

I. PLANES OF DISCOURSE IN FIXED MEDIA ELECTROACOUSTIC MUSIC: A
COMPARATIVE STUDY AND APPLICATION OF ANALYTICAL APPROACHES
AND
II. THREE MOVEMENTS FOR STRING ORCHESTRA

By

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Abstract of Dissertation Presented to the Graduate School
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Part I of this study presents a comparative examination and application of representative approaches to the analysis of fixed media electroacoustic music. Electroacoustic works for fixed media present particular challenges for analysis, thereby warranting a specific analytical approach. Although there are a number of identifiable elements that can be said to distinguish fixed media electroacoustic music from other types of music, this study is conducted from the perspective that most fundamental is the potential for multiple planes of discourse.

There have been numerous analytical strategies published by scholars in the area of electroacoustic music analysis. However, while many of these strategies effectively illuminate activity within certain planes of discourse, none deal comprehensively with the interconnection between these planes. The present study combines elements of several representative analytical methodologies in a multi-layered approach.

The purpose of analysis (as considered in this study) is to explore the relationship between the listener/analyst's subjective perspective and the musical "object." Therefore, rather than seeking to produce an authoritative analytical product, this study seeks to develop an overall

strategy for the analysis of fixed media electroacoustic music. In this way, this study fills a gap in the existing scholarship dealing with electroacoustic music analysis.

Chapter 1 outlines the intentions of this study and considers the state of scholarship in the area of electroacoustic music analysis. Chapter 2 is comprised of the comparative study itself, which is followed in Chapter 3 by the application of elements of the approaches considered in this study to four contrasting fixed media electroacoustic works. Chapter 4 considers the findings in Chapters 2 and 3, addressing the potential for (and ramifications of) interconnection between planes of discourse and also considers the benefits and drawbacks of a comprehensive strategy for the analysis of fixed media electroacoustic music.

Part II of this study is comprised of a three movement composition for string orchestra.

CHAPTER 1 INTRODUCTION

This study presents a comparative examination and application of representative approaches to the analysis of fixed media electroacoustic music and combines elements of these approaches in multi-layered descriptions of four fixed media electroacoustic works: *Onset/Offset* by Pete Stollery, *Private Play* by Scott Wyatt, *England (G & T Swimmers)* by Antti Saario, and *Night Traffic* by Paul Lansky. Chapter 1 outlines the intentions for this study and considers the state of scholarship in the area of electroacoustic music analysis. Chapter 2 comprises the comparative study itself, which is followed in Chapter 3 by a multi-layered application of the approaches studied to the four above-mentioned works. Chapter 4 considers the findings in Chapters 2 and 3 and addresses the potential for (and ramifications of) interconnection between planes of discourse. Chapter 4 also considers the benefits and drawbacks of a comprehensive strategy for the analysis of fixed media electroacoustic music.

Electroacoustic works for fixed media present specific challenges for analysis. There have been many analytical approaches published by scholars in the field and each addresses these challenges differently. As there is a multiplicity of aesthetics represented within the medium, no single analytical strategy can be applied to all fixed media electroacoustic music. This study focuses on the potential in fixed media electroacoustic music for multiple planes of discourse. One of the qualities unique to fixed media electroacoustic music is its potential to accommodate various levels of discourse simultaneously and, in particular, the potential ambiguities between them. This study examines ways in which existing analytical approaches treat these planes and argues for a comprehensive approach guided by a search for pertinences.¹

¹ The phrase “search for pertinences” is borrowed from Delalande and further discussed below. François Delalande, “Music Analysis and Reception Behaviours: Sommeil by Pierre Henry,” *Journal of New Music Research* 27 (1998).

Although this dissertation could conceivably provide a starting point for the development of an analytical methodology, the intention in this study is not to put forward a universally applicable analytical framework. The selection of an analytical approach is best determined by the specific piece in question. Therefore, the primary purpose of the descriptions in Chapter 3 is to illustrate ways in which the approaches studied deal with certain planes of discourse. While the result of these analyses might prove to be fruitful, or in some ways illuminating, the approach taken in Chapter 3 is not offered as a step-by-step analytical method. It is, however, the contention in this study that multiple analytical tools should be considered in any analysis, and the descriptions in Chapter 3 illustrate ways in which some of these might be applied.

Definition of Terms

As this dissertation deals with analytical approaches to fixed media electroacoustic music, a working definition of the material studied is needed.²

Definition of Electroacoustic Music

The term “electroacoustic music” has a wide range of meanings and usages. It is therefore necessary to consider the meaning of the term as it is applied in this study and to establish a working definition. The following discussion is not intended to be exhaustive, but merely to be illustrative of the variety of existing ideas regarding the meaning of the term “electroacoustic music” and to establish a working definition.

In *The Study of Ethnomusicology*, Bruno Nettl advances a framework for establishing definitions:

In a complex society one may find definitions in at least three ways: by asking the society’s own ‘expert,’ who has thought about it long and hard (that is, perhaps, by looking in the dictionary); by asking members of the society at large in order to determine whether

² This preliminary discussion of the term, “electroacoustic music,” while admittedly lengthy, is necessary in order to illustrate the various ways in which the term is used.

there is a consensus (possibly using a questionnaire and distributing it widely); and by observing what people do and listening to what they say without imposing one's self on their thoughts by asking questions...³

In the following paragraphs, this framework is applied to electroacoustic music.

Beginning with the first component of Nettle's framework, examples of definitions taken from music dictionaries are presented.⁴ For the second part of Nettle's framework, definitions of the term "electroacoustic music" were solicited from a number of individuals active within the field. Continuing with part three, additional observations are added.

Definitions

In the *New Grove Dictionary of Music and Musicians*, Simon Emmerson and Denis Smalley define "electroacoustic music" in the following way:

Music in which electronic technology, now primarily computer-based, is used to access, generate, explore and configure sound materials, and in which loudspeakers are the prime medium of transmission. There are two main genres. Acousmatic music is intended for loudspeaker listening and exists only in recorded tape form (tape, compact disk, computer storage). In live electronic music the technology is used to generate, transform or trigger sounds (or a combination of these) in the act of performance; this may include generating sound with voices and traditional instruments, electroacoustic instruments, or other devices and controls linked to computer-based systems. Both genres depend on loudspeaker transmission, and an electroacoustic work can combine acousmatic and live elements.⁵

The Hutchinson Concise Dictionary of Music provides no discrete entry for "electroacoustic music." Instead, the listener is directed to "see acousmatic music," which is given the following definition:

3 Bruno Nettle, *The Study of Ethnomusicology* (Urbana, Illinois: University of Illinois Press, 1983), 16.

4 In the case of electroacoustic music, the distinction between the first two parts of Nettle's framework is blurred by the fact that the electroacoustic music "society" is largely comprised of specialists (composers, teachers, researchers, etc.) in the field.

5 Simon Emmerson and Denis Smalley, "Electro-acoustic Music," in *The New Grove Dictionary of Music and Musicians, Second Edition*, ed. Stanley Sadie (London: Grove, 2001) 59-87.

music in which the composer uses electronic or computer-based means to shape sounds directly, without the use of notation or performers. The original sounds may be recorded or synthesized, or both. More or less synonymous with electroacoustic music.⁶

In *The Harvard Dictionary of Music*, Fourth Edition, Jon Appleton also offers a definition:

Electro-acoustic music. Music that is produced, modified or reproduced by electronic means, including computer hardware and software, and that makes creative use of those technologies. The character of electro-acoustic music depends to some degree on the technology employed, but the term refers to the medium and not a specific style of music....⁷

The above definitions suggest that “electroacoustic music” refers more to a medium than a particular style, aesthetic, or approach to composition. In the case of Appleton’s definition, this is stated explicitly.⁸ Although this is a legitimate view, its scope is too broad for a useful analytical approach. However, attempting to narrow this definition creates problems. Therefore, while its broad scope is recognized, the first of the above definitions (that of Simon Emmerson and Denis Smalley) forms the basis of the definition of the term “electroacoustic music” as it is applied in this study.

Asking

For part two of Nettle’s scheme, individuals active within the field (such as composers, curators of radio programs, reviewers or directors of websites which feature electroacoustic music) were asked to define the term “electroacoustic music.”⁹ As mentioned above, this small sampling is not intended to be an exhaustive survey. The present objective is simply to illustrate the wide range of prevailing conceptions of the meaning of the term “electroacoustic music.”

6 Barrie Jones, ed., *The Hutchinson Concise Dictionary of Music* (Chicago: Fitzroy Dearborn Publishers, 1999) 4.

7 Jon Appleton, “Electro-acoustic Music,” in *The Harvard Dictionary of Music, Fourth Edition*, ed. Don Michael Randel (Cambridge, Massachusetts: The Belknap Press of Harvard University Press, 2003) 287-288.

8 In the remainder of his entry, Appleton goes on to discuss specific styles and genres within electroacoustic music.

9 Individuals were asked to briefly describe their idea of the meaning of the term “electroacoustic music.” It was specified that informal and spontaneous responses were preferred.

Don Campau, curator of the San Francisco-based radio program *No Pigeonholes*¹⁰, which regularly features electroacoustic music, provides the following definition:

To me, "electroacoustic music" means electronic music derived from acoustic means or acoustic music derived from electronic means (and of course, any combination of the two). It's a broad scope that can cover Xenakis' "Persepolis" and the works of Francisco Lopez to so-called "laptopers" such as Fennesz, Chris Watson and Greg Davis.¹¹

Bryce Moore, co-host of the radio program *Difficult Listening*,¹² also responded:

I have always thought of the term "electroacoustic" as covering a rather generic area of sound produced by electricity, as the term might suggest. To me, it has always described a technique of producing sound, rather than a stylistic definition. There are many overlapping and often interlocking areas of new music that forestall any rigid definition of "electroacoustic."

I think the term "electroacoustic" predated "electronic", but is probably now interchangeable with it. When you actually listen to the music, it is so varied and multifaceted that it is impossible to have an overarching definition apart from one that refers to the technique, which may in the end not mean much. Electroacoustic music includes the ear-torturing hard feedback of Merzbow as well as the delicate sonic filigrees of some of Robert Normandeau's work, and what do they have in common?¹³

The above responses evidence the diversity of ideas regarding the meaning of the term "electroacoustic music." Both Campau and Moore refer to the broad range of potential meanings in their responses. However, while both Campau and Moore cite specific artists, suggesting a stylistic range of what they regard as "electroacoustic music," neither is prepared to offer a specific definition.¹⁴ Several additional responses are included in the Appendix to this dissertation.

10 *No Pigeonholes* is broadcast on KKUP 91.5 FM in San Francisco

11 Don Campau, e-mail message to author, July 3, 2007.

12 *Difficult Listening* is broadcast on RTRFM in Perth, Australia.

13 Bryce Moore, e-mail message to author, July 4, 2007.

14 Laura Zattra also notes the variety of subgenres within electroacoustic music: "from tape music to computer music, from concrete music to mixed music, live electronic music, laptop music, etc." Laura Zattra, "Analysis and Analyses of Electroacoustic Music," <http://smc.afimasso.org/smc05/papers/LauraZattra/LZanalysis.pdf>.

Observing

Continuing with the third part of Nettle's framework, one observation is added. As considered in this study, electroacoustic music generally exists in relation to the western "art music" tradition. Although this relation may be tangential in some cases, composers of electroacoustic music almost invariably have some connection to the university system and have a background and training in the western "art music" tradition.

In this way, "electroacoustic music" as considered in this dissertation is differentiated from music that is often referred to as electroacoustic music but is more closely related to popular music genres (such as Intelligent Dance Music). The motivation for making this distinction is to focus this study and avoid an overly broad approach. The intention is not to exclude these forms of music from consideration as electroacoustic music, or to in any way discount them. In addition, this differentiation is a very general one, however, and there is a great deal of overlap.

Definition of "Fixed Media Electroacoustic Music"

Having established a working definition of "electroacoustic music," the term "fixed media electroacoustic music" simply refers to electroacoustic works that are experienced through playback from a fixed source, such as analog tape, compact disc, or any of a variety of digital formats. The motivation for using this term and not the better established "acousmatic music" is simply to avoid confusion with a single school of composition.

Individual Listening Context

The scope of this project is limited to works that are intended for individual listening in stereo. The performance of fixed media electroacoustic works in concert and their diffusion over multiple loudspeakers presents a wide range of analytical issues and is best dealt with elsewhere. In addition, the individual listening context is a valid and generally accepted way of experiencing

fixed media electroacoustic music. The individual listening context considered in this project consists of stereo playback over near-field monitors.¹⁵

Study Objectives and Purpose

Specific Challenges Presented by Fixed Media Electroacoustic Works

Many authors have noted specific analytical challenges presented by electroacoustic music,¹⁶ and in the following paragraphs, some examples of these are given. For example, Jan Morthenson draws a clear separation between electronic and “traditional” music stating that “electronic music has no natural connection to ordinary music whatsoever; its sound-material did not develop from traditional music and is consequently not from the beginning conceived with musical elements.”¹⁷ In addition, David Hirst refers to the distinctive nature of the acousmatic medium saying that, while traditional musical relationships may be found in acousmatic music, “there can also be unique abstract relationships between the sonic attributes of sounds and the perceiver of those sonic attributes that we don’t find in traditional instrumental music.”¹⁸

Various writers identify surface elements that distinguish electroacoustic music from other musical types. For example, in his *Analytical System for Electronic Music*, William David Moylan's primary argument is that electronic music has a “new topography” (a new set of surface features and constructional conceptions) and that a “new” analytical approach is

¹⁵ In this study, analysis and analytical approaches are considered in terms of an idealized listening situation, although this is not always practical. Denis Smalley discusses ramifications of varying listening perspectives in his “Space Form and the Acousmatic Image.” Denis Smalley, “Space-form and the Acousmatic Image,” *Organised Sound* 12 (2007): 35-58.

¹⁶ For example, Mary H. Simoni, Benjamin Broening, Christopher Rozell, Colin Meek and Gregory H. Wakefield state that analysis of electro-acoustic music, “presents an array of problems not present in the analysis of Western tonal and post-tonal music.” Mary H. Simoni et al., “A Theoretical Framework for Electro-acoustic Music” (paper presented at the 1999 International Computer Music Conference, Beijing, China, October 22-26, 1999).

¹⁷ Jan Morthenson, “Aesthetic Dilemmas in Electronic Music,” in *On the Wires of Our Nerves: The Art of Electroacoustic Music*, ed. Robin Julian Heifetz (London: Associated University Presses, 1989), 61.

¹⁸ David Hirst, “An Analytical Methodology for Acousmatic Music” (paper presented at the 2004 International Symposium on Music Information Retrieval, Barcelona, Spain, October 10-15, 2004).

necessary.¹⁹ Moylan identifies four primary characteristics of the "new topography" in electronic music: "(1) An increased aural complexity...(2)...an equal emphasis of all musical parameters...(3) 'unfamiliar' sounds, resources and origins, and (4)...a decentralization of structural goals."²⁰ One of the most readily apparent elements of this "new topography" is a relative emphasis placed on timbre in electroacoustic music. Simon Emmerson notes that timbre has taken on an increasingly "emic" role over time – particularly for the composer of electroacoustic music.²¹

Much of Denis Smalley's theoretical work also deals with the "new topography"²² in fixed media electroacoustic music. In an early article, "Spectro-morphology and Structuring Processes," he portrays the development of western music in the twentieth century in terms of a "historic bifurcation in musical language," with tonality on one side and the other half represented by spectro-morphology.²³

Smalley notes the lack of sufficient analytical concepts and terminology as "the most serious problem in discussing the structure of electro-acoustic music."²⁴ In several articles, Smalley has formulated an involved system of morphological archetypes, spectral typologies, motion types, etc. These concepts deal with identifying and classifying elements and relationships in the structure of electroacoustic music. Smalley puts forth a set of concepts (using

¹⁹ William David Moylan, "An Analytical System for Electronic Music" (PhD diss., Ball State University, 1983), 2.

²⁰ *Ibid.*, 9.

²¹ Simon Emmerson, "Crossing Cultural Boundaries Through Technology," in *Music, Electronic Media and Culture*, ed. Simon Emmerson (Aldershot: Ashgate Publishing Limited, 2000), 127.

²² Smalley, of course, does not use this term.

²³ Denis Smalley, "Spectro-morphology and Structuring Processes," in *The Language of Electroacoustic Music*, ed. Simon Emmerson (London: Macmillan, 1986), 61.

²⁴ Denis Smalley, "Problems of Materials and Structure in Electro-Acoustic Music," *EMAS* 1 (1981): 1.

Schaeffer's *solfege* as a point of departure) that approach the composition and analysis of electroacoustic music from a spectral and morphological perspective.

Other writers cite the lack of a prescriptive score for fixed media electroacoustic works. Norman Adams states that traditional analysis is based on a notated score (using traditional western notation) and that the score "assumes that the music can be abstracted to a sequence of isolated events, or notes."²⁵ Adams argues that this kind of abstraction cannot be applied to the bulk of fixed media electroacoustic music. John Young also addresses this point, stating that the electroacoustic medium "has to a considerable extent obviated the need for traditional or even non-traditional scores" and that analytical strategies must be based solely on aural perception.²⁶ In addition, Thomas Licata cites the lack of a traditionally notated score as a primary challenge in the analysis of electroacoustic music.²⁷

A contrasting view refers to the lack of an established canon or historical tradition for the relatively young electroacoustic medium. Bruno Bossis states that, "While the analytic methodology of older or better-referenced music benefits from a large corpus and numerous studies, the same cannot be said for music linked to electronic instruments."²⁸ Jan Morthenson echoes this, attributing many of the issues discussed in his "Aesthetic Dilemmas in Electronic Music" to the lack of an established historical tradition in electronic music. Morthenson states

²⁵ Norman Adams, "Visualization of Musical Signals" in *Analytical Methods of Electroacoustic Music*. Mary Simoni, Editor. (New York: Routledge, 2006), 2.

²⁶ John Young, "Practice, Process and Aesthetic Reflection in Electroacoustic Music," *Organised Sound* 12 (2007): 1.

²⁷ A desire for a score is represented by the suggested use of a "surrogate score" (a time-frequency representation of the audio signal) as an aid for listening analysis by Mary H. Simoni, Benjamin Broening, Christopher Rozell, Colin Meek, Gregory H. Wakefield in "A Theoretical Framework for Electro-Acoustic Music." Mary H. Simoni et al., "A Theoretical Framework for Electro-acoustic Music" (paper presented at the 1999 International Computer Music Conference, Beijing, China, October 22-26, 1999).

²⁸ Bruno Bossis, "The Analysis of Electroacoustic Music: From Sources to Invariants," *Organised Sound* 11(2006): 101.

that, “We encounter important aesthetic dilemmas in electronic music just because so little has amalgamated with it in its relatively short time of existence.”²⁹

The views expressed in the preceding paragraphs support the notion that fixed media electroacoustic music presents the analyst with an array of specific challenges. However these statements fail to address a more central underlying issue.³⁰ It is the contention in this study that the most fundamental (potential) difference between fixed media electroacoustic music and other types, such as instrumental music, is in the potential for both representation and abstraction. This potential in fixed media electroacoustic music affords multiple levels of discourse.

Multiple Planes of Discourse

Because a wide range of types of sound materials can be used in fixed media electroacoustic music, things and events that would otherwise be outside of the scope of traditional musical discourse can be directly referenced. For example, an unaltered recording of a door being unlocked or the sound of a baby crying become potential materials in a fixed media electroacoustic work. In instrumental music, however, this kind of direct reference is much more difficult. For example, Mendelssohn’s imitation of the sound of a donkey braying in his music for *A Midsummer Night’s Dream* or Beethoven’s imitation of bird sounds in his *Pastoral Symphony* are indirect references. This is quite different than Hildegard Westerkamp’s use of relatively un-manipulated recordings of rain in her piece *Talking Rain*, or Pete Stollery’s inclusion of recordings of street noise in his *Onset/Offset*. While the Mendelssohn and Beethoven

29 Jan Morthenson, “Aesthetic Dilemmas in Electronic Music,” in *On the Wires of Our Nerves: The Art of Electroacoustic Music*, ed. Robin Julian Heifetz (London: Associated University Presses, 1989), 66.

30 Moreover, a number of these issues are also applicable to approaches to the analysis of examples of post-tonal instrumental music. For example, the criteria of Moylan’s “new topography” could certainly be applied to instrumental compositions by Kaija Saariaho.

cases make indirect reference through resemblance, the electroacoustic medium allows Westerkamp and Stollery to reference these sounds/events in a direct way.

These sounds can also be altered and/or combined in a virtually unlimited number of ways so that any sound that can be captured or created becomes potential material for fixed media electroacoustic music. Because of this, a wide range of relationships is possible in fixed media electroacoustic music. In addition, many of these relationships can occur simultaneously, resulting in multiple planes of discourse. Of course, which of these types of relationships might be found in a piece will vary, giving rise to the need for multiple analytical tools.

Multiplicity of Existing Analytical Approaches

As stated above, many writers have noted the range of specific analytical challenges presented by fixed media electroacoustic music. As a result, it is not surprising that a diverse collection of analytical approaches has emerged. Although the body of scholarship dealing with the analysis of fixed media electroacoustic music is not fully developed, a number of contrasting analytical approaches have been published.

Following a survey of this literature, it is immediately clear that the scholarship in this area is fragmented and most of the analytical approaches are narrowly focused. Most of the existing analytical strategies for fixed media electroacoustic music focus on one plane of discourse. For example, Denis Smalley's spectromorphological approach focuses on imagined intrinsic qualities, attempting to ignore all "external" or referential signification. At the same time, Ambrose Field proposes an analytical strategy that focuses on rhetorical analysis of referential meanings in fixed media electroacoustic music. Each of these approaches reduces a work differently.

In itself, this situation does not necessarily present a problem. All analysis involves reduction, and any analytical tool will inevitably reduce a work in a certain way. A universally

applicable analytical framework is probably not possible, or desirable. The fact that existing analytical approaches are narrowly focused is not a drawback if they are viewed as providing a set of descriptive tools.

Why Analyze This Music?

Potential Goals in the Analysis of Fixed Media Electroacoustic Music

There are various potential goals for the analysis of fixed media electroacoustic music.

Laura Zattra lists six categories:

- the preservation of a musical heritage;
- the drawing of graphical scores for helping the listening [*sic*];
- the production of automatic scores for helping the musicologist in the investigation of structural dimensions
- automatic classification of electroacoustic music for web searches;
- definition of analytical details...in order to define [the music's] human and technological dimensions;
- aesthetical definition of the electroacoustic arborescent object, its dimensions and inner associations.³¹

The above categories are only a partial representation of the numerous potential goals for the analysis of fixed media electroacoustic music. Additional examples include Leigh Landy's "Intention/Reception" project, which incorporates analysis as part of reception studies for the purpose of investigating the accessibility of electroacoustic music as well as William David Moylan's stated goal of increasing accessibility.

While not in conflict with the above goals, the purpose of analysis as considered in this dissertation is concerned more with the relationship between the listener/analyst's subjective perspective and the musical "object." The primary purpose of analyzing music is to explore this

31 Laura Zattra, "The Identity of the Work: Agents and Processes of Electroacoustic Music," *Organised Sound* 11 (2006): 113.

relationship. This exploration must also be guided by a search for pertinences. The phrase “search for pertinences” is taken from François Delalande’s “Music Analysis and Reception Behaviours.”³² From Delalande’s perspective, pertinent information is information that is relevant to the explanation or exploration of either poietic or esthetic processes (discussed below).

Personal Anecdote

As an extra credit question on a recent exam, I asked my undergraduate music theory students to respond to the question, “What is the point of analyzing music?” The majority of the answers essentially stated that the purpose of analysis is to better “understand” the music. But when I followed up with the question, “What does it mean to “understand” music?” the responses were less clear. In the case of traditional Western tonal music, do we better understand the music after completing a roman numeral analysis? Or, similarly, do we better understand Ligeti’s *Artikulation* after studying Wehringer’s listening score? What do these analytical tools tell us?

The question, “What does analysis tell us?” is perhaps too broad to be dealt with adequately in this dissertation. But whether or not analysis can tell us anything specifically, the perspective from which this study is conducted identifies one primary purpose in the analysis of fixed media electroacoustic music. While again not opposing many of the potential goals identified above by Zattra and others, it is argued in this study that the primary purpose of music analysis is to explore the relationship between the subjective perspective and the musical “object.”

³² François Delalande, “Music Analysis and Reception Behaviours: *Sommeil* by Pierre Henry,” *Journal of New Music Research* 27 (1998): 19.

A similar viewpoint can be found in the scholarship of Mladen Milicevic. Milicevic “deconstructs the belief that the meaning of music lies within its structure” and argues that, “the meaning is not located in the musical object (the piece), nor is it exclusively in the mind of the perceiver (human), but rather lies in the relationship between the two.”³³

Although she does not propose an analytical model, Katharine Norman makes a statement that is compatible with the idea that the purpose of analysis lies in exploring the relationship between the subjective experience and the object. She argues that the listener's "creative" listening is as essential as the composer's own interpretation and that, in “realworld” music, "this creativity of reception is encouraged by the experiential quality of the material."³⁴

These statements are also applicable to the analysis of instrumental music. The fundamental goal of analysis is the same for both instrumental and electroacoustic music. The difference, however, lies in what tools are appropriate. As suggested earlier (and by various other writers), there are many cases in which the application of traditional analytical approaches to a fixed media electroacoustic work is either inappropriate or incomplete.³⁵ Although different “tools” are needed, the fundamental goal of analysis is the same.

Esthetic Analysis: Poietic Analysis

The distinction between esthetic and poietic analysis is a particularly important element in the analysis of fixed media electroacoustic music. Poietic analysis focuses on the processes of creation and on internal structure. This is in opposition to esthetic analysis, which focuses on aural perception. An example of a poietic analysis is Pascal Decroupet and Elena Ungeheuer's

³³ Mladen Milicevic, “Deconstructing Musical Structure,” *Organised Sound* 3 (1998): 27.

³⁴ Katharine Norman, “Telling Tales,” *Contemporary Music Review* 10 (1994): 107.

³⁵ However, there are also many cases where traditional analytical approaches (such as those focusing on pitch or counterpoint) should not be excluded from analysis of a fixed media electroacoustic work.

analysis of Stockhausen's *Gesang der Jünglinge*. Marc Battier also takes a poietic approach in "A Constructivist Approach to the Analysis of Electronic Music and Audio Art – Between Instruments and Faktura." He states that, "analysis can be carried out through knowledge of the sound-producing systems and by the close study of the manner in which they are embedded in the composing..."³⁶

Lelio Camilleri is critical of poietic approaches to analysis of electroacoustic music:

It has been stated that not the score but the scores, in much of synthetic music for example, represent an important source because they contain sonological information on the work itself. This statement seems a bit rash to me because scores contain acoustic data which often do not coincide with the performance of the sound phenomena as our ears perceive it"³⁷

Simon Emmerson also finds fault with overemphasis on the poietic side of analysis. In "Composing Strategies and Pedagogy," he argues that a change in the poietic model is only significant if it results in a change in the esthetic model.

Although poietic analysis may be informative and useful in some contexts, this study focuses on esthetic analysis because, for the most part, fixed media electroacoustic music is intended for listening without the aid, frame, or shadow cast by the composer's creative process and statements of intent, motivation, or inspiration. Many analyses of computer music in particular emphasize the computer "score," and others often focus on the composer's sketches. These materials provide certain information, but these poietic "texts" do not necessarily reflect the phenomenological experience.

³⁶ Marc Battier, "A Constructivist Approach to the Analysis of Electronic Music and Audio Art – Between Instruments and Faktura," *Organised Sound* 8 (2003): 252.

³⁷ Lelio Camilleri, "Electroacoustic Music: Analysis and Listening Processes," *Sonus Contemporary Music Materials* 1 (1993): 3.

Note on Terminology

As this study deals with multiple approaches to the analysis of fixed media electroacoustic music, multiple terms for the “abstract” and “concrete” elements of sound are encountered. To avoid confusion and to avoid becoming entangled in continual discussion of terms, the terms “abstract” and “concrete” will be used throughout this study to designate what is often referred to as “intrinsic – extrinsic”, “musical – extramusical,” “aural – mimetic,” etc. Where these and other sets of terms are encountered, they will be replaced with “abstract” and “concrete” in this study. None of these sets of terms (including the pair used in this study) is without problems, and it is not suggested here that there are not subtle differences between them. However, the essential meaning of all of these pairs of terms is the same, and the consistency afforded by adhering to one of these pairs is needed in a study such as this.

Summary

The above discussion has attempted to show that fixed media electroacoustic music presents specific challenges for analysis and that its primary distinguishing feature is the potential for multiple planes of discourse. While there are many existing analytical approaches, none of them, on their own, provide a complete picture. Multiple descriptive tools should be considered in any analysis, and this dissertation provides a starting point through a comparative study of several representative approaches. In the following chapters, the analytical approaches discussed above will be considered in more detail and applied in Chapter 3 to four contrasting fixed media electroacoustic works.

CHAPTER 2
A COMPARATIVE STUDY OF REPRESENTATIVE APPROACHES TO THE ANALYSIS
OF FIXED MEDIA ELECTROACOUSTIC MUSIC

Introduction

This chapter is comprised of a comparative examination of seven sets of concepts for the analysis of fixed media electroacoustic music. An overview of each is given, and comparative and critical discussion is included as well. As each successive approach is introduced, similarities and differences between it and the previously discussed approaches will be considered. Elements of the approaches considered here are applied in Chapter 3.

The approaches discussed in this chapter cover a range of possible analytical strategies. Although they do not include every conceivable approach to the analysis of fixed media electroacoustic music, they are representative of the primary approaches carried out or proposed by scholars in this field. It is argued here that an understanding of the range of analytical strategies and concepts considered in this study can provide a solid foundation for consideration of the multiple planes of discourse possible in fixed media electroacoustic music.

As this chapter consists of a comparative study, a significant amount of information and concepts from other sources will be duplicated. This document is intended to be useful to readers who are not necessarily familiar with the details of each of the approaches considered here, making necessary an overview and exposition of each.

William David Moylan: An Analytical System for Electronic Music

In his *Analytical System for Electronic Music*,¹ William David Moylan argues that electroacoustic music has a “new topography” (a new set of surface features and constructional

¹ Although Moylan uses the term “electronic music,” he states that his usage of the term is synonymous with the term “electro-acoustic” and includes genres such as *musique concrete* and tape music. Therefore, the term “electroacoustic” will be used in this discussion. William David Moylan, “An Analytical System for Electronic Music” (PhD diss., Ball State University, 1983), 1.

conceptions) and that a new analytical approach is necessary.² He identifies four primary characteristics of this "new topography":

- an increased aural complexity...
- an equal emphasis of all musical parameters
- 'unfamiliar' sounds, resources and origins
- a decentralization of structural goals³

Moylan's solution is a parametric approach, focusing on five parameters and methods for their graphic representation. These five parameters are pitch, duration, loudness, timbre and sonic location. Moylan states that these parameters can be analyzed on any structural level in a piece, and that in the analysis of electroacoustic music, constant shifts in focus (between micro and macro levels of structure) are necessary. The term "structural focus" is applied to this continual shifting of concentration. In addition, he introduces the term "parametric focus" to describe the process of shifting attention to and between individual parameters.⁴

Also central to Moylan's system is the contention that each of the parameters has an equal potential for change, and therefore an equal potential to be the central component of a musical idea.⁵ Moylan terms this "parametric equivalence." He devotes a chapter to each of the five parameters identified above and presents methods for graphically representing each.

For the representation of pitch, Moylan presents "pitch contour" and "vertical density" graphs.⁶ The pitch contour graph plots the movement (in terms of frequency) of a melodic gesture over time and is designed for application to music in which discrete pitch is undefined.

² Ibid., 2.

³ Ibid., 9.

⁴ Ibid., 45.

⁵ Ibid., 40.

⁶ Moylan states that he does not intend for these graphing methods to replace traditional techniques for the analysis of pitch, only to augment them where necessary. Ibid., 49.

Moylan states “When fixed referential levels are not present, the succession of pitches is most readily perceived by its overall shape.”⁷ This can range from specific designation of frequency to more relative registral terms (high, very high, etc.). If a metric grid is perceived, it might also be indicated in the graph. In addition, the thickness of the graphing line itself might be adjusted to indicate the degree of pitch specificity. An example of a pitch contour graph is included in the Appendix.

The vertical density graph can show a variety of types of information (depending on the context) including vertical spacing of discrete pitches, the number of simultaneous sounds and contour of the changes in registral density.⁸ The exact form of the graph will vary depending on the musical context. For example, if discrete pitches can be identified, they might be indicated on the y-axis. Or, in other cases, more general relative terms for frequency might be employed.

For the representation of duration, Moylan's solution is the "attack density graph" which displays the number of attacks⁹ occurring within a given time frame. Moylan notes that an underlying metric pulse is often absent in electroacoustic music and that methods of analysis must be adapted accordingly.¹⁰ He also states “Without a metric grid, the ability to quickly compare durations is lost.”¹¹ In the absence of a metric grid, Moylan argues that rhythm is more often perceived in terms of attack density.

Moylan presents two types of “attack density graph.” The first simply records the points in time where attacks occur as well as their approximate durations. The second type records the

⁷ Ibid., 80.

⁸ Ibid., 74.

⁹ By “attack,” Moylan is referring to the onset of a sonic event. The problematic nature of applying this approach to music in which events are not easily segmented or do not carry equivalent perceptual weights is discussed below.

¹⁰ Ibid., 82.

¹¹ Ibid., 90.

number of attacks within a given time frame or unit. An example of this type is included as Figure 2 in the Appendix to this study. This might be applied to a single sound source or “voice” or to the combined events in a musical texture. This graph type might be used to determine the contour of the number of attacks as well as the registral boundaries of the attack densities.¹²

For the representation of loudness, Moylan proposes the use of a "dynamic contour graph" which plots changes in loudness in general and relative terms using the traditional symbols, *p*, *mp*, *mf*, *f*, etc. Moylan notes that loudness is difficult to measure and cannot be described in precise terms. The graphing method that Moylan applies here is, in its essentials, identical to that of the previously discussed graphs and may be applied either to single sound events or to the texture as a whole.

Moylan attempts to apply his approach to sound location, identifying three categories for considering space relative to the listener: direction, distance and elevation.

Moylan restricts his initial treatment of sound location to direction, and presents two graph types: the "stereo sound-location graph" and the "multi-channel sound-location graph."¹³ In the stereo sound-location graph, time is represented on the horizontal axis and placement within the stereo field is represented on the vertical axis. This is only possible for a small number of sounds and only applicable to sounds that can be localized. It would prove to be less effective, however, when applied to complex textures occupying a range within the stereo image. Moylan does not attempt to adapt his graphs to consider the vertical plane.

Moylan also presents “distance-location graphs” as a means for the representation of perceived distance from a sound source. The approach here is similar to that of the other

¹² Ibid., 95.

¹³ As this study is limited to works intended for stereo listening, Moylan’s multi-channel sound-location graph will not be discussed here.

proposed graph types. Time is represented horizontally, and perceived distance of the sound is represented vertically. As precise increments of distance are not usually perceivable, Moylan uses the relative terms “near” and “distant.”

Moylan states that, of all of the parameters identified, the analysis of timbral characteristics is the most difficult and complex, and that consideration of all of the information necessary for a complete description of timbre requires too much detail to be applied in practice. Moylan's approach presents a compromise, plotting three characteristics of timbre (vertical density of harmonics, dynamic envelope and pitch definition) over time on a multi-level graph. This approach to timbre is problematic. Because of the complexity of the information, this method of graphing can only be applied to single sound objects. The information displayed in this graph type includes change in perceived density of harmonics over time, perceived changes in dynamic level and perceived changes in the overall bandwidth of the spectrum of a sound object. Moylan acknowledges that this approach is an oversimplification.

Moylan is correct in his recognition of a need for new analytical strategies for electroacoustic music, and if applied as a purely descriptive tool, his *Analytical System* can potentially provide certain information about a fixed media electroacoustic work. For example, Moylan's pitch contour graphs present one possible way of representing gestural shapes (in terms of pitch) that might not be well represented by standard notation. There might also be cases in which the “attack density” graphs could be useful for consideration of the spacing of events over time.

However, there are multiple problems with Moylan's approach. First, Moylan's approach is dependent on the notion that an electroacoustic work can be segmented into perceptually discrete units. Although, as Delalande points out, “It is not impossible that a music has been

imagined and realised as an assemblage of sound objects,”¹⁴ this is not always the case, and even so, is not necessarily of perceptual relevance. Analysis based on such segmentation is often problematic in fixed media electroacoustic music both for practical reasons (a fixed media electroacoustic work cannot always be easily segmented) and because it relies on “taxonomic listening” (discussed below). These difficulties (particularly in the case of “attack density”) are further illustrated in Chapter 3.

In addition, Moylan’s system relies on the separating out of the abstract and concrete (and therefore “musical” and “extra-musical”). For example, conspicuously absent from Moylan’s set of parameters is any consideration of what a sound event or the relationships between sound events might signify. Although he does not use this term, Moylan’s approach is an extreme example of the “reduced listening” employed in the spectromorphological approach discussed below. Moreover, while the separation of an object of analysis into constituent parts for the purpose of examination is a legitimate strategy, Moylan’s system does not consider the relationships between the parameters. Moylan is primarily interested in identifying and measuring the densities and registral limits of changes within parameters.

Denis Smalley’s Spectromorphology

Denis Smalley’s spectromorphological approach is the most well-known and frequently discussed approach to electroacoustic music analysis. In several articles published between 1981 and 2000, Smalley has set out his approach in detail. The discussion here centers on spectromorphology as it is described in two of Smalley’s publications: “Spectromorphology and Structuring Processes” and “Spectromorphology: Explaining Sound-shapes.”

¹⁴ François Delalande, “Music Analysis and Reception Behaviours: *Sommeil* by Pierre Henry,” *Journal of New Music Research* 27 (1998): 20.

Like Moylan, Smalley is concerned with the “new topography” in electroacoustic music. But Smalley’s approach is more far-reaching and is not as rigidly parametric in orientation. Smalley describes spectromorphology as “an approach to sound materials and musical structures which concentrates on the spectrum of available pitches and their shaping in time,”¹⁵ and presents it as a descriptive tool and listening aid.

There are certainly parallels that can be drawn between Moylan’s system and Smalley’s spectromorphological approach. Both are descriptive tools, and both attempt to systematically approach the analysis of electroacoustic music. Like Moylan’s system, Smalley’s spectromorphology is based in aural perception. He describes aural perception and discrimination as “supreme musical tools” and states “It is not a scientific knowledge which is required but an experiential knowledge.”¹⁶

Some loose parallels can also be observed between Moylan’s separating out of the parameter of timbre and Smalley’s treatment of spectral types. In addition, Smalley’s “note-noise” continuum (discussed below) is virtually identical to the “pitch-definition” component of Moylan’s treatment of the parameter of timbre. Moreover, both Moylan and Smalley state that their descriptive approaches can be applied to multiple levels of structure.¹⁷

However, beyond this (and a few additional minor similarities discussed below), Smalley’s spectromorphology is quite distinct from Moylan’s *Analytical System*. Moylan’s approach can be seen as representing an extreme example of the “absolutist” view of musical

¹⁵ Denis Smalley, “Spectro-morphology and Structuring Processes,” in *The Language of Electroacoustic Music*, ed. Simon Emmerson (London: Macmillan, 1986), 61.

¹⁶ *Ibid.*, 81.

¹⁷ For an example of application of Smalley’s morphological archetypes to multiple structural levels see Joseph Harchanko’s “Spectro-morphology and Structure: An Analysis of Gilles Gobeil’s ‘Le Vertige Inconnu.’” Joseph Harchanko, “Spectro-morphology and Structure: An Analysis of Gilles Gobeil’s ‘Le Vertige Inconnu,’” *eContact!* 6 (2003).

meaning.¹⁸ Moylan's system does not attempt to account for what the sounds in an electroacoustic work might refer to, and only considers quantifiable change within the five parameters discussed above. While spectromorphology certainly focuses on abstract (what Smalley refers to as "intrinsic") qualities, it does not altogether ignore concrete (or "extrinsic") attributes.

As stated above, spectromorphology attempts to describe sounds and events in electroacoustic music separately from their concrete meanings – or by ignoring their source. This involves the Schaefferian concept of "reduced listening."

...to find out what happens in the life of a sound or sound structure, or what attracts us about a sound quality or shape, we must temporarily ignore how the sound was made or what caused it, and concentrate on charting its spectro-morphological progress.¹⁹

However, Smalley also acknowledges the importance of the concrete aspects of sound. He describes all sounds as possessing a dual potential – both "abstract" and "concrete."²⁰

Smalley states that while listeners have a pre-developed familiarity with the concrete aspects of sound from daily life, an awareness of the abstract elements has to be acquired. Spectromorphology attempts to provide a set of concepts for discussion of the abstract elements.

However, Smalley asserts that a categorical distinction between abstract and concrete elements of sound is too simple:

Music is always related in some way to human experience, which means that mimesis is always at work even in music regarded as abstract, though such mimesis is notoriously difficult to explain.²¹

Conversely, Smalley notes that the reverse is also true:

¹⁸ The term "absolutist" is employed here in the same way used by Leonard B. Meyer in his *Emotion and Meaning in Music*.

¹⁹ *Ibid.*, 63.

²⁰ *Ibid.*, 64.

²¹ *Ibid.*, 64.

On the other hand, a musical context which appears to depend entirely on mimetic impact is equally deceptive.²²

Smalley also cites a lack of established terminology as a major problem for electroacoustic music analysis. Spectromorphology attempts to address this problem. But in its totality, Smalley's extensive system of lists of vocabulary and analytical concepts is prohibitive to practical application. However, selected concepts from Smalley's spectromorphological approach can be well applied to fixed media electroacoustic music.

This is not an exhaustive discussion - the objective here is to examine the primary elements of spectromorphology. The spectromorphological concepts considered here are:

- Spectral types
- Morphological models (and their variants)
- Motion types
- Spectral-space settings
- Gesture-carried and texture-carried structuring
- Structural Functions²³

Spectral Types

One of the primary spectromorphological concepts is the "note to noise continuum" which involves a continuum between sound events which carry a clearly defined fundamental pitch and those which do not. This continuum involves the "spectro" part of the term, spectromorphology, or what is often referred to as the vertical dimension in music. Smalley identifies three categories of sound spectra, which divide the "note to noise continuum": "note, node and noise."²⁴ Smalley further subdivides the "note" category into "note proper, harmonic

²² Ibid., 64.

²³ Although Smalley introduces some concepts for consideration of space as part of his spectromorphological approach, his later formulation of "space-form" is more refined and will be considered separately.

²⁴ Ibid., 65.

spectrum and inharmonic spectrum.”²⁵ These categories are relative and the boundaries between them are not clearly defined. He defines the first as “concerned with the perception of a discrete pitch or pitches,” the second as “a band or knot of sound which resists pitch identification” and describes the third saying that “the density of a noise spectrum is so compressed that it is impossible to hear any internal pitch structure.”²⁶

Morphological Models

Having established the elemental concepts for the consideration of sound spectra, Smalley turns to the “morphology” part of the term, spectromorphology.

For the discussion of morphology (temporal shaping), Smalley identifies what he refers to as the “three linked temporal phases” (roughly equivalent to the concept of envelope) of a sound object/event. These three phases are “onset, continuant and termination,”²⁷ and there is a virtually limitless range of possible ways that these phases might be articulated. Smalley produces a set of “morphological models” that are drawn from instrumental sounds:²⁸

- attack-impulse archetype
- closed attack-decay archetype (and its reversed form)
- open attack-decay archetype (and its reversed form)
- linear attack-decay (and its reversed form)
- linear graduated continuant
- swelled graduated continuant
- graduated continuant archetype²⁹

The distinction between “open” and “closed” attack-decay archetypes refers to the length of decay. Sound events with more substantial decay are of the “open” type.

²⁵ Ibid.

²⁶ Ibid., 67.

²⁷ Ibid., 69.

²⁸ Smalley represents these archetypes graphically.

²⁹ Ibid., 70.

Smalley states that the archetypes above may be joined and extended in order to generate a “wide and subtle variety of temporal articulations,” and he uses the term “morphological string” to describe the combination of these archetypes.³⁰ In the case of a morphological string of attack-impulse events, Smalley’s concept of the “attack-effluvium continuum” comes into play.³¹ As the density of attacks increases, we move through the following stages – iteration, grain and effluvial state. Smalley also asserts that these concepts are not solely applicable to individual sound objects/events and that they can extend to larger scale processes and structural levels.

Motion Types

Another primary element of spectromorphology is “motion typology.” Smalley notes that the morphological models discussed above merely represent relatively primitive dynamic outlines, and he presents a set of five categories (“unidirectional, bi-directional, reciprocal, centric/cyclic, and eccentric/multi-directional”³²) of motion in order to provide more detailed description. Smalley further divides these into subcategories, which results in a sizable collection of terms for the description of motion. Although absorption of this set of terms might be initially tedious, they present a means for describing motion that is not present in other approaches.

Smalley also considers the implicative nature of motion. In “Spectromorphology: Explaining Sound-Shapes,” Smalley states that “Motion and growth have directional tendencies which lead us to expect possible outcomes, and they are helpful guides in attributing structural

³⁰ Ibid., 71.

³¹ Ibid., 72.

³² Ibid., 73.

functions.”³³ Like the morphological models, Smalley states that these categories of motion may be applied to multiple structural levels.

Smalley states that all motion in electroacoustic music is implicative, concerned with fulfillment and frustration of expectation. These concepts for the consideration of motion types could provide an initial framework for discussion of the implicative characteristics of motion in a work.

In addition, Smalley introduces a set of concepts for the consideration of internal motion style. These take the form of several continua:

- synchrony – asynchrony
- continuity – discontinuity
- conjunction – disjunction
- periodicity – aperiodicity
- flocked motion – streamed motion – contorted motion
- monomorphology – polymorphology³⁴

Spectral-space Settings

While Smalley’s morphological models and motions types are concerned with active morphology, he also introduces a set of concepts for consideration of more stable textures and sound events. These are three divisions of “spectral space” contained within a “pitch-space frame.”³⁵ Smalley describes spectral space as the distance between the lowest and highest sounds and divides it into three parts:

- Canopy
- Centre
- Root³⁶

³³ Denis Smalley, “Spectromorphology: Explaining Sound-Shapes,” *Organised Sound* 2 (1997): 115.

³⁴ Denis Smalley, “Spectro-morphology and Structuring Processes,” in *The Language of Electroacoustic Music*, ed. Simon Emmerson (London: Macmillan, 1986), 77.

³⁵ *Ibid.*, 79.

³⁶ Denis Smalley, “Spectromorphology: Explaining Sound-Shapes,” *Organised Sound* 2 (1997): 121.

Gesture-carried and Texture-carried Structuring

Noting that there is no “consistent low-level unit” in electroacoustic music, Smalley states that consideration of structural level and focus becomes particularly important.³⁷ Smalley identifies “gesture” and “texture” as two primary structuring principles. He describes “gesture” saying, “*Gesture* is concerned with the action directed away from a previous goal or towards a new goal...”³⁸ Smalley describes “texture” as “concerned with internal behaviour patterning, energy directed inwards or reinjected, self-propagating; once instigated it is seemingly left to its own devices....”³⁹

Smalley proposes the identification of structures as either gesture-carried or texture-carried depending on which is most dominant. However, like many of Smalley’s spectromorphological concepts, the distinction between gesture-carried and texture-carried structuring is more of a continuum than clearly defined divisions. Smalley asserts that the relationship between gesture and texture is, “more one of collaboration than antithesis” but that this collaboration isn’t always equal.⁴⁰

Although spectromorphology is primarily concerned with abstract qualities of sound, in the case of gesture, Smalley considers the connection between musical gesture and source – cause relationships. To do this, Smalley introduces the concept of gestural surrogacy to deal with the relative degrees of perceptual distance between a gesture and its source. Smalley introduces four categories of gestural surrogacy: “first-order surrogacy, second-order surrogacy, third-order

³⁷ Denis Smalley, “Spectro-morphology and Structuring Processes,” in *The Language of Electroacoustic Music*, ed. Simon Emmerson (London: Macmillan, 1986), 80.

³⁸ *Ibid.*, 82.

³⁹ *Ibid.*, 82.

⁴⁰ *Ibid.*, 83.

surrogacy and remote surrogacy.”⁴¹ First-order surrogacy involves clearly recognizable source and cause. Second-order surrogacy involves “instrumentalisation.” Third-order surrogacy involves inferred gesture – the cause of the gesture is not clear in this case. In the case of remote-surrogacy, source and cause are completely unknown.⁴²

Structural Functions

As stated above, Smalley argues that spectromorphology can be applied to multiple levels of structure. To do this, Smalley returns to the three linked temporal phases – onset, continuant and termination. In the initial introduction of these concepts they were only applied to sound events or objects. However, Smalley states that these concepts can be expanded to higher levels of structure as well. In this more expanded consideration, Smalley introduces subcategories of each phase and proposes the interpretive application of these concepts by identifying series of “function chains.”⁴³

Onset:

- approach
- emergence
- insurgence
- anacrusis
- downbeat

Continuant:

- maintenance
- statement
- prolongation
- transition

Termination

- plane
- immersion
- release

⁴¹ Denis Smalley, “Spectromorphology: Explaining Sound-Shapes,” *Organised Sound* 2 (1997): 112.

⁴² Ibid.

⁴³ Denis Smalley, “Spectro-morphology and Structuring Processes,” in *The Language of Electroacoustic Music*, ed. Simon Emmerson (London: Macmillan, 1986), 86.

- resolution
- closure ⁴⁴

In “Sound Morphology and the Articulation of Structure in Electroacoustic Music,” John Young also argues that morphological analysis can be extended to multiple structural levels. Young proposes an adaptation of reductive analytical methods to electroacoustic music, suggesting that acousmatic music that “uses environmental/natural sounds as recognisable referents within a network of morphological transformations” contains “reducible structural levels.” ⁴⁵

If treated as a descriptive tool, spectromorphology can provide a framework for discussing aspects of fixed media electroacoustic music that might be otherwise difficult to describe. For example, Smalley’s terminology for the description of motion types is potentially useful for the description of the behavior of abstract sounds (or the abstract qualities of sounds). ⁴⁶ Although their application is potentially cumbersome, the “morphological archetypes” also provide a means of discussing the basic morphology of sounds. Smalley’s distinction between “gesture-carried” and “texture-carried” structures as well as the levels of “gestural surrogacy” are also useful descriptive tools.

Critique of Morphological Analysis

In “Music Analysis and Reception Behaviours,” François Delalande offers a critique of morphological analysis and raises several issues. Delalande’s primary criticism of morphological analysis is that it involves “taxonomic listening” which involves an attempt to isolate perceptual

⁴⁴ Ibid., 85.

⁴⁵ John Young, “Sound Morphology and the Articulation of Structure in Electroacoustic Music,” *Organised Sound* 9 (2004): 9.

⁴⁶ The term “abstract” is used here in a relative sense.

units.⁴⁷ Although Delalande indicates practical problems with applying this approach, his primary criticism involves the question of pertinence. He asks, “What is the pertinence of a morphological analysis?”⁴⁸

The morphological analysis of electroacoustic music (based on a resolution into sound objects) is a ‘syllabic’ analysis, which does not provide the means of highlighting pertinent configurations either poetically...or esthetically. Thus we do not consider a morphological analysis to be a music analysis.⁴⁹

However, Delalande also makes a crucial distinction. He is critical of morphological analysis but is explicit in his differentiation between morphological *analysis* and morphological *description*. Delalande states that description of morphological characteristics is useful (in some cases essential) when guided by a search for pertinences.⁵⁰

...I would say that a morphological analysis which is not guided by a search for pertinences either does not contribute a great deal or gets lost in absurdity.⁵¹

Delalande’s point is an important one. An analysis that simply describes a work according to spectromorphological characteristics will likely be of little value.⁵² But this warning can be also extended to most of the analytical approaches considered in this study. For the most part, the approaches considered in this study are useful descriptive tools, but if description is treated as an end in itself, it will be of little value. This is particularly important to bear in mind regarding fixed media electroacoustic music, which affords multiple planes of discourse.

⁴⁷ David Hirst also proposes an analytical methodology based on the segmentation of a work into “sonic objects.”

⁴⁸ François Delalande, “Music Analysis and Reception Behaviours: *Sommeil* by Pierre Henry,” *Journal of New Music Research* 27 (1998): 19.

⁴⁹ *Ibid.*, 20.

⁵⁰ “As a last resort the description of pertinent units, whatever they may be, always hinges on the description of such characteristics.” *Ibid.*

⁵¹ *Ibid.*, 21.

⁵² It should also be noted that Smalley does not suggest such an approach.

It is initially tempting to criticize spectromorphology for attempting to ignore the concrete characteristics of sound. But Smalley makes it clear that as he views spectromorphology as a set of conceptual tools for considering the more abstract qualities of sound, it is intended as a tool with a specific purpose. Smalley states that spectromorphology is (among other things) “more concerned to account for sounds whose sources are relatively mysterious or ambiguous rather than blatantly obvious.”⁵³

A spectromorphological approach cannot deal adequately with electroacoustic music which is very strongly anecdotal or programmatic, that is, music where a very wide palette of sonic references may be employed. . . . In this type of electroacoustic music, meaning is closely allied to recognising the sources, identifying with them, knowing which context they have been drawn from, and reinterpreting their meaning in their new musical context. Such music is therefore *transcontextual* or *intertextual*.⁵⁴

He adds that in most cases, a combination of spectromorphological and transcontextual elements is necessary.⁵⁵

Stéphane Roy’s “Functional and Implicative” Approach

In an analysis of François Bayle’s *Ombres Blanches*, Stéphane Roy puts forth what he refers to as a “functional and implicative” approach to the analysis of fixed media electroacoustic music. Drawing on and adapting the writing of Leonard B. Meyer, Roy approaches the analysis of this piece through a description of the functional and implicative qualities of sound events and their interrelationships. Roy gives an account of Bayle’s work in terms of a substantial lexicon of potential functions, giving priority to the relationships between events (as opposed to the individual events themselves). For both Roy and Meyer, the meaning of a sound or event comes from its relation to other events in a work (as well as the stylistic context). A central theme in

⁵³ Denis Smalley, “Spectromorphology: Explaining Sound-Shapes,” *Organised Sound* 2 (1997): 109.

⁵⁴ *Ibid.*, 110.

⁵⁵ *Ibid.*

Roy's approach is the idea that "the role of one semantic unit can change according to its location in the syntactic flow"⁵⁶

In his approach, the segmentation of events originates in aural perception, and this information is then "mapped" onto a listening score. Of the approaches considered in this study, Roy's is the only one that specifically involves graphic representation or transcription. Roy explicitly states, however, that this listening score is intended as an aid during the process of analysis and is not meant to stand for the work itself. Roy clarifies this distinction in semiotic terms, stating that the listening score is merely a representation of esthetic processes, not the "neutral" level.⁵⁷ Lelio Camilleri also addresses the problem of the creation of listening scores in relation to the "neutral level" noting that analysis of electroacoustic music can only be based on perception – "the only text that we can analyze is the sound text."⁵⁸ While Moylan's approach does involve the creation of graphs, he is more concerned with the plotting of data than transcription or representation. Transcription of fixed media electroacoustic music presents a host of issues that are beyond the scope of this study.⁵⁹

Roy characterizes his approach as reliant on the intuition of the analyst and positions it in contradistinction to that of Schaeffer, which he describes as "a descriptive method investigating the morphology of isolated sounds without taking into account their contextual

⁵⁶ Ibid., 166.

⁵⁷ Stéphane Roy, "Functional and Implicative Analysis of *Ombres Blanches*," *Journal of New Music Research* 27 (1998): 166.

⁵⁸ Lelio Camilleri, "Electroacoustic Music: Analysis and Listening Processes," *Sonus Contemporary Music Materials* 1 (1993): 2.

⁵⁹ The visual representation of electroacoustic music is discussed by (among others) Norman Adams (2006) and Èvelyne Gayou (2006).

relationships....”⁶⁰ Roy describes his own approach as “analytical and interpretative” and states that his analysis is inspired by functionalism in language.

As can be seen from the above discussion, Smalley’s spectromorphological approach does include a consideration of “structural function” (although it is clearly not the focus of his approach). Smalley’s treatment of “structural function” is an extension of his “three linked temporal phases” and their grouping into “function chains.” Smalley’s proposed interpretation of “function chains” is, to a degree, similar to Roy’s approach. Both approaches are concerned with the relationships between events and the ways that they are linked together and interact. But Roy’s approach is distinct from Smalley’s in its focus on the role of “implication” (discussed below).

In addition to function, Roy’s framework also considers implicative relationships, employing an adaptation of Leonard B. Meyer’s implicative method for the analysis of tonal melodies. A central idea in Meyer’s writing is the notion that meaning arises from connections between stimuli and does not lie in the stimulus alone.⁶¹ Following from this, Meyer argues that the expectations (particularly the frustration of these expectations) resulting from these connections form “the basis of the affective and the intellectual aesthetic response to music.”⁶²

An implicative relationship is one in which an event...is patterned in such a way that reasonable inferences can be made both about its connections with preceding events and about how the event itself might be continued and perhaps reach closure and stability.⁶³

Roy presents a set of symbols for the graphic representation of both functional and implicative relationships. As the focus of this study is on the concepts themselves, the specific

⁶⁰ Ibid., 166.

⁶¹ Leonard B. Meyer, *Emotion and Meaning in Music* (Chicago: Chicago University Press, 1956), 34.

⁶² Ibid., 43.

⁶³ Leonard B. Meyer, *Explaining Music: Essays and Explorations* (Berkeley: University of California Press, 1973), 110.

symbols employed by Roy are not discussed here. Roy does not present a complete framework for analysis in this article. Instead, he illustrates his approach through a detailed analysis of Bayle's piece.

One drawback to Roy's approach, as manifested in this analysis of Bayle's work, is not in the approach itself but in the fact that a complete exposition of the functions comprising his approach is not provided. Roy includes a comprehensive lexicon of terms and concepts, but only those applied in his analysis of *Ombres Blanches*. The complete lexicon is not available in English.⁶⁴ However, this does not present a serious problem for the purpose of this study. In combination with a basic understanding of Meyer's work (as manifested in his *Emotion and Meaning in Music* and *Explaining Music*), the lexicon provided in the article discussed here provides a sufficient outline of Roy's methodology. The concepts discussed here could easily be expanded or adapted by an analyst.

Roy identifies five categories of functions: "orientation, stratification, process, rhetoric and rhythm."⁶⁵ Although the meaning of many of these terms is evident from their names, Roy's definitions are reproduced here to avoid misapplication. Although the following pages simply replicate directly material from Roy's article, the inclusion of this information here will be helpful to the reader who is not familiar with Roy's approach and is also necessary for the sake of clarity.

Category of Orientation

Begetting: "This function is usually ascribed to a brief morphological unit that prepares and furthers the immediate arrival of another event or group of events."

Conclusion: "This function closes without any ambiguity a syntactic unit."

⁶⁴. The article considered here is Roy's only English-language publication on this subject. Additional functions and other terms are included in Roy's other articles (in French).

⁶⁵ *Ibid.*, 181.

Interruption: “Interruption is a function of morphological rupture. Unlike trigger, an interruption does not have any consequent.”

Introduction: “An event plays the role of an introduction when it progressively initiates a musical discourse or part of it by using a dynamic crescendo, an increase in density, or any kind or gradual morphological progression that does not generate surprise in the listening process.”

Suspension: “Like the conclusion, this function is located at the final part of a syntactic progression. It occurs when a syntactic progression seems to be directed toward a conclusion but does not reach it because it remains too unstable; it is thus a weak form of conclusion.”

Trigger: “The trigger function abruptly and suddenly introduces an event, a group of events, a musical phrase, a section or the complete work.”⁶⁶

Category of Stratification

Background, Figure and Foreground: Roys usage of the terms “foreground” and “background” correspond to the usual definitions of these terms. Of “figure,” Roy states that, “Among the layers of a stratified texture, the function of figure is located in the extreme foreground of the auditory field. A figure is usually represented by a short and well-articulated unit.”⁶⁷

Rhetorical Category

Affirmation: “The function of affirmation is one of the resources of musical eloquence. It is usually the final step in a process of repetition.”

Call and Answer: “This couple is based on a local rhetorical relationship (within the limits of the musical phrase), and is articulated through the repetition of an expressive antecedent/consequent pair.”

Deflection: “A process whereby the continuity of a main process is interrupted by another process which aims toward a new goal.”

Parenthesis: “This function is represented by an encrustation, that is to say by a sound unit or a group of sound units that temporarily break into a musical progression without having any causal motive.”

Reiteration: “a function that intensifies the expressive character of an event by repeating it frequently within the limits of a phrase.”

⁶⁶ Ibid.

⁶⁷ Ibid., 182.

Sign: “a sound unit that plays the role of a sign, channeling the listening process toward an extra-musical referent.”⁶⁸

Rhythmic Category

Pedal: “This function is represented by a long sound unit that influences the perception of the tempo.”⁶⁹

Like both Moylan and Smalley, Roy suggests that functional and implicative analysis can be applied to multiple structural levels. Meyer also makes this point regarding hierarchical structuring of implication.⁷⁰ However, in his analysis of *Ombres Blanches*, Roy focuses on the phrase level. In music where hierarchical structuring can be perceived, the functions described by Roy could certainly be expanded to consider various levels of structure.

In adapting Meyer’s concepts of function and implication from the analysis of tonal melodies, Roy implies that a similar brand of syntax can be found and examined in fixed media electroacoustic music. But is this necessarily the case? Can functional and implicative relationships really be found in fixed media electroacoustic music, particularly that which is not tonal? It is one thing to state that a melody outlining a dominant seventh chord in a Beethoven piano sonata is implicative, but can this concept be transferred to fixed media electroacoustic music?

The answer to this question is simply that the relevance of this approach is dependent on the piece in question - certainly Roy’s approach (or any of the approaches considered in this study) is not applicable to all fixed media electroacoustic works. For example, it would be difficult to argue that an analysis of implicative relationships using Roy’s approach would be

⁶⁸ Ibid., 183.

⁶⁹ Ibid.

⁷⁰ Leonard B. Meyer, *Explaining Music: Essays and Explorations* (Berkeley: University of California Press, 1973), 120.

particularly illuminating when applied to Paul Lansky's *Table's Clear*. However, on the other hand, Roy's approach could be well applied (as is illustrated in Chapter 3) in an analysis of Scott Wyatt's *Private Play*.

While the relatively common stylistic contexts found in many types of tonal music often provide more easily analyzable implicative relationships than some fixed media electroacoustic music, the tonal system is not the only setting in which implication can be found. Meyer states that, "Implications arise because patterns are incomplete or unstable in some respect."⁷¹ Accordingly, any musical context involving patterning or expectation can potentially involve implication as a pertinent feature of analysis.

Ambrose Field: Landscape Morphology

Ambrose Field identifies a need for concepts for the analysis and discussion of electroacoustic music that consider the concrete aspects of sound.⁷² In "Simulation and Reality: The New Sonic Objects," Field's stated purpose is to "set-out methods and compositional devices that might be used by composers who manipulate recorded sounds."⁷³ Noting the electroacoustic medium's potential for the inclusion of sounds from the "real" world, he states that "the representation of reality is now a compositional parameter..." and that his intention is to consider ways in which this idea can co-exist with a concern for timbral manipulation.⁷⁴ To this end, Field introduces two sets of concepts: "landscape morphology" and "sonic rhetoric."

⁷¹ Ibid., 118.

⁷² Ambrose Field, "Simulation and Reality: The New Sonic Objects," in *Music Electronic Media and Culture*, ed. Simon Emmerson (Aldershot: Ashgate, 2000), 36.

⁷³ Ibid.

⁷⁴ Ibid., 37.

Field invokes semiotics (referencing Nattiez) in order to provide “a clear way to conceptually separate concrete meanings from abstract (spectromorphological) structures.”⁷⁵

Field references Saussure’s two-fold division of the sign stating that the signifier is made up of abstract structures while the concrete (Field uses the term “extramusical”) meaning of those structures comprises the signified.

Field’s approach is exclusively concerned with analysis of concrete elements. He states that while his approach focuses on this separation between abstract and concrete, it allows the coexistence of both elements. This implies that one might combine Field’s concepts with spectromorphological ideas in analysis.

Of the approaches considered thus far, “landscape morphology” is the only approach that focuses on space from a concrete perspective. Although Moylan does consider “sonic location” in his Analytical System, he is only concerned with plotting the location and movement of sound objects. His “stereo sound location graph,” for example, simply plots perceived location of sound objects within the stereo field. Moylan’s system also ignores the concrete aspects of space. While Smalley does consider space as part of spectromorphology (he uses the term “spatio-morphology”), it is not a major feature of his approach (his more recent use of “space-form” is discussed below). In addition, beyond labeling events in terms of “foreground” or “background,” space is not considered in Roy’s functional and implicative approach.

By contrast, Field’s “landscape morphology” does not deal with sonic location or movement. Instead, Field presents a set of concepts for classifying the overall character of a “landscape” in a fixed media electroacoustic work according to the degree to which it involves “representation of reality.” Field introduces four general categories of “landscape morphology”

⁷⁵ Ibid., 41.

and their application to the creation of simulated environments in fixed media electroacoustic music.

- Hyper-real
- Real
- Virtual
- Non-real

Field provides the following definitions for each of these categories:

- “Most commonly, the term *hyper-reality* refers to a situation where events appear to be more real than real.”⁷⁶ Field also states that in hyper-real environments, “it is not possible for the audience to tell the difference between simulation and recorded reality itself.”
- “A real environment is one that has not been simulated in any way.”
- “Virtual reality is pure simulation, and is ultimately intended to be perceived as such.”
- Non-real environments are “environments that are not surreal, nor are they identifiable as real in any way.”⁷⁷

In a perceptually based analytical approach, the distinction between a real and hyper-real environment is often difficult - the difference is not always clear. Field cites Luc Ferrari’s *Presque rien no. 1* as an illustration of a work containing hyper-real landscapes. In the course of this work, Ferrari compresses the time scale of events occurring within “real” landscapes.

Although the work is clearly the product of extensive editing processes, the end result is the aural impression of a heightened reality.⁷⁸

While a “virtual” landscape is “pure simulation,” once the abstraction of concrete sound events and spaces is introduced, the landscape may begin to take on surreal qualities. Field cites the environments created in Trevor Wishart’s *Red Bird* as examples of “surreal” landscapes. In

⁷⁶ Ibid. 43.

⁷⁷ Ibid.

⁷⁸ Ibid.

these cases, while the co-existing sounds and spatial cues are, for the most part, plausible, “tiny details in the sounds suggest that we might not be listening to a recording of reality.”⁷⁹ Although it is not completely clear from his brief discussion, Field seems to consider “surreal” landscapes to be a subcategory of “virtual” landscapes.

“Non-real” environments might be comprised of sounds whose co-existence within the same space is not plausible, or of sounds that carry conflicting spaces. For example, if in a fixed media electroacoustic work, the recorded sound of an audience applauding in a concert-hall were super-imposed on top of a recording of the sounds of ocean waves crashing, the effect created would be that of an obviously non-real landscape. The utter implausibility of the coexistence of these sounds within the same space would make it clear that the composer is not attempting to create a realistic soundscape. But Field also notes that “non-real” environments can be created through the use of sounds that are “remote surrogates” (Smalley’s term). In this case the listener is “directed to concentrate on the timbral evolution of the work” as opposed to the “real world” or concrete elements.

Trevor Wishart puts forth a similar set of concepts for the consideration of landscape in electroacoustic music. In “Sound Symbols and Landscapes,” Wishart assigns the term “landscape” to the characteristics of a sound which are related to the recognition of its source and identifies several subcategories of sound-objects in relation to space:

- real objects/real space
- unreal objects/real space
- real objects/unreal space
- real sounds/real space “surrealist”⁸⁰

⁷⁹ Ibid., 46.

⁸⁰ Trevor Wishart, “Sound Symbols and Landscapes,” in *The Language of Electroacoustic Music*, ed. Simon Emmerson (London: Macmillan, 1986), 48.

When considered in contrast to the extensive sets of concepts put forth in the other approaches considered in this study, these concepts for discussing landscape morphology appear relatively uncomplicated and general. But much can be said about a work using these general categories, and (as is shown in Chapter 3) they can be augmented with additional descriptive terms. Field does not present a specific framework for the application of these terms - they might be adapted by the analyst in a variety of ways. These terms might be employed to further refine those proposed by Field.

Ambrose Field: Sonic Rhetoric

The second set of concepts that Field presents is his “sonic rhetoric” which adapts standard rhetorical devices for the consideration of electroacoustic music. Field argues that a sound’s contextual information can be used as a compositional parameter and introduces “sonic rhetoric” as a tool for making connections between musical processes and “extrinsic” contextual information.⁸¹

Field sets out five basic archetypes of “sonic rhetoric”:

- sonic metaphor
- sonic simile
- sonic hyperbole
- sonic personification
- sonic synecdoche

Field’s adaptation of these terms for music analysis, while congruent with their standard meanings, warrants brief explanation.

Field’s conception of “sonic metaphor” does not diverge from the conventional view of metaphor (a figure of speech representative or symbolic of something else), but he also states

⁸¹ Ambrose Field, “Simulation and Reality: The New Sonic Objects,” in *Music Electronic Media and Culture*, ed. Simon Emmerson (Aldershot: Ashgate, 2000). 47.

that a sonic metaphor can be found “where sounds with clear extramusical contexts suggest musical functions or processes.”⁸² John Young also identifies the creation of sonic metaphor as one of the most powerful potentials of the concrete elements of electroacoustic sound. His “Imagining the Source: The Interplay of Realism and Abstraction in Electroacoustic Music” includes thorough discussion of the role of sonic metaphor in Trevor Wishart’s *Red Bird*. Field notes that as in literature, film and other rhetorical contexts, overuse of sonic metaphor can result in euphemism.

Field’s concept of “sonic simile” is particularly useful in the analysis of fixed media electroacoustic music. He states that a sonic simile “gives new meaning to an existing sound by juxtaposing it with new material.”⁸³ This is not quite the same as a simile in language. In language, simile typically involves the comparison of two things using a connector (such as “like” or “as”) that points directly and unambiguously to the object of comparison. In the case of a sonic simile, however, the comparison is invited simply by juxtaposition (either by vertical superimposition, linear/temporal proximity or through a transformation process). This creates a potentially rich ambiguity in interpretation.

By “sonic hyperbole,” Field is referring to “a sound that possesses deliberately overstated extramusical connotations.”⁸⁴ Field illustrates this by referring to Christian Calon’s *La disparition* in which a jungle scene is overstated by “a Tarzan-like vocal sample that appears to swing through some imaginary trees.”⁸⁵ Overstatement of this type can serve (among other things) to make the listener aware of an active compositional presence. In this example, Calon

⁸² Ibid.

⁸³ Ibid., 48.

⁸⁴ Ibid., 49.

⁸⁵ Ibid.

changes the listener's focus from the landscape to the composer's presence through overstatement: "Such exaggeration of a monkey's call into this Tarzan-like utterance is clearly not meant to be taken as being a 'real' event."⁸⁶

"Sonic personification" occurs "where a sound has highly personal and human extramusical connotations."⁸⁷ As in the case of the sonic simile, sonic personification is more vague than the concept of personification in language. Field refers to Andrew Lewis's *Scherzo* as an example of sonic personification. Field states that the superimposition of Lewis's child's voice onto more abstract materials imbues them with a human quality. As the more abstract materials are drawn from the original recordings of the child's voice, this particular example might be interpreted as abstraction rather than personification. However, whether one hears *Scherzo* in terms of sounds abstracted from the recordings of Lewis's children, or the reverse (as sonic personification) is a matter of interpretation. Regardless, this concept is potentially useful as a descriptive and interpretive tool.

Field states that a "sonic synecdoche" can be found "when only partial aural cues are given to an extramusical context."⁸⁸ In more traditional rhetorical analysis, synecdoche involves cases when the audience is expected to be able to fill in the blanks. For example, if a proud parent says of his/her child, "My child will be president someday," it is understood (assuming that they are United States citizens) that "president" refers to "President of the United States" although there are many other possible types of "president." But Field's concept of "sonic synecdoche" involves more ambiguity. He states that in the case of sonic synecdoche, "listeners

⁸⁶ Ibid.

⁸⁷ Ibid.

⁸⁸ Ibid.

must generate their own extramusical meanings from deliberately ambiguous sonic information.”⁸⁹

Field asserts that the widespread understanding of rhetorical concepts affords the creative use of “sonic rhetoric” in sorting out concrete meanings in fixed media electroacoustic music.⁹⁰ In addition to the examples discussed here, other rhetorical devices can be adapted (where appropriate) in analysis.

By invoking rhetoric, Field implies the existence of syntax in fixed media electroacoustic music, although in this case, syntax is considered more loosely than in Roy’s approach. As with the other approaches discussed in this study, the applicability of these concepts will be determined by the work in question. Where elements of sonic rhetoric might be identified, Field’s terms will provide a useful descriptive tool for analysis. They will not, however, be applicable to all fixed media electroacoustic works.

A parallel between Field’s “sonic rhetoric” and Roy’s “functional and implicative” approach can be found in Roy’s “rhetorical category” of functions. However, with the exception of the “sign” function, Roy’s functions do not deal specifically with the concrete elements of sound. For example, Roy’s description of the “call” and “answer” functions as being concerned with antecedent/consequent relationships underlines his concern for more traditionally “musical” analytical concepts such as phrasing. As the above discussion makes clear, Field’s “sonic rhetoric,” on the other hand, is almost solely concerned with the concrete.

⁸⁹ Ibid., 50.

⁹⁰ Ibid.

Denis Smalley: Space Form

In his 2007 article, “Space-form and the Acousmatic Image,” Smalley takes an approach that is very different from that of his spectromorphology. In this article, he puts forth a set of concepts for the investigation of space in acousmatic music. Like Field in his “landscape morphology,” Smalley focuses on the concrete (although Smalley uses his term, “source-bonded”) elements of sounds and spaces. Field’s “landscape morphology,” however, is much more general than Smalley’s approach. While Field is concerned solely with the ways in which sonic landscapes represent “reality,” Smalley considers (in addition to identifying types of spaces) a range of issues including gesture, transmodality of perception, perspective and spectral space.

Smalley notes the importance of considering space in fixed media electroacoustic music, “the only sonic medium that concentrates on space and spatial experience as aesthetically central.”⁹¹ He describes the scholarship on this subject as “scattered” and puts forward a framework for the consideration of space in fixed media electroacoustic music. As he does in his previous articles dealing with spectromorphology, Smalley presents an extensive catalog of concepts and terminology.

An important element of Smalley’s space-form is that it requires a holistic view of space in which temporal progress is ignored:

The temporal disposition of, and relations among, sounds serve to articulate and shape spectral and perspectival space, but even though my perception of sound is the product of time, I ultimately sideline time’s formative role. So space can be more significant than time, or at least we can profit by starting with the idea that time can be placed at the service of space rather than the reverse.⁹²

⁹¹ Denis Smalley, “Space-form and the Acousmatic Image,” *Organised Sound* 12 (2007): 35.

⁹² *Ibid.*, 38.

Consequently, in a consideration of “space-form,” the events that occur within a soundscape or environment become collapsed into a single moment. Although this is not stated explicitly, Field’s “landscape morphology” also requires a holistic view of space. In order to identify a soundscape as real, non-real, virtual, etc., a listener must group sounds and events together.

“Source-bonded spaces” are a primary component of Smalley’s consideration of space-form. He notes that recorded sounds are carriers of the spaces they inhabit and that source-bonded spaces play an important role in many fixed media electroacoustic works. This statement applies to spaces which are carried by realistic source-bonding as well as those in which source-bonding may be imagined or artificially constructed. Hence, any case in which sounds’ source-cause may be detected or inferred involves source-bonded space.

Smalley makes a distinction between source-bonded spaces that are “nature-based” and those that are “culture-based.” Because they are produced by human activity, Smalley refers to culture-based spaces as “enacted spaces”. He further partitions “enacted spaces” into two main types, “utterance spaces” (those articulated by vocal sound) and “agential spaces” (those produced by human movement).

While Smalley suggests that a variety of kinds of enacted spaces are possible, he specifically discusses two types. One is “mechanised space,” which involves any type of sound emitting machine or technology. Another is “mediatic space,” which is the space occupied by mass media and communication technology. Smalley notes that these two types often overlap with other types of enacted spaces.

Another idea central to Smalley’s space-form is the “transmodality” of perception. He argues that, although they are not directly affected, acousmatic listening invokes reactions in all of the senses:

Although acousmatic music may be received via a single sensory mode, this does not mean that the other senses lie dormant; in fact they spill over into sonic experience.⁹³

This transmodality, according to Smalley, contributes to the richness of association and meaning in fixed media electroacoustic music that involves source-bonded sounds and spaces.

Having discussed transmodality, Smalley offers a definition of “space-form”:

Space-form in acousmatic music is an aesthetically created ‘environment’ which structures transmodal perceptual contingencies through source-bondings and spectromorphological relations.⁹⁴

Smalley devotes considerable attention to one type of enacted space – “performed space.”

He states that performed space is “gesturally rooted” and identifies three zones (adapted from Edward Hall): “gestural, ensemble and arena space.”⁹⁵ Although Smalley discusses each zone in detail, his definitions are sufficient for the purpose of this discussion:

- Gestural space is the intimate space of individual performer and instrument.
- Ensemble space, within which individual gestural spaces are nested, is the personal and social space among performers.
- Arena space is the whole public space inhabited by both performers and listeners.⁹⁶

Smalley also identifies an additional specific type of performed space that is particularly significant in fixed media electroacoustic music – “microphone space.” Microphone space is a primary compositional tool for creating proximate spaces which beam to us small and microscopic presences and details of spectral space. As such it will be recognised if source-bonded magnification seems to be taking place.⁹⁷

⁹³ Ibid., 39.

⁹⁴ Ibid., 40.

⁹⁵ Ibid., 41.

⁹⁶ Ibid., p. 42.

⁹⁷ Ibid., 43.

Smalley considers “spectral space” saying that in this context the term simply refers to space in the vertical dimension. A primary concept in his consideration of spectral space is “gravitation” which refers in this context to attractive poles within the dimension of spectral space. These ideas are drawn from François Bayle and Stéphane Roy’s discussions of tendencies and attractions within spectral and pitch space. Smalley’s conception of gravitation is more concerned, however, with attractions and motions between relatively stable regions or planes within spectral space. Smalley considers these motions and attractions in terms of “diagonal forces” and states that the expansion and contractions of these forces define the scale of spectral space.

The final primary concept of Smalley’s space-form considered here is “perspectival space” which he defines as “the relations of position, movement and scale among spectromorphologies, viewed from the listener’s vantage point.”⁹⁸ Smalley identifies three views in perspectival space – “prospective space, panoramic space and circumspace.”

Prospective space is the frontal image, which extends laterally to create a panoramic space within the range of vision; circumspace – space around the listener – extends panoramic space to encompass the listener...⁹⁹

Smalley also advances two pairs of concepts regarding prospective space. One pair involves movement in relation to the proximate center of prospective space by either approach or recession. The other pair involves “ouverture” (opening out) and “enclosure” (closing in) of prospective space. Smalley provides a glossary including additional terms and concepts not discussed here, some of which will be encountered in the example analyses in Chapter 3.

⁹⁸ Ibid., 48.

⁹⁹ Ibid.

These concepts could potentially be combined with Ambrose Field's more general "landscape morphology." The two approaches, while distinct from one another, are not incompatible. In certain cases, a description of "landscape morphology" might be enriched by the specificity of Smalley's terms. For example, a sonic landscape identified as surreal might be further described according to the types of "agential" spaces it contains or in terms of the listener's perspective (such as the way that a particular type of "overture" or "enclosure" contributes to the landscape's surreal qualities). At the same time, the emphasis on degrees of "representation of reality" in Field's "landscape morphology" provides a perspective that is not accounted for in Smalley's approach.

Katharine Norman: Listening Journal

Although Katharine Norman does not attempt to put forth an analytical model, the approach taken in her recent book, *Sounding Art*, is one that should be taken into account in a study such as this. Norman describes her book as an "unashamedly personal response" to a selection of electroacoustic works.¹⁰⁰ Each chapter of *Sounding Art* is essentially a listening journal, and each is contrasting in its organization. Norman states that each chapter "reflects its subject in the way that it is written and structured."¹⁰¹

As Norman's approach in *Sounding Art* is not explicitly analytical, one might initially call into question its inclusion in this study. However, recalling Delalande's assertion that a search for pertinences should be a primary element in analysis, the argument could be made that Norman's responses to the pieces considered in *Sounding Art* generally provide more pertinent information than those analytical approaches that impose a preset methodology on a musical

¹⁰⁰ Katharine Norman, *Sounding Art: Eight Literary Excursions through Electronic Music* (Aldershot: Ashgate Publishing Limited, 2004), xi.

¹⁰¹ Ibid.

work. Although Norman does not specifically employ this terminology, her responses to the works attended to in *Sounding Art* seem to be guided by a search for pertinences.

For example, Chapter 4 addresses Hildegard Westerkamp's *Talking Rain*, not by attempting to describe or analyze the work's structure, or by subjecting the work to a preset analytical model or system, but instead through a transcription of an interview between Norman and Westerkamp walking through Lighthouse Park, where the sounds used in *Talking Rain* were recorded. This is not altogether different from a poetic analysis. Norman and Westerkamp discuss the ways in which the work was created and the connection between these poetic elements and the ways in which the work is perceived.

Is this analysis? And, what exactly is Norman's approach? Norman's treatment of *Talking Rain* is one of the parts of *Sounding Art* that is the most unlike traditional music analysis. But what analytical approach could be more appropriate to a work like *Talking Rain*? – a spectromorphological description? an implicative analysis? If we accept Delalande's search for pertinences as a primary element in the object of analysis, Norman's method of addressing this work is fitting.

Unlike the approaches considered above, Norman does not put forth any sets of terms or concepts for the consideration of this music. Each work or topic is approached differently, as a response to the work (not an imposition on it). Perhaps this is not analysis in a formal sense, but it is analysis nonetheless. To provide a sense of Norman's approach, the discussion here will briefly focus on two examples from *Sounding Art*. The first is Norman's consideration of *Petit jardin* by Magali Babin, and the second is that of *untitled #90* by Francisco Lopez.

In the first chapter of *Sounding Art*, Norman briefly addresses Magali Babin's *Petit jardin*. Norman describes the work in a very personal way, using such phrases as "I imagine", "I

can hear”, “I listen,” etc. In the course of this brief “analysis,” Norman considers the role of the performer in fixed media electroacoustic music such as this, where intentional performative gesture is clearly present.

Norman also addresses the transmodality of perception (a primary feature of Smalley’s “space-form”) discussing a personal connection between the sounds in *Petit jardin* and her own memories of physical sensations of touch:

I’m finding that ‘swirling hand’ sound especially satisfying and immediate, probably because it reminds me of that pleasurable sensation of plunging a hand deep into a sack of grain, or whatever, and scrunching around for the pure enjoyment of the physical sensation. I’m not sure I have any specific memory of a precise instance of doing that, but I certainly seem to remember how it feels.¹⁰²

...there’s a tactile quality to these sounds. Listening even becomes a proxy for touching. When I listen to Babin’s ‘metallic sounds’ my mind is reinhabited with sensory images of quite specific kinds, and these are memories derived from touch.¹⁰³

Norman also considers an excerpt from Francisco Lopez’s *untitled #90*. As in all of the explorations of pieces in *Sounding Art*, Norman’s response to the work is conducted from a very personal perspective. This work, in stark contrast to *Petit jardin*, resists any attempt to identify concrete sound sources or causes, occupying the domain of what Smalley refers to as remote surrogacy. This is reflected in Norman’s consideration of this piece. She begins her discussion with an account of her initial attempt to find tangible connections between the sounds in this piece to her own prior experience.

I don’t know what any of these sounds are. And I don’t know what I mean by that- what are they ‘of’, ‘for’, ‘about’, ‘doing’? Behind a screen of processing there are glimpses of – I think, for a while – waves breaking, insects calling, birds singing. For a few minutes I am straining my ears to hear connections. I can’t hear them. I can’t use them. But there is this loud, insistent, high-pitched tone – not superimposed, but part of it (whatever ‘it’ is) – that

¹⁰² Ibid., 9.

¹⁰³ Ibid., 10.

blasts through like...no- no *similes* please. It is not a sound to identify, or to care to identify...¹⁰⁴

Following this initial discussion, Norman considers the process of listening to a work that is dominated by abstract sound. She adds that, “the material that makes this piece is empty of associations and full of substance.”¹⁰⁵

The analytical approaches discussed above all present new specific sets of terminology or concepts. Norman, on the other hand, does not do this. Of course, Norman is not attempting to put forth an analytical framework, but her overall approach can be taken as a model for effective analysis. What Norman is doing in *Sounding Art* is exploring her own perceptions and experiences of listening to electroacoustic music.

Where appropriate, however, Norman incorporates many of the concepts that are included in the other approaches considered in this study.¹⁰⁶ For example, in the interview between Norman and Westerkamp, “microphone space” and its relation to “perspectival space” are discussed throughout (although not using Smalley’s terms).¹⁰⁷

Norman’s consideration of *Birds* by Luigi Ceccarelli also includes examples of ways in which she incorporates concepts addressed in the approaches considered in this study. While again not using the same terms, Norman discusses the forces between different regions in spectral space as well as the ‘effort’ involved in navigating them.

In Norman’s account, this also involves a metaphor for flight. She uses the discussion of spatial planes as a way of illustrating how in *Birds* this metaphor moves beyond the obvious and

¹⁰⁴ Ibid., 70.

¹⁰⁵ Ibid., 71.

¹⁰⁶ An example of this has already been encountered in Norman’s discussion of perceptual transmodality in her treatment of *Petit jardin*.

¹⁰⁷ Ibid., 78-79.

is carefully constructed and subtle. In the course of this discussion, Norman also briefly describes the “landscape morphology” of part of this piece. Again, she does not use the same terms, but identifies the non-real landscape.¹⁰⁸

Conclusion

This chapter has reviewed seven sets of concepts for the analysis of fixed media electroacoustic music. The primary purpose of this chapter has been to examine ways in which existing analytical approaches might be used as descriptive tools in the consideration of the multiple planes of discourse afforded by fixed media electroacoustic music. As has been argued in the first chapter of this study, one of the most unique qualities of fixed media electroacoustic music is its potential to accommodate various levels of discourse simultaneously and, in particular, a potential ambiguity between them. While connections and parallels have been drawn between many of these approaches, each is distinct and supplies the analyst with conceptual tools (although some are more useful than others) for electroacoustic music analysis.

Although the approaches considered here do not deal with every possible approach to the analysis of fixed media electroacoustic music, they are representative of the range of the predominant analytical strategies typically implemented or proposed by scholars in this field. It is the contention in this study that a grasp of the range of analytical strategies and ideas considered in this study can provide a solid foundation for consideration of the multiple planes of discourse possible in fixed media electroacoustic music.

In Chapter 3, concepts drawn from the approaches considered above, will be applied to four fixed media electroacoustic works: *Onset/Offset* by Pete Stollery, *Private Play* by Scott Wyatt, Paul Lansky’s *Night Traffic* and *England (G & T Swimmers)* by Antti Saario. These

¹⁰⁸ Norman’s approach is revisited in the analytical discussion of Paul Lansky’s *Night Traffic* in Chapter 3.

analytical descriptions illustrate ways in which these concepts might be applied in the analysis of contrasting fixed media electroacoustic works.

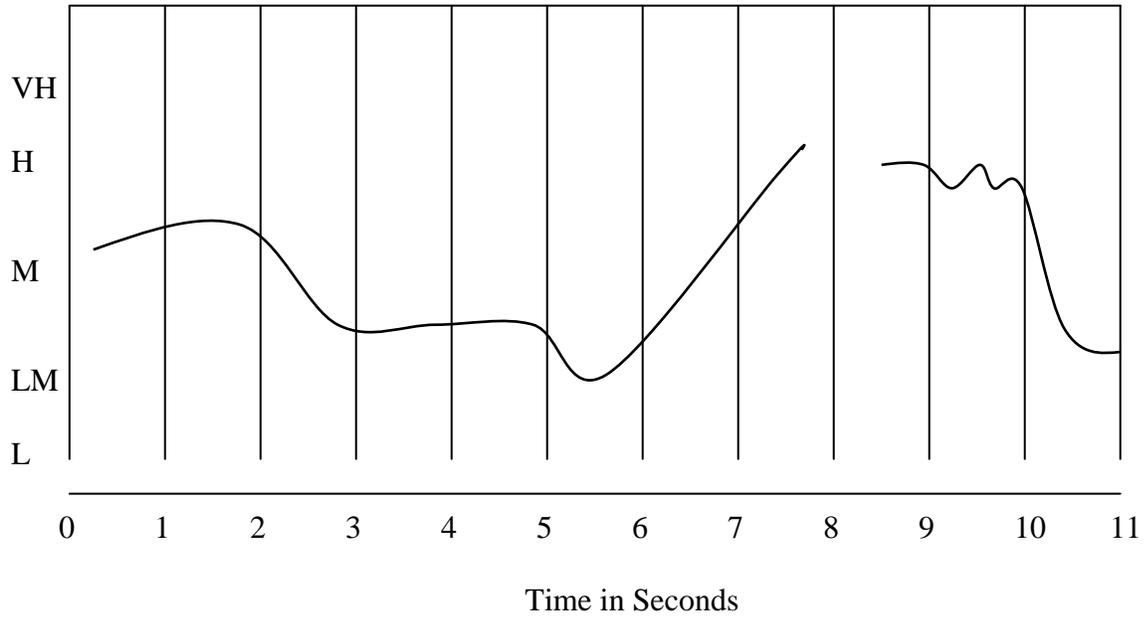
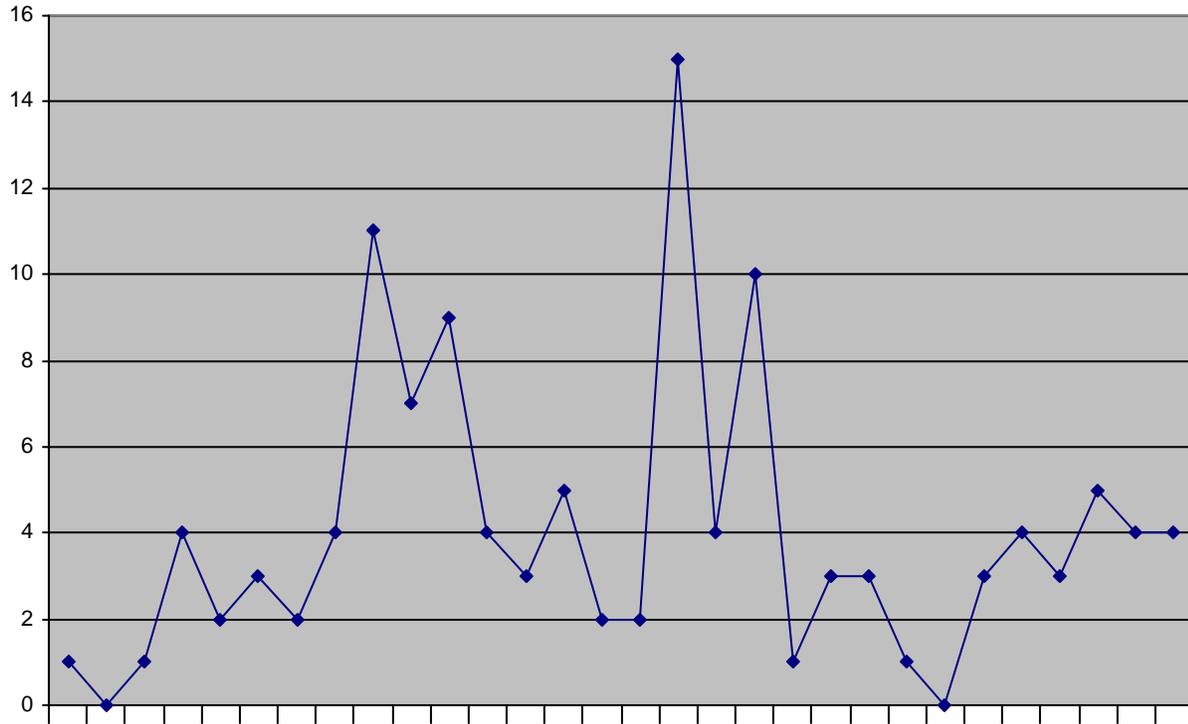


Figure 2-1. Moylan – Pitch Contour Graph

The vertical axis represents the number of attacks recorded and the horizontal axis represents time in seconds.



- - - Time in Seconds - - -

Figure 2-2. Moylan – Attack Density Graph Type 2

CHAPTER 3 APPLICATION OF THE APPROACHES CONSIDERED IN THIS STUDY

Introduction

In this chapter, elements of the approaches considered in Chapter 2 are applied in multi-layered descriptions of four fixed media electroacoustic works: *Onset/Offset* by Pete Stollery, *Private Play* by Scott Wyatt, *England (G & T Swimmers)* by Antti Saario and *Night Traffic* by Paul Lansky. The intention for the descriptions in this chapter is to illustrate ways in which the descriptive tools examined in this study might be applied. The discussion of this small sampling of examples is also illustrative of the need for multiple descriptive tools in the analysis of fixed media electroacoustic music. It is shown here that each descriptive approach provides a different type of information, and that none is applicable to all fixed media electroacoustic music.

The description and discussion in this chapter is purely illustrative and should not be mistaken for analysis. The objective here is *not* to analyze these pieces. As stated in both Chapters 1 and 2, music analysis should be guided by a search for pertinences, and descriptive tools such as those considered here should only be applied in support of this search and in order to serve interpretive purposes.

The nature of this study restricts the majority of this discussion to the local level, and the examples considered here are relatively brief (between 2 and 3 minutes each). Of course, in an actual analysis, the complete work (and whatever pertinent relationships might be uncovered) should be considered. As the emphasis of this chapter is on the illustration of ways in which the analytical approaches considered in this study might be applied as descriptive tools, the brevity of these excerpts does not hinder the present discussion.

While some of the descriptions here are interesting or illuminating, many would be of little use in an analytical context. However, illustration of the areas in which certain descriptive tools

are not appropriate is also worthwhile in the context of this study. As discussed in the preceding chapters, fixed media electroacoustic music affords multiple planes of discourse. While the descriptions in this chapter focus on these planes separately (in order to demonstrate how particular descriptive approaches might be applied), these planes are often interconnected. This potential interconnection will be explored in Chapter 4.

Onset/Offset by Pete Stollery

The first example considered in this chapter is the initial 2 minutes and 45 seconds of Pete Stollery's *Onset/Offset*. This piece contains a diversity of types of spaces, textures and sound sources, inviting the use of multiple descriptive tools. The first approach applied here is Moylan's *Analytical System for Electronic Music*. Moylan's "attack density" and "pitch contour" graphs were created for this excerpt. Below is a representation of this excerpt employing Moylan's second type of attack density graph. As discussed in Chapter 2, this graphing method shows the contour of the number of "attacks" occurring within the given time frame. Figure 3-1 is an Attack Density Graph Type 2 for this excerpt of *Onset/Offset*.

The creation of this type of graph presents several problems. First, Moylan's approach requires that a work be segmented into perceptually discrete units, but works such as *Onset/Offset* which include "concrete" sounds, often resist this type of segmentation. The opening of the work, for example, consists of a sound event (a door apparently being unlocked) that is difficult to describe in terms of attack density. Should the entire event be labeled as one "attack"? If so, a complex sound event will be reduced to its onset alone. Conversely, attempting to represent this sound event's complexity by recording multiple attacks within this event is also problematic. At what level of detail does one segment a sound event such as this?

Pitch Contour Graph

Application of Moylan's "pitch contour graph" to this excerpt from *Onset/Offset* also presents difficulties. While "pitch contour" can certainly be identified in parts of this excerpt, there are also many sections that are not pitch-based. There are also portions that are more "texture-carried" than "gesture carried." While a "pitch contour" may be identifiable in these parts, this does not necessarily reveal pertinent information. Figures 3-2 and 3-3 are examples of pitch contour graphs representing parts of this excerpt.

As the above examples show, these types of graphs present multiple problems. In each of these excerpts, the texture is much more complex than its representation in these graphs. However, the above graphs do reflect a connection between overall gestural shapes in the two excerpts. Although the applicability of Moylan's approach is limited, there are certainly conceivable situations in which it might reveal information useful to analysis.

Spectromorphological Description

A spectromorphological description is also applied to this excerpt from *Onset/Offset*. The description here is, again, purely illustrative, and is merely an attempt to show how spectromorphological terminology might be used to describe individual sound events. This is presented in the form of a chart, simply listing the sound events in this excerpt and describing their basic spectromorphological characteristics. This chart is a simplistic version of a spectromorphological description and these concepts can naturally be applied more precisely and in much greater detail. However, as this chapter is concerned with illustration of the application of descriptive approaches, an exhaustive description is not necessary here. The sound events in this excerpt were primarily described in terms of Smalley's morphological archetypes as well as motion types.

Table 3-1. Spectromorphological Description of *Onset/Offset* (excerpt)

Time	Event
0:00	A series of Attack-Decay (AD) events, noise type
0:11 – 0:29	A Graduated Continuant (GC) event lasting 18 seconds containing two primary layers. The first layer is of the note type moving in linear descent from the approximate pitches F to A with a brief reciprocal motion (at 28 seconds) in linear ascent by a 1/2 step to the approximate pitch B-flat. The second layer consists of a granular texture of the node type in the canopy of the spectral space.
0:28	A series of AD events, noise type
0:34 – 0:36	A Graduated Continuant with Decay (GCD) event lasting 2 seconds, node type, moving in an ascending/descending parabolic motion.
0:36 - 0:40	A series of AD events, noise type
0:40 – 1:16	A GC event (granular texture), noise type, moving erratically in an irregular undulation in the upper centre and canopy of spectral space.
0:47 – 1:16	A GC event, note/node type, containing a mostly linear reciprocal ascent/descent beginning on F#, rising to B and then falling again.
1:17 – 1:20	A GCD event, noise type, moving in ascending/descending parabolic motion
1:17 – 1:56	A GC texture in the canopy of spectral space. This is a granular texture articulated by internal, endogenic undulating motion. ¹ The internal motion could be further described as “flocked” motion.
1:33 – 1:48	A staggered series of Attack-Impulse (AI) and AD events, noise type
1:59	An AI event, noise type
1:59 – 2:01	A GC event, noise type
2:00 – 2:01	A GC event, noise type moving in a linear descent.
2:01	An AD event, noise type
2:07 – 2:45	A series of staggered AD events, mostly of the note type. These events have a flutter decay. These events converge in a flocked motion.

(AD = Attack Decay, GC = Graduated Continuant, GCD = Graduated Continuant with Decay, AI = Attack Impulse)

The above description, while preliminary and admittedly inelegant, reveals several difficulties. While spectromorphological concepts are attractive in theory, their practical application is often problematic. Spectromorphological description quickly becomes tedious and difficult to interpret. Even a limited description such as that above is cumbersome and likely indecipherable by the reader unschooled in spectromorphology. Moreover, while a more

¹ These are subcategories of Smalley’s “motion typology.”

thorough spectromorphological description of this excerpt might provide more specific information, the reader may also soon become lost in the details.

Another shortcoming of spectromorphology is that it is not particularly well suited for the description of sound transformations. While Smalley's terminology for describing various types of motion is useful and detailed, these spectromorphological concepts are not adequate for the description of sound transformations. For example, the transformation of the texture from 1:17 to 1:56 is not well-described using spectromorphological terms alone.

However, the shortcomings of this abstracted descriptive example only demonstrate the inadequacy in seeking to analyze a work such as *Onset/Offset* (or any work that contains both concrete and abstract elements) relying solely on spectromorphological description, and the above description by itself is an unfair representation of spectromorphology. At no time does Smalley suggest that the analyst simply list events in the manner shown above. The purpose of the above description is simply to show how the terms might be applied on a local level. In many cases, a combination of spectromorphological description and other descriptive approaches (if guided by a search for pertinences) will be most appropriate. The combination of descriptive approaches and the interconnection between multiple planes of discourse is discussed further in Chapter 4.

Landscape Morphology

Ambrose Field's "Landscape Morphology" is also applied to this excerpt. As noted in Chapter 2, these terms are quite flexible, leaving a good deal of room for freedom in application. This flexibility affords adaptation and allows for a broad application.

The opening of this piece (the first 10 seconds) takes place in a real environment. The sounds of what seems to be a door being unlocked carry a plausible interior space and there are

no other sounds present that contradict this realistic landscape. The sounds of movement in the background also seem to belong to and strengthen the sense of an interior space.

However, beginning at 10 seconds (and continuing until approximately 29 seconds) the landscape shifts abruptly to a non-real environment. A processed texture is presented that is clearly not intended to be perceived as real. The sounds presented in this section (a granular, filtered texture) would not normally be found within the real interior environment presented in the opening of this piece. The listener is no longer in the same place – the scene has changed.

Following this (at 34 seconds), Stollery changes the landscape once again. At this point, the sounds from the opening of the piece (or very similar ones) are presented again, but they no longer carry a plausible realistic space. These sounds now carry a reverberated non-real space. This introduces the effect of a surreal landscape – the sounds presented here are still recognizable as real, but the space in which they are presented is not realistic.

At 40 seconds, a landscape similar to the non-real environment introduced at 10 seconds returns. While this continues, at 1:00, the sounds of what seems to be crumbling paper (or something similar) are added. By themselves, these sounds might suggest a real landscape, but in this context, the landscape remains an unreal one.

At 1:20, another shift in landscape occurs. This new environment is still a non-real one, but the space is now larger, with a deeper sense of foreground and background. The sounds contained within this space (while apparently abstracted from “real” sounds), are non-real.

At 1:58, the landscape shifts again and the sounds of what seem to be opening doors carry realistic spaces, but only briefly. We only remain in this potentially realistic environment for a few seconds before the scene changes to another non-real landscape.

As in the above applications of Moylan's graphing techniques and spectromorphological descriptions, this description of landscape morphology is in no way interpretive. In an actual analysis, these descriptive tools should be used (where appropriate) to interpret (not simply describe) a work.

Because of its flexibility, landscape morphology seems to be quite suitable to this excerpt. But again, this single method of description does not provide a complete picture in itself. The overall landscape or environment is described well using these concepts, but in most cases, the events taking place within the landscape need to be considered. Depending on the work, description of events (or relationships between them) in terms of spectromorphology, sonic rhetoric, or other means might be combined with landscape morphology.

Sonic Rhetoric

Similar to the other approaches considered in this study, Field's sonic rhetoric can be applied to virtually any fixed media electroacoustic work, particularly those which make use of concrete sound material. However, the relevance of these concepts to analysis will be determined by the work in question. Just as one might be able to identify a particular spectromorphological characteristic that is of little value in analysis, sonic metaphors, sonic similes, sonic hyperboles, etc. might be identified that are not relevant to analysis. As in the application of other approaches above, description of sonic rhetoric in this excerpt is purely illustrative and is not guided by a search for pertinences. Therefore, the elements of sonic rhetoric identified may be but are not necessarily relevant to analysis.

As in any work involving identifiable sound sources, there is potential for description of sonic metaphor in this excerpt. Obvious sonic metaphors can be drawn in connection with the sound of a door being unlocked at the opening of this work. This could be taken to represent

transition (into a new space, into the work itself, etc.) or many other concepts associated with doors, keys or locks.

Field's conception of sonic simile can also be applied to this excerpt. As discussed in Chapter 2, Field's idea of sonic simile is less direct and less restricted than simile in language. For Field, a sonic simile invites comparison simply through juxtaposition, and this conception affords a potentially rich ambiguity in interpretation. However, if this notion is taken to the extreme, it would follow that one could interpret all sounds or events in a fixed media electroacoustic work as being in simile relationships. Again, this involves questions of interpretation, and is left to the individual analyst.

For example, one might identify a simile relationship between two of the sound events in the opening of this excerpt (the first beginning at 0:10 and ending at 0:29 and the second occurring between 0:34 and 0:36). The first is a granular texture that contains a strand of pitch moving in a linear descent. The second is the sound of a sliding door (or could at least be interpreted as such). This sliding door, while noise based, also contains an overall linear descent. One might interpret a simile relationship between this sliding door (which is immediately followed by the sounds of a door being unlocked that are very similar to the sounds that open the piece) and the more abstract granular texture. However, whether or not this relationship is pertinent is interpretive and reliant on the analyst's perspective as well as the context of the work.

***Private Play* by Scott Wyatt**

Unlike *Onset/Offset*, Scott Wyatt's *Private Play* is comprised primarily of relatively abstract sound material and events. However, most of these abstract elements also have a degree of referential potential. As in the above discussion of *Onset/Offset*, multiple descriptive

approaches are applied to the first three minutes of *Private Play*. The first approach applied is Roy's functional and implicative approach.

Roy's Functional and Implicative Approach

The first 19 seconds of this work comprise a single figure function, which also carries an introduction function. This event begins abruptly, almost as a trigger, but in this case the trigger is the beginning of the event itself.² This is followed, at 23 seconds, by the initiation of a contrasting sound event. This contrast, and the apparent lack of association between the two events, lends a sense of incompleteness to the first. This new event carries an introduction function, initiating a downward motion (in terms of pitch).

These two events are followed, at 45 seconds, by a series of figures that set up a gradual ascension that continues until approximately 1:16. This might be interpreted as being in an antecedent/consequent (or "call and response") relationship with the preceding event.

At 1:36 a high intensity event (in terms of loudness) with an interruption function occurs and is reiterated by a similar event at 1:44. However, these events are only interruptions on a local level. On a larger scale they serve as an introduction to similar events that are reiterated throughout the work. As the piece progresses they begin to be perceived less as interruptions as they become more expected and lend to the work a forward motion.

Relatively unaffected by these interruptions, the gradual ascension continues (in both pitch and density of activity) until approximately 2:10. At this point a plateau is reached and followed by a descent beginning at 2:26. At 2:43 the figure function from the beginning of the work returns. This functions as a reiteration and recontextualizes the opening of the work. On a more

² This is a slight adaptation of Roy's description of "trigger." In this case, this function is not triggering another event but is the beginning of a longer event of which it is a part.

local level, there are several “begetting” functions in this excerpt. For example, at 1:19, there is a brief event (a high, pitched event) that prepares a brief outburst.

There is a clear sense of forward motion in this work, inviting a functional and implicative analysis. However, attributing specific functions in this work is difficult. One could apply these same concepts to the same excerpt in many different ways, and there are many interpretive possibilities. If nothing else, however, these concepts provide a basis for discussion of functional and implicative relationships. The fact that an event in this excerpt might be identified by one analyst as an interruption and by another as having a “begetting” function is an issue of interpretation.

Space-form

Next, this excerpt from *Private Play* is described in terms of Denis Smalley’s space-form. Although a sense of space is articulated and well crafted in this example (and in this work as a whole), a conception of space according to Smalley’s idea of space-form does not seem to be a significant feature of this work. Once the space is established in *Private Play*, it does not change significantly. The focus seems to be on what happens within this space. Wyatt is careful in establishing a space, but it seems to function primarily as an arena for discourse to take place in. The features of the space itself are not the focus of the discourse in this piece.

A large reverberant space is articulated at the beginning of this example and we (the listeners) remain in a similar space for the entirety of this excerpt. This space is established in the initial sixteen seconds by a moving sound (like a rolling marble) that creates the illusion of encircling the listener. This event begins in the left side of the panoramic space, moves to the right side and then in a circle around the listener, finally returning to its original position. The course of this circular motion articulates a relatively sizable range between proximate and distal space. The sounds in this example are heavily reverberated creating the sense of a soundscape

that, while unreal, is large. The vantage point in this excerpt is fixed. There is a good deal of motion of sound events in this excerpt, but there is no sense of a shift in perspectival space.

Wyatt seems to have carefully considered spectral space in this work. As the sounds in this example are all “abstract,” the listener is more likely to become aware of spectral space. The initial “marble rolling” event sets up a plane in the upper middle level of spectral space, and the bulk of the activity in the first minute of this excerpt takes place above this plane. This plane is gradually forced downward throughout this example. By three minutes into the excerpt, the “root” of spectral space has been reached, completing the gradual downward extension of the spectral space frame in this excerpt.

Spectromorphology

A spectromorphological description such as that applied to *Onset/Offset* above would be repetitive and unnecessary. This brief application to this excerpt from *Private Play* will focus on Smalley’s motion typology and structural functions.

Smalley’s terminology for describing motion can be applied to parts of this excerpt. For example, the opening event can be described as involving a long circular reciprocal motion. The following event (beginning at 0:22) contains a unidirectional motion, in descent, and this is followed by a longer series of events moving collectively in ascent. On a larger scale, the excerpt as a whole (excepting the first 20 seconds) contains an internal contorted motion, with layers of sound folding in on one another.

An attempt to apply Smalley’s concepts for description of structural functions immediately presents problems. While these ideas might be initially attractive, their application is difficult. How might the initial sound event (the first 19 seconds) be described according to Smalley’s structural functions, for example? Which of the subcategories of the three linked temporal phases could be used to describe this event? Smalley does not provide examples of their application, so

these, while affording interpretive freedom, remain vague in terms of practice. One potential interpretation might be that on the more local level (this event alone), the onset is that of “emergence,” the continuant is that of “prolongation,” and the termination is that of “resolution.”

Attempting to apply Smalley’s expansion of the three linked temporal phases to the gradual ascension that takes place between 0:45 and approximately 2:20 is again problematic. One could again say that the three phases at work here are “emergence,” “prolongation” and “resolution.” But, whether or not this might be pertinent to an analysis is doubtful. However, these concepts could conceivably be applied to other fixed media electroacoustic works.

England (G & T Swimmers) by Antti Saario

The opening two minutes and five seconds of Antti Saario’s *England (G & T Swimmers)* will also be used to illustrate the application of the descriptive approaches considered in this study. This excerpt presents difficulties for each of the approaches. A prominent element of this piece is the presentation of recordings of intelligible speech. This should not be ignored in analysis. However, as the analytical approaches considered in this study do not consider speech or text, it will not be dealt with in these descriptions. Similarly, there are pitch relationships in this work that would be best dealt with by other analytical tools. Again, this is not to suggest that these relationships are of less analytical pertinence.

Landscape Morphology

Considered as a whole, this excerpt takes place within a surreal landscape. However, on a more local level, both “real” and “non-real” landscapes can be identified. There are also moments in which real landscapes are presented, but which are altered or interfered with. Saario’s frequent use of abrupt transitions between spaces (much like “jump cutting” in film) contributes to the overall surreal quality of the landscape in this work.

In the opening seconds of the work, “electronic” glissandi are followed by a chordal pad texture (suggesting G major). A sense of foreground and background space is established, but a real environment is not suggested - this is clearly intended to be perceived as a non-real environment.

At 23 seconds there is an abrupt and jarring transition. The listener is suddenly inside a realistic interior space. This is a small, dry space in which someone is casually playing a cello and several people are talking and having drinks. But, very quickly (within 10 seconds) Saario begins to disturb this perceived reality. This begins subtly - as one of the people in this space begins to hum a melody, this is harmonized very softly in the background by an unidentifiable sound. Shortly after this, the disruption of the sense of reality becomes more pronounced as recordings of the words and phrases spoken by people in this space are repeated (through literal copying).

At 45 seconds into the work, the landscape shifts once again. The listener has been taken out of the interior space previously presented, and is now in another surreal landscape. The sound of ice clinking in a glass is retained from the previous “scene,” but it is now being rattled around in the glass in a more unnatural way, with a seemingly performative intention. This sound is no longer simply part of the scene; it is now something to be listened to. The presence of a pitch-based background texture lends this new landscape a more non-real quality than that of the previous scene.

For the remainder of this excerpt, the sounds of the interior scene are juxtaposed and combined with non-real or abstracted sounds. This creates an overall surreal landscape. For example, when the interior scene returns (with people talking about the “G’s” and Gs sounded at

the same time in the background texture), the realistic interior space is presented simultaneously with processed sounds that contradict that space.

Varying degrees of representation of reality seem to be an important aspect of this work. Therefore, landscape morphology seems to be an appropriate descriptive tool. However, even in a preliminary description such as this, Field's very general concepts need to be augmented with additional description. This does not present a difficulty, however; the flexibility of these concepts makes them applicable to a wider variety of works.

Sonic Rhetoric

As this work is concerned in large part with varying degrees of representation of reality, it presents opportunities for the application of elements of Field's "sonic rhetoric." Saario uses pitch connections to link events and spaces in this excerpt. As stated above, this work might be interpreted in terms of varying degrees of reality and abstraction. One way to view this work is as presenting a multi-dimensional reality in which the dimensions are connected in various ways. From this perspective, Field's concept of sonic simile comes into play.

One of the ways in which sonic similes can be identified is in the pitch connections in this work. These pitch connections can be interpreted as inviting comparison between otherwise unrelated events.³ For example, between 0:25 and 0:36, Saario uses pitch to link three different dimensions. First, the cello in the "real" interior space plays A and D pizzicatos. At the same time, a female voice casually hums a melody in D major, but this voice does not quite fit into the scene. Although a person humming would not be implausible in this space, something about the spatial placement doesn't seem to match the context. Two different dimensions seem to be connected by this pitch connection. Also at the same time, a chordal background suggests D

³ This concept of sonic simile is slightly expanded from that explicitly described by Field.

major. However, the source of this sound is unclear and suggests something “non-real”. The pitch connection creates a “sonic simile” between three otherwise separate dimensions.

A comparable simile connection can be identified after 1:20 when the plucked open strings of the cello in the interior space are anticipated (and later echoed) by the “non-real” background. In this example, the pitches of the cello’s open strings are sounded by a processed and sustained background texture. This background continues through the end of the excerpt, drawing ambiguous simile connections along the way.

From another perspective, the literal repetitions of sounds in this excerpt could also be interpreted as sonic hyperbole. The first of these begins at 0:36 when the sounds from the interior space are exactly copied, creating a literal echo. This literal overstatement of reality contributes to the sense of surreal landscape mentioned above.

At the same time, sonic synecdoche could also be viewed as playing a major role in this work. This can be found on the local level and in the work as a whole. In the excerpt discussed here, a scene is represented. Although there are strong connections to reality, much is left to the listener’s imagination. In the standard conception of “synecdoche,” a part of something is representative of the whole. But, as Field suggests, in sonic synecdoche, exactly what the whole is that is represented is often unclear. This is the case in this excerpt from *England (G & T Swimmers)*. Something is clearly being represented, but exactly what that is could be interpreted in many different ways. Again, it is not completely clear whether this interpretation is entirely in line with Field’s concepts as outlined in his article. Field’s exposition of these ideas is relatively brief, leaving matters of interpretation such as this to the analyst.

Spectromorphology

An attempt to apply spectromorphology to this excerpt would support the argument that no descriptive approach can be successfully applied to all fixed media electroacoustic works.

Although morphology, motion types or other spectromorphological attributes could be described in this excerpt, this would be of little value in analysis. For example, one might attempt to describe the motion types in the opening seconds of this excerpt in spectromorphological terms, as a sort of erratic reciprocal motion. However, as the work unfolds it becomes clear that this sound is simply representing radio signals. Just as it would be of little value to describe space form in a work where this is not pertinent, a description of the spectromorphological features that do not carry any esthetic relevance would also be unproductive.

Similarly, Moylan's *Analytical System* reveals little pertinent information about this excerpt. As discussed above, Moylan's approach is parameter based and its application to this excerpt would be problematic. For example, application of the attack density graph to this excerpt would be incredibly problematic. The ambiguity in this piece defies any such simplistic segmentation.

***Night Traffic* by Paul Lansky**

The final work addressed here is Paul Lansky's *Night Traffic*. As with the other pieces considered, discussion focuses on an excerpt. The first three minutes of the work are considered.

Space-form

As stated above, Smalley's "space-form" approach requires a holistic view of space. Therefore, in a general sense, the analyst must attempt to set aside the progression of time and consider the soundscape as a whole. However, as soundscapes frequently shift in fixed media electroacoustic music, this is not always possible. For example, in Antti Saario's *England (G & T Swimmers)*, an attempt to apply Smalley's concepts such as "zoned spaces" or "nested spaces" within an overall soundscape would be problematic. Smalley's space-form works best when it is applied to works in which the listener has a relatively fixed vantage point and in which there is a

sense of overall soundscape. This is partially the case with *Night Traffic*, but this attempt to describe it in terms of space-form also presents problems.

This excerpt unfolds in a source-bonded space. The listener can deduce from the title (and program notes) that literal recordings of “night traffic” are being presented. However, these sounds have been altered – this is not a literal presentation of reality.⁴ In spectromorphological terms, this primarily involves third order and remote surrogacy.

This is a distinctly “enacted” (“culture based”) space. Within the category of “enacted” spaces, this is an “agential space” – these sounds here are produced by human activity.

This excerpt also provides an opportunity for the consideration of “perspectival space.” The listener’s vantage point in this excerpt seems to be stationary. Beginning in the opening seconds, perspectival space is expanded (*ouverture*) to encompass a wide panoramic space through what Smalley refers to as a “vectorial wipe.”⁵ Perspectival space remains broad for the entire excerpt. These vectorial wipes also articulate a range of proximate to distal space through approach and recession. However, because these sounds are on a third order or remote level of surrogacy, they do not carry specific spatial cues. It is difficult to acquire a precise awareness of the dimensions of this space. Virtually all of the activity in this excerpt involves these vectorial wipes. Therefore, while the outer edges and range of panoramic space are defined, neither a “distal” or “proximate” center of prospective space is articulated.

From Smalley’s perspective, the more that sounds have an abstract nature, the more they invite a consideration of spectral space. This is the case in this section of *Night Traffic*. Smalley states that, “we are not always aware of how spectral factors contribute to our sense of space,”⁶

⁴ This is an area where Field’s landscape morphology might come into play.

⁵ Denis Smalley, “Space-form and the Acousmatic Image,” *Organised Sound* 12 (2007): 49.

⁶ *Ibid.*

particularly in the case of spaces which have a high degree of source-bonding. However, Smalley states that the listener's attention will be more drawn to spectral space (he states that "thinking spectrally requires a certain level of abstraction") as abstraction is introduced.

Spectral space is mostly filled in this example, using the full audio spectrum. There are not clearly separated spectral planes in this example. Rather the relatively monolithic vectorial traffic sounds weave in and out of spectral levels. There is an emphasis on the upper "centre" of the audio spectrum, but the overall spectral range is quite wide.

Immediately apparent in attempting to describe this excerpt according to Smalley's "space-form" terminology, is the lack of a means for considering how "real" or "unreal" the space is. This is an important part of this piece. Are the sounds interfered with? This is a case where an adaptation of Field's terms might be successfully combined with Smalley's space form.

Landscape Morphology

This is a surreal landscape, which (as discussed in Chapter 2), can be assumed to fall within Field's "virtual" landscape category. It is clear from the title (and program notes) that the sounds in this work are recordings of the sound of highway traffic. Knowing this, the sounds in this example are quite recognizable as manipulations of these recordings. The listener knows of the "real" landscape of the original unaltered sounds. But the abstractions of these sounds create a surreal landscape. A "reality" is presented and contradicted at the same time.

Sonic Rhetoric

This piece provides an opportunity for description of sonic synecdoche, in which a part stands for a whole. As discussed above, Field's concept of sonic synecdoche is more ambiguous. In this work, "night traffic" is partially represented. By bringing out and exaggerating resonances in these sounds, Lansky obscures their specificity. But, the overall morphology (Doppler shifts, characteristic envelope) still represents traffic. This can be interpreted in at least

two ways. This synecdoche can represent the larger concept of “traffic” or can partially represent a specific scene. The sounds, combined with the added descriptor “night,” invite a listener to conjure up a scene on the side of a highway at night. But the rest of the details are up to the listener. This partial representation creates a fruitful ambiguity.

Norman’s Discussion of *Night Traffic*

In *Sounding Art*, Katharine Norman briefly addresses *Night Traffic*. In her brief description, a clear contrast can be seen between her approach and the others considered in this study. As discussed in Chapter 2, Norman does not have a preset descriptive methodology that she applied to all works. Norman’s discussion of the work is centered on the character of the work itself, on the questions that it raises.

In her address of works in *Sounding Art*, Norman typically identifies what she views as central to a work’s identity, or what distinguishes it. In the case of *Night Traffic*, Norman identifies an ambiguous fusion of the representation of traffic and abstract musical processes. Norman notes that, considered separately, neither the representation of traffic or the abstract musical processes in this work are particularly interesting on their own. Norman states that the effectiveness of this work lies in the fusion itself:

Neither of these would work alone; it is in their (literal) confusion that the lyric simile resides. An epic field-recording of untouched traffic sounds would be too literally a ‘picture’ of a sound. An abstract musical work that presented a slow, aimless voice-leading harmony would be a pleasant diversion. But the two together, offer a mutual confusion.⁷

Conclusion

The above descriptions illustrate some of the ways in which the approaches considered in this study might be applied to contrasting fixed media electroacoustic works. It has been shown

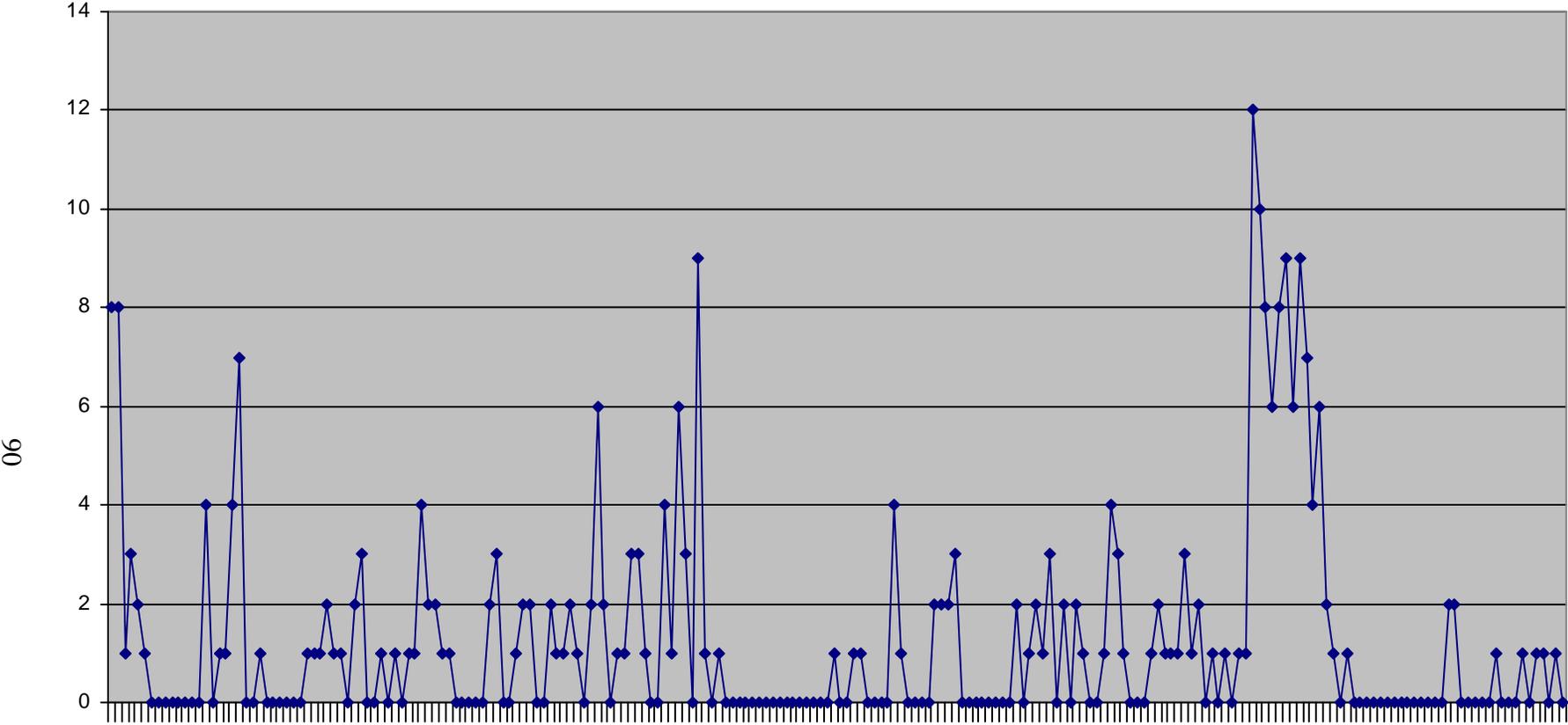
⁷ Katharine Norman, *Sounding Art: Eight Literary Excursions through Electronic Music* (Aldershot: Ashgate Publishing Limited, 2004), 69.

that each descriptive approach provides a different type of information, and that while each has the potential to provide relevant information when applied to certain fixed media electroacoustic works, none can be effectively applied to all.

A persistent feature of the above descriptions is their incompleteness. Although this is exaggerated by the nature of this study, it highlights the inadequacy of attempting to blindly apply analytical approaches. The incompleteness of the descriptions in this chapter also calls attention to the need for analysis to be guided by a search for pertinences. As discussed above, the focus of this chapter is on the illustration of ways in which the analytical approaches considered in this study might be applied as descriptive tools. The descriptions in this chapter are therefore purely illustrative and are not to be regarded as analyses.

As stated above, interconnection between multiple planes of discourse is often a salient feature of fixed media electroacoustic works. It is also important to the consideration of listening strategies. This interconnection, as well as the possibility of a comprehensive analytical approach is considered further in Chapter 4.

The vertical axis represents the number of attacks recorded and the horizontal axis represents time in seconds.



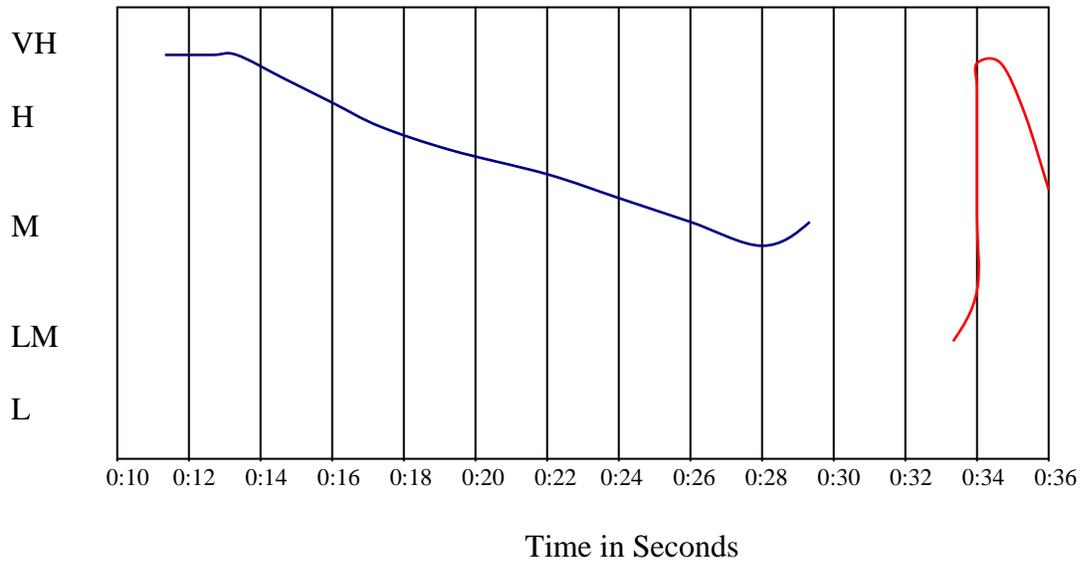


Figure 3-2. *Onset/Offset* (excerpt) – Pitch Contour Graph – 0:10 to 0:36

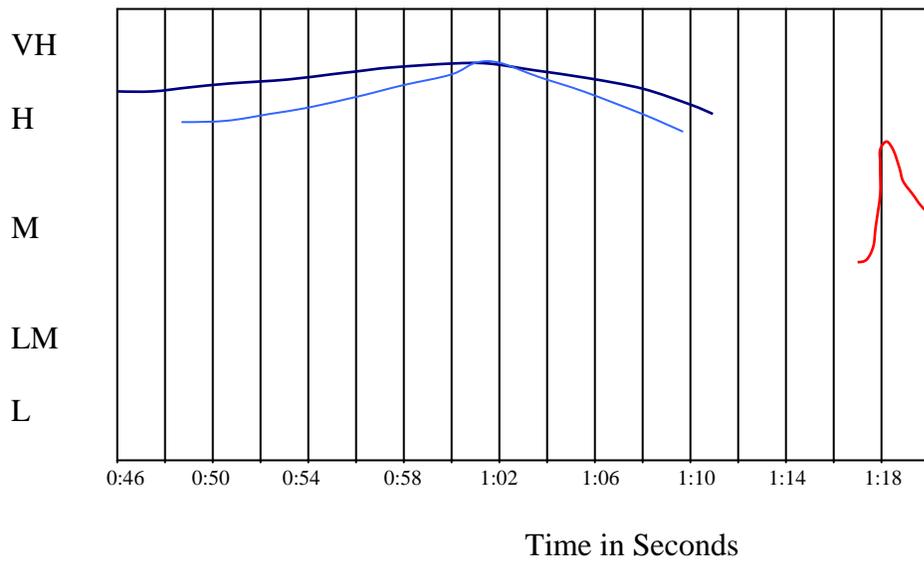


Figure 3-3. *Onset/Offset* (excerpt) – Pitch Contour Graph – 0:46 to 1:20

CHAPTER 4 CONCLUSION

Introduction

In this study a comparative examination and application of representative approaches to the analysis of fixed media electroacoustic music has been presented. Elements of each of the approaches considered in this study have been applied in multi-layered descriptions of four fixed media electroacoustic works: *Onset/Offset* by Pete Stollery, *Private Play* by Scott Wyatt, *England (G & T Swimmers)* by Antti Saario, and *Night Traffic* by Paul Lansky. While many topics and analytical approaches have been addressed in this study, one important question has yet to be considered – that of the interconnection of planes of discourse in fixed media electroacoustic music. In the following paragraphs, the principal themes of the preceding chapters of this study are retraced. This is followed by discussion of the interconnection of planes of discourse in fixed media electroacoustic music.

In Chapter 1 it was argued that one of the most unique qualities of fixed media electroacoustic music lies in its potential for the accommodation of various levels of discourse and, in particular, a possible ambiguity between these levels. It was also stated that the intention in this study is not to put forward a universally applicable analytical framework and that the selection of an analytical approach is best determined by the specific piece in question. In addition, it was also asserted that an analyst should consider multiple descriptive tools.

Chapter 1 made the point that fixed media electroacoustic music presents the analyst with specific challenges. While various writers have cited many of these challenges, this study identifies one as being most fundamental – the potential for varying degrees of representation and abstraction and the resulting possibility for multiple levels of discourse. It was also noted that, although a number of analytical approaches have been published, scholarship in the area of

electroacoustic music analysis is currently fragmented and that the majority of existing approaches are narrowly focused. With the exception of Katharine Norman's approach in her book *Sounding Art*, each of the approaches considered in this study are concerned with a single plane of discourse. The approach taken in this study has been to view each of these approaches as descriptive tools that might be employed within a comprehensive approach guided by a search for pertinences.

The purpose of music analysis was also addressed in Chapter 1. While several possibilities were considered, it was established that the primary purpose of analysis, as considered in this study, lies in the exploration of the relationship between the listener/analyst's subjective perspective and the musical "object". The descriptive approaches considered in this study can provide a potential starting point for this exploration. This idea of "exploration" raises several questions and a more thorough consideration of these and related issues is beyond the scope of this study. The present objective is to present a comparative study of existing analytical approaches and to illustrate how they might be applied as descriptive tools. Therefore for the purpose of this study, it will simply be stated that the relationship to be explored in music analysis is that between the "neutral level" and "esthetic processes" (as outlined by Nattiez).¹

In Chapter 2, seven sets of concepts for the description of fixed media electroacoustic music were presented. These approaches were considered critically and were measured against one another. It was shown that, while parallels can be drawn between many of these approaches, each is distinct and supplies the analyst with conceptual and descriptive tools (although some may be more useful than others) for fixed media electroacoustic music analysis.

¹ Jean-Jacques Nattiez, *Music and Discourse: Toward a Semiology of Music* (Princeton, New Jersey: Princeton University Press, 1990).

In Chapter 3, elements of the approaches considered in Chapter 2 were applied in multi-layered descriptions of four fixed media electroacoustic works. It was shown that each descriptive approach yields a different type of information, and that while relevant to certain pieces, will likely provide little or no pertinent information when applied to others. As stated previously, a persistent feature of the descriptions in Chapter 3 is their partiality. Although the nature of this study accentuates this partiality, it also highlights the inadequacy of an indiscriminate application of analytical approaches. This further calls attention to the need for analysis of fixed media electroacoustic music to be guided by a search for pertinences.

What has yet to be considered, however, is the interconnection between planes of discourse. In order to examine existing analytical approaches in a comparative and critical manner, it has been necessary to consider them separately up to this point. However, this separation is only useful in terms of considering these analytical approaches as individual descriptive tools. In the section that follows, the interconnection of planes of discourse is considered.

Interconnection of Planes of Discourse

Plane

Before discussing the interconnection of these planes, the use of the term “plane” should itself be considered. While the usage of this term requires some clarification, it is the most appropriate term for a study such as this. In this study, the term “plane” concerns the various ways in which different analytical approaches reduce a fixed media electroacoustic work. As this study is primarily concerned with esthetic processes, these planes can also be viewed as modes of listening or, in a sense, as esthetic “filters.” For example, Smalley’s spectromorphology and Field’s sonic rhetoric each consider a work from different perspectives, each reducing a work in its own way and providing a distinct view. The term “plane” is employed here in the sense that,

as each analytical approach filters out a certain type of discourse, a certain segment of the total possible discourse is emphasized. In the case of Smalley's space-form, for example, discourse involving relationships within "source-bonded" spaces such as "zones" within a soundscape or of "prospective" or "panoramic" space is filtered out.

One potential drawback of the term "plane" is that (like "level") it may imply a potential for hierarchical ordering. This is not the intention in this study. In an analytical approach guided by a search for pertinences, the work in question should determine what planes (if any) are considered to be primary carriers of discourse. In this way, the term "plane" is more closely related to the word "dimension" than to the word "level."

Interconnection

Having discussed the usage of the term "plane" in this study, and having argued for the view that planes of discourse can be identified in fixed media electroacoustic music, interconnection of planes of discourse can be considered.² The focus of this comparative study has been on separating out planes of discourse and considering how different analytical approaches deal with these planes. However, while the planes can often be considered separately, there is some degree of interconnection in most cases. This is illustrated in the brief consideration of Saario's *England (G & T Swimmers)* below.

While it is not so difficult to declare that planes of discourse in fixed media electroacoustic music are often interconnected, the application of this idea is more precarious. One difficulty in approaching the interconnection of planes of discourse is that it is problematic to attempt to discuss this interconnection in a way that is applicable to all fixed media electroacoustic music.

² The use of the term "interconnection" is not meant to imply that there is always a literal connection between planes of discourse. The selection of this term is intended to reflect the relational quality of planes of discourse in most fixed media electroacoustic music.

As stated above, application of the descriptive tools considered in the previous chapters is possible for most fixed media electroacoustic works, but each does not always reveal relevant information about a specific work. For example, all sounds possess spectromorphological characteristics, and these can usually be described utilizing spectromorphological concepts and terminology. However, this particular mode of description is not always relevant to an analysis. For example, although a spectromorphological description of the initial ten seconds of Stollery's *Onset/Offset* would be possible (while difficult), it is doubtful that such a description would reveal much useful information in this case. However, consideration of the potential "concrete" significance of these opening sounds (perhaps employing concepts from Field's "sonic rhetoric" or "landscape morphology") might be of value to analysis (illuminating elements of esthetic processes).

As discourse is often framed by the individual fixed media electroacoustic work (instead of by a stylistic context)³, consideration of the interconnection between planes of discourse is contingent on the work in question. Depending on the specific work, this interconnection might primarily be interactive, or interdependent, or a lack of connection itself might be a primary feature of the work.⁴ For this reason, a preset step-by-step method for analysis of this music is neither feasible nor desirable.

An awareness of the interconnection of planes of discourse (as well as an intuitive search for pertinences) can be found in Katharine Norman's address of works in *Sounding Art*. In this process, she often touches on the interconnection between planes of discourse. For example, in

³ A combination of these is often the case.

⁴ Other degrees or types of interconnection are, of course, also possible.

her consideration of *Birds* by Luigi Ceccarelli, she notes connections between morphologies and metaphors of flight:

What was the role of that strange opening section, which started in the stratosphere but didn't explore any flighty connections with birds, and was brief and introductory? I would suggest that it triggered our awareness of the ground that followed. This difference between 'up' and 'down' prepares us for a subsequent difference between 'above' and 'below.' It does so through metaphoric images from pitch, timbre and also 'effort.'⁵

Norman also addresses the interconnection of planes of discourse in Lansky's *Night*

Traffic, noting their interdependence and its centrality to her interpretation of the work:

The sounds of traffic appear recognizable – in contour, shape, pace. The representation of traffic is transparent. Similarly the musical framework is a clear 'representation' that is recognizable – pitches, rhythm and so on. Neither of these would work alone; it is in their (literal) confusion that the lyric simile resides. An epic field-recording of untouched traffic sounds would be too literally a 'picture' of a sound. An abstract musical work that presented a slow, aimless voice-leading harmony would be a pleasant diversion. But the two together offer a mutual confusion.⁶

Of course, there are other planes of discourse that might be considered. This study only selects a few which, taken together, are representative of the mainstream of published analytical strategies for fixed media electroacoustic music. Other planes of discourse might include the mediation of technology, reception data (such as that in Leigh Landy's *Intention/Reception Project*) or traditional concepts such as pitch and rhythm. Poietic processes (while not considered in this study) present a range of potential planes of discourse.

Comprehensive Strategy

Is a comprehensive strategy for the analysis of fixed media electroacoustic music possible? This question has been underlying much of the discussion in this study and it has been responded to both indirectly and in fragments. This study has dedicated significant space to criticism of

⁵ Katharine Norman, *Sounding Art: Eight Literary Excursions through Electronic Music* (Aldershot: Ashgate Publishing Limited, 2004), 37.

⁶ *Ibid.*, 69.

analytical approaches as well as to separate consideration of individual planes of discourse.

However, while a more comprehensive approach has been suggested, it has not been discussed in depth. In this section, the question of the plausibility of a comprehensive analytical strategy is examined further.

As may be gleaned from the above discussion and from previous chapters, it is the contention in this study that a single universal methodology for the analysis of fixed media electroacoustic music is not possible or even desirable. This has been illustrated throughout this study. It has been argued that fixed media electroacoustic music affords a range of degrees of representation and abstraction and that this creates the potential for multiple planes of discourse. Because such a wide range is possible, no single analytical tool (or “filter”) can be applicable to all of this music. For example, it has been illustrated that Smalley’s spectromorphology (while it is an extensive system) only focuses on certain types of discourse. While this may be relevant to a particular work, it has been illustrated in Chapter 3 that this is not always the case. In many of these cases, other methods of describing or conceptualizing a particular piece (such as those concerned with “concrete” signification) are more applicable. Conversely, spectromorphology may reveal pertinent information for another work in which other approaches such as Field’s landscape morphology might be irrelevant.

However, as has also been suggested throughout this study, a more general approach is proposed here. This is more an overall approach than a specific methodology or model. The overall approach suggested here has four main stages.⁷ The organization of this into stages is for

⁷ This division into stages should not be interpreted as presenting a preset or step-by-step approach. It has been argued above that such an approach to analysis is neither feasible or desirable. This division is intended to illustrate aspects of a general approach to analysis which overlap in practice and are often themselves interactive.

illustration, not to necessarily prescribe a four-step process or formula for fixed media electroacoustic music analysis. Some of these “stages” may also take place simultaneously.

Search for pertinences

The necessity of a search for pertinences has been emphasized throughout this study. As previously stated, François Delalande argues that analysis should be guided by a “search for pertinences” meaning that the analyst should be led by an attempt to uncover information that explains or illuminates either poietic or esthetic processes. Delalande states "The specific features of the object which are considered pertinent are those explained through compositional strategies and choices, or those which contribute to explain certain listener responses." ⁸

However, in this study, no attempt is made to offer a specific method as to how exactly this search should be conducted. This study is primarily concerned with the esthetic level and, although Delalande suggests that there may be some consistencies between listeners, it is not possible to prescribe precisely what elements of a piece will be esthetically pertinent to an individual listener/analyst. Esthetic processes vary between individuals as well as between listenings. As Delalande points out, "one of the difficulties of describing music as heard is that we never hear it twice the same way." ⁹

Application of descriptive tools

Guided by a search for pertinences, the appropriate descriptive tools can be employed. Examples of application of the descriptive approaches considered in this study have been discussed in Chapters 2 and 3. However, these descriptive approaches might be adapted or

⁸ François Delalande, “Music Analysis and Reception Behaviours: Sommeil by Pierre Henry,” *Journal of New Music Research* 27 (1998): 10.

⁹ *Ibid.*, 11.

applied in different ways. The discussion and application in this study is intended solely as a starting point for analysis.

In addition, the descriptive tools appropriate to any given analytical situation are not necessarily limited to those considered in this study. Other approaches to description of fixed media electroacoustic are certainly possible. In addition, traditional concepts such as pitch, rhythm, counterpoint, etc., should be employed where appropriate. The absence of these concepts from the discussion in this study does not suggest that they are less important to fixed media electroacoustic music analysis. However, as much has been written on the subject of traditional analytical techniques, discussion of them here would be extraneous to the purpose of this study.

Interconnection between planes

Depending on the nature of the piece, interconnection between planes of discourse may (in most cases) warrant consideration. As stated above however, the way in which this is approached is contingent on the work in question. The types of interconnection (interactive, interdependent, juxtaposed, parallel or any other type) will vary, and the evaluation of this interconnection is also interpretive.

It should also be added that the idea of interconnection should not be imposed on a work. Just as it would be inappropriate to assume that all fixed media electroacoustic works should be described using spectromorphological (or any other) concepts, it would also be inappropriate to force the notion of interconnection between planes of discourse onto all fixed media electroacoustic works. Interconnection should be discussed only when it is judged to be a pertinent feature of the work. It is also argued, however, that this interconnection is a primary distinguishing feature of much fixed media electroacoustic music and should therefore not be disregarded.

Interpretation

Ultimately, an analysis of a fixed media electroacoustic work should illuminate something about esthetic processes and how these processes distinguish it. In light of this study's emphasis on esthetic processes, the interpretive process does not aim to merely represent the structure (or "neutral level") of a work. Alternatively, the relationship between the perspective of the analyst and the work itself is represented. Again turning to Katharine Norman's *Sounding Art*, her interpretation of *Talking Rain*, for example, does not seek to simply represent the work itself. It is instead a representation of her relationship to the work (her perceptions, associations, emotional responses, and her reaction to it).

This perspective on interpretation is not atypical, but rather reflects any interpretive situation. A pianist's interpretation of a Mozart sonata, for example, is not only a reflection of the performer and it is not only a reflection Mozart; it is a reflection of the relationship between both. Similarly, Katharine Norman's interpretation of *Talking Rain* is not a representation of *Talking Rain* nor is it a representation of Katharine Norman; it is instead a representation of the relationship between the two. Moreover, even something so ostensibly objective as a spectrogram image is actually an interpretation. In order to obtain a "satisfactory" spectrogram image, one must adjust analysis parameters to acquire an image to reflect what is perceived aurally (often in an attempt to obtain "objective" verification of what is heard). Only when the image reflects what one either wants to or actually does hear (which is really a search for pertinences) is a spectrogram image useful.

Therefore, it is argued in this study that an analysis of fixed media electroacoustic music should not attempt to say what a certain piece is (in terms of the neutral level), but it should instead shed light on the esthetic processes. This is not to suggest that a work does not have a "structure" or that structure is not important, but rather that what is important is the esthetic

processes which result from the relationship between that structure and the listener/analyst's experience of that structure.

England (G & T Swimmers)

For a brief illustration of the stages discussed above, Antti Saario's *England (G & T Swimmers)* is revisited. This analysis is partial and preliminary, focusing on the excerpt considered in Chapter 3 (the opening two minutes and five seconds). The objective here is not to produce a complete analysis itself, but simply to illustrate a potential application of the overall approach described in the preceding pages.

Search for Pertinences

In initial listenings, Saario's piece gives the impression of being one that involves multiple levels of discourse. The apparent overlapping of different planes of activity (and spaces) in this excerpt was discussed in Chapter 2 and seems to involve multiple types of interconnection. At times these planes seem to be interactive. For example, at 1:20, when a male voice says the letter "G!" the pitch G is sounded in a background layer. At some points however, sound events operating on one plane carry over into another. For example, leading up to 0:45, the sounds of ice clinking in a glass are part of the interior scene (accompanied by spoken phrases such as "Would you like some ice in your wine?" or "Nice drink"). But following this, the "scene" changes and these clinking sounds take on a more abstract quality. At other times, disparate realities or planes of discourse seem to occur simultaneously but without affecting each other, as if they are simply layered onto one another. For example, between 1:35 and 2:00 there seem to be multiple layers, including a pitched texture, fragments of the interior scene (such as group laughter and conversation) and layers of interior sounds. Some of these sounds, while seeming to belong to the same scene or space, are separated from it through an unnatural presentation. For example, the sound of someone swallowing (at 1:59) is unnaturally magnified by microphone

placement. There are also abrupt shifts in these planes. For example, at 1:30, there is an abrupt transition in which pitched based material (similar to that previously making up the background) is suddenly placed in the foreground. A similar example occurs at 0:45. It seems from this initial exploration (and as was shown in Chapter 3) that activity on multiple planes of discourse and the interconnection between these planes warrants further exploration.

Application of Descriptive Tools

In Chapter 3, several of the descriptive tools considered in this study were applied to this excerpt and that discussion will not be duplicated here. As was illustrated in Chapter 3, the approaches dealing with concrete meanings such as landscape morphology and sonic rhetoric seem to be better applied to this work than those that emphasize abstract elements such as spectromorphology or Moylan's *Analytical System*. In a more complete analysis, descriptive tools dealing with pitch relationships would be employed and the intelligible speech in this excerpt should also be considered. However, in an initial consideration, the pitch relationships in this excerpt do not seem to be primary carriers of the discourse in themselves. Although pitch is relatively prominent in this excerpt and is organized in a relatively logical manner, it does not develop in a way that is of analytical significance. Returning to the search for pertinences, I sense (subjectivity is inescapable here) that something is, in fact, quite interesting about this piece. This leads me to consider something other than the pitch relationships alone. The significance of the pitched material in this excerpt seems also to be more connected with the concrete events and seems also to link planes of discourse.

Interconnection Between Planes

The interconnection between planes of discourse has been briefly considered in the above paragraphs. Similar interconnection can be identified in other parts of this piece, and a few

additional examples are included here. In a more complete analysis however, this discussion would be more exhaustive.

Between 2:45 and 2:52, the sounds of ice clinking in a glass (from the interior scene presented earlier) reappear. But they have now been altered. They have been pitch-shifted and now comprise a texture made up of densely packed iterations. Yet, they are still recognizable as the sounds of ice clinking. They are now lying in an ambiguous area between the abstract and concrete. It now seems more appropriate to use spectromorphological terms such as graduated continuant or to identify an internal motion typology. But, the concrete element of these sounds is also clear. This type of interconnection is particularly typical of fixed media electroacoustic music.

Interconnection of this type continues to occur when soon after (at 3:06), the sound of liquid being poured into a vessel is unambiguously presented. This is immediately followed by varying degrees of abstraction of this sound as well as of the clinking ice sounds presented before (continuing until approximately 3:55).

Interpretation

In this preliminary address of this excerpt, the assumptions initially stated in the search for pertinences seem to be confirmed by further exploration. It appears that after further consideration, there are multiple types of interconnection between planes of discourse and that this seems to be a significant element in this piece.

This work could certainly be interpreted differently, however. The work seems to be intended as a representation of a particular place in England (as the title suggests). This might be interpreted in terms of dialectal montage (in some ways similar to Katharine Norman's *London*). In addition, as the work unfolds, it is framed by a radio broadcast, and this invites a narrative interpretation.

These multiple interpretive possibilities raise the notion of these four stages of analysis as being in constant feedback with one another. A hypothetical example of the analytical process might unfold as follows: An initial search for pertinences might lead an analyst in a particular direction and this might yield insufficient results, leading to an unsatisfactory interpretation. At this point, the exploration in the descriptive tools phase might lead to another idea of pertinences to be considered. This process might continue until an interpretation is reached.

Conclusion

In the course of this comparative study, many questions pertaining to the analysis of fixed media electroacoustic music analysis have been raised. In addition to comparison and criticism of existing scholarship, questions of analytical objectives and methodology have been considered. By focusing on the potential for multiple planes of discourse, this study is intended to fill a gap in the scholarship regarding electroacoustic music analysis. There are however, topics which cannot be dealt with sufficiently within the scope of this dissertation and warrant further consideration.

While a thorough examination is outside of the scope of this study, the objective of analysis should be considered further. Some views regarding the objective of analysis (such as the argument for the importance of a search for pertinences, and the consideration of multiple planes of discourse) have been put forth. It has been stated that the primary purpose of music analysis lies in the exploration of the relationship between the listener/analyst's perspective and the musical object (esthetic processes). This is another area that warrants further consideration

A preliminary overall approach has been put forth in this chapter. This is something that should also be considered further in a future study. It should be emphasized that the four-stage model presented in this chapter is intended merely to illustrate four main stages in analysis of fixed media electroacoustic music. In practice they will not always be quite so separated and it is

not necessarily recommended that they be applied in a step-by-step way or in a particular order (although interpretation will always form the final stage). These are decisions that are left to the individual analyst and will be determined in large part by the specific work being analyzed.

While this dissertation is primarily a comparative study and is focused on the representative approaches considered within it, it can also serve a secondary purpose. It is hoped that this dissertation might be of use as a user's guide to electroacoustic music analysis (or as a basic toolbox for analysis). As has been stated previously, the analytical approaches considered here (while representing the main stream of the spectrum of published approaches) do not cover all possibilities. There are many other possibilities. Most importantly, however, it is hoped that the comparative examination and additional discussion in this study has provided a starting point for further exploration.

CHAPTER 5
THREE MOVEMENTS FOR STRING ORCHESTRA

Three Movements for String Orchestra is a three movement work that explores musical time. Each of the three movements explores this in a different way. Movement I is dominated by an incessant and irregular ostinato that never completely establishes itself. Movement II is characterized by both stasis and slow transformations. Movement III is rhythmically energetic and takes the form of an irregular dance. All three movements are also characterized by the interplay of a small group within the ensemble and the group as a whole.

[Object 5-1. Three Movements for String Orchestra Score](#)

APPENDIX RESPONSES FROM COMPOSERS

Several additional responses to the question, “What is electroacoustic music?” are included here. The first is from Mike McFerron, composer and director of the annual Electronic Music Midwest festival.

“Electroacoustic” to me is simply music where electricity is a major component in the creative process. In other words, electroacoustic music for me is music that is written idiomatically for an electronic medium similar to [the way in which] orchestral music is music written for the orchestra. I take the view that electroacoustics is just another instrumental medium (that is very large and diverse). For me, the definition is broad -- narrowing the definition is really a definition of style (ie., pop vs. concert music -- jazz vs. techno -- etc....) ¹

Composer Erdem Helvacioğlu also provided a definition.

Electroacoustic music seems to mean the genre that is created by the processing of recorded analog sounds, but I think it is so much more than this very general definition. I think it is the only form of music where both the composer and the listener are urged to listen to the very fine details of every imaginable sound. This could be the sound of a marble rolling right near to a microphone, or the sound of a jet motor recorded from ten meters away. All of the innovative timbre processing techniques and the wild imagination of the composers combined with these details of sound creates the core of one of the most exciting musical genres of the 20th and 21st century : electroacoustic music. ²

Scott Wyatt of the University of Illinois also provides this definition, which he describes as a combination of definitions from multiple sources.

Generally speaking, electroacoustic music is music that is produced, changed or reproduced by electronic means (as distinguished from acoustic music). However, electroacoustic music, within the context of contemporary concert art music, refers to a genre of music, whose compositional idea is specifically composed to require specialized electronic means for its sonic creation, assemblage and presentation - that could not be created in any other manner.

Electroacoustic music is distinct and quite different from: electronic realizations of traditionally performed music, any form of acoustical music receiving electronic amplification, and any recording of traditionally performed music using electronic amplification for playback. It incorporates the subcategories of Musique Concrete,

¹ Mike McFerron, email message to author, April 4, 2008.

² Erdem Helvacioğlu, email message to author, April 15, 2008.

Elektronische Musik, Tape music, Synthesizer music, Computer music and various combinations of these subcategories created for either fixed media, interactive and/or live performance.³

³ Scott Wyatt, email message to author, April 15, 2008.

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BIOGRAPHICAL SKETCH

Tim Reed graduated with a B.A. in creative music technologies from LaGrange College in 1999 and subsequently attended the Dallas Sound Lab School for the Recording Arts in the Fall of 2000. Tim completed his M.M. in composition/theory at Illinois State University in 2004. Tim has received awards in the Goliard Ensemble Composition Competition, the LaGrange Symphony Young Artist Composition Competition, and the 2004 Pedrick-Hutson Guitar Duo Commission Contest. His music has been performed at various festivals and concerts including Music '04 (Cincinnati Conservatory), the University of Nebraska at Kearney New Music Festival 2004, the 2005 Nong Project, SEAMUS, Electronic Music Midwest, the International Double Reed Society Conference, the Kentucky New Music Festival, FEASt, CHASM, and the Florida Electroacoustic Music Festival. Tim's works have also been programmed by the string orchestra, R20 in Wroclaw, Poland, and by the 2007 60 x 60 Project. In October of 2003, Tim composed a score for the WIP Studios film, "Prison-a-Go-Go!", which has received several awards including "Best Feature Film" in the Backseat Film Festival. His compositions have been featured on numerous radio programs including Foldover (Oberlin, Ohio), Difficult Listening (Perth, Australia), Furthernoise Radio (Bristol, UK) and No Pigeonholes (San Francisco, California). Tim's compositions have been published by Trevco Music and Lonely Whistle.