented by composers of the Second Viennese School, Arnold Schoenberg, Anton Webern, and Alban Berg), Neoclassicism (with possible focus on Stravinsky's Neoclassical period and on the music of Paul Hindemith), American ultra-modernism (with studies of music by Charles Ives, Ruth Crawford-Seeger, and Edgard Varèse), and classical 12-tone serialism.

Courses and textbooks on post-tonal theory and analysis often devote very little attention, if any, to post-1945 music. Quite to the contrary, I propose that the semester be approximately divided equally between the two halves of the twentieth century, and, moreover, to provide an introduction to twenty-first century music at the end of the second half of the semester. The following sequence of stylistic modules provides a roughly chronological—and pedagogically very effective—grouping of topics: post-1945 serial techniques (including composers such as Stravinsky, Pierre Boulez, Stockhausen, and Milton Babbitt), temporal issues (with possible focus on Olivier Messiaen, Elliott Carter, and Stockhausen), aleatory and sound-mass composition (including John Cage, Penderecki, Witold Lutosławski, Stockhausen, and Ligeti), quotation and collage (well represented by Luciano Berio and George Rochberg), minimalism and post-minimalism (possibly with music by Philip Glass, Steve Reich, Arvo Pärt, Louis Andriessen, Michael Nyman, Michael Torke, and others), postmodernism and neo-tonality (with many recent composers to choose from, including John Corigliano, John Adams, Aaron Jay Kernis, Christopher Rouse, Richard Danielpour, or Jennifer Higdon), and the return to motivic expressionism (with possible examples by Thomas Adès, Augusta Read Thomas, Kaija Saariaho, or Oliver Knussen).

(5) *Avoiding the linear historiographic model*. Following a linear historiographic model leads to a teleological vision of historical events as a concatenation of causes and effects linked to an idea of progress towards the future. This evolutionistic view of history can work for some specific musical periods or developments. For instance, we can follow the "progress" of early polyphony from parallel *organum* to the motets and masses of Palestrina and Victoria step by step in quite a linear way, and we can see how each new technical or notational innovation advances the sophistication of polyphony (think, for instance, of the effect of Franco of Cologne's proportional notational system on the advance of the motet in mid-thirteenth century). A linear reading of twentieth-century music would focus almost exclusively on modernist developments. According to such a narrative, Schoenberg's expressionism and atonality are a historically necessary development continuing the tradition of Beethoven, Schumann, Brahms, and Mahler, and resulting from the dissolution of the tonal system. The line continues with Webern and twelve-tone serialism, leading to post-1945 serial and multiserial techniques, then to the avant-garde movements of the 1960s and 70s, including aleatory music, sound masses, etc. This linear conception of musical progress proposes that only fully original and new art is truly legitimate at a certain historical moment, and that novelty is a sign of progress in the same way that attachment to old styles and forms is a sign of non-progressive conservatism. This aesthetic philosophy thus ensures a historical validation of multiserialism and the avant-garde movements of the 1950s and 1960s.

I consider this reading to be essentially flawed and misleading. First, it centers on only one of the many lines of musical development in the twentieth-century (albeit an important one). Second, it sidesteps other very important developments that do not fall into the modernist category; courses and textbooks that follow this way of thinking are almost exclusively focused on the Second Viennese School and on pitch-class set theory and twelve-tone theory. I propose two more inclusive approaches to the organization of a post-tonal course. First, an overarching consideration of two general style categories—based on the composer's relationship with the past—allows for the accommodation of virtually all post-tonal compositional styles. These two general approaches can be summarized as modernism, which seeks to break with at least some aspect of the past and create new modes of artistic expression, and neoclassicism, which would include a broad spectrum of styles in which a dialogue with and an absorption of the past takes place at some level. We need to allow for various shades of gray between

the two categories, given that they overlap in the case of some composers. The modernist part of this binary formulation includes Stravinsky's Russian and serial periods, the Second Viennese School, the American ultra-modern composers, post-1945 serial techniques, aleatory and sound mass composition, and other avant-garde styles from the 1960s and 70s. The side of the binary equation that is based on a dialogue with the past would include Stravinsky's Neoclassical period and other neoclassical composers, Hindemith, post-1945 quotation and collage, and various postmodernist, minimalist, neotonal, neo-Romantic, and neo-expressionist composers from recent decades.[3]

A broader historiographical model that I propose as a pedagogical alternative to the linear model is what I have called the "mosaic model." We can think of the twentieth century, from the perspective of the history of musical styles and techniques, as a complex mosaic made up of many stylistic tiles. The tiles have coexisted in the historical mosaic, often with a large degree of independence among them, but also with numerous interconnections. We can identify some of the tiles of the first decades of the century as tonal music, post-tonal pitch-centered music, free atonal music, serialism, and neoclassical music. In the second half of the century, some of the tiles would be serialism, aleatory composition, sound mass, collage and quotation, minimalism, electronic and computer music, neo-Romanticism, and neo-tonality, besides the still existing tiles from the first half of the century (tonality, pitch centricity, atonality, neoclassicism, etc.). Composers, however, have been free to switch between tiles, or even to stand on more than one tile at a time. That is, the tiles of the mosaic are not exclusive, neither are they necessarily contradictory. Stravinsky, for instance, touched on quite a few of them (such as pitch centricity, neoclassicism, serialism) either successively or simultaneously. And so did Schoenberg (tonality, atonality, serialism, neoclassicism) as well as many other composers (such as Bartók, Lutosławki, Penderecki, Stockhausen, Rochberg, Pärt, or Andriessen, just to name a few).

The mosaic, moreover, allows for an equalitarian, non-hierarchic vision of twentieth-century music. All tiles are equally valid options,

[3] The two positions have been expressed in just a few words by modernist poet Ezra Pound in his famous injunction, "make it new" (which became the title of his book *Make it New* [London: Faber and Faber, 1934]), and Igor Stravinsky, quoting Verdi's "Torniamo all'antico e sarà un progresso" ("Let's return to the old and it will be progress") in his *Poetics of Music in the Form of Six Lessons,* bilingual ed, trans. Arthur Knodell and Ingolf Dahl. (Cambridge, MA: Harvard University Press, 1970), 58.

and thus we can avoid the concept of a mainstream, dominant line (usually considered "progressive") that implies other secondary or subordinate lines (often viewed as "conservative," or marginal). From the perspective we have at the beginning of the twenty-first century, moreover, the idea of "progressive" and "conservative" trends in twentieth-century composition seems quite outdated, especially because what was once considered "conservative" by some (that is, writing tonal or pitch-centered music) is one of the preferred options among many of the major, present-day composers of various age groups (from emerging composers to well-established masters), and some of the trends traditionally referred to as "progressive" are of no interest at all to many of the leading younger composers. The mosaic model thus does more justice to what may be one of the most complex, rich, and fragmented periods in music history (similar in many ways, from this point of view, to the Renaissance, a period we can also think of as a mosaic of independent but interchangeable and intersecting styles).

(6) *Broadening the repertoire*. Courses and books that focus almost exclusively on set and twelve-tone theory tend to rely mostly on the repertoire of the Second Viennese School, both from their free atonal and serial periods. Possible additions to this repertoire in these courses or books include occasional examples by composers such as Stravinsky, Bartók, and Dallapiccola. The pedagogical ideas presented in points (4) and (5) above preclude such limited coverage of repertoire. A course that focuses on the music, does so in a roughly chronological way, and excludes a limited linear vision of art history, will necessarily by open to a much broader spectrum of composers and styles. Thus, while Debussy, Stravinsky, and Bartók will be prominently included in the unit on pitch centricity (Stravinsky will also possibly be included in units on neoclassicism and post-1945 serialism), and Schoenberg, Berg, Webern, and perhaps Dallapiccola will unquestionably be the main focus of atonal and twelve-tone units, many other composers and compositions will enrich these and other units. This will be the case, for example (and just to cite a few representative composers among the many others that can be studied in each of the following units), of Ives, Varèse, and Crawford Seeger for the unit on American ultra-modern composers; Prokofiev, Hindemith and Ravel in the unit on neoclassicism; Boulez and Babbitt for studies of post-1945 serialism; Messiaen, Carter, and Stockhausen for the unit on temporal issues in post-1945 music; Cage, Penderecki, Lutosławski, Ligeti, and Crumb in the unit on aleatory music, sound mass, and other post-serial developments; Berio and Rochberg as examples of composers using quotation and collage; Reich, Glass, Pärt,

Andriessen, Adams, and Torke in the unit on minimalism and post-minimalism; and numerous possible composers in the unit or units on recent compositional developments (including Adès, Saariaho, Thomas, Kernis, Higdon, and so on).

(7) *Introducing difficult theoretical topics with more easily accessible music*. Introducing a difficult or unpopular topic using some difficult or unpopular music seems to be counterintuitive, both psychologically and pedagogically. Students don't warm up easily to the music of, say, Schoenberg, and neither do they warm up easily to pitch-class set theory. Pairing both as a way to introduce set theory will do nothing to contribute to the popularity of either member of the pair. Students connect with much more ease to music by Debussy or Stravinsky. Introducing set theory in an unobtrusive and more casual way when explaining motives in "The Sunken Cathedral" or *The Rite of Spring* will lead to more acceptance of the method by students, given that the context will be music that they are likely to find immediately attractive. Motives in these pieces are normally non-triadic, and appear in a post-tonal context. Students can understand the need to use a new system—which at this point can be explained briefly—to label these non-tonal pitch-class collections. Thus, they will get used to referring to the (025) and (027) ubiquitous motives in "The Sunken Cathedral," or the prominent *Rite of Spring* motives derived from (0257), or Bartók's also prominent (0167) motives. By the time we get to the unit on free atonal music in the Second Viennese School, and hence to a more extensive study and use of set theory, students will already be familiar with the basic concepts and applications of the theory, and no extensive justification of it will be necessary. The largely unfamiliar repertoire in this latter unit will thus not be accompanied by the introduction of an also unfamiliar analytical method.

(8) *Addressing the multiplicity of styles in the second half of the twentieth and early twenty-first centuries*. The "common-practice period" was replaced, in the twentieth century, by a "diverse-practices period." This is particularly apparent in the decades since the end of World War II. The "mosaic model" explained above allows for a broad coverage of these styles in a way that does not imply linear value judgments. The roughly chronological organization of topics, on the other hand, allows instructors and students to make some causal sense of the quick succession of compositional styles that takes place between the 1950s and the 1980s. Moreover, the two essential attitudes toward the past, which we have discussed, can also be seen underlying the major post-World War II stylistic developments. Keeping these two general creative trends in

mind while thinking about the multiplicity of styles in that period gives students an element of perspective that allows them to navigate the experimental complexities of avant-garde composers in the 1950s and beyond.

(9) *The lack of a unified methodology*. This is one of the most common problems that face the instructor and students in a post-tonal course. While set theory (along with its extension, twelve-tone theory) provides a strong and unified methodology to study much of the pre-1945 atonal and serial repertoires, no such methodology exists that can embrace the variety of compositional styles after 1945. This requires the adoption of several solutions to address this problem. First, it helps to be aware of two large categories, both of which can include various styles: motivic music, and spatial/registral music. Motivic composition is centered around motives. Motives are generated by collections, and collections can be studied by means of pitch-class sets. A set-theoretical study of motivic music can apply to works by stylistically and chronologically diverse composers such as Stravinsky, Schoenberg, Webern, Crawford Seeger, Babbitt, Crumb, Rihm, Kernis, or Thomas. Spatial music, on the other hand, functions in a musical space where register is an essential component. We can think of spatial music as moving or developing in space, and hence it functions in pitch space, not pitch-class space. Set theory is thus not suitable to analyze registral or sound mass music by composers such as Varèse, Ligeti, Penderecki, Lutosławski, or Stockhausen. Whatever analytical system we use for this music, it should represent register in a spatial context.

Second, we need to acknowledge and study ad hoc compositional techniques used by specific composers in specific pieces or groups of pieces. In other words, we need to be flexible in our use of analytical approaches that will reflect techniques peculiar to specific composers and pieces. Some of these ad hoc techniques include, for instance, multiplication as used by Boulez,[4] rotation as used by Stravinsky,[5] a variety

[4] See Stephen Heinemann, "Pitch-Class Set Multiplication in Theory and Practice," *Music Theory Spectrum* 20, no. 1 (1998): 72–96; and Catherine Losada, "Complex Multiplication, Structure, and Process: Harmony and Form in Boulez's Structures II," *Music Theory Spectrum* 36, no. 1 (2014): 86–120.

[5] See Claudio Spies, "Some Notes on Stravinsky's Requiem Settings," *Perspectives of New Music* 5, no. 2 (1967): 98–123; and Joseph Straus, *Stravinsky's Late Music,* 3rd ed. (Cambridge: Cambridge University Press, 2001).

of combinatorial arrays used by Babbitt,[6] net structures used by Ligeti,[7] ancient Indian *talas* used by Messiaen,[8] quotation and collage techniques used by composers such as Rochberg or Berio,[9] Carter's metric modulation,[10] and so on. Students have to be made aware of these composers' individuality, of the fact that these composers invented and developed their own personal musical and compositional languages, and that, as such, these pieces require analytical techniques appropriate to these languages that, very often, will not apply to music by other composers.

(10) *The need to rely on existing theoretical and analytical scholarship*. Given the circumstances described in the previous points, reliance on existing published scholarship on post-tonal music is an essential pedagogical need. One cannot expect a single instructor to know firsthand about all the multiple compositional and theoretical systems developed and used by so many major composers in the twentieth century, particularly since 1945. Many books and articles have been published on the music of these composers, and knowing at least the essential analytical literature on post-tonal music enriches our teaching and the classroom experience of our students, helps us teach with better knowledge of the material we are teaching, and saves us endless amounts of time since we don't have to analyze the pieces we teach from scratch, as if reinventing the wheel. We can use the collective knowledge of so many previous scholars who have already done the work for all of us, and

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[6] See Andrew Mead, *An Introduction to the Music of Milton Babbitt* (Princeton: Princeton University Press, 1994); and David Hush, "Asynordinate Twelve-Tone Structures: Milton Babbitt's Composition for Twelve Instruments," *Perspectives of New Music* 21 (1982–1983): 152–205.

[7] Miguel A. Roig-Francolí, "Harmonic and Formal Processes in Ligeti's Net-Structure Compositions," *Music Theory Spectrum* 17, no. 2 (1995): 242–67.

[8] Julian L. Hook, "Rhythm in the Music of Messiaen: An Algebraic Study and an Application in the *Turangalîla Symphony*," *Music Theory Spectrum* 20, no. 1 (1998): 97–120.

[9] David Osmond-Smith, *Playing on Words: A Guide to Luciano Berio's Sinfonia*, Royal Musical Association Monographs (London: Royal Musical Association, 1985); Michael Hicks, "Text, Music, and Meaning in the Third Movement of Luciano Berio's *Sinfonia*," *Perspectives of New Music* 20 (1981–1982): 199–224; and Cristina Catherine Losada, "Between Modernism and Postmodernism: Strands of Continuity in Collage Compositions by Rochberg, Berio, and Zimmerman," *Music Theory Spectrum* 31, no. 1 (2009): 57–100.

[10] Jonathan Bernard, "The Evolution of Elliott Carter's Rhythmic Practice," *Perspectives of New Music* 26, no. 2 (1988), 164–203; and David Schiff, *The Music of Elliott Carter,* 2nd ed. (Ithaca: Cornell University Press, 1998).

whose studies deserve our pedagogical attention. A sample of scholarly publications that have an immediate pedagogical value in a course on post-tonal music can be found in the selected bibliography at the end of this article.

(11) *The need to be aware of the interpretive and generative approaches to analysis*. In this context, being aware of the difference between generative and interpretive analysis is useful for both the instructor and the students of post-tonal music. The aim of *generative* analysis is to show how the composer actually composed a piece. That is, we try to understand how the piece was put together (how it was generated), and what the composer knew and applied when he or she put it together. In order to do this, we must know the compositional process used by that particular composer. Some composers have written extensively on their own work and compositional methods. This is the case with Paul Hindemith, Olivier Messiaen, and Milton Babbitt, for example.[11] In cases such as this, we can look at the information provided by the composer, and use it if it is pertinent to this composer's piece that we are analyzing.[12]

In many cases, however, we don't know the composer's intentions or method, and we don't know how the piece was put together. Rather than helping us understand what the composer was doing when he or she was composing a piece, the goal of analysis will then be to discover what is in the music, regardless of the composer's intentions. This is the type of analysis we call *interpretive*. That is, we study the score, and, as best we can and through whatever means are available to us, we interpret what we see in the music. Our analysis is then an interpretation (with, perhaps, a good dose of subjectivity involved) by an "outsider," so to speak.

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[11] See Paul Hindemith, *The Craft of Musical Composition*, vol. 1, *Theoretical Part*, trans. Arthur Mendel (New York: Associated Music, 1942; rev. ed., 1945), and vol. 2, *Exercises in Two-Part Writing*, trans. Otto Ortmann (New York: Associated Music, 1941); Olivier Messiaen, *The Technique of My Musical Language,* trans. John Satterfield (Paris: Alphonse Leduc, 1956); and Stephen Peles, Stephen Dembski, Andrew Mead, and Joseph Straus, eds., *The Collected Essays of Milton Babbitt* (Princeton: Princeton University Press, 2003).

[12] Even in these cases of composers who have written about their music, an interpretation of their writings is very useful as a pedagogical link to the analysis of their music. From this perspective, see David Neumeyer, *The Music of Paul Hindemith* (New Haven: Yale University Press, 1986); Mead, *An Introduction to the Music of Milton Babbitt*; Harry Halbreich, *Olivier Messiaen* (Paris: Fayard/SACEM, 1980); and Hook, "Rhythm in the Music of Messiaen."

(12) *The importance of helping the students enjoy the material and the music, and of having fun in the process of presenting it.* This point may be one of the central psychological factors in our success at being effective teaching a post-tonal course. By teaching this material with enthusiasm and enjoyment, and transmitting these qualities to our students, we will make a tremendous difference not only in establishing a positive relationship with our students, but also in helping them accept and be open to what we teach. In this course we teach great music by great composers. A lot of the discoveries we make about the pieces we teach denote this greatness, be it Bartók's impeccably designed octatonic structures, Webern's intricate motivic relationships, Messiaen's complex polymetric layers, or Berio's carefully composed and connected collage textures. All of it displays great artistic ingenuity and craft, which results in powerful musical compositions. We cannot miss a chance to point that out to our students, and to share our enthusiasm about these things with them.

We should not miss any chance, either, to have some lighter, fun moments in our class, which sometimes can be enhanced by our use of classroom technology. Even students who may have a hard time accepting the aesthetics of some modernist music will find it easier to connect with some equivalent examples from the visual arts. Showing students a projection of Oskar Kokoschka's expressionist painting *The Bride of the Wind* (1914) can be a welcome complement to the study of a piece like Schoenberg's song "Angst un Höffen" (1909). Similar stylistic relationships can be established between, say, Wassili Kandinski's abstract *Composition VII* (1913) and Webern's *Five Movements for String Quartet*, op. 5 (1909); or between Mark Rothko's abstract multiform *No. 1* (1962) and Ligeti, *Atmosphères* (1961); Joan Miró's abstract surrealist *Ciphers and Constellations* (1941) or Jackson Pollock's *Stenographic Figure* (1942) and Stockhausen's *Telemusik* (1966); Larry Rivers' collages *Europa I* (1956) or *Golden Oldies '60s* (1974) and Berio's *Sinfonia* (1968), just to cite a few examples of clear stylistic relationships between painting and music.

The relationships between visual arts and music can also be framed in terms of the relationship between the artist and the past. The same as we have discussed how establishing a dialogue with the past has led to styles like neoclassicism and quotation/collage in music, we can show multiple examples from painting and architecture that will allow students to make a contextual connection between music and culture at large. Examples of such stylistic relationships can be William Kendall's neoclassical New York Municipal Building (1914) and Pablo Picasso's *Mother and Child* (1921–1922) compared to Stravinsky's "Tarantella,"

from *Pulcinella* (1920); R. Hood and J. Howells' neogothic Chicago Tribune Tower (1924) compared to Stravinsky "Agnus Dei" from *Mass* (1944–48); Trowbridge and Livingstone's neoclassical Bankers Trust Co., NY (1912) and Giorgio de Chirico's *Mystery and Melancholy of a Street* (1914) compared to Hindemith's "Interlude in G" from *Ludus Tonalis* (1942); or, finally, Michael Graves' postmodernist Portland Building, Portland (1982) and Hammond, Beeby, and Babka's The Harold Washington Library, Chicago (1991) compared to Aaron Jay Kernis' *Colored Field* (Concerto for cello and orchestra) (1993). All of these visual comparisons to music they are studying catch our students' attention in a powerful way, opening up their understanding not only of the music, but also of the cultural context in which this music was created.

Finally, we should not overlook the many possibilities offered by an online tool such as YouTube. One could think that the class on Milton Babbitt's trichordal combinatoriality, combinatorial arrays, and durational rows could be a dry and unpopular one that students would dread and react against. Far from it, we can make that class one of the most interesting and attractive in our course, and a single video from YouTube that we will discuss below will contribute greatly to it. First, this class gives us the chance to discuss Babbitt's famous article, originally titled "The Composer as Specialist," infamously retitled "Who Cares if you Listen" by a *High Fidelity* editor, where Babbitt argues that the role of the experimental composer of "serious" music is similar to the role of the scientific researcher (particularly a mathematician or physicist) whose scientific discoveries are usually presented in language that only a limited circle of specialists can understand or appreciate, but that eventually may be absorbed into practical applications of scientific knowledge.[13]

[13] Milton Babbitt, "Who Cares if You Listen?" *High Fidelity* 8, no. 2 (1958): 38–40, 126–27, reprinted as "The Composer as Specialist" in *The Collected Essays of Milton Babbitt*, 48–54. See also "Past and Present Concepts of the Nature and Limits of Music," *International Musicological Society Congress Report* (New York, 1961), 398–403 (New York, 1961), reprinted in *Perspectives on Contemporary Music Theory*, ed. Benjamin Boretz and Edward Cone (New York: W. W. Norton, 1972), 3–8, and in *The Collected Essays of Milton Babbitt*, 78–85. See also Martin Brody, "'Music for the Masses': Milton Babbitt's Cold War Music Theory," *The Musical Quarterly* 77, no. 2 (1993): 161–92.

An enlightening discussion on this matter can take place if we ask the class the following question: In what media do we indeed hear atonal music of various styles in a commercial context? (And here I'm thinking of film and TV music, especially for thrillers, and for mystery or horror films and series). Secondly, we can actually enjoy such a "practical application" of Babbitt's difficult language in a very attractive YouTube video by jazz trio The Bad Plus, where Babbitt's *Semisimple Variations* are performed (and danced by a trio of dancers) in a lively jazz style. Students invariably appreciate and enjoy this video, as well as how accessible Babbitt's language can be when performed in a context and style that is more familiar to them.

* * *

I will conclude this article with a pedagogical analytical application. Earlier I mentioned the different analytical approaches needed for motivic and spatial music. If, upon studying a score, we discover the presence of motivic organization of pitch-class materials, it is likely that a pitch-class set analysis may lead to an understanding of pitch and motive relationships in that composition. Pitch-class set analysis, however, presupposes octave equivalence. And octave equivalence neutralizes spatial or registral processes. If such processes do not appear to be essential to a composition, motivic analysis through pitch-class sets is perfectly justified. As effective as pitch-class sets are for the study of motivic relationships, however, the method is not applicable to music where register and space take on a structural role. In his book *The Music of Edgard Varèse*, Jonathan Bernard develops an analytical methodology for the music of Varèse that takes into account the preeminent role of spatial and registral aspects of this music.[14] In such a context, inversional and octave equivalence do not apply: pitches sound in a particular register, and create specific spatial intervallic relationships (and, often, symmetrical spatial structures) with other pitches. Studying this music in terms of pitch-class space rather than pitch space would amount to ignoring one of its most salient aspects (its spatial character). To illustrate an approach to music that features an eminently spatial component, we will now examine a fragment from Krzysztof Penderecki's *St. Luke Passion*, using some of the criteria developed by Bernard in his studies of Varèse.

[14] Jonathan Bernard, *The Music of Edgard Varèse* (New Haven: Yale University Press, 1987).

Analysis: Penderecki, *St. Luke Passion*, No. 13, *"Et Surgens Omnis Multitudo"*

Penderecki's *St. Luke Passion* (1965) is widely considered one of the choral masterpieces of the twentieth century. From an orchestral perspective, the *Passion* includes many of the experimental techniques that Penderecki (born in 1933) had developed in such orchestral works as *Anaklasis* (1960), *Threnody for the Victims of Hiroshima* (1960), and *Polymorphia* (1961). The variety and novelty of the vocal and choral techniques used in the *Passion* also have precedents in a number of vocal works from the same period. Considering, however, the highly experimental character of many of these instrumental and vocal techniques, the work's length (around 70 minutes), and the fact that it was composed for an occasion that would have seemed to herald a fairly traditional, probably even conservative, musical expression (the celebration of the seven-hundredth anniversary of the Cathedral of Münster, West Germany), it is remarkable both that the *Passion* received immediate acclaim both from the public and the critics, and that it soon became a twentieth-century classic. In our study of movement 13 from this work, we will discuss the text and dramatic action in this movement, the notational techniques used, and the compositional, instrumental, and vocal characteristics of each of the sections.[15]

1. The text.

Penderecki's text for the *Passion* draws on several sources. The main source is St. Luke's Gospel. Other biblical sources include fragments from St. John's Gospel, the Psalms, and the Lamentations of Jeremiah. Several non-biblical fragments include passages from liturgical hymns, and the sequence *Stabat Mater*. The complete work is to be performed in Latin.

The text for movement 13, which closes Part I of the *Passion*, is fully drawn from St. Luke (23:1–22). The English translation of this fragment from Luke is as follows (the Latin words in brackets indicate the beginning of each significant section in the music):

> [Evangelist: *Et surgens*] And the whole multitude of them arose, and led him unto Pilate. And they began to accuse him, saying: [Chorus: *Hunc invenimus*] "We found this fellow perverting the nation, and

[15] The main study of Penderecki's *Passion* is Roy Robinson and Allen Winold, *A Study of the Penderecki St. Luke Passion* (Celle: Moeck Verlag, 1983).

> forbidding to give tribute to Caesar, saying that he himself is Christ a King." [Pilate and Jesus: *Tu es rex*] "Art thou the King of the Jews?" "Thou sayest it." "I find no fault in this man." [Evangelist: *Et remisit*] And he sent him to Herod. [Chorus: *Herodes autem*] Herod questioned with him in many words; but he answered him nothing. [Chorus: *Sprevit autem*] And Herod set him at nought, and mocked him, and arrayed him in a gorgeous robe, and sent him again to Pilate. And Pilate when he had called together the chief priests, said unto them: [Pilate: *Ecce nihil*] "Nothing worthy of death is done unto him. I will therefore chastise him, and release him." [Chorus: *Tolle hunc*] "Away with this man, and release unto us Barabbas." [Evangelist: *Iterum autem*] Pilate, therefore, willing to release Jesus, spake again to them. But they cried, saying: [Chorus: *Crucifige*] "Crucify him, crucify him." [Pilate: *Quid enim*] "Why, what evil hath he done? I have found no cause of death in him."[16]

The passage has great interest from a dramatic point of view. The characters include the Evangelist (who recites some of the action in spoken form), Pilate (bass solo), Herod (who does not speak or sing), Jesus (baritone solo), and the crowd (represented by three SATB choruses). Dramatic tension is created by the opposition between the will of Pilate (who finds no fault in Jesus) and the will of the crowd (which accuses Jesus and wants him crucified), by the handing of Jesus back and forth between Pilate and Herod, and by the listener's knowledge that in the end, Pilate will be too weak to follow his conscience and will give in to the wish of the crowd. The variety of dramatic situations allows for a variety of text delivery: the Evangelist speaks, Pilate and Jesus sing their dialogue, Pilate sings his statements, and the chorus speaks most of the text in several different ways, and actually sings on pitches in only two brief occasions: the exclamation "*Domine*" (Lord) after Jesus speaks (a word which is not part of Luke's text), and the final, forceful outbursts asking for Jesus's crucifixion.

2. Notational, Stylistic, and Compositional Elements.

Penderecki's notational practices at the time he wrote the *Passion* require some clarifications. First, durational notation in the *Passion* includes two different systems. Some sections are notated in the traditional metric system, and then a time signature is provided (as in the 2/4 section beginning at "ecce nihil"). In other sections, however, Penderecki uses what is known as proportional notation. Measures in

[16] Luke 23:1–22 (Authorized [King James] Version).

this type of notation do not refer to metric units, but rather to time spans of a durational length indicated proportionately by the spatial length on the score. The section that opens the movement is written using proportional notation (mm. 1–13).

Some pitch events are also notated by means of non-conventional symbols. A solid black triangle pointing upward (mm. 2–3) indicates the highest note on the instrument, while the same triangle pointing downward (trombones, mm. 24–28) means the lowest note on the instrument. Clusters may be fully notated, as in the string cluster in mm. 4–9, or indicated by means of continuous black bands, as in mm. 45–48. Both of these clusters, moreover, are microtonal—they include quarter-tone accidentals for which special symbols are used. A straight line after a note head indicates that the note must be sustained. A line slanted upward or downward indicates a glissando. The violas in m. 5 and the trumpets in m. 19 perform quick glissandi, while the voices in mm. 10–12 are required to perform slow-moving slides. Dots on a line, as in the trombones in mm. 24–29, indicate the repetition of a note as fast as possible for the duration of the line. Finally, the symbol in cellos and double basses in m. 20 refers to an arpeggio on four strings between the bridge and the tailpiece (that is, indeterminate pitches or sounds will result).

The main compositional elements in this movement are clusters (blocks of sound made up of adjacent chromatic or microtonal steps) and sound masses. In sound-mass composition, or textural composition, individual pitches and lines are integrated into complexes of sound ("sound masses"), which Penderecki often realizes as clusters. In sound masses we do not perceive individual pitches, but rather chromatically-filled complexes of sound. Two particular types of cluster in Penderecki's *Passion* deserve attention. In the first type, the cluster is built progressively beginning on one pitch and adding pitches one by one, as in the cellos and double basses in m. 4. We will refer to this type of cluster as a wedge cluster. In another type of cluster all voices first begin on the same pitch, and then slide progressively to different pitches that will form the cluster. This event, which we will call a sliding cluster, can be heard in the choruses in mm. 10–12. Sound masses are not necessarily made up of clusters. They may be made up of indeterminate pitch groups, as in the passages by the low strings and the trombones and tuba in mm. 21–28, or they may be made up of spoken sounds in a large choral group, as in the choral passage in the same measures (21–28).

Various techniques are used by Penderecki in his vocal writing. In m. 13 we can hear the Evangelist speaking freely. In the section after

m. 24, on the other hand, we hear the chorus repeating spoken phrases in rhythm, and again in m. 46, the tenors speak their text in rhythm. In m. 50 and following, the tenors deliver their text in *Sprechstimme* (as indicated by the cross note heads), a technique that lays between speech and song (the text is "spoken on a pitch"). Finally, some of the passages by both the soloists and the choruses are sung in the usual way (the "Domine" passage in mm. 36–38, or the dialogue between the bass and the baritone soloists in mm. 32–44).

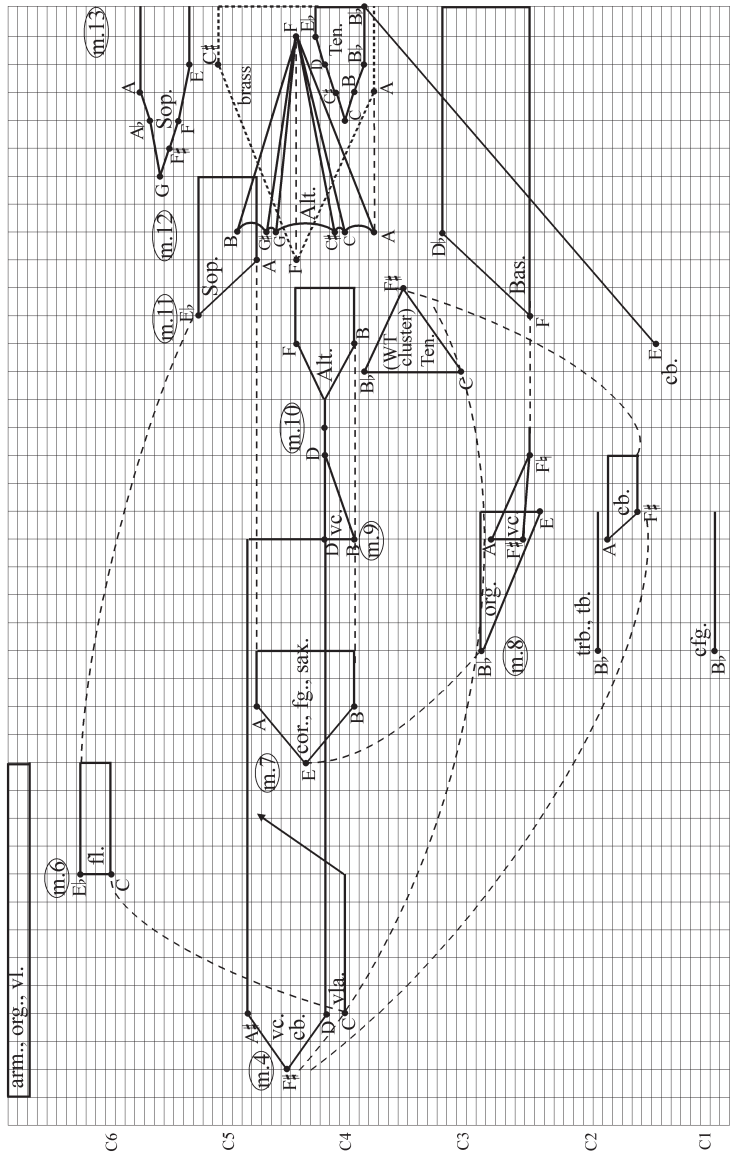
3. A spatial and registral analysis of the movement's introduction.

The main defining characteristics of sound masses and clusters are their density, width, register, and timbre. These are all elements that function in musical space. That is, we can imagine a three-dimensional space in which sound masses exist and are transformed. We will picture such space by means of the type of bi-dimensional graph shown in Example 1. The vertical axis of the grid in this example represents pitch, going from lowest at the bottom to highest at the top. Each square equals one semitone, and octaves are indicated by their usual numerical labels (C_4 equals middle C). Time is read from left to right on the horizontal axis, which, however, has no constant value (that is, length in the horizontal axis does not indicate proportional duration in the actual music).[17] In his spatial analyses of Varèse's music, Jonathan Bernard uses the term "projection" to refer to the transference of a structure (a pitch, an interval, a complex of pitches, etc.) to a new pitch/registral level.[18] The same concept will be useful in our study of Penderecki's spatial processes.

We will now analyze the spatial relationships in the movement's opening section (mm. 1–12, the introductory section leading to the Evangelist's recitation beginning in m. 13), as represented in Example 1. Measure numbers are indicated with circles within the graph.

[17] This type of spatial grid graph was first used by Robert Cogan and Pozzi Escot in *Sonic Design: The Nature of Sound and Music* (Englewood Cliffs, NJ: Prentice-Hall, 1976), and then adopted by Jonathan Bernard in his studies of Varèse's music, and later to represent spatial relationships in the music of Ligeti and Bartók. To consult Bernard's use of this graphic technique, see his article "Pitch/Register in the Music of Edgard Varèse," *Music Theory Spectrum* 3 (1981): 1–25, and his book *The Music of Edgard Varèse* (New Haven, Yale University Press, 1987).

[18] See Bernard, "Pitch/Register in the Music of Edgard Varèse," 9.



Example 1. Penderecki, *St. Luke Passion*, mov. 13, mm. 1–12, spatial reduction

Mm. 1–9. The movement begins with a high-register cluster of indeterminate pitches (the five "highest notes" in the harmonium and organ, and the "highest note" in the violins). In mm. 4–5 a microtonal wedge cluster is built in the cellos and double basses. Two additive processes begin simultaneously at $F♯_4$, upward in the cellos and downward in the basses). The cluster's maximum width is reached at the end of m. 4 (from a D_4 raised a quarter tone to an A_4 raised three quarter tones), at which point the violas play slides beginning on C_4 (a tritone away from $F♯_4$). The cluster of cellos and double basses creates a sound band all the way to the end of m. 9, and occupies the central register space. The tritone F♯–C, moreover, takes on an essential role (through projection) in the subsequent registral expansion. The first projection to the upper register takes place in m. 6, where the C_4 from the violas is projected up two octaves to C_6, generating a cluster in the flutes with a width of a m3 (C_6–$E♭_6$). This opening of the upper register is balanced by the opening of the lowest register in this section in m. 9, now by projection of F♯ three octaves lower (from $F♯_4$ to $F♯_1$). $F♯_1$ now becomes the lowest pitch for a cluster in the double basses, also with a width of a m3 ($F♯_1$–A_1).

Two subsidiary clusters are built by wedge motions in mm. 7 and 8. In m. 7, a cluster begins at E_4 in the horns, bassoons, and saxophones, and opens in wedge motion up and down a P4, to A_4 and B_3 respectively. A tritone-projection of E_4 to $B♭_2$ in m. 8 begins a new wedge cluster in the organ, now opening to the tritone width E_2–$B♭_2$. $B♭_2$, moreover, is replicated an octave lower as a $B♭_1$ pedal in the trombones and tuba and, sounding yet an octave lower, in the contrabassoon, the lowest pitch of the whole passage. This opening instrumental passage concludes with two symmetrical sliding clusters in the cellos beginning in m. 9. Both clusters begin with a width of a m3 (F♯–A, microtonally inflected, in the lower cellos, and B–D in the upper cellos), and both converge by sliding motion on single pitches, F_2 and D_4 respectively (again related by m3). Notice that the D_4 in the upper cellos is a continuation of the D_4 that we find at the lower boundary of the opening wedge cluster (m. 4).

Mm. 10–12. The closing passage of the introduction begins with the entrances of the three choruses in m. 10. A complex pattern of sliding clusters emerges in the following three measures. The altos begin on D_4 (continued from the cellos in m. 9), and slide into a tritone cluster, B_3–F_4), thus restoring again and for the third time the role of B_3 as the lower pitch of a mid-register cluster. The tenors perform a closing sliding cluster, beginning with a whole-tone cluster with C_3–$B♭_3$ boundaries, and converging onto $F♯_3$ (a tritone away from C_3).

This cluster restores the registral significance of F♯: $F♯_3$ is an octave projection of the $F♯_4$ that opens the cello/double bass wedge cluster at m. 4. We can also think of this $F♯_3$ as a two-octave projection of $F♯_1$ from the low-register cluster in m. 9. Similarly, an octave projection of the highest pitch in the high-register cluster in m. 6, $E♭_6$, opens the soprano sliding cluster in m. 11 at $E♭_5$. The width of this soprano cluster is A_4–$E♭_5$, a tritone. The lower boundary of this cluster, A_4, restores the role of this pitch as a cluster boundary (it was the high boundary of the cluster in m. 7). To complete the clusters in all four voice types, the basses begin their own sliding cluster in m. 11 at F_2, the same pitch that closed the previous instrumental section in the low cellos.

The final gesture in this section (m. 12) includes four pitch events in the altos, sopranos, tenors, and brass instruments respectively. The central events are two contrary wedge motions taking place in the same register in the altos and brass instruments. The altos begin with a complex symmetrical sonority (not a cluster): A_3–C_4–$C♯_4$–G_4–$G♯_4$–B_4, in which a central tritone, $C♯_4$–G_4, is framed by minor thirds below and above (A_3–C_4 and $G♯_4$–B_4 respectively). All of these voices slide and converge on F_4, creating a closing wedge motion. The brass instruments, on the other hand, perform an opening wedge cluster beginning at F_4, and opening to A_3–$C♯_4$. The designs of these two pitch groups (altos and brass) are thus complementary and symmetrical from a spatial/registral point of view. Two subsidiary and parallel wedge clusters take place in the sopranos and tenors in m. 12, from G_5 opening to the perfect fourth E_5–A_5 in the sopranos, and from C_4 opening to the perfect fourth $B♭_3$–$E♭_4$ in the tenors.

Throughout this final passage in mm. 10–12, a slow glissando in the double basses moves from E_1 to $B♭_3$. E_1 is not only the lowest pitch in the section other than the contrabassoon's $B♭_0$ in m. 8, but it is equidistant by tritone from the $B♭_0$ and $B♭_1$ pedals in m. 8. The glissando, moreover, covers a compound tritone span from E_1 to $B♭_3$, thus connecting the low and middle registers through one of the structural intervals in this section, the tritone (the other structural interval is the m3, which determines so many of the intervallic relationships in the section). A brief extension of the brass cluster into m. 13 functions as a connection with the next section, in which the Evangelist begins reciting the text for the movement, and the altos sing their lowest possible note (again a cluster of indeterminate pitches in a lower register, which balances the initial cluster of indeterminate pitches in a high register).

Conclusions. The graphic analysis in Example 1 helps us understand the compositional architecture underlying this passage. Sound masses

and clusters (the main compositional elements in the section) are used in a coherent way, and we have noticed not only the existence of structural intervals (the m3, the tritone, and to a lesser extent, the P4), but also that different passages and clusters are connected among themselves by projection of pitches or intervals, by symmetrical and balanced spatial designs, and by restoration of pitch registers which had already been established in previous pitch events.

* * *

In this article I have provided a pedagogical framework for the organization and presentation of a course in post-tonal theory and analysis, in a way that brings together the technical understanding of music as an objective entity on the one hand, and the historical and social contexts needed to provide the necessary perspective to our conceptual understanding of a musical work on the other. I have suggested and discussed various ways of bridging the gap between a likely negative and biased attitude of students toward much of the post-tonal repertoire and our task to teach this music to them and, hopefully, help them understand and appreciate it, regardless of their liking it or not. With mindful pedagogy and some psychological interpretation of class dynamics, it is perfectly possible to have a successful teaching experience in a post-tonal course, one in which students will end up enjoying and accepting a repertoire which was previously largely unknown and obscure to them.

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