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Feldman, Analysis, Experience

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Abstract

The growing number of performances and recordings of Feldman's music in recent years attests to increased interest among performers and listeners; yet his music remains an uncommon subject for detailed music analysis. Proceeding on the premise that this disparity is no accident, I argue that certain distinctive qualities of the music render it difficult to analyse with tools, methods, and practices developed in response to other repertories. This paper investigates the analytical challenges posed by Feldman's music. A survey of such challenges as they relate to his output in general is followed by an account of two particular issues associated with his late work: scale and repetition. Two case studies address these issues in turn, advancing relevant conceptual and methodological approaches. In the first study, on *Coptic Light* for orchestra (1985), I suggest that analysts might reconsider part–whole relationships in music analysis, and use the idea of 'populations' (with their attendant features of range of variation and distribution) to develop a non-reductive (and non-constructive) approach to scale. In the second study, on *Piano, Violin, Viola, Cello* (1987), I encourage analysts to rethink the role of repetition in music analysis, such that repetition is no longer (only) a goal, but becomes a point of departure. Throughout the essay I take the view that analysis is an investigation of experience; that a particular difficulty of analysing Feldman's music is the self-knowledge it requires; and that the concerted inquiry that is music analysis can well be used to expand – not only condense – the realm of musical experience.

What is it about Feldman's music? Feldman once said: 'the music seems to float, doesn't seem to go in any direction, one doesn't know how it's made, there doesn't seem to be any type of dialectic, going alongside it, explaining it'.[1] Can we ask? Feldman disparaged technique and compositional systems. In 'Boola Boola' (1966) he blasts contemporary music composition at American universities; in 'The Anxiety of Art' (1965), he allies 'systems' and 'craft' with flight from musical experience; on other occasions music analysis receives similar treatment.[2] Apparently, many interested in Feldman's music have taken such views to heart, for against the rising tide of recordings has come but a growing trickle of analyses. The fact is, Feldman's music remains a rather uncommon subject for detailed analysis – particularly in the U.S. and in the U.K., where technical developments in music theory and analysis have been most influential.[3]

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1 Conversation with Heinz-Klaus Metzger and Earle Brown. The LP EMI C 165 28954-7 provides a recording and transcription.

2 Both essays are included in Feldman, *Morton Feldman Essays*, 50–3 and 85–96, and in Feldman, *Give My Regards to Eighth Street*, 45–9 and 21–32.

3 Recent work in English on Feldman's music includes Bernard, 'Feldman's Painters'; DeLio, *The Music of Morton Feldman*; Gelleny, 'Variation Techniques'; Hirata, 'Analyzing the Music of Morton Feldman' and 'The Sounds of the

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Now more than fifteen years after Feldman's death, one might well ask why theorists and analysts haven't produced more work on Feldman's music. I think the answer is complex, but largely reflects real musical and conceptual issues, not ideological difficulties. In addressing such issues, this paper begins with a survey of analytical challenges associated with Feldman's music in general, then focuses on two such challenges – scale and repetition – associated primarily with Feldman's late work. Two case studies develop conceptual and methodological approaches to scale and repetition, with illustrations from *Coptic Light* for orchestra (1985) and *Piano, Violin, Viola, Cello* (1987), respectively. Repeated figures dominate both pieces, but the musical results are remarkably different. In *Coptic Light* innumerable repetitions of tiny figures accumulate into dense harmonic fields that are extended and transformed over time, with the disparity between figure size and field extension raising the issue of scale. In *Piano, Violin, Viola, Cello* the subtle transformation of individual repetitions by musical context becomes an object of attention in its own right; the perceptual malleability of individual repetitions suggests a need to rethink the concept of 'repetition' and its use in music analysis. In both case studies and in my conclusion I sketch a response to some of this music's analytical challenges, predicated on the idea that music analysis is an exploration of experience.

A Survey of Analytical Challenges

What is it about Feldman's music that makes it difficult to analyse? Some analytical challenges are obvious; some are not; some seem obvious, but are not. Indeterminate notation is an obvious challenge. Many of Feldman's works in the 1950s and the early 1960s use notation that is indeterminate in some respect. The notation for *Projections I* (1950), for example, specifies instrument, articulation, register, time frame, and instrumental coordination, but not actual pitches or durations; *Piece for Four Pianos* (1957) specifies pitch but not duration or synchronization among instruments. Notation for two late works, *Why Patterns?* (1978) and *Crippled Symmetry* (1983), is precise with respect to pitch and duration, but synchronization is somewhat free. In its own way, each of these indeterminacies raises the question of whether, or to what extent, analysts can work solely with the score rather than with individual performances, and whether, in focusing on individual performances rather than the score, analysts must venture into what remains relatively unexplored terrain.

Perhaps less obvious is the challenge of segmentation, that part of analysis concerned with the identification of musically – and analytically – significant units. Segmentation is difficult in much of Feldman's early music; it remains so in certain late works, but for different reasons. In *Extensions 4* (1952–3), for example, shifty surfaces characterized by strong sonic disjunctions (large leaps in pitch, rests, separations between attack-points, and abrupt changes in dynamics or timbre) offer many options for segment boundaries, but little repetition is available to encourage pattern formation. Without repetition as a cognitive

Sounds Themselves'; Janello, 'The Edge of Intelligibility'; and Johnson, 'Jasper Johns and Morton Feldman'. Recent literature in German includes Claren, *Neither*, and Saxer, *Morton Feldman: Between Categories*.

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incentive, it is hard to say which potential boundaries form convincing musical segments, much less how segments associate with one another to form larger groupings. By about 1980 the situation has roughly reversed: the meticulously notated 'pattern compositions' of Feldman's last years are rife with repetition, but sonic disjunctions rarely cut across the texture as a whole. Typical of this period are *Patterns in a Chromatic Field* (1981) and *For Christian Wolff* (1986), two pieces that proceed by layering and realigning short patterns repeated within individual instruments. The result is a composite texture with a fluid sonic surface in which pervasive repetition affords multiple, overlapping segmentations rather than one definitive one. In *For Bunita Marcus* (1985) Feldman precludes definitive segmentation in another way – with a fragile balance between the effects of sonic disjunction and pattern formation. In this piece notes almost always enter one at a time; each passage employs just a few pitches or pitch classes, subject to changes in order, timing, and register. The result is something like a single line, tenuously held together by the semblance of repetition (rarely exact) but vulnerable to disjunctions in pitch and the distance between attacks.

The length of Feldman's late works is another challenge, but not only – or even primarily – for the reasons one might think. The analyst drawn to Feldman's late works finds little refuge in, say, *Coptic Light* (1985) as opposed to *Crippled Symmetry* (1983) or the *String Quartet II* (1983), despite these works' considerable differences in length (about twenty-five minutes, compared with ninety minutes and six hours, respectively). The apparent challenge turns out not to be the critical one; the real problem is not quantitative but qualitative: not duration or the number of notes, but the identification of salient features that support memory and conceptualization. Whether long or (relatively) short, Feldman's late works are characterized by patterns that acquire temporal extension through repetition. Significantly, in late Feldman pattern extension tends to involve not literal repetition but *semblances* of repetition – numerous, often uncoordinated, adjustments in duration, timbre, and pitch. Feldman's penchant for pattern extension by near repetition poses a distinct cognitive challenge: the proliferation of near repetitions frustrates attempts to prioritize events by distinctive features, and thereby to categorize, or even remember, individual instances. The result is a superabundance of nuance that eludes conceptualization, leaves listeners with little to report, analysts with little to say.[4]

Then there is the question of analytical tools and method. A survey of recent literature suggests that analysis of Feldman's music remains at a formative stage: there is no common practice, no consensus of how one *should* go about it. The situation, in part, reflects the diversity of Feldman's output, both over decades and from one piece to the next. Feldman's works of the early 1950s, for instance, variably deploy traditional notation, graph notation, and a modified traditional notation that specifies pitch but not duration. Three such pieces encourage and disable different analytic approaches; so do 'pattern compositions' that

4 Feldman's writings indicate that the cognitive challenge is intentional. In his essay 'Crippled Symmetry' he describes a 'conscious attempt at formalizing a disorientation of memory' (*Give My Regards to Eighth Street*, 137). I use the word 'nuance' in this context to suggest something akin to Diana Raffman's 'nuance ineffability', but with the resistance to categorical perception taking place in the contextual domain (and involving properties of, and associations among, segments) rather than in the sonic domain (involving psychoacoustic attributes of individual notes). See Raffman, *Language, Music, and Mind*, especially chapter 4.

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introduce, combine, and recollect patterns in radically different ways, as do *Coptic Light* (1985) and *Palais de Mari* (1986). Feldman's music requires analysts to adopt a kind of 'beginner's mind' – to take little for granted. One must constantly ask 'What tools and methods are appropriate for *this* piece?'[5]

But with Feldman's music, asking this question often leads to a mixed realization: the kinds of questions our analytical tools and methods are best at answering may not be the ones we find most intriguing. Established tools and methodologies are supposed to make the analyst's job easier, but in Feldman's case they can also frustrate, leave one with a sense of having learned more about the limits of a particular tool than about the music. As Joseph Dubiel points out, this is not such a bad thing: mismatches between tools and musical situations can be revealing, and can force the analyst towards important realizations that contain the seed of a better approach.[6] Or, one can forego the safety (or peril) of established tools and methodology and strike out on one's own. But then in what direction?

If one thinks of music analysis as being not so much about pieces as about experiences of pieces, a reasonable place to start is at the centre of that experience. Truly to get at what makes Feldman's music what it is, we must be willing to analyse not only the music but also ourselves – our habits of thinking, hearing, and doing music analysis; and our understanding and expectations of what music analysis is or can be. Feldman's music asks analysts to become intensively introspective, to inquire into qualitative aspects of musical experience, and to develop appropriate conceptualizations and methodology. Two analysts working along these lines are Catherine Hirata and Mark Janello; both focus analytical investigation on significant qualitative aspects of Feldman's music. Delving into the paradox of 'the sounds themselves', Hirata identifies the marvellous 'sound' of individual notes and dyads in Feldman's early music with their saturation by context, and offers an appropriately radical view of succession in Feldman's music: 'succession might be the means largely – or even, *only* – of conferring qualities on each of the individual elements of the succession'.[7] Janello contemplates the flow of time in Feldman's late music and the many connections among past, present, and future, without teleology: 'This is a world in which the past exists but the future does not. While there is progress and development such that the present seems consequent to the past, we do not experience the past as antecedent to the future . . . what happens is paradoxically both justified and uncalled for.'[8]

In the two case studies below I develop and illustrate different ways of thinking about repetition in Feldman's late music. Case Study I, which considers passages from *Coptic Light*, sets repetition in the context of populations and scale: individual repetitions are cumulative rather than additive, and part–whole relationships are non-reductive. Case Study II, on

5 Or even 'What does "appropriate" mean?' On this question, I take the view that tools and methods are appropriate so long as they produce interesting results that inform musical experience in some way, regardless of their original aesthetic or historical context. Tools and methods are useful to the extent that they tell us something we want to know or are glad to have learned.

6 Dubiel, 'Looser, Less Technical'.

7 On sound see Hirata, 'The Sounds of the Sounds Themselves'; on succession see Hirata, 'Analyzing the Music of Morton Feldman', 40.

8 Janello, 'The Edge of Intelligibility', 40.

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Piano, Violin, Viola, Cello, examines individual repetitions and how each relates to surrounding musical context. Whereas in much music analysis the identification of repetition serves as a goal and an endpoint, here repetition becomes a starting point for studying changes in salient properties triggered by changes of context.

Case Study I: *Coptic Light* and the Challenge of Scale

Commissioned and first performed by the New York Philharmonic on 30 May 1986, *Coptic Light* (1985) is Feldman's last work for large orchestra.[9] The title of the piece was inspired by early Coptic textiles Feldman had seen in the Louvre; the subtly transforming musical surface is beautifully evocative, but also reflects a technical concern – Feldman's intent to 'create an orchestral pedal, continually varying in nuance'.[10] *Coptic Light* immerses the listener in nuance: repetition is pervasive, but almost never exact; inflections in rhythm, register, and timbre are persistent, but ephemeral. The work moves largely in eight-bar units, distinguished by slight changes in pattern and orchestration. Example 1 reproduces the first eight bars of the score; sets of systems from the oversize orchestral score are shown side by side with woodwind, most brass, and harp on the left, and tuba, piano, timpani, vibraphone, and strings on the right.

Engrossed in this opening and the half-hour meditation that ensues, I hardly worry about analytical challenges; I just listen. As an analyst, however, I do get round to asking questions and, when I do, find that this piece offers few easy answers. Music analysis often revolves around two activities – the identification of musically significant units or 'segments', and the study of relationships among segments. To get a bit more specific and introduce some useful terminology, I suggest that much analytical discourse takes place in two *domains* – the sonic and the contextual.[11] (For the reader's convenience, a glossary of technical terms and summary of abbreviations and notational practices follows the main text. Technical terms are italicized in the text as they are introduced.) Discourse in the *sonic domain* focuses on contrasts; significant disjunctions in dimensions such as pitch, duration, dynamics, and timbre mark segment boundaries; a sonic disjunction in any one of these sonic dimensions constitutes a *sonic criterion* for segmentation. Discourse in the *contextual domain* involves associations (repetition, by equivalence or similarity) between groupings of notes in some respect. These include, but are not limited to, contour, ordered or unordered sets of pitches or pitch classes, set class, and rhythm. Such repetitions of properties predicable of groupings often motivate segmentation. A *contextual criterion* indicates a property predicable of a grouping that acts as a relational property between groupings within a certain musical context.

9 Sebastian Claren discusses changes in Feldman's thinking about timbre and orchestration in the 1970s and 1980s, and considers their relationship to patterns in Feldman's late work, particularly in *Turfan Fragments* and *Coptic Light*; see Claren, *Neither*, 443–71.

10 Feldman, 'Coptic Light', in *Give My Regards to Eighth Street*, 201.

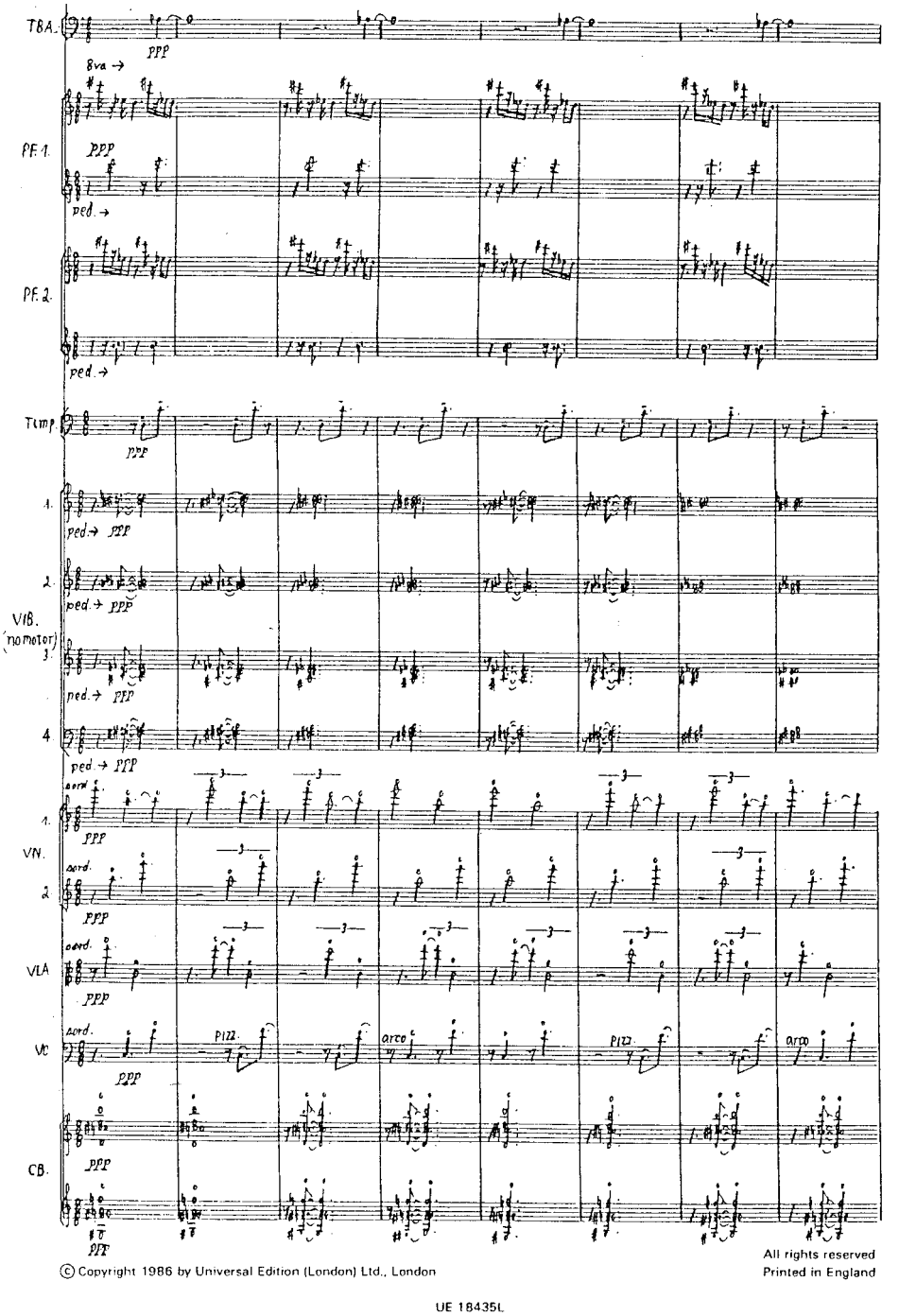
11 For a detailed and comprehensive account of the sonic and contextual domains, sonic and contextual criteria and their interactions with one another in segmentation, see Hanninen, 'Orientations, Criteria, Segments'.

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Example 1 Feldman, *Coptic Light*, opening. © 1986 Universal Edition, Ltd, London. All rights reserved. Used by permission of European American Distributors LLC, US and Canadian agent for Universal Edition Ltd, London.

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Example 1 *continued.*

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From the start, *Coptic Light* has remarkable sonic continuity: no rests or synchronized sonic disjunctions define segments in the texture as a whole, or even within orchestral sections. Within instrumental parts, however, near repetition defines many segments and associations among segments. The problem is, none of these stands out as particularly significant, or insignificant; a continuous revelation of nuance leaves listeners with a mass of detail but no means with which to prioritize or categorize it. How, then, can we proceed? How can we relate the myriad individual segments, this shimmering nuance, to the whole?

In the essay 'Crippled Symmetry' Feldman alludes to this situation, which is so characteristic of his late works, including *Coptic Light*, when he says: 'As a composer I am involved with the contradiction in not having the sum of the parts equal the whole. The scale of what is actually being represented, whether it be of the whole or of the part, is a phenomenon unto itself.'[12] In other words, the parts *don't* add up; the whole is *not* a sum of parts and shouldn't be conceived or constructed as such. Now *that* is an analytical challenge, for it means analysts must rethink the workings of part–whole relationships in music analysis, from aesthetics (preferences for hierarchy and reduction over association and multiplicity) to tools and methodologies. We must give up the idea that analysis is necessarily reductive (or constructive), give up the idea that we can truly analyse a piece of music by studying its parts and relationships among parts, that statements about parts necessarily support inferences about the whole. What analysts working on Feldman's late music need, and what I now set out to develop, is a concept of *scale* – what scale is (and is not), and a way to deal with it.

Scale is not just a matter of length or the number of notes. Nor is it about form. Feldman contrasts form and scale in this way: 'Up to one hour you think about form, but after an hour and a half it's scale. Form is easy – just the division of things into parts. But scale is another matter. You have to have control of the piece – it requires a heightened kind of concentration.'[13] Form involves concatenation or compilation of parts; scale, extension of a whole. To develop the concept of scale a bit more, we must establish that wholes can have properties not predicable of their parts; to deal with scale analytically, we must recognize *emergent* properties, not only collective ones. Ecologists Craig Loehle and Joseph Pechmann distinguish collective and emergent properties in this way:

> A collective property of a system is one that is simply the sum of properties of its components . . . A true system or emergent property is one that results from interactions among system components and is qualitatively different from the properties of those components. Alternatively, an emergent property can be defined as a property of a system that is not predictable from studies of isolated system components . . .[14]

We now can identify a significant analytical challenge of *Coptic Light* and much of Feldman's late music with some specificity: as analysts, we must find a way to recognize and work with emergent properties. As *music* analysts (that is, analysts concerned with the

12 Feldman, *Give My Regards to Eighth Street*, 137.
13 Feldman, 1994 Universal Edition brochure; quoted by Paul Griffiths in *Modern Music and After*, 94 and 303–6.
14 Loehle and Pechmann, 'Evolution: The Missing Ingredient in Systems Ecology', 306–7.

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perception and interpretation of music) we must develop tools and methodologies that involve aggregate properties not only in a statistical sense (as spectrographs do) but in a *musical* one – that is, a sense that can recognize perceptual units in a complex texture such as notes, segments, and sets of segments (which spectrographs do not). What is needed is a shift in analytical focus, a move towards what evolutionary biologist Ernst Mayr has called 'population thinking' – away from individuals (and their properties and relationships) and towards populations (and their properties and relationships).[15] Seeing this move through to completion is a substantial challenge and is work in progress. For now, I will set out two features of this way of thinking and apply them to two passages from *Coptic Light*.[16]

I first define a *population* as a set of segments; the segments may, or may not, be associated by contextual criteria.[17] Populations are more than collections of segments; they are individuals with emergent properties – properties identified not with individual segments but with *interactions* among segments in a population as a whole. Two significant emergent properties of a population are its *range of variation* (with respect to predicable properties in certain contextual dimensions of the analyst's choosing) and the *distribution* of these properties among segments in the population. To analyse and compare populations with respect to range of variation and distribution is to focus on questions of *scale* and thereby avoid the problem of reducing scale to a matter of form.

In bb. 1–8 of *Coptic Light,* near repetition within and across instrumental parts suggests one way we might form a population for study. Four pitch-class dyads dominate the texture – {A, E}, {C, D}, {B♭, E♭}, and {C♭, D♭}; these serve as contextual criteria that define and associate segments within the woodwind, trumpet, timpani, violin, viola, and cello (but not contrabass) parts. Call the set of segments associated with these four criteria and instruments

15 Ernst Mayr defines population thinking as 'A viewpoint that emphasizes the uniqueness of every individual in populations of a sexually reproducing species and therefore the real variability of populations; the opposite of essentialism and typological thinking'; *This Is Biology*, 310. See also Mayr, *Toward a New Philosophy of Biology*, 15, 346. For another move towards population thinking in the context of music analysis see Hanninen, 'Association and the Emergence of Form'.

16 One of Feldman's comments on *Coptic Light* (from several to be found in the 1986 Middleburg Lectures and in a composer's talk at the 1986 Internationale Ferienkurse für neue Musik) seems consistent with an analytical interest in populations. The lectures remain unpublished, but Claren's discussion of *Coptic Light*, based on his own transcriptions and translations from English into German, provides a glimpse of their content. In the Summer Course lecture, speaking on the 'problem' of ending a piece in the twentieth century, Feldman compares the harps' gradual emergence in *Coptic Light* from the 7/16 time signature on page 32 to the end with similar moves towards the end of Varèse's *Ionisation* and Boulez's *Répons*; he contrasts this kind of gradual solution to the more abrupt one of starting a new section (Claren, *Neither*, 459). I find Feldman's solution of the harps' emergence interesting in the present context, in that the result is a transformation in the population as a whole that closes the piece.

17 A population is less restrictive than an associative set (as defined in Hanninen, 'Understanding Stefan Wolpe's Musical *Forms*' and below): a population is a set of segments; an associative set is a set of segments interrelated by contextual criteria. A population can consist of a single associative set, the union of two or more disjointed associative sets (as in Examples 1–3 of this essay), segments selected from an associative set, or any combination of these with segments from another, or a different associative set. In music analysis, I use 'population thinking' to indicate a focus on group properties of a population – that is, the range and distribution of properties predicable of individual segments with respect to some contextual dimension(s) of interest – rather than, as in the case of associative sets and associative organization, on particular segments and particular relationships between segments within the set.

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pcs {A,C,D,E} = [0,2,4,7]	{A, E}	Vn 1, 2 (8)	Fl. 1, 3 (8)	Ob. 2, 4 (8)	Cl. 1, 3 (8)	
	{C, D}	Vla, Vlc. (8)	Fl. 2, 4 (8)	Ob. 1, 3 (8)	Cl. 2, 4 (8)	Timp. (8)
pcs {B♭,C♭,D♭,E♭} = [0,1,3,5]	{B♭, E♭}			Bsn 1, 3 (8)	Trp. 1, 3 (8)	
	{C♭, D♭}			Bsn 2, 4 (8)	Trp. 2, 4 (8)	

Example 2a Population 1 by pitch-class dyads (bb. 1–8: woodwind, trumpet, timpani, strings (not contrabass)).

2 x [0,5] = [0,1,6,7]	{A, E}	Vn 1, 2 (8)	Fl. 1, 3 (8)	Ob. 2, 4 (8)	Cl. 1, 3 (8)	
	{B♭, E♭}			Bsn 1, 3 (8)	Trp. 1, 3 (8)	
2 x [0,2] = [0,1,2,3]	{C, D}	Vla, Vlc. (8)	Fl. 2, 4 (8)	Ob. 1, 3 (8)	Cl. 2, 4 (8)	Timp. (8)
	{C♭, D♭}			Bsn 2, 4 (8)	Trp. 2, 4 (8)	

Example 2b Population 1 by interval class (bb. 1–8: woodwind, trumpet, timpani, strings (not contrabass)).

in bb. 1–8 population 1.[18] Population 1 has 168 segments, one per bar per part for eight bars. Example 2a illustrates some features of population 1. The four pitch-class dyads listed in the second column define the range of variation. Each dyad is followed by a list of instruments and a number in parenthesis that shows how many segments each part contributes to the population. The affinities between particular dyads and instrumental parts is obvious in the score. What is less obvious is that the distribution of the four criteria within the population is uneven: the dyads {A, E} and {C, D} occur at least twice as often as their 'flat' counterparts {B♭, E♭} and {C♭, D♭}.[19] Register stratifies the population further: the dyad {A, E} realized in the highest registers (violin 1 and flute 1) tends to project most, {C, D} less so, and {B♭, E♭} and {C♭, D♭} less still. Example 2b points out another feature of population 1: with respect to interval class, the range of variation is two (interval classes 5 and 2); this distribution is evenly balanced, except for the timpani (which slightly shifts the population toward interval class 2).

The four pitch-class dyads remain prominent up to bar 40 (in performance time, for about three and a half minutes) while the orchestral texture gradually changes. By the fourth eight-bar unit (bb. 25–32), some instruments pick up new pitches, others replace successions with simultaneities, and the overall texture thins noticeably (Examples 3a and 3b). I define population 2 as the set of segments consisting of near repetitions of the same four pitch-class dyads in bb. 25–32. Example 3a summarizes the key features of population 2, which is much like population 1 in an important respect: the distributions of the four pitch-class dyads are virtually identical, as shown in Example 3b. Thus, transformation of the orchestral texture resides entirely in the kind and number of segments each instrumental part contributes to the population. The population as a whole, understood in terms of range of variation and distribution, remains stable.

18 All members of the complementary pitch-class set {F, F♯, G, A♭} appear within chords in the vibraphone parts. I omit these from text discussion not because they are unimportant, but because they, like the chords in the contrabasses and the repeated figures in pianos 1 and 2, do not form part of the population under study, which is defined on the basis of four particular contextual criteria – that is, repetition of the four pitch-class dyads listed in the text.

19 In other words, the white-note figures {A, E} and {C, D} stand out relative to their black-note counterparts and the rest of the orchestra. In the Middleburg lecture of 2 July 1987, Feldman identifies *Coptic Light* as 'a perfect example of chromatic relief', a situation in which 'the white notes are over here and there are the black notes on top of each other' (Feldman, 'Feldman-Lecture', 17; see also Claren, *Neither*, 456).

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pcs {A,C,D,E} = [0,2,4,7]	{A, E}	Vn 1, 2 (8)	Fl. 1, 3 (6)	Cl. 1, 3 (5)	
	{C, D}	Vla, Vlc. (8)	Fl. 2, 4 (6)	Cl. 2, 4 (5)	
pcs {B♭,C♭,D♭,E♭} = [0,1,3,5]	{B♭, E♭}		Ob. 1, 3 (5)		Hn 1, 3 (5)
	{C♭, D♭}		Ob. 2, 4 (5)		Hn 2, 4 (5)

Example 3a Population 2 by pitch-class dyads (bb. 25–32: flutes, oboes, clarinets, horns, strings (not contrabass)).

	pop. 1	**pop. 2**	**pop. 2 as proportion of pop. 1**
{A, E}	64	38*	= .5938
{C, D}	72	46	= .6388**
{B♭, E♭}	32	20	= .625
{C♭, D♭}	32	20	= .625

* If population 1 figure were 40, outcome would be would be .625.
** 46/72 is even numbered pairing (suggested by pairings of instruments) whose outcome is closest to .625

Example 3b Comparison of pc dyad distributions in populations 1 and 2.

A complementary situation obtains later in the piece, between what I define as populations 3 and 4, discernible within the larger orchestral texture in bb. 81–96 (the relevant stratum is quoted in Example 4).[20] Population 3 involves seven segments in bb. 81–8: four chords that pair clarinets with horns, bassoons with trumpets, and oboes with trombones, followed by the four flutes; each chord but the last occurs twice. Population 4 involves seven segments in bb. 89–96 and a different set of instrumental pairings – flutes with oboes, clarinets with trumpets, and bassoons with horns, followed by the trombones. Each passage is a palindrome (or nearly so), around the flutes in bb. 84–5 and the trombones in bb. 92–3. While every instrument contributes the same pitches to populations 3 and 4, the populations differ in the way timbres and tetrachordal pitch sets combine to produce segments. Example 5 illustrates this, and prompts two observations. First, each of the three composite chords in population 3 occupies a similar register, while the chords in population 4 fall and rise around the trombones' axis of symmetry. Second, although both populations contain the same 'genetic material,' as it were – the seven pitch tetrachords contributed by individual instruments – they differ in the resultant 'genotypic' (and phenotypic) composition – the range of variation and distribution of octachordal set classes and the different timbral combinations that result. In this case, consistency resides within the individual instrumental parts, whereas variability emerges at the level of the population as a whole. A similar situation obtains in woodwind and brass in bb. 97–112 (not quoted) and in other passages in the composition.

Populations offer a promising means to work with aspects of scale in *Coptic Light* and other late pieces by Feldman. Comprehending scale is inherently difficult: trying to grasp how the superabundance of nuance in *Coptic Light* creates the subtle transformation of timbre and harmony in the piece as a whole is a little like gazing over the rim of Arizona's Grand Canyon. The whole exceeds the sum of detail, is an emergent effect of interactions

20 As in previous examples, the full orchestral texture includes other events that, citing different contextual criteria, one might define as separate populations. I do not claim that the systematic recombination of pitch tetrachords in woodwind and brass between populations 3 and 4 (described below) is necessarily clearly audible in the full orchestral texture, but that the structural integrity of the wind and brass parts in bb. 81–96 suggests that they constitute a distinct layer and, in that sense, a coherent whole worthy of study.

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Example 4 Feldman, *Coptic Light*, bb. 81–8 (wind only). © 1986 Universal Edition, Ltd, London. All rights reserved. Used by permission of European American Distributors LLC, US and Canadian agent for Universal Edition Ltd, London.

among details intersecting with human experience. Scale is not a fact or an attribute of a thing in itself but an *experience,* a relationship between a person and a thing shaped by one's powers of perception and comprehension. 'Large-scale' indicates a gap in comprehension – a difficulty or inability to construct the large from the small through a series of intermediate levels of organization. Studying populations short-circuits the need for intermediate levels: a population is not only a collection of individuals; it is itself an individual, at a higher level of organization, with its own properties which emerge from interactions among its members.[21]

21 Biological species offer a helpful analogy, in that some philosophers of biology have proposed seeing species as individuals at a higher level of organization. While this view remains open to debate, it is generally accepted that a species constitutes a unit of biological organization. Ernst Mayr writes, 'The species is . . . to a large extent, the basic

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Example 4 *continued.*

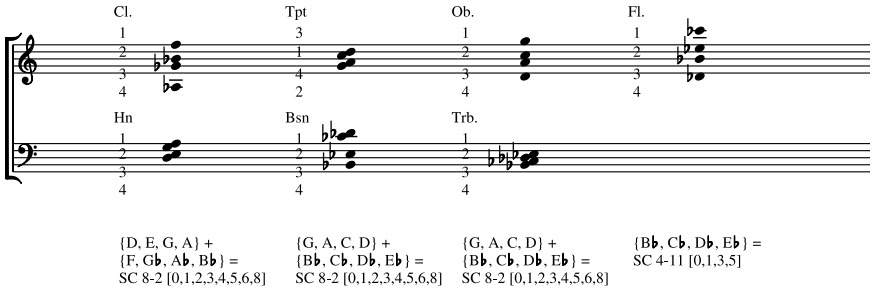
Defining a set of segments as a population and studying the structure, transformation, succession, and combination of populations over time allows analysts to focus directly on high-level, large-scale aspects of musical organization.[22] 'Population thinking' is especially useful as an analytical approach to two kinds of musical textures that are common in late Feldman but tend to resist traditional analysis focused at the level of individual segments: textures that involve a large number of closely related and subtly altered segments (as in *Coptic Light* bb. 1–8) or systematic recombination of segments (as in bb. 81–96).

unit of ecology. . . . A species . . . interacts as a unit with other species with which it shares the environment'; Mayr, *This Is Biology*, 134.

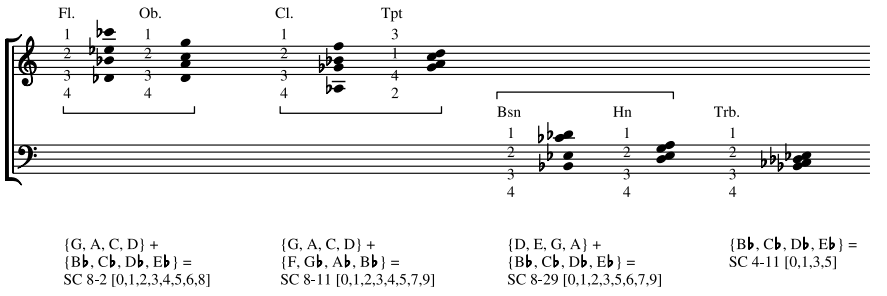
22 Distinct populations (defined according to contextual criteria or sonic features such as register, temporal proximity, or timbre) can occur successively (as discussed in Examples 1–5) or simultaneously (as one might see, for instance, by returning to bb. 1–8 and including activity in all instruments).

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Chords in population 3 [bs 81–8: wind, brass]



Chords in population 4 [bs 89–96: wind, brass]



Example 5 Composite chords in populations 3 and 4, bb. 81–96, wind and brass.

Case Study II: *Piano, Violin, Viola, Cello* and the Challenge of Repetition

In *Coptic Light* the multitude of segments that contribute to the orchestral texture encourages the analyst to focus not on individual segments but on sets of segments, on populations. In solo or chamber works with fewer and relatively more prominent segments, the analyst's attention may instead be drawn to individual segments and, in particular, to their boundaries and salient characteristics as these remain fixed or become fluid with repetition. *Piano, Violin, Viola, Cello* (1987) is Feldman's last composition. Here, pervasive literal and near repetition of individual segments reordered or set in new musical contexts serves not as a means for codification, but for proliferation and ramification.

Lecturing in Middleburg, Germany, on the afternoon of 2 July 1987, Feldman refers to the piece as a 'rondo of everything'. His account declares:

> Everything is recycled. A lot of times it comes back just modulated a little bit, and that sounds very weird. Because you feel that it's the wrong notes. The fixed registration of the notes is like a stand and then the stand becomes a little bit blurred because you hear the pitches differently when they come back. There's just something peculiar about it.[23]

23 Feldman, 'Feldman-Lecture', 13.

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In other words, when *notes* are repeated, the *sound* may change.[24] In *Piano, Violin, Viola, Cello*, as in many of Feldman's works, the sound of a segment need not stand still for repetition, but may be subtly altered by it; a segment's salient properties may be altered by a change in context. As repetitions of individual segments – traditionally a building block in music analysis – dissolve into multiple perceptions, the analyst must make a choice: to retreat from the disjunction between notes and sounds, or to engage with it. Opting for the latter, I relate the difference between notes and sounds to that between repetition and recontextualization – that is, the 'phenomenal transformation of repetition . . . induced by a change in musical context . . . an *estranged* repetition, in which repetition doesn't sound (primarily) like repetition'.[25] A sharp focus on the repetition and recontextualization of one segment in the opening passage of *Piano, Violin, Viola, Cello* will allow us to examine how recontextualization works, and how it can affect not only the sound of individual segments but also the *associative organization* of segments within a passage.

Example 6 shows bb. 1–18 of *Piano, Violin, Viola, Cello*, the first two systems of the score. The excerpt contains eighteen one-bar segments. Ten of these are distinct (bb. 1–7, 15, 17, and 18); eight are repetitions (bb. 8–14 and b. 16), which Feldman reorders. Numbers in solid parentheses indicate the bar of origin for the eight literal repetitions. Numbers in dotted parentheses indicate the most similar precedent for two near repetitions , with changed notes encircled: with a few tweaks in pitch order and register, b. 17 becomes a repetition of b. 2; b. 18 is virtually a repeat of b. 4. All told, bb. 1–18 derive from eight segments, subject to repetition, reordering, and minor adjustments in order and register. These eight segments and processes underlie the entire opening passage from b. 1 to b. 37.

Contextual criteria allow us to represent the relationship between one instance of a segment and its repetitions in formal terms, a move that is essential for detailed study of recontextualization.[26] As before, each contextual criterion records (what is in practice) a relational property (e.g. pitch or pitch-class content, pitch intervals, durations) shared by two or more segments. Contextual criteria are written with a capital C, followed, in parentheses (or subscript), first by the contextual subtype (e.g. 'pitch' for pitch inclusion, 'pc' for pitch class, 'ip' for pitch intervals, 'SC' for set class), then by the individual criterion (that

24 This idea that there is an important and fundamental distinction between things and musical perceptions derives from the work of David Lewin and is most eloquently argued in his 'Music Theory, Phenomenology, and Modes of Perception'.

25 Hanninen, 'A Theory of Recontextualization', 61.

26 For the sake of simplicity I use 'segment' and 'instance' here in a more or less standard and intuitive sense. The present context does not require the fine conceptual distinctions carried by these terms in my earlier essay 'A Theory of Recontextualization' (66, 70), henceforth, 'the theory proper'. Thus, in the present article, a segment is a musical unit that may have repetitions; each repetition is an instance of the original segment. Readers cross-referencing with the earlier article should note that this usage differs from the theory proper in two ways. First, it admits the convenient and intuitive locution that segments have instances (in the theory proper, *ideas* – not segments – have instances), and, secondly, it assumes that instances are segments, a move that this particular passage from *Piano, Violin, Viola, Cello* admits (in the theory proper, instances of ideas are not necessarily the perceptible units called segments). To translate from the senses of 'segment' and 'instance' in this article to those in the theory proper: a segment amounts to 'an instance of an idea that is (also) a segment'; an instance of a segment becomes 'a different segment that instantiates all the same contextual criteria'.

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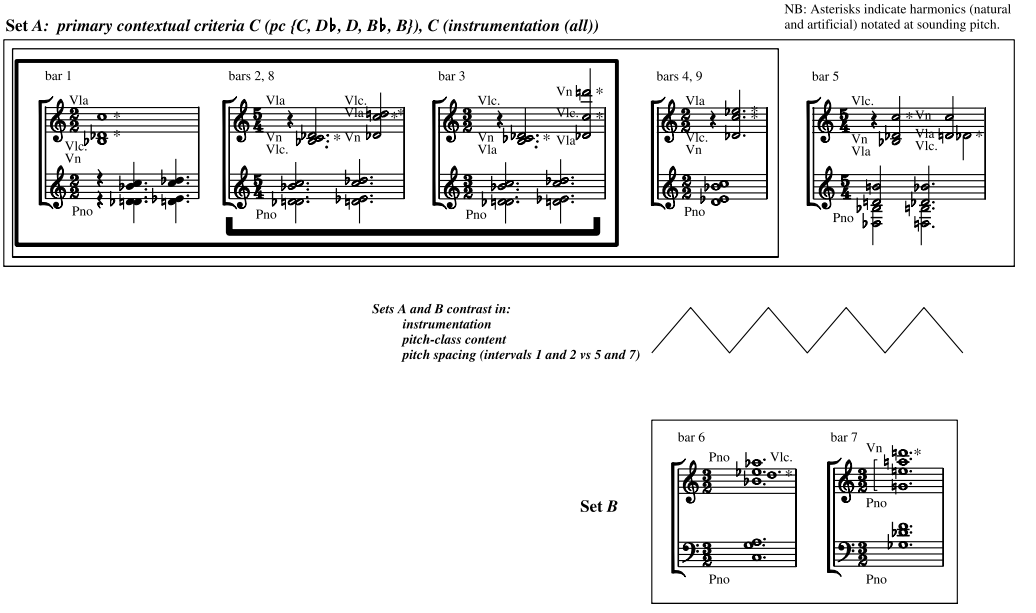
Example 6 Feldman, *Piano, Violin, Viola, Cello,* bb. 1–18. © 1987 Universal Edition, Ltd, London. All rights reserved. Used by permission of European American Distributors LLC, US and Canadian agent for Universal Edition Ltd, London.

is, *which* pitches, e.g. {c, g, a, b♭^{1}, d^2, e♭^{2}, a♭^{2}} for bb. 6, 12, and 16). So C$_{\text{pitch}}$ {c, g, a, b♭^{1}, d^2, e♭^{2}, a♭^{2}} is the strongest contextual criterion that relates bb. 6, 12, and 16.

Contextual criteria do two things: they help to define individual segments, and they motivate groupings of segments called *associative sets*.[27] An associative set is a set of segments associated by contextual criteria. In bb. 1–7, for example, instrumentation, pitch-class content, and register tend to associate the segments in bb. 1–5 with one another and contrast these segments with those in bb. 6 and 7. In bb. 1–5 all four instruments participate. Pitch-class content is limited to the six-note chromatic set {C, D♭, D, E♭, B♭, B}; notes congregate at the edges of the span from b♭ to d^2. In bb. 6 and 7 the strings virtually drop out as the piano expands the available register from c to a♭^{2}. In a clear contrast to the pitch-class content of bb. 1–5 (made especially audible by the damper pedal), the two chords in bb. 6 and 7 complete the aggregate.

27 Associative sets are first defined in Hanninen, 'A General Theory for Context-Sensitive Music Analysis' (PhD dissertation, University of Rochester, 1996) and underlie the analytic approach in 'On Association, Realization, and Form' and 'Understanding Stefan Wolpe's Musical *Forms*'.

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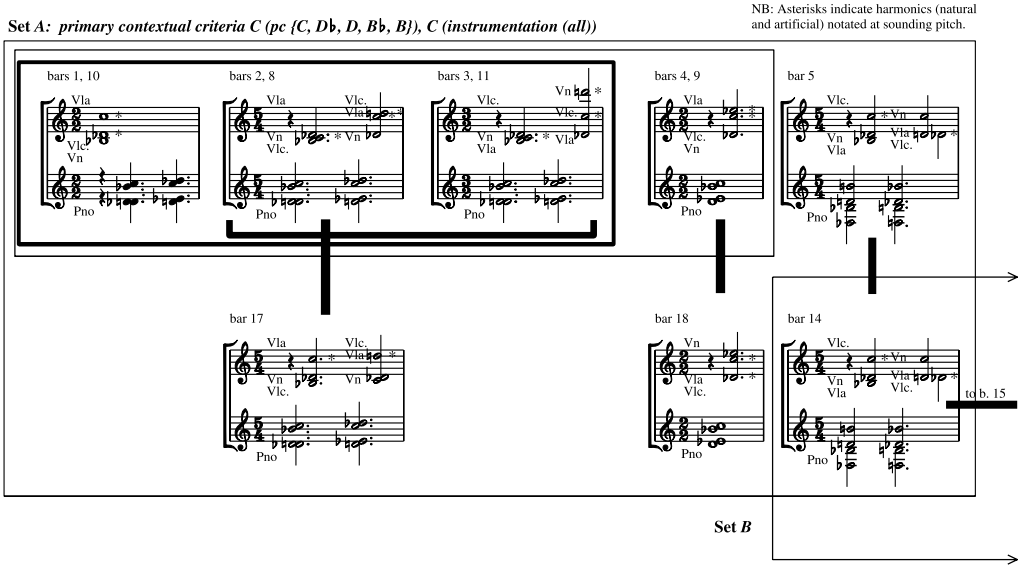


Example 7 Associative sets *A* and *B* in Feldman, *Piano, Violin, Viola, Cello,* bb. 1–9.

To represent these affinities and contrasts among segments, we might partition the nine segments in bb. 1–9 into two associative sets, *A* (bb. 1–5, 8, and 9) and *B* (bb. 6 and 7), as shown in Example 7. More than a list of contents of each set, this example is a *contextual association graph*, which uses spatial relations, nested boxes, line weight, and contextual criteria to represent an interpretation of *associative organization*.[28] All five segments in bb. 1–5 are interrelated by the primary contextual criteria for set *A*: $C_{pc\ \{C,\ D\flat,\ D,\ B\flat,\ B\}}$; and $C_{instrumentation\ (all)}$. Additional – stronger – contextual criteria suggest the series of *associative subsets* shown with nested boxes and varied line weight. Bars 2 and 3 are most closely related. These add E♭ to the chromatic pentachord associated with set *A* as a whole, repeat the two chords < {d♭^{1}, d^1, b♭^{1}, c^2}, {d^1, e♭^{1}, c^2, d♭^{2}} > in the piano, and share the pitches (but not the instrumental assignments) of the first string chord {b♭, c^1, d♭^{1}} and pitch-class content of the second ({C, D♭, D}). Bar 1 shares these features but includes c^2, not c^1, in its string chord and has no second string event. Bar 4 similarly shares the pitch-class content of bb. 1–3 but has only one chord in the piano (an amalgam of the right hand of the first and the left hand of the second piano chords in bb. 1–3). Bar 5 hangs at the edge of set *A*: it shares five pitch classes of the chromatic set in bb. 1–4 and pitch-class content {B♭, C, D♭} of the first chord in the strings, but omits E♭; the most audible difference, however, is the piano's move down into the mid-bass. The graph tags two bar numbers to the segments in bb. 2 and 4, to

28 Note that contextual association graphs depict associative organization *in the abstract*; they need not reflect temporal order or proximity. As it happens, in bb. 1–7 the strongest associations among segments are in fact articulated by temporal adjacency, as a comparison of spatial proximity with bar numbers in the graph suggests.

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Example 8 Associative sets *A* and *B* in Feldman, *Piano, Violin, Viola, Cello,* bb. 1–18.

indicate that their repetitions in bb. 8 and 9, respectively, occupy the same place in the associative organization as the originals.[29]

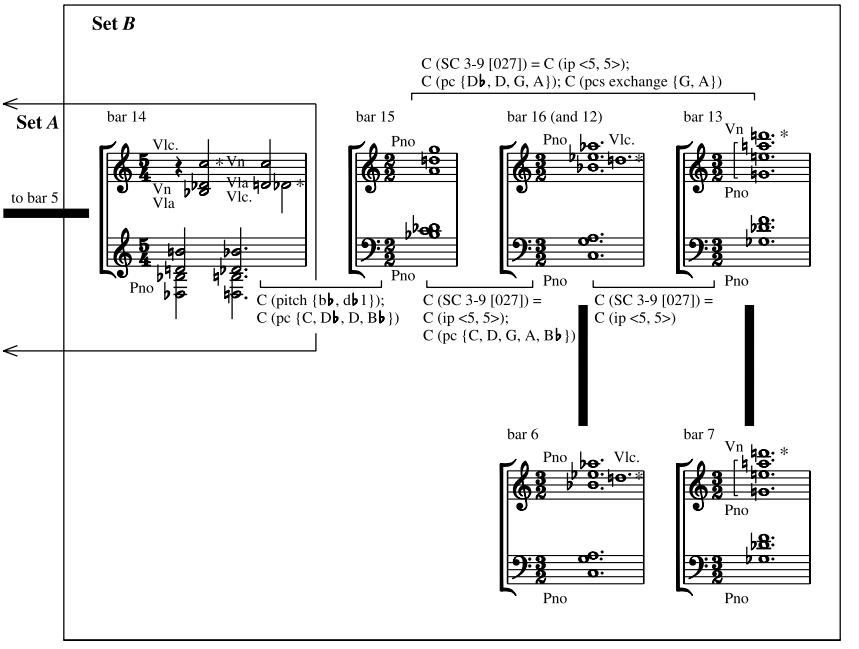
Inspired by Example 7, one might imagine an 'analysis' of bb. 1–37 that lists every bar along with its origin in bb. 1–7 or b. 15. Such catalogues of origins can be useful, but classification – mere taxonomy – is not *music* analysis.[30] Rather than conflate multiple segments into a single notational image or set of properties as classifications do, I follow Feldman's lead in the opposite direction to focus on *differences* in the sound of segments with identical notational images.

The opening passage (bb. 1–37) contains three repetitions of the segment first heard in b. 5; these appear in bb. 14, 27, and 34. As outlined above, aspects of pitch-class organization and instrumentation in the immediate environs of b. 5 – say, bb. 1–9 – associate b. 5 with bb. 1–4 and contrast it with bb. 6–7, rendering b. 5 part of set *A* rather than set *B*. Context surrounding the first repetition of b. 5 in b. 14, however, includes three salient connections among pairs of segments in bb. 12–16 that suggest another way to hear the same notes. These can be traced in the contextual association graph shown in Example 8 (for clarity over the page break, b. 14 is shown twice). First, the move from b. 14 to the first occurrence of a new segment in b. 15 preserves two pitches $\{b\flat, d\flat\}^1$ in the piano and four of five pitch classes.

29 The reader may notice that the graph shows primary contextual criteria for set *A*, but not for set *B*. The omission reflects a point of interpretation: that Set *B* is looser in its associative organization than is set *A* and lacks a strong criterion that relates all its members. The omission does not affect my argument with respect to bb. 5, 14, 27, and 34, which requires only the criteria for set *A* and a clear difference between sets *A* and *B*.

30 I contrast classification with music analysis based on associative organization in Hanninen, 'Morton Feldman's *Palais de Mari*', unpublished paper.

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Example 8 *continued.*

Second, the trichord in the right hand of b. 15 moves up by semitone to the trichord in the right hand of b. 16 and five pitch classes are retained ({C, D, G, A, B♭}). Third, b. 16 is a repetition of b. 12 (and b. 6).[31] Each of these connections might be heard either as a partial voice-leading – a motion (or mapping with an invariant result); conversely, each might be heard as an association, a partial equivalence relation we might model with contextual criteria. Taking these three associations in tandem, however, has an interesting result: connections between b. 14 and its neighbours in bb. 12–16 locate b. 14 at the periphery of set *B,* but the repetition of b. 5 also places b. 14 in set *A* – perhaps nearer the centre of set *A* than b. 5 is, if one hears the onset of b. 14 as representing a return to set *A* that activates its core features.[32] Unlike b. 5, then, b. 14 does not belong unequivocally to set *A or* set *B* but to both: the repeated segment acquires a different sound, shaped by its own set of associations with new companions.

The contextual association graph of Example 8 helps highlight two important points about the associative organization of bb. 1–18. First, flatly contradicting the notion that literal repetition necessarily renders two segments at different temporal locations functionally identical (as classification suggests), the graph assigns bb. 5 and 14 – two segments related

31 The juxtaposition of segment and context that drives recontextualization in the present analysis is roughly orthogonal to the layering of segment and context outlined in 'A Theory of Recontextualization'.

32 I find this impression particularly strong the first time before the repeat, but still significant the second time, given the disposition of repetitions of bb. 2, 4, 1, and 3, in that order, in bb. 8–11.

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by literal repetition – distinct locations in the associative organization.[33] Second, segments related by literal repetition can have different salient properties. This may seem counter-intuitive, but it is logically implied by the concept of a contextual criterion as a relational property that involves two or more segments. The association between bb. 14 and 15 by $C_{\text{pitch}\ \{b\flat, d\flat^1\}}$ is a good example. Of course, the pitches b♭ and d♭^{1} appear in both b. 5 and b. 14: b. 14 is a literal repetition of b. 5. But in b. 5 the immediate context provides little incentive to pick these pitches out as salient or significant. In the context of bb. 1–9, then, the statement 'b. 5 includes {b♭, d♭^{1}}' is true, but 'inclusion of the pitch set {b♭, d♭^{1}} is a salient property of b. 5' is not; in the context of bb. 1–9 'includes {b♭, d♭^{1}}' is a predicable property of b. 5, but not a relational property. When the repetition of b. 5 that is b. 14 appears in the context of bb. 12–16, however, inclusion of the pitch set {b♭, d♭^{1}} *becomes* a salient property: the pitches serve as common tones to b. 15; they connect b. 14 to b. 15 and instigate the series of links from b. 14 to 15, to 16, and back to bb. 6 and 12 that bring b. 14 into set *B*. In the context of bb. 12–16, then, 'includes {b♭, d♭^{1}}' is a predicable property *and* a relational property of b. 14, which repeats the notes of b. 5.[34]

The opening passage contains two more repetitions of b. 5, in b. 27 and b. 34; Example 9 provides a score for bb. 19–36 as context. As before, numbers in solid parentheses indicate bars of origin for literal repetitions; numbers in dotted parentheses indicate the most similar bar of origin, with changed notes encircled. The segment in b. 27 marks the centre of an eleven-bar span of segments (bb. 22–32) that all (ultimately) derive from bb. 1–5.[35] Flanked on each side by five members of set *A*, b. 27 is not only absorbed into set *A*, but, at least with respect to temporal placement, moves to its centre – this in contrast to b. 5, which is peripheral to set *A* both with respect to associative organization and temporal placement. The next repetition, in b. 34, is different. Bar 34 resembles b. 14 in that its closest companions are members of set *B* rather than set *A*. Like b. 14, b. 34 appears in a sequence of segments (bb. 33–6) that derive from bb. 6, 7, and 15, respectively (all members of set *B*). Reordering of these segments, however, makes the salient properties of b. 14 and b. 34 subtly different. The reordering has two aspects; each contributes to the distinctive sound of b. 34. First, repetitions of bb. 15 and 5 in bb. 33 and 34 recall bb. 14 and 15, but in reverse order (i.e. b. 33 repeats b. 15, and b. 34 repeats material from b. 14 that itself is a repeat of b. 5). This reversal brings out the downward octave transposition of {d♭^{1}, d^2} in b. 33 to {d♭, d^1} in b. 34 and a sort of voice exchange over the barline from {b♭, d♭^{1}} in b. 33 to {d♭, b♭}

33 The basic idea that repetitions of a segment may occupy distinct conceptual, phenomenological, and, in this case, spatial locations in a contextual association graph is strongly reminiscent of David Lewin's distinction between events and perceptions (in his 'Music Theory, Phenomenology, and Modes of Perception'). Lewin focuses on the multiplicity of musical perceptions that one might identify with a single segment in different musical contexts. I wholeheartedly embrace these ideas, but my present point happens to be more conservative: temporally distinct repetitions of a segment (in Lewin's terms, two distinct events that are identical with respect to notational image, pitch content, duration, and instrumentation) can have distinct salient properties.

34 The contextual criterion $C_{\text{pc}\ \{C, D\flat, D, B\flat\}}$ also associates b. 14 with b. 15, but is a different case. Pc set inclusion {C, D♭, D, B♭} is salient in both b. 5 and b. 14, but serves contrary ends: in b. 5 it forges a link to set *A*; in b. 14, to the new segment in b. 15 that leads to set *B*.

35 Ultimately, in that b. 23 derives from b. 17 (which derives from b. 2), b. 26 from b. 18 (which derives from a fusion of bb. 1 and 4), b. 28 from b. 18, and b. 31 from b. 17.

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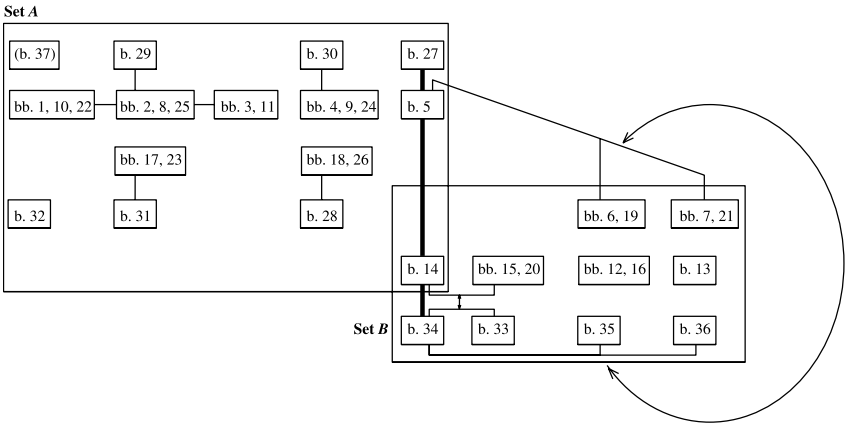


Example 9 Feldman, *Piano, Violin, Viola, Cello,* bb. 19–36. © 1987 Universal Edition, Ltd, London. All rights reserved. Used by permission of European American Distributors LLC, US and Canadian agent for Universal Edition Ltd, London.

in b. 34; it also downplays the common tone d♭[1] between bb. 33 and 34 in the piano, an event now interposed between the note's two instances. The second aspect of reordering involves bars that originate in bb. 5–7. Bars 12–13 and 14 had repeated these three bars in a different order: bb. 6, 7, 5. In bb. 34–36, the recall of near repetitions is again reversed, with the result that bb. 34, 35, and 36 now recall bb. 5, 6, and 7, in their original order. Pitch transposition among the three major sixths {d♭, b♭}, {d, b}, and {c, a} in bb. 34–35 traces a line through the bass in seconds, helping to secure the long-range association with b. 5 (and bypass b. 14). This wrangling with detail throws two issues into relief. First, the associative constitution of b. 34 involves *two* sets of associations in which bb. 5 and 14 – related by literal repetition – are functionally distinct. Second, the near repetition of bb. 5–7 and bb. 34–6 is not only near repetition but, given the intervening association between bb. 14–15 and bb. 33–4, also recontextualization. In a nice twist, this recontextualization of a three-bar unit embeds the recontextualization of b. 5 as a member of set *A* to b. 34 as a member of set *B*.

Example 10 summarizes the preceding discussion of repetition and recontextualization among bb. 5, 14, 27, and 34 with an abridged contextual association graph in which each of the four segments occupies a distinct location. For visual emphasis, the four segments bb. 27,

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Example 10 Summary of associative organization and relations among bb. 5, 14, 27, and 34 of Feldman, *Piano, Violin, Viola, Cello*.

5, 14, and 34 run vertically down the centre of the graph and are connected by a heavy line, suggesting their central role in this particular interpretation of associative organization for bb. 1–37, and their relative positions as central or peripheral members of associative sets *A* and *B*.[36] In the graph as a whole, boxes enclose associative sets; vertical alignment indicates relationship by literal or near repetition. Lightweight lines connect members of set *A* with additional associations: vertical lines connect unique near repetitions to their closest relative (e.g., b. 31 derives from b. 17); horizontal lines model other particularly strong associations (i.e., the associative subset comprised of bb. 1, 2, 3, and their literal repetitions, which all share pitch content of the two piano chords and the pitch-class set {B♭, B, C, D♭, D, E♭}). Braces connected by arrows point out the additional relationships among bb. 14–15 vs bb. 33–34, and bb. 5–7 vs bb. 34–36, discussed above. Note that where associative organization and temporal order coincide (and two-dimensional representation permits) bar numbers ascend left to right and top to bottom.

A quick read through the graph turns up numerous backtrackings and reorderings, signs of the unpredictability of return and 'development' in Feldman's 'rondo of everything'. As an *attempt* to coordinate associative organization with chronology, the graph helps to bring out the ways in which the passage is unpredictable: repetitions may be temporally adjacent but reordered (bb. 14, 15, 16 vs their counterparts in bb. 34, 33, 35); temporally adjacent segments may derive from bars introduced at different times (bb. 28, 29, 30, 31 from bb. 18, 2, 4, 17); and spans of adjacent bars drawn from one associative set vary considerably in length (starting with b. 1 in set *A* and continuing through b. 37: 5, 2, 4, 5, 2, 3, 11, 4, and 1

36 As a kind of cartography, a contextual association graph represents facts for a particular purpose or from a particular point of view. Thus graphs are both selective in regard to *what* is shown, and nuanced in *how* it is shown; they express *interpretations*, not neutral results. In this case, the graph is designed to best illustrate the nexus of relations among bb. 5, 14, 27, and 34, and more specifically the shifts in associative reach and salient properties despite literal repetition that I find so interesting about this passage. An analyst attracted to subtle changes that arise in the jostling among segments in set *A*, however, might think of and render associative organization of the same passage differently.

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bars). Such incongruities between associative organization and chronology contribute much to the temporal process and character of Feldman's late music and warrant serious consideration in *Piano, Violin, Viola, Cello* and in other works in which pattern repetition and recontextualization play a prominent role.

The foregoing analysis is offered in the spirit of a suggestion, a sketch of a way of thinking that gets at some peculiar niceties (or nice peculiarities) of Feldman's music. Recognizing the distinction between repetition and recontextualization draws analysis closer to music as sound, brings out detail one otherwise might not notice. But more is at stake than recontextualization *per se*. The essential point is not that analysts should acquire a new concept (recontextualization), but that we would do well to deconstruct habitual ways of thinking (perhaps ingrained through experience with music that is fundamentally different in structure and rhetorical character) that hinder us in the analysis of Feldman's music. Feldman's words on *Piano, Violin, Viola, Cello* point up the distinction between a note and what, after Catherine Hirata, I have been calling a *sound* – essentially, an *experience* of notes saturated by some context, that is, notes with a particular potential for disjunction and association, notes with a place in associative organization.[37] Drawing two more distinctions, between notational image and note, and between sound concept and sound, gives us four access points: notational image, note, sound, and sound concept. A *notational image* or *notation* is part of a score, a visual trace that prescribes sound production. A *note* is an aural event; it involves physical vibration and aural reception, but not musical context. A *sound* is an experience of notes saturated by context as described above; a sound is a phenomenon. A *sound concept* is a mental representation of the determinate and relational properties of a sound; it does not involve physical vibration.[38] Depending on one's point of view, notation, notes, sounds, and sound concepts may be arranged in either linear or circular fashion. As an activity, music analysis involves at least notes, sounds, and sound concepts; usually, it also involves notational images. But as product, music analysis deals only in sound concepts and their graphic, verbal, or aural representations.

While this terminological quartet is useful for music analysis in general, it is essential for close analysis of Feldman's music, which so often plays in the interstices between notation and notes, notes and sounds, and sound concepts and notation. In Feldman's music, not only are notation, notes, sounds, and sound concepts different things, but they are things that often do not map one-to-one. In *Crippled Symmetry* and *Patterns in a Chromatic Field*, for example, Feldman's use of accidentals and enharmonic notation plays with a many-to-one mapping from notation to notes; if intonation in flute and cello is not absolutely precise (likely enough, for intervals like the doubly-diminished second from A♯ to

37 On the phrase 'the sounds themselves' in relation to a single note, F, in Feldman's *Last Pieces*, Hirata says this: 'an issue, just of . . . being able to focus on the F – in such a way that everything going on between the first chord and the F is somehow projected onto the F, is experienced as *part of* the sound of the F'; Hirata, 'The Sounds of the Sounds Themselves', 11.

38 A sound concept, then, is comparable to the 'perception' Lewin renders on the page in 'Music Theory, Phenomenology, and Music Perception'. The sound that inspires that perception is Lewin's (or yours, or mine) alone.

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B♭♭ in b. 2 of *Patterns* are common in both pieces) the mappings become many-to-many.[39] In *Piano, Violin, Viola, Cello* the recontextualization of literal repetitions plays on the variability of mappings among notational images, notes, sounds, and sound concepts: one notational image, one set of notes, repeated among bb. 5, 14, 27, and 34, maps onto at least four different sounds and sound concepts. One might well identify this kind of play on our tendency to conflate notational images, notes, sounds, and sound concepts as a distinguishing feature of Feldman's music, part of what gives the music its special quality.[40] To understand how this music works, analysts must look at how notation, notes, sounds, and sound concepts interact – which is to say they must first undo the tendency to conflate notes with sounds and notation with sound concepts, and resist the temptation to impose what they *have* heard in one sound onto what they *are* hearing[41] in a different sound with the same notes.

For analysts interested in Feldman's late music, the idea of recontextualization can be rejuvenating. Pattern repetition no longer degenerates into classification, but remains fresh; the particularity of Feldman's 'repetitions' is restored – it blossoms – as notes open out into disparate sounds imbued by context. Some analysts will find the burgeoning possibilities exciting. Others may find them unsettling, and for good reason. Analysis that focuses on the multiplicity of sounds issuing from a single set of notes can rub up against deeply held (or hidden) ideas about music analysis – what music analysis is, and why one does it. Must analysis distil, condense, or control, musical experience? Can it explore and expand experience? Analysis of recontextualization entails a commitment to the second view – that analysis is a reasoned and imaginative exploration of musical experience. Analysis redirects and refocuses attention; it is essential for precise communication about musical experiences that must remain private. Seen in this light, analysis expands rather than condenses the realm of musical experience. Analysis is not primarily about definition, but about interpretation – and interpretation in a certain sense: not the reduction of sounds and ideas, from individuals to classes, or complex theoretical terms to terms taken to be more fundamental (as one 'interprets' a term in a scientific theory or the musical foreground in Schenkerian theory), but interpretation as the *ramification* of sounds and ideas, interpretation as criticism in the literary sense. An important challenge in the analysis of Feldman's music is the self-knowledge that it requires. Only when we recognize and examine our habits and assumptions about the nature, purpose, and process of analysis can we best use or change them.

39 Indeterminate notation in the *Projections* series and other early works also plays with one-to-many mappings between notational images and notes.

40 I owe the idea that this play is not only characteristic of Feldman's music, but *characterizes* it and accounts for much of its special quality to a conversation with Robert Morris.

41 Or, for that matter, *playing*. To follow up on another theme of Lewin, 'Music Theory, Phenomenology, and Modes of Perception', regarding a bias in much music analysis toward the experience of listeners, rather than that of composers or performers, one might speculate on how differences in the situations of a listener without a score, a listener with a score, and a performer might tend to individuate or blur, illumine or suppress, their experiences of repetition versus recontextualization. I suspect that the peculiar experience of recontextualization is heightened for listeners who have seen a score and been able to verify that some notational images remain invariant across changes in sound, and most pronounced for performers who repeatedly and simultaneously reinforce the combined invariances of visual imagery and physical actions as they rehearse and perform, yet must carefully attend to subtle changes in the ordering of events and alignment among parts to track their location properly.

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Conclusion

What is it about Feldman's music that makes it so difficult to analyse with tools, methodologies, and expectations of music analysis that analysts have developed in response to other repertoire? The case studies of *Coptic Light* and *Piano, Violin, Viola, Cello* suggest two (of many possible) answers to this question: scale, and distinctive treatment of repetition. Analysts tend to work with individuals – individual segments, their properties, and relations among segments. In *Coptic Light* and in much of Feldman's late music, organization emerges at a level theorists are not used to working with: the level of populations, not individuals. Substantial theoretical work remains to be done in this area, but I hope at least to have established that a shift in analytical focus away from individual segments and form toward populations and scale can bring important features of Feldman's late music to light. A full working-out of the conceptual and methodological difficulties that attend scale will not be easy, but should reward us with applications not only to music by Feldman, but also to that of other contemporary composers, including Ligeti and Reich. Once we as music analysts expand our purview to include aspects of scale, we might start to investigate in our own terms a seductive observation by ecologists Allen and Hoekstra: 'The trick is to model at the right level of organization'.[42]

Piano, Violin, Viola, Cello combines the challenge of scale with another challenge: the distinction between repetition and recontextualization that arises in a variable relationship between notes and sounds. Analysts tend to work as if musical segments were fixed things, as if repetition conferred identity. Linguistic conventions and a penchant for equivalence can encourage a slide toward classification; a tendency to conflate notational images, notes, sounds, and sound concepts tends to reinforce and perpetuate this kind of thinking and ally analysis with classification. But in *Piano, Violin, Viola, Cello* segments have slippery identities. Segments are not only repeated but recontextualized; a segment's salient properties and place in associative organization can change in response to new musical contexts. In a delightful paradox (which Feldman's words suggest he recognized and may even have intended), Feldman's marvellously untidy 'rondo of everything' is, in another sense, hardly a rondo at all, for what comes back – *sounds,* or notes? Playing at the interface between notes and sounds over the work's large scale (over seventy minutes in performance) creates a musical immersion experience. While we as analysts cannot reasonably hope to capture and fix such an experience in all its detail and all its degrees of variation and vagueness, we might still come to approach it and – with an appropriate choice of analytical philosophy, subject, and method – touch and contemplate it with our minds, satisfy some of our intellectual curiosity about musical experience. Is that not worth doing?

In 'The Anxiety of Art' (1965) Feldman writes, 'Proust tells us the great mistake lies in looking for the experience in the object rather than in ourselves'.[43] Feldman's music resists analysis (what music doesn't?), but it does not defy analysis. To insist that it does, intrinsically, is to make two mistakes: to assume that the current repertory of tools and

42 Allen and Hoekstra, *Toward a Unified Ecology*, 23.
43 Feldman, *Give My Regards to Eighth Street*, 23.

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methodologies is all we can have; and to relegate analysis to a study of notes, overlooking the gap between notes and sounds and all it might contain. Analysis is an inquiry into musical experience; the inspiration for analysis is curiosity. What *is* it about Feldman's music? If we can hear it, can we find ways to 'think it'?[44]

Glossary of Terms

domain: a realm of musical experience and discourse about it; a universe defined by the kinds of things one attends to or is interested in.

sonic domain: the domain concerned with psychoacoustic attributes of individual notes such as pitch, dynamics, duration, and timbre.

contextual domain: the domain concerned with associations among, and categorization of, musical events.

segment: a grouping of notes (or other musical events) that constitutes a significant object in analytical discourse. Segments, and relationships among segments, contribute to (the construction or construal of) musical organization at higher levels.

criterion: a rationale for cognitive grouping of musical events. Criteria support segments.

sonic criterion: a rationale for segmentation based on psychoacoustic attributes of individual notes. Sonic criteria mark segment boundaries at local maximum disjunctions in sonic dimensions such as pitch, duration, dynamics, and timbre.

contextual criterion: a rationale for segmentation based on association between two or more groupings of notes by virtue of repetition, equivalence, or similarity of elements in a nonacoustic, nonlinear musical space such as pitch contour, pitch content, pitch-class set, set class, and rhythm. Contextual criteria record (not only predicable but) *relational* properties of segments: they represent an association *between* segments as a property *of* two or more segments. Contextual criteria are notated with a C (for contextual), followed in parentheses (or subscript) by the type of association (pitch-class, set-class, rhythm, etc.), then the specific elements that produce the association, e.g., $C_{pc\ \{A,E\}}$. In music examples, contents of the subscript appear in parentheses.

associative set: an unordered set of two or more segments related by contextual criteria. Each segment in an associative set relates to at least one other by one or more contextual criteria; conversely, every contextual criterion shown to contribute to the set must support at least two of its segments. Associative sets are named with letters, e.g., associative set *A*; segments can be named by bar number, or by the set name followed by a number that indicates score chronology, e.g., *A1, A2*.

associative subset: two or more segments embedded in a larger associative set and distinguished from its total membership by the action of additional, often stronger, contextual criteria.

associative organization: the internal structure of an associative set (by virtue of varying strengths of relation among its members), combination of two or more associative sets, and perhaps also temporal disposition of segments within or between associative sets.

contextual association graph: a graphic representation of an interpretation of associative organization for one or more associative sets as a network of segments (represented as musical excerpts or named nodes) connected by contextual criteria or transformations.

population: a set of segments, often drawn from one or more associative sets (and thus interrelated by contextual criteria), considered with respect to group properties such as range and distribution of predicable properties of individual segments.

Notation and Abbreviations in Contextual Criteria

{ . . . }: curly brackets enclose unordered sets

< . . . >: angled brackets enclose ordered sets

{ < > < > }, < { } { } >: nested curly and angled brackets indicate partial orderings

***incl* (inclusion)**: used in contextual criteria, indicates criterion pertains to a subset of a segment rather than to the segment in entirety

44 An allusion to Feldman's words in 'The Anxiety of Art': 'But I work very much like a painter, insofar as I'm watching the phenomena and I'm thickening and I'm thinning and I'm working in that way and just watching what it needs. I mean, I have the skill to hear it. I don't know what the skill is to think it, I was never involved with the skills to think it.' (Feldman, *Give My Regards to Eighth Street*, 183).

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pc **(pitch class)**: upper-case note names without octave designation, e.g., 'C', 'E♭'. Pitch class assumes octave equivalence and implies enharmonic equivalence.
pitch **(pitch)**: upper- and lower-case letters with subscripts indicate pitches in a designated octave, e.g., 'C' for cello C, 'c^1' for middle C.
ip **(pitch interval)**: measured in semitones, with direction: +7 = perfect 5th up
INT **(pitch-class intervals)**: in modular space; pc intervals range from 1 to B, for eleven
ic **(interval classes)**: six ics, 1–6
SC **(set class)**: Forte name followed by prime form enclosed in square brackets: SC 5-2[0,1,2,3,5]

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