ASPECTS OF PERFORMANCE IN THREE WORKS FOR PIANO AND TAPE:
LARRY AUSTIN'S SONATA CONCERTANTE, THOMAS CLARK'S
PENINSULA, AND PHIL WINSOR'S PASSAGES

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF MUSICAL ARTS

By

Octavia Brandenburg, B.M., M.M.
Denton, Texas
May, 1993
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This dissertation primarily concerns performance aspects in compositions for piano and tape, using three specific works as the basis for discussion: Larry Austin's *Sonata Concertante*, Thomas Clark's *Peninsula*, and Phil Winsor's *Passages*. These compositions are representative of the medium as a whole, yet each offers its own unique set of performance problems.

Chapter One serves as an introduction to the medium of electronics, providing a historical overview of electronic music and its instruments. Chapter Two is a survey of various compositional approaches that have been utilized in combining tape plus live instruments. Chapter Three deals with the construction and stylistic features of the three works by Austin, Clark, and Winsor. Personal interviews with the composers provided much of the information presented here. Finally, Chapter Four investigates specific performance problems associated with the three aforementioned compositions, taking into account specific topics such as tape notation and synchronization, rhythmic notation, improvisational elements, phrasing, and pedaling. A biographical sketch of Larry Austin, Thomas Clark, and Phil Winsor is included in the Appendix.
Tape recordings of all performances submitted as dissertation requirements are on deposit in the University of North Texas Library.
PREFACE

This paper primarily concerns performance aspects in compositions for piano and tape. Even though the medium combining prerecorded sounds with live performers has been in existence for some four decades, it seems that much of its history is not generally known. For this reason, I have included introductory information in the first two chapters: a brief history of electronic music and its instruments, followed by a look at various compositional approaches to the combination of tape plus instruments.

I first became interested in the medium of piano and tape after having attended performances featuring these types of compositions at the University of North Texas. Their appeal was that they were inventive, and the presence of the prerecorded taped sounds added a new dimension to my perception of the function of the piano.

The progression of electronic music has coincided with the advancement of electronic technology—synthesized instruments now rival many of their acoustic counterparts, and composers today have at their disposal a greater variety of sonic resources than ever before. Compositions for piano and taped electronic sounds are one of the paths composers have taken in their attempt to combine acoustic instruments with electronics.

Chapters Three and Four of this paper deal with the style, form, and performance aspects of three works for piano and tape, chosen for their individual characteristics: Larry Austin's *Sonata Concertante*, Thomas Clark’s *Peninsula*, and Phil Winsor’s *Passages*. 
Invaluable information gathered from detailed interviews with the composers, as well as their assistance with rehearsals, was facilitated by the fact that all three are faculty members of the University of North Texas.

I wish to express my appreciation to professors Larry Austin, Thomas Clark, and Phil Winsor for their willingness to give generously of their time and expertise in my preparation of this study. My thanks also to members of my committee for their time and consideration: D. M. A. committee chairman Dr. Edward Baird, Dr. Alis Dickinson, Dr. Steven Harlos, Mr. Morris Martin, and particularly to Mr. Adam Wodnicki for his guidance and encouragement throughout the development of this dissertation.
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North Texas State University
School of Music

Graduate Piano Recital

OCTAVIA BRANDENBURG

Monday, March 7, 1988 6:15 p.m. Recital Hall

Sonata in Dm, L. 415..............Scarlatti
Sonata in Fm, L. 437
Sonata in Dm, L. 422

Fantasie in Cm, Op. 15 ("Wanderer")......Schubert

Intermission

Nocturne Op. 33, No. 3..............Faure
Impromptu Op. 102, No. 5

Sonata No. 7 in B-Flat, Op. 83......Prokofieff
   Allegro inquieto
   Andante caloroso
   Precipitato

Presented in partial fulfillment of the
requirements for the degree of
Doctor of Musical Arts
UNIVERSITY OF NORTH TEXAS
School of Music

presents
Graduate Recital

OCTAVIA BRANDENBURG, Piano

Monday, November 20, 1989  8:00 p.m.  Recital Hall

Program

Sonata in F Major, K. 332
   Allegro
   Adagio
   Allegro assai

Fantasiestücke, Op. 12
   Des Abends (Evening)
   Aufschwung (Soaring)
   Warum? (Why?)
   Grillen (Whims)
   In der Nacht (In the Night)
   Fabel (Fable)
   Traumes Wirren (Restless Dreams)
   Ende vom Lied (End of the Story)

INTERMISSION

Jeux d'Eau

Trois Mouvements de Petrouchka
   Danse russe (Russian Dance)
   Chez Petrouchka (In Petrouchka's Room)
   La semaine grasse (The Shrovetide Fair)

Presented in partial fulfillment of the requirements for the degree of Doctor of Musical Arts

Reception following in the Green Room
Presents

A Graduate Recital

BRAD BECKMAN and OCTAVIA BRANDENBURG, 
duo-pianists

Monday, November 25, 1991 8:15 p.m. Concert Hall

En blanc et noir
   I. Avec emportement
   II. Lent, Sombre
   III. Scherzando

- pause -

Rapsodie Espagnole
   I. Prélude à la nuit
   II. Malagueña
   III. Habana
   IV. Feria

- pause -

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   IV. Easter

Presented in partial fulfillment of the
requirements for the degree of
Doctor of Musical Arts
University of North Texas
College of Music

presents

A Graduate Lecture Recital

OCTAVIA BRANDENBURG, piano

Monday, November 16, 1992, at 6:00 p.m.
Merrill Ellis Intermedia Theater

ASPECTS OF PERFORMANCE IN
THREE WORKS FOR PIANO AND TAPE:
LARRY AUSTIN'S SONATA CONCERTANTE
THOMAS CLARK'S PENINSULA, AND
PHIL WINSOR'S PASSAGES

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Presented in partial fulfillment of the
requirements for the degree of
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CHAPTER I

HISTORICAL OVERVIEW OF ELECTRONIC MUSIC AND ITS INSTRUMENTS

Electronic music has its roots in the sound-generating machines of the early 1900s. These machines were made possible by the efforts of Alexander Graham Bell and Thomas Edison, who, with their respective inventions, the telephone in 1876, and the phonograph in 1878, created not only the means of transmitting sounds by way of electricity, but also the possibility of storing and altering them.

One of the earliest electronic instruments was Thaddeus Cahill's Dynamophone, also called Telharmonium, exhibited in 1906 in Holyoke, Massachusetts. His instrument employed a touch-sensitive keyboard to imitate familiar orchestral instruments, achieved through the use of dynamos. The Dynamophone was anything but practical, weighing 200 tons and measuring 60 feet in length, built at a cost of about $200,000. Its importance, however, lay in the fact that it introduced new possibilities of sound: new timbres and pitches.

Other electrical instruments soon followed, such as the Theremin, devised by Russian Leon Termen in the early 1920s. The Theremin employed an oscillator which was controlled by the motions of the performer's hands around a vertical aerial.

Two notable keyboard-oriented electronic instruments, both from Europe, were the Ondes Martenot (1928), for which Messiaen composed several pieces, and the Trautonium (1930). And in America, the invention of the vacuum tube led to the first electronic
organ, built by Laurens Hammond in 1929, and produced commercially beginning in 1935. The vacuum tube, invented by Lee De Forest in 1906, was a device of major significance, as it could be used for the generation, modulation, amplification, and detection of current. All of the above instruments allowed for the control of timbre, pitch, and volume, and all were designed for use in live performance.

These early electronic instruments, though still rather archaic in terms of sound-producing capabilities and construction, met with some degree of success. Nevertheless, many composers expected much more. As Varèse stated in a 1916 newspaper interview: "I refuse to submit myself to sounds that have already been heard. What I am looking for are new technical mediums which can lend themselves to every expression of thought and can keep up with that thought."2

Several media were experimented with between World Wars I and II. Varèse, Milhaud, Hindemith, and others produced limited but impressive results using variable-speed turntables to manipulate sounds. In *Imaginary Landscape No. 1* (1939), John Cage transformed previously recorded sound, in this case, RCA Victor test recordings, by playing them on two variable-speed turntables. Others experimented with film soundtrack, on which rather unpredictable results were obtained from the drawing of designs on

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transparent strips located alongside the film frames. These were then translated into sounds through the patterns of light and dark that emerged.\(^3\)

A development of major significance was the invention in Germany of the magnetic tape recorder. Though produced in 1935, its real impact was not felt until around 1950, after its commercial introduction.

The easy manipulation of sounds afforded by the tape recorder led to the establishment of the first studio for electronic music. Pierre Schaeffer, a sound technician at Radiodiffusion-Télévision Française in Paris, conducted studies in what he called "musique concrète." His work involved the manipulation of recorded sounds derived from the natural world, that is, sounds which are not produced by electronic means. Schaeffer transformed these sounds by playing them at varying speeds, in forward or reverse; superimposing fragments of one sound on another; splicing differing sound fragments together; and creating ostinato effects by splicing a tape into a continuous loop.

RTF broadcast some of his work live, in a "concert of noises," which resulted in immediate interest from the public and other composers. In 1949 Pierre Henry joined Schaeffer at the studio and they began the first of several musical collaborations. In 1951 RTF formally introduced the studio as the "Groupe de Musique Concrète," and opened it to other musicians. Equipment in the studio included a number of tape recorders, a "space potentiometer" (a mixing device that could move sounds in space), a "morphophone," which could produce echo effects, and two variable-speed tape-loop

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\(^3\) Ibid.
machines ("phonogenes"). The studio attracted several well-known composers, including Boulez, Stockhausen, and Messiaen. Their interest diminished, however, as they became dissatisfied with Schaeffer's insistence on the use of processed natural sounds rather than electronically generated sounds. Still, the work of Schaeffer and others established the musical use of tape and performers, including the following works produced at the studio: Jazz et Jazz, for piano and tape, by André Hodeir (1951-52); Darius Milhaud’s La Rivière endormie (Étude Poétique), Op. 333, for mezzo-soprano, two narrators, orchestra, and tape (1954); and Déserts, composed in 1954 by Edgard Varèse, for winds, percussion, and tape (only a portion of the tape realization was done at the RTF studio). The Varèse work was one of the most important of the musique concrète compositions, as it placed electronic music within the context of an orchestral composition.

The first electronic studio in Germany, the Nordwestdeutscher Rundfunk (Northwest German Radio) in Cologne, was established as the result of a program presented there in October of 1951 by composers Robert Beyer and Herbert Eimert and physicist Werner Meyer-Eppler. The studio was directed by Eimert, an advocate of serialism, who sought to produce purely electronic music ("elektronische Musik"), as opposed to the French method of relying on recordings of sounds gathered from natural sources. Eimert was responsible for the selection of equipment and composers who would work at the studio. Equipment in the Cologne studio included two electronic keyboard

4Ibid., 12.

instruments—the Monochord and Melochord, electronic oscillators, tape recorders (variable-speed and four-track), various filters, white noise generators, ring modulators, reverberators, and tape-loop players.

NWDR became the best known of the early electronic music studios, thanks to the efforts of Eimert and the association of Karlheinz Stockhausen with the studio. Stockhausen joined Eimert in 1953, after working for a short time at the RTF studio in Paris. His first works in Cologne were the two Studien of 1953 and 1954, for which he devised a sophisticated graphic notation. Studie II became the first electronic score to be published.

The first composition in which electronic and concrete elements were combined was Stockhausen’s Gesang der Jünglinge (1956), also considered to be the first masterwork of electronic composition. This merger of electronic and concrete principles was indicative of the general trend around the mid-1950s, as the terms "musique concrète" and "elektronische Musik" began to lose their individual identities, becoming incorporated under the generic label of "tape composition." Among composers who later worked at the Cologne studio were Ernst Krenek, Henri Pousseur, and György Ligeti.  

By 1960 most of the major electronic studios of Europe had been established. One of the best known was the Studio di Fonologia in Milan, where Luciano Berio, Bruno Maderna, John Cage, and Henri Pousseur composed some of their earlier works. During

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6 Holmes, *op.cit.*, 65.
the mid-to late-1950s other studios were established in Tokyo, Eindhoven, Munich, Warsaw, London, Brussels, and Stockholm.

Whereas in Europe and elsewhere, most studios were supported by public or government funds, in Canada and the United States, studios were either private or affiliated with universities. Among these were Gordon Mumma and Robert Ashley’s studio in Ann Arbor, Michigan (1958), Morton Subotnick’s Tape Music Center in San Francisco (1959), studios at the Universities of Illinois and Toronto (both 1958), and the first major American studio—the Columbia-Princeton Electronic Music Center (1959). John Cage’s *Imaginary Landscape No. 5* (1951-2), one of the first works of tape music composed in America, was realized at the private New York studio of Louis and Bebe Baron, as was his *Williams Mix* (1952).

By 1970 electronic music studios numbered over 400 in the United States alone, their size varying from small home studios to large university complexes. This great increase in the number of studios was largely the result of the development of the voltage-controlled electronic music synthesizer.

The first electronic music synthesizer was the RCA Synthesizer, built by Harry Olsen and Herbert Belar at the Sarnoff Research Center in New Jersey in 1955 and later given to the Columbia-Princeton Electronic Music Center, which was formally established

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in 1959 as a result of the efforts of Columbia University instructors Otto Luening and Vladimir Ussachevsky.

The RCA synthesizer, already a very large unit, was replaced in 1959 by an even larger synthesizer, the Mark II, also constructed by Olsen and Belar. The Mark II contains over 1700 tubes, and measures twenty feet long by seven feet high. The Mark II is a self-contained system of previously separate machines (oscillators, mixers, etc.), which also eliminates the need for tape manipulation. This synthesizer allows composers much more control over pitch, volume, duration, and timbre. Milton Babbitt, who has been the leading backer of the Mark II, was instrumental in converting it to a tape recording system, as opposed to the old method of recording on disc.⁹

In 1964 Robert Moog constructed the first synthesizer which employed voltage-controlled components, thereby increasing the speed and accuracy of sound generation. These advances coincided with the miniaturization of electronics, and in 1966 synthesizers by Moog and also Donald Buchla were introduced commercially. The synthesizer gained greater public attention with the release of *Switched on Bach*, a record of Bach’s music performed on a Moog synthesizer by Walter Carlos. Also, Morton Subotnick composed a series of large-scale works using a Buchla synthesizer.

While the Moog and Buchla instruments were intended mainly for use in creating tape music, Paul Ketoff’s synket, built in 1965, was designed for live performance.

Indeed, most new instruments are for use in live situations, especially since they have become of increasing importance in rock performances.\(^\text{10}\)

Computers have continued to refine the degree of control available to composers. In 1961 at Bell Telephone Laboratories in New Jersey, engineer Max Mathews developed the first computer program capable of generating sound. Adaptations of his programs were installed in 1964 at Princeton and Stanford Universities, where they began to be used by James K. Randall and Charles Dodge.

Lejaren Hiller and Leonard Isaacson composed the first important work with the aid of a computer in 1956, the *Illiac Suite*, for string quartet. Each movement was composed using a different program developed to obtain the desired compositional style.\(^\text{11}\)

As applied to music, computers have basically three functions: (1) controlling the equipment (synthesizer modules); (2) as an aid in the compositional process; and (3) for the generation of sounds through the use of special programs. Computers can also be used to transform prerecorded sounds, such as those produced by an acoustic instrument.\(^\text{12}\)

The use of computers in sound generation continues to be actively researched at universities, where composers have ready access to equipment, and by IRCAM (Institut de Recherche et de Coordination Aoustique/Musique) in Paris, formed in 1976 under the direction of Pierre Boulez. IRCAM, which is supported by the French government, has

\(^{10}\text{Holmes, op. cit., 84.}\)

\(^{11}\text{Morgan, op.cit., 477.}\)

\(^{12}\text{Ibid., 476-77.}\)
assimilated the most advanced computer facilities available. Many noted composers have worked at IRCAM, including Luciano Berio and American Tod Machover, former director of musical research.\textsuperscript{13}

\textsuperscript{13}\textit{Ibid.}, 477-78.
CHAPTER II

SURVEY OF VARIOUS COMPOSITIONAL APPROACHES IN
COMBINING TAPE AND INSTRUMENTS

Early in the development of taped electronic music, some composers welcomed the idea of finally gaining complete control over their work—not having to rely on the interpretation (or misinterpretation) of the performer. However, having nothing on stage to look at but two loudspeakers was disconcerting to audiences. The loss of the performer meant also the loss of drama, uncertainty, and visual interest. Since electronic music on tape is fixed, it will never vary from its original form and never benefit from differing interpretations. Partly as a result of these factors, music for prerecorded tape and live performers became more popular with composers in the years following the first such compositions in the early 1950s.

Composers have dealt with the combination of live instruments and tape in a variety of ways. Until around 1960, most composers made use of orchestras or large instrumental ensembles for the live element, the idea being, the more numerous and varied the instruments, the greater the possible connections with the taped sounds.¹

The first publicly performed piece of this type was Luening and Ussachevsky’s *Rhapsodic Variations for Tape Recorder and Orchestra* (1953-4), commissioned and

premiered by the Louisville Orchestra. The solo part of this work is the tape, which was derived from the recording of an instrumental ensemble. The work juxtaposes thematic materials between the tape and orchestra, with the focus being on melodic rather than timbral considerations.

The first section of *Rhapsodic Variations* mainly involves the introduction of thematic statements by the orchestra, followed by their canonic treatment in the tape part. Heard often in this section are the artificially reverberated flute melodies on the tape. Later in the work, the tape introduces a percussive theme which resolves into a thematic dialogue with the orchestra, followed by a short cadenza, also in the tape part. In the next section, the tape assumes a totally percussive role in the presentation of complex rhythmic canons. The piece ends quietly, with the bell-like sounds of the tape and the pastoral orchestral part moving in simultaneous but metrically independent patterns.\(^2\)

Another work in which tape and performers share thematic material is *Dialogues for Piano and Two Loudspeakers* (1963) by Walter Carlos. This piece is rhapsodic in character, consisting of a piano part, against which timbrally contrasting motives are heard on the tape.\(^3\) These motives are constructed around a series of intervals which gradually diminish in size while rising in pitch, extending from a perfect fifth down to a minor

\(^2\)Otto Luening and Vladimir Ussachevsky, record jacket notes for *Rhapsodic Variations for Tape Recorder and Orchestra*, performed by the Louisville Orchestra, conducted by Robert Whitney (First Edition Records LOU-5455).

\(^3\)Ernst, op. cit., 128.
second (C to G, C-sharp to F-sharp, etc.). The tape part supplies thematic as well as accompanying elements, and in contrast to the Luening-Ussachevsky work, is derived from purely electronic sources.

In *Déserts* (1949-54), Varèse took an entirely different approach to the combination of tape and performers: he completely isolated the one from the other. The work calls for an ensemble of winds, brass, and percussion, and two monophonic tapes with speakers arranged to produce a stereo effect. These two elements (ensemble and tape) alternate throughout the piece in the following manner: Instruments / Tapes / I / T / I / T / I. Both parts are sectional in construction. The tapes consist of some electronic, but mostly concrete sounds, based on recordings Varèse made of iron mills, saw mills, and various other factories in Philadelphia. Principal features of *Déserts* are rhythmic and timbral contrasts.

Mario Davidovsky composed a series of eight pieces for various instruments and tape entitled *Synchronisms* (1962-74), using the RCA Mark II synthesizer at the Columbia-Princeton Center. In these pieces Davidovsky focused on the possibilities of dialogue between the live and taped sounds. In *Synchronisms*, especially the later ones, such as *No. 6 for Piano and Electronic Sounds* (1970), Davidovsky achieved a fine timbral balance between the tape and instruments. While in the earlier *Synchronisms*
Davidovsky tended to contrast the two sources, in the later pieces he was more interested in integrating and unifying the tape and performers. The electronic sounds suggest, without actually imitating, the instruments with which they are joined, and the tape part assumes an equal role in the composition. In No. 6, which was awarded the 1971 Pulitzer Prize in music, "the electronic sounds in many instances modulate the acoustical characteristics of the piano, by affecting its decay and attack characteristics." Many of Morton Subotnick's compositions have involved the use of the Buchla synthesizer, including Prelude No. 4 for piano and electronic tape (1966). In this piece a certain unity between the two elements is achieved through the "highly instrumental approach" to the synthesized music, which often replicates, on a timbral and motivic level, the piano writing. Subotnick's synthesized tones effectively express a variety of moods and specific sounds, such as the night sounds in nature and, near the end, the faint bell-like tones of an ice cream truck. Prelude No. 4, which, according to the composer, is "autobiographical--working backward in my life," retrogresses in its texture from complex to more simple.

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7Mario Davidovsky, Program Notes for *Synchronisms No. 6*, Edward B. Marks Music Corporation, 1972.


9Melody Peterson, record jacket notes for *Prelude No. 4*, performed by Richard Bunger (Avant Records AV 1008).
Henri Pousseur’s *Rimes pour différentes sources sonores*, composed in 1958-9, also focuses on timbral similarities between tape and performers. The sound sources are set against each other in an antiphonal manner throughout most of the composition, which consists of three parts. The first section begins with an orchestra of violins, violas, cellos, contrabasses, harp, piano, celesta, vibraphone, and glockenspiel. Also, loudspeakers are arranged at the front and rear of the hall. The second section, which begins with the tape, uses a larger orchestra: two sextets of winds, brass, and strings, paired with two groups behind the loudspeakers. A percussion group of amplified piano and marimba is placed between them. This section is more complex in design than the first. The final part is relatively simpler and employs only the orchestra. The tape part of *Rimes* is made up of mostly electronically generated sounds, ranging from simple sine waves to complex “white noise,” and was realized at the Brussels electronic music studio, which Pousseur was instrumental in establishing.¹⁰

In his work *Differences* (1958-59), Berio also concentrates on timbral values. The piece is scored for flute, clarinet, viola, cello, harp, and magnetic tape. The realization of the tape part was done at the Milan studio, after Berio first recorded sections for instruments in Paris. The recorded instruments occur in their original form as well as in electronically altered form. Berio’s objective was to establish a homogeneous texture between the two sound sources, in order to concentrate on large-scale processes instead.

¹⁰Henri Pousseur, *Rimes pour différentes sources sonores*, from *The New Music*, performed by the Rome Symphony Orchestra, conducted by Bruno Maderna, adapted from notes by Massimo Mila (Victrola VICS-1239, 1967).
of momentary interactions. The tape part sometimes sounds like an extension of the live instruments. Also, he used comparative densities and qualities of timbres as structural tools. According to Berio, in "Différences the original model of the five instruments coexists alongside an image of itself that is continually modified, until the different phases of transformation deliver up a completely altered image that no longer has anything to do with the original model."

Since the mid-1960s, works for tape and soloist or small ensemble have, in large part, supplanted those for tape and orchestra that were popular in the medium's infancy. During this time, composers have tended to concentrate on ways of unifying the fundamentally inherent differences between electronics and acoustic instruments, resulting in innovative structural associations and the extension of conventional instruments beyond their traditional capabilities.

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CHAPTER III

CONSTRUCTION AND STYLISTIC FEATURES OF WORKS FOR PIANO AND TAPE BY AUSTIN, CLARK, AND WINSOR

This chapter deals specifically with the three compositions chosen for this study. Interviews with the composers supplied much of the information presented here. Each piece will be discussed individually regarding elements of form and style, to be followed by a survey of performance aspects in Chapter Four.

Larry Austin's *Sonata Concertante*

*Sonata Concertante*, for pianist and computer music on tape, was commissioned by Bob Houston to be performed on his "Sound Source" radio series. The piece was completed in January of 1984 and composed for performance by Yvar Mikhashoff, who premiered it at the State University of New York in Buffalo for the North American New Music Festival. Austin completed a revised version of *Sonata Concertante* on May 1, 1985. The revision basically involved cutting approximately four minutes from the first, or Capo, section of the piece. The revised version was first performed by Adam Wodnicki, who was the pianist for the recording of the work in 1988.1

*Sonata Concertante* was composed using a computer program written by Austin, "CZWalk." This program was designed according to the principles of fractal theory. The

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1Interview with Larry Austin, Denton, Texas, July 22, 1992.
word "fractal" was invented by Benoit Mandelbrot to describe his newly developed geometry of nature, whereby many of the "irregular and fragmented patterns around us" can be defined in mathematical terms, thus deriving understandable patterns from randomness. The degree of irregularity or fragmentation of the shapes is "identical at all scales." In the case of Sonata Concertante "fractal music" is produced by "computer-determined material extrapolated from self-similar pitch and durational patterns." "Self-similar" refers to a quality of replication that exists in nature as well as in all natural things. For example, ". . . one grain of sand on a beach is quite similar to the entire beach." Therefore, the properties of the one are representative of the whole.

In Sonata Concertante fractal theory was applied to 175 lines of text extracted from Mandelbrot's The Fractal Geometry of Nature. Austin chose phrases he liked, some fragments, some complete sentences, and put them together under the title Zone. The text of Zone, in fact, has been used by Austin in several of his compositions. Self-similar, in this case, means that the incidence of particular numbers of letters that appeared in words is similar at, for example, the sentence level, the phrase level, and the 175 lines of text. So, according to fractal theory, "the property of recurrence of particular words was predictable."  

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3Larry Austin, performance notes.

4Interview with Austin.

5Interview with Austin.
nature is irregular, fragmented.
a preface from beginning to end.
don't believe that the stars are carelessly strewn.
two instants in time vary irregularly as the time between becomes shorter.
a function without derivative.
going further and further to infinitely granular structure.
dimensions must not be multiplied beyond necessity.
b u t a multiplicity of dimensions is absolutely unavoidable.
a dust cloud floats around the orderly.
transitions between dimensions are fractal zones.
nonrandom fractals are strongly stratified and hierarchical.
is a coast zone infinitely long?
scaled, looked at again closer, sub-bays, sub-peninsulas appear.
a closer scale finds sub-sub-bays and sub-sub-peninsulas.
closer and closer, the length lengthens without bound.
new discoveries come from the unclassified residuum.
we superpose features, sharply distinct, real.
they need not be real, only the number.

The computer program "CZWalk" was used to extract fractal information from Zone by randomly "walking" through a file of text of specified length and in a specified direction, making selections along the way. The extrapolation involved counting the letters in a word, from the first through last letters and the space following, thus yielding a number for that specific word. For example, if the first word of a series was the word "research" and the second word was "music," the letter r would be assigned the number one and the letter m would be assigned the number ten. This would produce the sequence

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5 Thomas Clark, "Duality of Process and Drama in Larry Austin's Sonata Concertante," Perspectives of New Music XXIII/I (1984), 115.

6 Ibid.
This set of ascending numbers would continue until reaching the limit of 61, the total number of pitch specifications possible in one configuration of the Synclavier. The continuation of this process produced several ascending sets of numbers, all from 1 to 61, but each with a different combination of numbers. Austin then used a modular of 12 to divide all the numbers, and what remained were the numbers between 1 and 12 (an octave). Each number was then assigned to a pitch: number 1 = C, 2 = C-sharp, 3 = D, and so on. The ascending sets of numbers were also used to specify rhythms. The numbers grew progressively smaller as they ascended, up to 1-64th of a whole note, so that number 1 would be a whole note; 2 would be a half-note; 3, 1-3rd of a whole note; 4, 1-4th of a whole note (quarter note), etc. Austin did a lot of experimentation with the program to understand the results and ascertain what musical materials would be generated. The results were a "kind of mixture of chromatic and diatonic sounding successions of pitches when they’re collapsed [by modular 12]." The process of composition was the same for both the piano and computer music, with the exception of the computer music in the first (Capo) section of the piece, which was a modular of 61 rather than 12.

For the synthesized tape sounds Austin used the Synclavier II. All the tape sounds were resynthesized from 17 or 18 different notes from a Steinway concert grand. These were processed in such a way as to expand the seven-octave range of the piano to nine

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8 Interview with Austin.

9 Thomas Clark, op. cit., 115-116.

10 Interview with Austin.
octaves: ten notes lower and twelve notes higher. The composer then modulated these notes with the computer, giving them metallic sounding qualities, similar to those of a prepared piano.

The title "Sonata Concertante" implies the concept of two entities which join forces—in this case, the piano and computer music on tape. The title was derived from the 18th-century idea of the sinfonia concertante, which was neither a symphony, nor a concerto, nor a concerto grosso, but a genre in itself.¹¹

Sonata Concertante is comprised of three large sections: the Capo, the Cadenza, and the Coda. Each section is successively shorter in duration: ten minutes, 3 and one-half minutes, and one minute, respectively. These three sections correspond to the three sections of a sonata, with the Capo being the exposition, the Cadenza the development, and the Coda the recapitulation, (in spirit). The duality of sonata form is expressed in the way in which the "themes" (the taped sounds and the piano sounds) are presented in the Capo: they occur simultaneously rather than successively. Following an introduction of 40 seconds by the computer sounds, the piano enters with two loud c’s played two octaves apart, on C3 and C5, and held for ten seconds. In fact, the entire Capo section consists of single lines of parallel notes played two octaves apart in a declamatory manner, interspersed with occasional chords and trills. Each individual beamed sequence accelerates as it progresses from beginning to end.

¹¹Interview with Austin.
Each phrase begins with a sustained first note, ranging in length from eleven seconds to one second, as indicated by the numbers which appear above the fermatas. The Capo drives toward the Cadenza, eventually getting extremely fast, ending in one long trill which leads into the Cadenza.

The Cadenza is a complete change. Whereas in the Capo section the computer sounds were contrasted against the piano, in the Cadenza they interact with each other, exchanging improvisatory material. The first beat, the chord at the beginning of each boxed portion, is played simultaneously with the rolled chords of the tape and held with the sostenuto pedal for the remainder of the box. While the chord is sustained, the pianist plays improvised pointillistic notes according to the approximate pitches and spatial durational notation which Austin has provided. The number at the beginning of each box indicates its relative duration. This section accelerates in speed also, as does the Coda, going from .67 seconds per beat at the start of the Cadenza to .2 seconds per beat at the end.

\[\text{sempre espressivo e drammatico, ad libitum}\]

\[\text{Example 1. Beginning phrases of piano part of Sonata Concertante.}\]
end of the Coda. The acceleration of the Cadenza is accompanied by a progressive
decrease in the number of improvised notes.

Example 2. Beginning of the Cadenza section of *Sonata Concertante*.

In the Coda the tape continues in the same manner, chords followed by
improvisatory, pointillistic notes. The piano also continues with the "hammerstroke"
chords, only now they are not sustained, and there is no improvised material between
them. The length of each box, in terms of number of beats, follows a specific arch pattern
throughout the Cadenza and Coda, as shown in example 3 below. There are six complete
cycles of this palindrome.

Example 3. Pattern of beats per box throughout the Cadenza and Coda sections of
*Sonata Concertante*.
Although the piano and tape are together in the Coda, as opposed to being "desultory and disparate in the exposition" (Capo), according to Austin, there is an element of recapitulation, in that the principal of the choice of pitches, timbres, etc., is the same as it was in the Capo.  

Thomas Clark's Peninsula

Peninsula was composed by Thomas Clark in 1984, and given its premiere performance January 28, 1985 at the University of North Texas, by Adam Wodnicki. The piece, for piano and computer music on tape, was inspired by the shorelines of the Leelanau Peninsula in northern lower Michigan. The compositional process involved tracing the shapes of the coastlines onto graph paper, noting specific points of interest such as harbors.

Figure 2. Partial map of Michigan with specific area highlighted, and graph of Leelanau Peninsula with plotted interest points.

\[\text{Figure 2. Partial map of Michigan with specific area highlighted, and graph of Leelanau Peninsula with plotted interest points.}\]

\[\text{Interview with Austin.}\]
The vertical and horizontal lines that emerged from the plotted points were measured and assigned a pair of numbers. These number coordinates determined the duration and density level of each section of *Peninsula*. The pitches were arrived at, in part, by placing sections of mapped outlines onto a pitch grid, as in figure 3 below, which shows a portion of the map turned sideways on a pitch graph of C's. This type of mapping also suggested "certain interval stacks, their time order and even contrapuntal strings of pitches."

Figure 3. Sideways placement of peninsula map onto pitch grid.

But the note pitches were not happened upon simply by placing a grid over a map. There was a great deal of experimentation carried out by the composer over every detail.

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14For instance, a specific point on the map having an x coordinate of 3 and a y coordinate of 5 units would translate into a section of three phrases, with a relative density of activity of five (relative to the other density numbers for other sections).


16Ibid.
of the piece, including pitches. For example, if a certain mapped shape did not produce interesting results, he would either not use that particular shape, or would adjust the scale used for that shape. Clark also experimented with different alignments of the shape onto the graph paper, as seen previously in figure 3.

Not all the pitches, however, were derived this way. A large portion of the pitch material of the piano part was "reprocessed" from the pitch language of a previous piece by Clark, *Shores* composed in 1975. *Shores* was, in fact, the first of a set of pieces (the second being *Peninsula*) based on the peninsula maps. The medium of *Shores* was voice, flute, alto saxophone, cello, guitar, marimba, and piano.\(^{17}\) The text for the voice part, shown below, was also written by Clark:

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Figure 4. Text of *Shores*.

Sea breeze
Searching rocky coastline,
Brushing sparkling sun specks
On the water surface
To peer beneath at cold green nothing,
Rustling reedy shore grasses,
Combing it for secrets,
Tossing seagulls skyward as they too search,
Drying salty sand on rocks and driftwood.

Seek until the slowly settling sunset
Paints an orange repose upon the sky.
Search still the blackened water
Discover in the sound of midnight breakers
Crashing endlessly upon the sleeping shore
Your lover’s voice.

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\(^{17}\)Interview with Clark.
Following are examples of some of Clark's sketches which provide some insight into the compositional process.

Figure 5. Graph of the pitch names given to the points charted on the peninsula map, which is superimposed over it.

Figure 6. Sectional structure noting actual locales on Leelenau Peninsula. The width of each rectangle represents its relative duration, while the two numbers inside the rectangles are the density numbers: one for tape, and one for piano.
All of the sounds on the tape part of *Peninsula* were digitally synthesized and resynthesized using a Synclavier II computer music system. This was accomplished by feeding recorded sounds into the computer, then editing and altering them to produce the desired resynthesized results. The recorded sounds produced by acoustic instruments were: a piano note played with the hand or finger damping the string, a marimba note, a plucked guitar chord, and a single long saxophone tone. The other recorded sounds were those which were used to emulate the surf, not actual water sounds, but a group of people whispering.\(^{18}\)

The synthetic sounds of the tape are generally percussive in nature, with the exception of the saxophone tone, which has a singing, humming quality. But these sounds are not harsh in character; a good deal of reverberation was added to them, giving them a certain resonance. The two main reasons the composer strove for percussiveness are: 1) Clark perceived the piano as being a percussive instrument; and 2) the image Clark held of the Peninsula and surrounding areas was that of a stretch of rock-covered beach located at the very tip of the Leelenau Peninsula, north of the village of Northport. It is this image that the composer linked to percussive sounds.\(^{19}\)

In fact, all aspects of *Peninsula* were based on imagery, "from the graphic imagery of the shapes on a map, to the sound imagery of the surf, to the rhythmic imagery--the

\(^{18}\)Interview with Clark.

\(^{19}\)Interview with Clark.
rhythms seem to be like the rhythms that you might actually feel or see or hear if you were out on a beach."²⁰

Unlike *Sonata Concertante*, in which the form is evident from the sectional designations, the overall structure of *Peninsula* is somewhat more difficult to discern. *Peninsula* is constructed of thirteen smaller sections, delineated by the surf-like sounds. Each section is comprised of varying numbers of ten second phrases. Some of the phrases, however, in both the piano and tape parts do not seem to be clearly demarcated; they give the impression of being linked together, in a way somewhat suggestive of the surf. The duration of each section is shown in Figure 7, below.

Figure 7. Length of each section between surf sounds in *Peninsula*.

A pattern can be seen: each time frame occurs either two or three times, usually consecutively; the sections are shorter at the beginning of the piece and longer at the end, coinciding with the calming down that is happening at that point in the music. Also, the larger sectional pattern is basically short/long/short/long (20"/50" and 40"/30"/60").

²⁰Interview with Clark.
Peninsula may also be described in terms of smaller units, its motivic structure, an important factor with respect to interpretation. The opening measure contains two motives which occur throughout the work: motive \( a \), which almost always begins with an accent and employs differing numbers of repeated notes (from two to six); and motive \( b \), a widely spaced figure, in either ascending or descending direction. A slightly different version of motive \( a \) appears even more often, in which the repeated notes are preceded by the same accented pitch as the notes following it, as opposed to the original version, which starts on an upper note (E).

Example 4. Opening measure of Peninsula.

Example 5 shows a contrapuntal treatment of motives \( a \) and \( b \). These two measures (40 and 44) are also part of the climax of Peninsula. They are both fortissimo, both have greater activity occurring in the piano, and both are approached by big crescendos.

Example 5. Contrapuntal treatment of motives \( a \) and \( b \) in Peninsula.
In addition to the aforementioned event-types there are three others which recur throughout the piece: 1) a two-note slurred motive, in both descending and ascending form; 2) legato repeated phrases, the contours of which can be linked to motive $b$; and 3) phrases containing chords or parallel intervals.

Example 6. Remaining set of gestures which occur throughout Peninsula.

In Peninsula an integration of piano and synthesized sounds is achieved, though the two do not actually interact with one another. There are a few instances, however, in which the tape echoes short motivic material in the piano.

The fact that the taped sounds include the damped tone of a piano helps connect the two sources timbrally. This is also true of the general percussiveness of the taped
sounds, and the treatment of the piano, in many cases, as percussive. Separation of events also occurs through the employment of the piano in many lyrical capacities, while the tape continues with drier, pointillistic effects.\textsuperscript{21}

\textbf{Phil Winsor's \textit{Passages}}

Phil Winsor's \textit{Passages}, for piano and computer, or taped computer sounds, was composed in 1990 under an R. O. C. grant at National Chiao Tung University, Hsin-chu, Taiwan. It was composed for, and dedicated to, Adam Wodnicki, and premiered by him at National Concert Hall in Taipei, Taiwan July 10, 1990.

The taped sounds of \textit{Passages} were realized on a Yamaha SY77 synthesizer, and composed algorithmically from a program written by Winsor, "ATP5" (Attack Time Point, 5th version). This computer program was designed to "generate large amounts of harmonic pitch data, shaped in accordance with precise pitch interval and rhythm specifications. 'ATP5' allows the user to precisely control the selection of data for five musical event parameters: pitch, rhythm, volume, articulation, and timbre."\textsuperscript{22}

Originally, the piece consisted of only the computer composed music, and was longer than the present version, though not in its performance time, since it played faster with computer alone. Winsor revised the tape part and added piano to it, adding also the option of accompanying the work with dancer and slides. This version was 77 measures long. The final 16 measures, for tape alone, were intended as extra time for the slides and

\textsuperscript{21}Austin and Clark, \textit{op. cit.}, 47, 187.

\textsuperscript{22}Phil Winsor, program notes.
dancer. Winsor eventually cut 12 of these measures, having decided that the piece was too long.

The synthesized sounds consist of slow moving, "free floating" tones, which seem almost imperceptibly to fuse together in ever changing sonorities, while covering a wide registral space. These sounds are notated in measures, each of which lasts eight seconds. The notation of the taped part is not literal, but indicates the general harmonic outline of the taped sounds.23

The piano part, composed intuitively, without the aid of a computer, was based on a synthetic scale which evolved from various exotic scales and the octatonic collection. The same scale structure appears throughout the piece. This is true even in the arpeggiated chords and chromaticized figuration; they all center around the same type of segmentation of the scale. There is a certain consistency of tonal materials from beginning to end that is evident upon hearing. Passages is a tonal composition, despite the "rigorous structuring of the scalar materials."24

Passages is fantasy-like in its mood swings. The piece begins with nine measures of the ethereal synthesized sounds alone. The piano joins in very unobtrusively at measure ten. This six-note repeated ascending pattern is something of a generative cell for the material that follows.

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23 Interview with Phil Winsor, Denton, Texas, August 27, 1992.

24 Interview with Winsor.
Example 7. Opening phrase of piano part of *Passages*, m.10.

There are three of these patterns, each of which is repeated several times. Each new phrase varies slightly from the previous one, yet each has intervals of tritones, half-steps, and minor thirds in common. The last of the six-note phrases leads into several passages of ascending and descending arpeggiation, in the manner of a short cadenza.

Example 8. *Passages*: cadenza-like material in piano, mm. 13-17.

The entire piece, in fact, is constructed around this material with respect to both intervallic content and scalar organization. The outline of *Passages* given in Figure 8 reveals a clear-cut design in which the basic ingredients introduced in the first several
measures are referred to throughout the piece. Also, there is greater use of tape solo passages here than in either *Peninsula* or *Sonata Concertante* (with the exception of its tape introduction).

Figure 8. Structural outline of *Passages*.

The second half of measure 17 begins a transitional section which starts reflectively, with inverted major triads on G-flat, D, B-flat, and A. The following measure consists of triads of the same tonal areas, except that D major becomes D minor.

These disjointed triads lead into fast ornamental passages. The last two of these (measures 19-20) are in ascending parallel lines, each ending with tremolos.

Example 10. Measures 19-20 of *Passages*.

The B section again displays a change in character. It is more sparse in terms of number of notes, covers a wide register, and consists mainly of parallel octaves. This material is somewhat suggestive of the use of octaves in measures 14-16 (example 8).

Example 11. Beginning of B section of *Passages*, mm. 22-23.

The return of A is preceded by one measure of tape solo. The piano entrance is the same here, and although comprised of different notes this time, the interval content
is also the same: tritone, half-step, whole-step, tritone, and minor third. As in the first occurrence of A there are repeated statements of three different phrases, except now they are compressed slightly, covering two measures instead of the previous three and one-half. The third phrase, extended to include eight notes, again proceeds into a longer phrase, here in a parallel ascending line very similar to measures 19 and 20 (see example 10).


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\begin{figure}
\centering
\includegraphics[width=\textwidth]{example12.png}
\caption{Example 12. Measures 27-29 of piano part in Passages.}
\end{figure}
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The return of B-like material, in which octaves appear not only in parallel form, but also in consecutive single notes, is followed by the now familiar ascending patterns (measures 36-38) in parallel intervals, softly and slowly.


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\begin{figure}
\centering
\includegraphics[width=\textwidth]{example13.png}
\caption{Example 13. Measures 36-38 of Passages.}
\end{figure}
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The tape plays solo for the next three measures (39-41). The piano then enters with material which is reminiscent of two previously used figures: the ascending six-note phrases at the beginning of the piece, and the ascending parallel patterns, now spanning a wider range, from 10ths to 13ths.


After another measure of tape solo, the piano begins a section improvisatory in character, with rapid figuration of single lines and parallel octaves. Almost every phrase ends with a trill.

The final coda-like section of piano music (measures 55-61) is rather static, consisting of arpeggiation around four consecutive tonal areas (A, F-sharp, D, and E-flat), each one fusing into the next. Winsor’s instructions at the second half of measure 57 are to play the left hand notes "not exactly together" with the notes of the right hand. That is, the placement of the notes of both hands should not coincide. The tape continues alone for the remaining four measures.


The title “Passages” refers to a physical motion, "like time traveling, or drifting in space; moving through different worlds." In accordance with Winsor’s perception of the piece, the accompanying optional slides are abstract and celestial in character. The slides are in color, handpainted by the composer.

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25 Interview with Winsor.
Although the tape and piano parts of *Passages* do not share the same thematic or structural material, the strong impression upon hearing is that the two entities are somehow connected, possibly because of the timbral similarities between them, and because they often share the same harmonies. The taped sounds are heard continuously throughout the work and play a major role in its atmospheric quality.
CHAPTER IV

PERFORMANCE CONSIDERATIONS

Tape Notation and Synchronization

The preparation and performance of compositions for piano and tape present many challenges. This chapter will deal with those encountered in the three works by Austin, Clark, and Winsor. These pieces are representative of the medium as a whole, yet each offers its own unique set of problems. One of the first to be encountered is notation, particularly that of the tape part. Unlike compositions which employ traditional notation, the notation used in works for piano and tape is often impossible to comprehend without explanations from the composers themselves, and without having heard the taped sounds. It is not unusual for composers to attach performance notes to the score, as is the case in Sonata Concertante and Peninsula.

Tape notation is closely associated with the matter of synchronization of tape and performer, which composers have dealt with in a variety of ways. In the three pieces discussed here the tape is played without interruption. Both Sonata Concertante and Passages begin with extended tape solos, which simplifies the performance situation, as it eliminates the need for complicated and visually distracting maneuvers by the pianist. Peninsula, however, requires the assistance of a tape operator since the tape is to be started five seconds after the first note of the piano is struck. Sometimes, also, during the course of a piece, synchronization is achieved by the use of a stopwatch by the performer.
when timings are given in the score, or by the inclusion of a cue-track. Often, learning the correct tempos which assure satisfactory synchronization requires a great deal of trial and error by the performer. Of course, composers may devise the layout of the taped sounds in such a way as to provide a margin for error, that is, inexact synchronization. In this case, the sounds on the tape are arranged so as to be compatible with the live sounds for large blocks of time, allowing a leeway for the performer to be slightly ahead or behind the taped sounds, depending on distance from cues and running time. The performance of this type of composition may be more flexible, allowing more interpretive choices for the performer and the possibility of greatly varied performances.¹

*Peninsula,* for example, does not require exact synchronization with the taped sounds, except at those points which demarcate the sections, indicated in the score by a special symbol. More precise synchronization, however, allows for more creative interchange between the pianist and the tape in terms of color, dynamic shadings, etc. In order to facilitate synchronization of the piano with the tape, Clark experimented with several different ways to notate the tape part. The first version was very general, showing only the phrase structure; it showed only those points in time where a new phrase began with a cluster of sound. In this notation, every phrase appeared to be the same in its graphic representation. The second attempt at satisfactory illustration of the taped sounds

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was just the opposite: a very detailed, graphic, note-by-note depiction. Every sound heard on the tape is drawn out with various shapes and shadings representing timbres.²

Example 17. Second version of tape notation in *Peninsula*.³

This rendering was considered to be too detailed for the pianist to follow during performance, so the composer came up with a compromise notation. This final version shows the general changes of density, without trying to indicate every individual sound.⁴

Example 18. Final tape notation of *Peninsula*, indicating general density and register location.

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²Interview with Clark.

³Austin and Clark, *op. cit.*, 188.

⁴Interview with Clark.
In *Passages* Winsor provides a general harmonic outline of the tape sounds. Here the longer, overlapping notes are indicated in the score by the white notes, while the entrances of new notes are signified in black.

Example 19. Tape notation in *Passages*.

Since this notation shows only the contour of the taped sounds, and because there is no real metric foundation, the pianist must rely at least as much on his ear as he does on the score. Both *Passages* and *Peninsula*, then, belong to the category of synchronization which allows for a margin of error. There are certain factors in both pieces, however, which guide the pianist: in *Passages* it is the changing harmonies which the performer must anticipate, and in *Peninsula*, it is the feeling of elapsed time from specific points (the surf sounds).

In *Sonata Concertante*, Austin has avoided the problems of tape notation altogether. To ensure that the piano part is precisely coordinated with the taped sounds, the accompanying tape consists of four tracks: two for the computer music playback, and track two for the pianist's cue-track, to be communicated via headphones during performance. In the Capo, or first section, of *Sonata Concertante* three types of cues are
used. Before the pianist actually begins to play, a click-beat tone is heard every second. After the fourth click, a sine-tone is introduced, coinciding with the beginning of the taped music. The sine-tone is heard every fourth click thereafter, for the first forty seconds of taped sounds. After ten of these sine-tones the piano enters. From there throughout the Capo section the sine-tone occurs at the beginning of each set of beamed sequences, accompanied by an oboe-like tone. This tone occurs not only in conjunction with the first note of each beamed set, but also with every note thereafter. In other words, the cue-track matches the piano score note-for-note, both rhythmically and pitch-wise. The cue-track is to be followed as precisely as possible so as to secure proper synchronization with the taped music. The fact that the oboe-like tone at the beginning of each phrase lasts 96% of that note’s total duration means that there is a very short "breath" between it and the next note. This breath is helpful to the pianist in anticipating the placement of the following note. Also helpful are the numbers which appear at the beginning of each sequence, and in some cases, the note following, denoting the number of one-second clicks heard during these longer notes.

Because of the increase in tempo of each beamed sequence, as well as the Capo section as a whole, the various gradations of tempo must be memorized. Also, it may be helpful to pencil in speed-change reminders in the score.

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5The length of the sine-tone is 48% of the first note’s total length, while the length of the oboe-like tone for the same is 96%.

6Although most of these numbers are accurate, some are a little off, being either slightly shorter or longer than the number indicates. According to Austin, this compromise in accuracy was a result of the limitations of the Synclavier system of that time.
Example 20. Number cues for the performer in *Sonata Concertante*.

The cue-track continues in the Cadenza and Coda sections, but just prior to the beginning of the Cadenza the click-beats are replaced by louder tones on the pitch C. To alert the pianist as to the arrival of the chords that follow, the ascending pitches E-G-C, accompanied by the sine-tone, are given. The placement of the chord should coincide with the last C. In this way, the E and G act as upbeats to the chords.

Figure 9. *Sonata Concertante*: cue-track tones heard prior to chords.

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7In actual performance with the taped computer sounds, the last C on the cue-track arrives a split second before the chord in the tape part. The chords on the tape are spread out, or rolled, so the pianist should learn to delay the arrival of the chord slightly, as in accompanying strings in chamber music.
The Cadenza and Coda are also accompanied by numbers located in the piano part which indicate the number of periodic beats (C's) heard on the cue-track for each particular box.\(^{8}\) These numbers allow the pianist to anticipate the following chords, relative to the ever increasing speed of the beats.


Rhythmic Notation

In traditional notation of the instrumental part everything is arranged according to regular units of musical time--meter, beats, etc. This is also true, to a certain extent, in both Peninsula and Passages, only these are arranged in units of real time. In Passages each measure occupies eight seconds of time, and in Peninsula each line is fifteen seconds in length. Clark also indicates in the score at ten second intervals the elapsed times of the tape from the first piano note. Such timings are useful for performance with a stopwatch and also for practicing without tape.

Seen frequently in works for performer and tape are rhythms which do not conform to any sort of conventional metric organization. Nonmetric rhythms may be

\(^{8}\)Larry Austin, performance notes.
notated by arranging the notes according to their spatial distance from each other. This type of notation is used in varying degrees in all three pieces in question. In Peninsula all the rhythms are proportionally drawn and should be flexibly interpreted.

Example 22. Spatial notation in Peninsula, mm. 28-29.

In spatial notation, all traditional symbols of duration, such as beams, flags, rests, etc., are immaterial. Blackened note-heads are used only to identify pitch, and sustained notes are indicated by lines of extension from the note-heads. In Sonata Concertante this type of notation is employed in the Cadenza for the improvised material.

Example 23. Spatially notated improvisational material in Sonata Concertante, Cadenza.

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10Thomas Clark, *Peninsula*, performance notes.

11Kurt Stone, *op. cit.*, 137.
In *Passages* the durational notation occurs in the more slower moving, lyrical sections.

**Example 24. Durational notation in *Passages*, mm. 34-35.**

![Example 24. Durational notation in *Passages*, mm. 34-35.](image)

Proportional notation can express an unlimited variety of complex situations or allow for more rhythmic flexibility, making it the ideal vehicle for compositions of tape and performer.\(^\text{12}\)

**Improvisational Elements**

In many pieces for tape and piano—in fact, in contemporary music in general—there is an explicit element of improvisation. Traditional freedom of tempo (ritardandos, accelerandos, etc.) is often replaced by free interpretation of rhythm, choice of register, and even choice of notes. All these are limited in various ways by composers. There are elements of improvisation in each of the three pieces under discussion. In *Sonata Concertante* these occur in the Cadenza and Coda. As indicated in the score, the chords "may be displaced in any octave." Octave displacement is, in fact, expected by the composer. In the Cadenza, the chords are to be held with the sostenuto pedal for the

\(^{12}\text{Ibid., 136-7.}\)
duration of the box. Here the pianist is limited by the potential of the sostenuto pedal. Care should be taken not to play, for example, two simultaneous chords in the highest register, as notes here are beyond the boundary of the sostenuto pedal. The chords of the Cadenza are followed by approximate pitches, notated in spatial duration. These are played both detached (the eighth-notes) and sustained, as shown previously in Example 23. The numbers at the beginning of each box serve as a guide to the pianist regarding pacing of the approximate pitches. The specific number of clicks indicated by these numbers should not actually be counted, however, but should be viewed relatively in the context of the tempo of the surrounding boxes.

The notes chosen for the indeterminate pitches may be written into the score, at least until a general idea of the layout is learned. This method of dealing with the indeterminate pitches, however, is somewhat detrimental at first, because the written pitches have to be searched out, and this requires too much time in many cases. Some of the pointillistic notes may end up being very near, or even the actual notes that are also being held from the chord under sostenuto pedal. Notes which may interfere with the sostenuto pedal should be avoided, and in these cases it is advantageous to pencil in the pitch choices.

The improvisational elements in Peninsula and Passages exist in the interpretation of the spatially notated rhythms (throughout Peninsula and in some sections of Passages), the tempo in the cadenza-like figuration (in Passages), and the bracketed and boxed phrases which are to be repeated ad libitum. Except for one instance, when the instructions are to repeat the phrases two or three times, Clark gives no indication of how
many repetitions to make in *Peninsula*. This will, of course, vary depending on the speed at which they are taken. Clark encouraged varying the speed and interpretation of repeated patterns.

Example 25. Pattern repetitions in *Peninsula*, m. 21.

In the opening piano part of *Passages*, a metronome marking is given: quarter note = 120 - 160. This naturally imposes some limitations as to the number of repetitions possible.

Example 26. Repeated phrases in *Passages*, m. 27.

Phrasing

Phrase structure is another area of concern to the performer. In *Peninsula* the phrases may be regarded as the material contained between bar lines. These phrases then
group into larger sections, demarcated by the surf sound on the tape. The phrase shapes are fairly conventional, even though their language may not be. Each phrase breathes in the traditional sense, usually at the end of each measure, though sometimes the character of a phrase seems to suggest continuation into the following measure. The composer again suggested flexibility and variety regarding the tempo and duration of various motives within a phrase as well as between phrases.

The phrases of Peninsula are constructed to a large extent of a basic set of gestures which occur throughout the piece, discussed previously in Chapter III. The notes of these event-types are articulated in three different ways: with the damper pedal; with note extenders, for legato without damper pedal; and with staccato touch. Different articulations often appear within the same phrase, though each of the event-types usually appears with the same articulation throughout the piece.

The beamed sequences in the Capo section of Sonata Concertante could be viewed as phrases. But the usually long-held first notes of each sequence act as not only the down-beat of that phrase, but also as the end notes of the previous phrase. A sense of moving forward is accomplished by the acceleration of each sequence from beginning to end. Some of these sequences end on an upper note, some end on a lower note, and they should be interpreted in the traditional manner, making dynamic shadings according to contour. Austin, in fact, has suggested this, with his instructions at the beginning of the piece, "sempre espressivo e drammatico, ad libitum."

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13 Interview with Clark.
Example 27. Capo of *Sonata Concertante*: The beginnings and ends of the beamed sequences coincide.

![Musical notation image]

In the Cadenza section of *Sonata Concertante*, the makeup of the boxed notes suggests that each of these also constitutes a phrase. Each box begins with a chord, followed by the semi-improvised material, which should be treated as groups of motives within a phrase.

Example 28. Boxed phrases in the Cadenza of *Sonata Concertante*.

![Musical notation image]

Several basic phrase-types appear repeatedly throughout *Passages*, including: 1) ascending patterns; 2) fantasy-like arpeggiations which encompass a wide registral range, and 3) passages containing slurred units of two or more notes which group into larger phrases.
Example 29. Examples of each of the three basic phrase-types of Passages.

Even though the language of the phrasing in these three pieces may seem to be very unconventional at times, the phrases relate on an expressive and structural level in terms of sequence, contrast, development, etc., and should be interpreted accordingly.

Pedaling

Use of various special pedal effects became an important compositional ingredient in piano works during the entire 20th century, and the use of sostenuto pedal was more often indicated by composers.

The sostenuto pedal is utilized a number of times in the course of Peninsula, excerpts of which are shown in Example 30.
Example 30. Some instances in which the sostenuto pedal is used in *Peninsula*.

In Example 31 Clark uses slurs to indicate to the performer that each middle C will sound longer because of its previous inclusion in the sustained chord.

Example 31. *Peninsula*: slurs used to indicate which notes are repeated while still held with sostenuto pedal.

In *Peninsula* the damper pedal is used as a way to achieve certain resonant effects. There are many cases in which the damper pedal is held through entire measures. In several instances the composer combines damper pedal with note extenders to retain
selected sounds from the previous sonority, as in Example 32 below. The pedal is changed while the extended notes are being held with the fingers.

Example 32. Combination of damper pedal with note extenders, m. 30 of *Peninsula*.

Winsor also provides pedaling instructions in *Passages*, ranging from "pedal freely," or "ad libitum," to indicating specific pedal on and off marks.

The only pedal indication in *Sonata Concertante*, "sostenuto pedal," appears under the first chord of the Cadenza. Instructions not to sustain the chords in the Coda are given in the performance notes. Although the nature of the Capo suggests no use of pedal, it is often helpful in connecting the chords with the surrounding notes, and may also be used effectively in the trills.

Example 33. Some instances in the Capo section of *Sonata Concertante* in which the use of damper pedal may be beneficial.
Additional Remarks

As for the engagement of dancer and slides in Passages, the composer has stated that the use of one or both is optional. Passages has, in fact, been performed three ways: with piano and tape (or computer) alone; with piano and tape and slides; and with piano, tape, slides, and dancer. Winsor indicates no preference for any of the above options. He does, however, prefer the use of computer to tape, since it is often difficult, if not impossible, for a mechanically run tape to avoid some flutter in long sustained notes. He notes one drawback to the use of the computer, and that is that both the computer and its operator must be placed on stage with the performer.14

14Interview with Winsor.
CONCLUSION

The performance of contemporary works offers unique opportunities to the performer. The combination of electronics with acoustic instruments has compelled composers to new approaches of form and style. The performer often encounters problems associated with the interpretation of improvisatory, indeterminate, spatial, and temporal elements associated with many of these compositions.\(^{15}\) The piano in many of these works is treated innovatively—it may be used to imitate synthetic sounds, matching them timbrally, which may require new techniques of playing. To quote Larry Austin on the subject of the piano:

> The piano is a dramatic instrument, an historic instrument . . . its repertoire challenges the composer of a new piece to cope with its past. To be original is quite difficult, so difficult that most attempts fail. But the composer must carve out a little niche to work in so that he feels his piece is an original contribution, not simply an addition to the parade of pieces passing by.\(^{16}\)

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\(^{16}\)Thomas Clark, "Duality of Process and Drama in Larry Austin's *Sonata Concertante,*" *Perspectives of New Music* XXIII/I (1984), 113.
The pianist also must deal with unfamiliar aspects of performing, such as arranging for a tape machine, tape operator, placement of the speakers, and other practicalities which must be considered well in advance of performance.\textsuperscript{17}

Another rare opportunity offered the performer of contemporary music is the possibility of working with the composer, especially important in cases where no recordings of the composition exist. In my case I was fortunate to have studied with Adam Wodnicki, who has performed and recorded the three works discussed herein. Also of great benefit was the assistance of the composers in providing not only background information on their respective pieces, but also input regarding interpretation.

Performance with a tape is an exceptional experience because of its obvious inflexibility. The tape will never deviate in its interpretation, and cannot come to the aid of the performer in moments of distress. The performer is faced with the problem of having to play with almost machine-like precision when strict coordination with the tape is necessary, yet must also retain a feeling of elasticity regarding interpretation. The performer must work around the implacable recorded sounds.\textsuperscript{18}

There has not been a great amount of information published concerning the performance of music for piano and tape, even though it has been an established vehicle

\textsuperscript{17}Speaker placement is always done with the audience in mind, that is, they are faced toward the audience. This means that the performer may sometimes experience difficulty in hearing the tape. In some cases an additional speaker placed near the performer may be necessary. To check balance between the piano and tape, the assistance of a listener is of vital importance.

for composers for several decades. With this study I have attempted to shed light on some of the more common problems associated with these works. In the process, it has become apparent that these pieces have a great deal in common with traditional music, even though their language may be quite different.

It is my belief that compositions for piano and tape deserve to be included in the pianist's repertoire and to be considered when fresh recital pieces are sought.\textsuperscript{19}

APPENDIX

ABOUT THE COMPOSERS
Larry Austin

Larry Austin was born in Duncan, Oklahoma in 1930. His education included studies at the University of North Texas, San Antonio College, Mills College, the University of California at Berkeley, and the San Francisco Tape Music Center. His studies were concentrated on modern-jazz performance of trumpet and string bass, and composition, which he studied under Darius Milhaud and Andrew Imbrie.

Austin has held positions at the University of California (Berkeley and Davis), Trinity University (San Antonio, Texas), University of South Florida, and Brooklyn College (guest composer in residence, 1986). Since 1978 he has been professor of music at the University of North Texas, where he also founded and has directed the Center for Experimental Music and Intermedia. While at the University of California, Berkeley, he co-directed the New Music Ensemble (1963-8), a new music performance group. In 1966 Austin founded the periodical SOURCE: Music of the Avant Garde, also serving as editor for the first eight issues. He also co-authored a book with Thomas Clark, Learning to Compose, published in 1989 by Wm. C. Brown Co.

Austin’s extensive compositional output ranges from the avant garde to conventional ensembles to the use of electronic sound sources (both alone and in combination with acoustic instruments). A complete listing of his compositions as well as aspects of his compositional style may be found in Contemporary Composers. Brian Morton and Pamela Collins, editors, Chicago: St. James Press, 1992, 36 ff.
Thomas Clark

Thomas Clark, born 1949 in Detroit, Michigan, received a Doctor of Musical Arts degree in 1976 from The University of Michigan, where he studied composition with Leslie Bassett and George Wilson; conducting and theory with Wallace Berry and Richmond Browne. He also studied with contemporary virtuoso trombonist Stuart Dempster, and was a regular member of CONTEMPORARY DIRECTIONS, the resident chamber ensemble at Michigan.

Clark taught at Indiana University and Pacific Lutheran University for ten summers through 1983, also working at Interlochen coordinating academic programs and ensembles as well as teaching composition and directing new music performances. Currently Professor of Music at the University of North Texas, Clark teaches composition, counterpoint, and contemporary music theory. He also serves as head of the Doctor of Musical Arts program for performance, conducting, and composition. Clark developed and directs the New Music Performance Lab at UNT, and has obtained numerous grants from the National Endowment for the Arts to produce the CEMI EVENT SERIES of professional concerts and lectures in the Center for Experimental Music and Intermedia. He is past President of the Texas Society for Music Theory and served for many years on the national council of the American Society of University Composers. Author of many published articles, Clark also co-authored Learning to Compose, published by Wm. C. Brown in 1989. His second book, published in 1992 by Brown & Benchmark, is ARRAYS: A Worktext of Musical Patterns for Aural Development. His instrumental, vocal, and electro-acoustic compositions have been widely performed.
Phil Winsor

Phil Winsor was born in Morris, Illinois in 1938. His early training as a classical pianist and trumpet player was counterbalanced by experience as a jazz musician during the late fifties and sixties. In 1960 he moved to San Francisco, where he played trumpet professionally, and was associated with the early San Francisco Tape Music Center. He studied composition with Will Ogdon and Robert Erickson prior to receiving a Fulbright Fellowship to Italy, where he composed at the Milan Radio-television Italy Electronic Music Studio and studied composition with Luigi Nono in Venice. Winsor returned briefly to the United States in 1965, studying with Sal Martirano, before returning to Italy on the Prix de Rome Fellowship.

Winsor resided in Chicago from 1968 to 1982, touring with the Chicago Contemporary Dance Theater as resident composer and musical director. During this time he also served as director of the Electronic Music Studio and founder of the New Music Ensemble at DePaul University. In 1980 he, along with Peter Gena, founded and co-directed the Chicago Interarts Ministry, an interdisciplinary performance art ensemble. While in Chicago, he was awarded several fellowships, including two National Endowment for the Arts Composition Fellowships.

In 1982 Winsor joined the faculty of the University of North Texas as Professor of Composition, also currently serving as director of the Center for Experimental Music and Intermedia and as co-director of the Center for Interdisciplinary Research in the Arts and Sciences. He also assisted in the development of Taiwan’s first computer music
research facility at National Chiao Tung University after having received a research grant from the National Science Council of the Republic of China in 1989.

Winsor has authored four books on computer music, published by McGraw-Hill Company and the University of North Texas Press. His music is widely performed and is recorded on Advance, Brewster, Centaur, and International Contemporary Music Exchange labels.
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