

Introducing Electronic Music in Sophomore Music Theory: Reflections on the Couch/Miksch Approach to Aural Analysis

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Abstract

Undergraduate students may briefly encounter electronic music in their music history courses, but the most popular music theory textbooks fail to even recognize this developing field. Theory books generally provide no insightful discussion because there is little practical and efficient pedagogical material of a sufficiently theoretical nature. At the 1999 ICMC conference in Beijing, Bonnie Miksch and I proposed a quick analytical system that could be presented within two class periods. That paper contains a basic vocabulary, a procedure for notation, and brief suggestions for interpretation. This pedagogical procedure and especially our tripartite division of interpretative approaches implies a theoretical framework of perception which I will explore using the Schoenbergian concepts of coherence and the musical idea. All these ideas naturally lead to the realm of aesthetics. This presentation will include a summary of the previous Couch/Miksch paper, discussion of the theoretical and aesthetic implications of the analytical system, and suggest areas for future research and development of pedagogical materials.

“. . . it must also be possible to make such [coherent] progressions out of the tone colors . . . with a kind of logic entirely equivalent to that logic which satisfies us in melody. . . . I firmly believe it is capable of heightening in an unprecedented manner the sensory, intellectual, and spiritual pleasures offered by art . . . it will bring us closer to the illusory stuff of our dreams.”¹

I. Introduction

By providing a fast and effective system of aural analysis, I hope, first of all, to persuade you to include electronic music in your undergraduate theory courses. Bonnie Miksch and I initially proposed this approach at the 1999 ICMC conference in Beijing, and, since then, I have been using it with great success at Luther College. Once I have presented the Couch/Miksch system, I will use Schoenbergian terms to explore some implications of our system. Finally, I will suggest areas for further work in aesthetics and pedagogy.

II. Undergraduate Music Theory and Electronic Music

Undergraduate music theory courses have three main goals: (1) to provide a common vocabulary and conceptual framework for meaningful conversation amongst professional musicians. (Often

¹Arnold Schoenberg, *Theory of Harmony* (1911 and revised 1922), Translated by Roy Carter (University of California Press: Berkeley, 1978), 421-22.

this strongly implies a conservative, academic value system.); (2) to teach fundamental skills to aid performance, listening, teaching, and composition; and (3) to introduce and promote understanding and appreciation of a large variety of western art music and popular music styles.

When sophomore theory courses attempt to introduce unfamiliar twentieth-century styles, students learn a rudimentary music vocabulary to describe rhythm and pitch. With previous emphasis on tonal harmony, students quickly infer and accept that pitch-oriented music must be superior to other types of expression. Many teachers simply ignore electronic music because few practical theoretical/analytical systems exist. Others merely throw unfamiliar styles at their students and provide little substantive guidance. Theory courses, therefore, leave students unprepared to appreciate *avant garde* music such as sound mass music and most electronic music.

III. The Miksch/Couch Approach to Aural Analysis

To remedy this situation, Bonnie Miksch and I proposed an approach to aural analysis at the 1999 ICMC conference in Beijing. Students consistently remark how our paper helped them appreciate electronic pieces that were initially beyond their grasp. As a result, some students have asked to pursue undergraduate research and senior theses on electronic music.

We divide aural analysis into three basic tasks. First, students must learn new ways of listening by practicing the identification of fundamental parameters beyond pitch and rhythm. This is a fairly simple task of informing them of technically verifiable musical elements. Table 1 achieves this in a logical and quick way. Second, students learn to notate their listening experiences as a memory and analytical aid. We have a general notation system that works for nearly all electronic music. (See Table 3 for notation and our ICMC paper for details.²) Most students use our system as a spring board, tailoring their own notation for the particular piece at hand. They usually use icons to conveniently represent recurring timbres, such as “space aliens.” Third, we describe three listening modes, or general approaches to interpreting musical works. (See Table 2 containing the interpretive parameters.)

For the purposes of this paper, the three listening modes in Table 2 deserve special attention. The object-centered mode captures what we traditionally call analysis: How do musical events technically relate to other passages, i.e., “relationships inside the music.” Recognizing an A-B-A’ form, for instance, is an object-centered conclusion. In the subject-centered mode, listeners describe their personal responses to sound, i.e., “relationship between the music and the individual.” For instance, a loud blast from the speakers may cause pain, or smooth waves of compliments may soothe sore emotions. These experiences not only provoke one’s memory; they often capture essential and normally unarticulated musical experiences. The context-centered approach encourages listeners to connect musical events to non-personal situations outside the formal music, i.e., “relationships between music and society and physical reality.” Titles and program notes, such as those for Barry Truax’s *Riverrun*, contribute to understanding of the

²Leon W. Couch III and Bonnie Miksch, “‘Blip, Buzz, Blurp’: The Challenge of Teaching New Ways to Listen,” *Proceedings of the 1999 International Computer Music Conference (ICMC)* in Beijing, China.

musical processes and expression. This approach is vital to music with explicit programs or political agendas, but one can easily claim that most music reflects or even molds our social experiences. In summary, the interpretive parameters create three categories of meaning. And, I simply allow students to feel and imagine.

In class, I (1) present the vocabulary and interpretive parameters, (2) allow students to practice their skills at recognizing fundamental parameters, and (3) work with them on notation of most parameters. (In step three, I often show them a sonogram and an example analytical graph of Robert Frank's *Zymurgy* or Miksch/Couch's *Sirens*.) Then, (4) the students discuss various interpretations of a piece played in class. I select compositions devoid of familiar tonal harmony or pitch-based development and familiar instrumental timbres (such as Paul Koonce's *Whitewash*), so that they practice unfamiliar skills. (5) Their homework assignments involve identifying musical form because this object-centered approach requires repeated, engaged listening. Furthermore, the class can discuss object-centered interpretations more easily and achieve some consensus. We also delve into context-centered approaches, and connect musical events with some subject-centered responses. (6) I ask them to defend their point(s)-of-view in a paper.

IV. Couch/Miksch Approach and Schoenberg's Musical Idea

Like all approaches to listening, our method implies beliefs about how music should or can work; perhaps some composers avoid outlining such approaches in their theory teaching for this reason. I wish to introduce some of Schoenberg's ideas about coherence and the musical idea to uncover some of these beliefs.³

Coherence simply describes relationships within an artwork, i.e., "How an artwork fits together." Coherence results from similarity of material or procedures within the artwork (repetition and variation).⁴ Comprehensibility is a measure of the clarity of the coherence, i.e., "how well the composition communicates its ideas."⁵ For instance, popular song contains a high level of

³Arnold Schoenberg, *Coherence, Counterpoint, Instrumentation, Instruction in Form*, Edited and with an introduction by Severine Neff, Translated by Charlotte M. Cross and Severine Neff (University of Nebraska Press: Lincoln, 1994).

⁴In Schoenberg's organic viewpoint, all passages should have some similarity to other parts, but contrasting elements may be emphasized to avoid monotony from excess repetition. Schoenberg concentrates on similarity between motives for coherence, but he does mention other sources: "metaphysical coherence" and "psychological coherence" (Schoenberg, *Coherence*, 5). On p. 63, he states that spiritual ("non-musical") content derives primarily from the sung texts and "images that are either conscious or unconscious, external connections."

⁵Because Schoenberg believes the tenets of organicism, he states that comprehensibility involves apprehending the whole and relating the parts to the whole. I have provided a more general definition, simply that one perceives the coherence (*Zusammenhang*). Schoenberg further distinguishes between comprehensibility (*Fasslichkeit*) and understanding (*Verstehen*). Comprehension occurs in time as the piece unfolds, while understanding requires more reflection out of time to consider relationship between parts of an organic form. Thus, understanding requires greater memory and skill, and provides amplified meaning. Understanding is defined

coherence because of the abundance of repetition and variation; the arrangement of material, understanding performers, and listeners' familiarity with its tonal style also lend popular song a high level of comprehensibility. Twelve-tone music, on the other hand, has a high level of coherence, but a low level of comprehensibility for most non-academic listeners. Simple factors such as interference or hiding melodies within thick textures may inhibit comprehensibility, and thus reduce the size of the potential audience.

Comprehensibility depends on three main sources: (1) the clarity of the composer's presentation of coherence,⁶ (2) the performer's skill of interpreting and projecting coherence, and (3) the listener's ability to recognize coherence. In theory teaching, we seek to increase the second and especially the third factors; i.e., we want to augment students' abilities to relate material to what has already occurred and to the overall structure. Schoenberg's explanations of comprehensibility seem to aim toward the composer's, performer's and listener's abilities at object-centered listening, and his theory on coherence elevates context-centered approaches above the other two listening modes.

The listener can develop the following skills that influence comprehensibility:

- Skill at recognizing basic musical elements. Here, I must stress the importance of vocabulary and the concepts they embody: from tonal elements to traditional twentieth-century devices to newer electronic music techniques. Recognition depends heavily on familiarity. In musicianship courses, we only practice the parameters most important to tonal music: distinguishing pitches, direction of pitches, collection of pitches, and rhythms. For *avant garde* music, we have a wider range of possibilities, all the fundamental parameters. Lack of time, plain vocabulary, and available overarching concepts restrict musicianship teachers who attempt to equip students for newer music.
- Ability to recognize similarity (and thus, contrast). Most musicianship courses do not directly address this vital skill.
- Memory. This is vital for recognizing similarity. Visual representation, scores, and dictations in ear-training courses can aim directly at increasing retention.
- Theoretical understanding. Theory and analysis not only improve memory, but also create expectation in the listener: the ability to predict and be surprised by musical events, knowing past ones in the same and other similar pieces.
- Extra-musical associations. A narrative, for instance, may bolster memory and will increase meaning. These associations can also lead to analytical revelations within all three listening modes.

as "recognition of similarity" (Schoenberg, *Coherence*, 11). For simplicity, comprehensibility in this essay encompasses both of Schoenberg's terms, *Fasslichkeit* and *Verstehen*.

⁶The laws of comprehensibility as they relate to the composer are listed in Arnold Schoenberg, *The Musical Idea and the Logic, Technique, and Art of its Presentation*, Edited, translated, and with a commentary by Patricia Carpenter and Severine Neff (Columbia University Press: New York, 1995), 133-43. As a composer and theory teacher, Schoenberg spends little effort on the role of the performer or listener. In tape music, the role of performer is fulfilled by the composer and board technicians.

Since many technical features of electronic music are currently beyond the scope of most undergraduate courses, the object-centered listening mode concentrates on more obvious features of repetition and contrast, especially in timbres and timing of sound events. Gradual change in any parameter normally indicates direction towards or away from goals while discontinuity, esp. silence or sudden change in texture or timbre, often creates sections. Because many sound processing techniques that may appeal to a small audience (electroacoustic composers themselves) are beyond students' level of experience and would require too large a block of time devoted to such material, students must instead venture into subject- and context-centered approaches to aid memory and create meaning.

Valuing these alternative listening modes, subject- and context-centered, has political ramifications. Music theory generally suppresses these ways of thinking, despite "the new musicology" that entreats everyone to consider context and recent narrative theories. Teachers suddenly attempting to teach these approaches may see in retrospect that they should not have ignored these listening modes when investigating tonal music. In other words, we do not practice nor encourage many of the most basic approaches to music, because we overemphasize strict harmony and positivistic thought. (Strangely enough, the two less-honored listening modes routinely surface in music appreciation texts and classrooms as well as in writings from famous nineteenth-century critics and theorists.)

V. Two Areas for Further Work

From Schoenberg's viewpoint, if a composer wishes to create coherent music, the composer has an obligation to reuse material. If the composer desires comprehension of his ideas, the composer must consider how to communicate to the target audience, i.e., so that they can recognize the coherence that may be present. The listener likewise has the responsibility to be engaged and educate himself to the level of the music he is listening to, especially if the music derives from another culture or employs unfamiliar techniques. This theory of coherence provides criteria for music criticism and aesthetic judgement. Did the composer create an artwork that expresses his ideas? I.e., are the level of coherence and the materials appropriate to the idea (*Idee*) and does the level of comprehensibility match the audience's abilities?⁷ These terms and aesthetic judgements seem appropriate to most traditional western art music, popular music, and many twentieth- and twenty-first-century compositions, especially those springing from the German tradition (i.e., music employing development).

Many of us, however, can think of works that use contrast, discontinuity, or unpredictability (e.g., aleatory) as their basic "organizing" principle. These works fall outside this theory, except in an abstract philosophical way: these works are unified by disunity. This ambiguous statement despite its ingenuity and rebellious political appeal is neither helpful nor insightful for a theory student

⁷For a provocative discussion of the social implications (the role of the composer and audience), read Milton Babbitt, "Who Cares if You Listen?" *High Fidelity* 8, no. 2 (February 1958): 38-40, 126-27, reprinted in *The American Composer Speaks*, edited by G. Chase, and *Contemporary Composers on Contemporary Music*, edited by Elliott Schwartz. The title, by the way, was suggested by an editor rather than Babbitt's idea.

trying to appreciate these types of music. Rather, I assert that these works employ subject- and context-centered parameters normally considered outside music to create meaning.

More directly put, the extra-musical contributes to musical meaning. In a sense, the piece (or rather the listener's mind) reaches out to other realms of human experience and finds appropriate analogs, i.e., the context-centered listening mode. One must ask: Does extra-musical bolster comprehensibility or coherence?

The second area for research is more practical and will be the focus of my endeavors. We need more up-to-date pedagogy for musicianship classes that prepares students for more recent music. First of all, we need to address more musical parameters in tonal music to practice basic skills and instill vital concepts. We tend to ignore, or even disparage, the context- and subject-centered responses, valuing them less. We need simple exercises for aural recognition of terms and techniques specific to recent music. We also need exercises to explicitly practice recognizing similarity and to further increase memory retention of all parameters (beyond four-bar phrase lengths of homophonic tonal music). In other words, we need to practice new ways of listening for new music.

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Leon W. Couch III joined the music faculty at Luther College in 1998. He both directs the *Collegium Musicum* and teaches music theory. He regularly performs organ recitals in the Midwest and southeast. While pursuing doctorates in music theory and organ performance at the University of Cincinnati's College-Conservatory of Music, Couch maintained an organ studio and taught theory courses there. In 1997, the University of Cincinnati hired Couch as an Adjunct Professor of Mathematics after he achieved doctoral candidacy. For three years, Couch also served as Music Director for an influential German-American congregation at Concordia Lutheran Church, Cincinnati, Ohio.

TABLE 1: Fundamental Parameters⁸

DOMAIN	PARAMETER	CONTINUUM
Time	Temporal Progression	Continuous <—————> Disjunct
	Rhythm	Pulsed <—————> Non-pulsed
Texture	Vertical Density	Thick <—————> Thin
	Horizontal Density	Busy <—————> Sparse
Amplitude	Dynamics	Loud <—————> Soft
	Attack and Release	Sharp <—————> Gradual
Frequency	Pitch	Pitched <—————> Non-pitched
	Range (and Tessitura)	Narrow <—————> Wide
Location ⁹	Distance	Close <—————> Far
	Direction	Horizontal -180° <—————> 180° Vertical -180° <—————> 180°

TABLE 2: Interpretive Parameters

LISTENING MODE	PARAMETERS
Object-centered	Form and shape, Phrasing, Meter, Pitch relationships, Tone color ¹⁰
Subject-centered	Physical responses & gut reactions, Emotions, Personal imagery
Context-centered	Title of work & artistic intention, Program notes, Historical & political background, Narrative & metaphor, Performance aspects (venue and room setup)

⁸Tables 1-3 are revisions of those in Leon W. Couch III and Bonnie Miksch, “‘Blip, Buzz, Blurp’: The Challenge of Teaching New Ways to Listen,” *Proceedings of the 1999 International Computer Music Conference (ICMC)* in Beijing, China.

⁹Although I talk about the importance of polar coordinates in some concert settings and headphone pieces, most students find terms analogous to home stereos easier and nearly as informative: left, center, and right.

¹⁰An interpretation of timbre, “tone color” refers to non-technical descriptions, such as “fat, grainy, and wet.” Although electronic music courses would include sound processing as an object-centered parameter, the subject is far beyond the scope of most music general theory courses.

TABLE 3: Visual Representation of Parameters

CATEGORY	PARAMETER	REPRESENTATION
Fundamental Parameters ¹¹	Time	Horizontal axis with timings (min : sec)
	Frequency	Vertical axis
	Amplitude Envelope	Shape
	Vertical Density	Height ¹²
	Dynamic	Darkness
	Location	Letters L, C, R (left, center, right)
Interpretive Parameters ¹³	Prominence of Event	Colors or highlighter Pens
	Phrasing and Sections (Form)	Brackets and traditional letter designations
	Meter	Meter signature(s)
	Pitch Relationships	Roman numerals or traditional notations
	Tone Color and Timbre	Text box (words inside sound event shape)
	Subject-centered Responses	Text box (words underneath sound events)
	Context-centered Descriptions	Text box (words below horizontal axis)

¹¹Fundamental parameters not listed here (temporal progression and horizontal & vertical density) become clear when one graphically represents sound events with the listed parameters. One may, however, resort to traditional notation for rhythms, if it is simpler.

¹²Miksch and I essentially conflated the time vs. amplitude axes common to sound editors and time vs. frequency axes of sonograms into one graph. We believe that the vertical representation of both pitch and vertical density will actually simplify graphing in a classroom situation. For more greater precision, Helmuth employs two parallel graphs to avoid this potentially confusing problem (Mara Helmuth, "Multidimensional Representation of Electroacoustic Music," *Journal of New Music Research*, vol. 25, no. 1 (Mar. 1996), 77). Because notation of the amplitude envelope also involves some vertical space, some students will occasionally find our notation less clear.

¹³Interpretive parameters omitted here can usually be handled in text boxes, but I have found students address more involved or subtle interpretive issues better in essays or discussion.

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I. Introduction

II. Undergraduate Music Theory and Electronic Music

- A. General goals
- B. Electronic music

III. The Miksch/Couch Approach to Aural Analysis

- A. Three steps to aural analysis and Tables 1-3
- B. Brief discussion of the three listening modes
- C. My pedagogical approach

IV. Couch/Miksch Approach and Schoenberg's Musical Idea

- A. Coherence vs. Comprehensibility (& Understanding)
- B. Three sources of Comprehensibility
- C. Factors of Comprehensibility that students can develop
- D. Special considerations when listening to electronic music: how an undergraduate can increase comprehensibility by using alternative listening modes

V. Two Areas for Further Work

- A. Aesthetic judgements and "Obligations" of the composer and listener
- B. The "extra-musical" and listening modes
- C. Need for new pedagogical materials to enhance specific musicianship skills for listening to and appreciating the *avant garde*

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– **Arnold Schoenberg, *Harmonielehre* (1911)**

Three Overarching Goals of Music Theory

1. to provide a common vocabulary and conceptual framework for meaningful conversation amongst professional musicians
2. to teach fundamental skills to aid performance, listening, teaching, and composition
3. to introduce and promote understanding and appreciation of a large variety of western art music and popular music styles

Three Steps to Aural Analysis

1. Practicing identification of fundamental parameters (Table 1)
2. Notating listening experiences (Table 3)
3. Interpreting their observations in three listening modes (Table 2)

My Pedagogical Approach

1. Vocabulary (fundamental parameters) and interpretive parameters
2. Recognition of fundamental parameters
3. Notation of most parameters
4. Classroom discussion of various interpretations.
5. Out-of-class analysis
6. Analytical paper

Coherence = relationships within an artwork

“How an artwork fits together”

VS.

Comprehensibility = the clarity of the coherence

“How well the composition communicates its ideas.”

Three Sources of Comprehensibility

1. Clarity of the composer's presentation of coherence
2. Performer's skill of interpreting and projecting coherence
3. Listener's ability to recognize coherence

Factors of Listeners' Comprehensibility

- ! Skill at recognizing basic musical elements
- ! Ability to recognize similarity
- ! Memory
- ! Theoretical understanding
- ! Extra-musical associations

Areas for Further Work

- ! Aesthetics and further Theory: What is a successful artwork?
Relationships between the extra-musical and coherence theory.
- ! Pedagogy: Materials for musicianship courses