EXPERIMENTAL INTERMEDIA FOUNDATION
April 19, 1986

LARRY POLANSKY
with musicians Ann LaBerge, William Winant, Gary Schall, and tap dancer Anita Feldman

FOUR VOICE CANONS
  William Winant, live and taped percussion

    FOUR VOICE CANON #3 (1976)
        for computer generated tape
    FOUR VOICE CANON #4 (1977-81)
        for four marimbas
    FOUR VOICE CANON #5 (1985-6)
        for four percussionists
    FOUR VOICE CANON #6 (April, 1986)
        for "homemade" computer sampling system
        (HMSL)

CANTILLATION STUDIES #1 and #2
  Ann LaBerge, live and taped flutes
  Jody Diamond, taped voice

ﾉt'e'ﾏﾏ ('B'rey'sheet) (In the beginning...)
          (Cantillation Study #1) (1986)
          voice and live computer, document
          of recent performance at the Mills
          College Center for Contemporary Music
          Jody Diamond, voice; HMSL computer system

ﾏﾍﾌﾍ   (V'leem'shol) And to rule...)
          (Cantillation Study #2) (1984-5)
          Ann LaBerge, live and taped flutes

THREE MONK TUNES
  Anita Feldman, tap dancer and choreographer
  Gary Schall, percussionist
  (1981-3)

    I. BEMSHA SWING (for David Rosenboom)
    II. 'ROUND MIDNIGHT (for Ann Rodiger)
    III. I MEAN YOU (for Jody Diamond)

P R O G R A M   N O T E S

FOUR VOICE CANON #3 (1976, computer)
FOUR VOICE CANON #4 (1977-81, marimba)
FOUR VOICE CANON #5 (1984-5, percussion)
FOUR VOICE CANON #6 (1986, computer)
Larry Polansky

These four works are part of an ongoing set of pieces constituting an experiment in the continous morphogenesis of musical ideas. Each piece is a mensuration canon on a single "voice" created from the simple permutation group of 4 or 5 objects (ABCDE, BACDE, CABDE, etc.). This permutation group is ordered by the computer so that each successive element in the group (where an element consists of a set of 4 values which may be applied to any musical parameter) is the "closest" possible to the previous one, by a simple rule of "two-cycling" from elementary group theory. In this way, it was my intent to devise a simple, elegant, and perceptually meaningful way to generate a "continous" morphogenetic structure, and one in which I and other listeners (with a great deal of difficulty and practice) might use to evolve our notions of morphological distance in music (a subject crucial to my current musical ideas). I am also interested in complex heterophonic ideas in my work, ones in which the complexity of the musical form easily exceeds the capability of uneducated perception. My intent is not to exclude those latter perceptions, but rather to serve as a sort of midwife to natural processes which can elevate all of our perceptions of the sound universe.

Each voice in each canon is the same permutation set, although durational values (and in the case of the computer versions and #5, certain temporal timbral parameters) are scaled to the ratio of the voice's length. In each piece the permutation elements apply to different musical parameters. In FVC #4 (the marimba piece), the simplest, each voice consists of reorderings according to the permutations of 4 different pitches for each voice. These pitches are drawn from the harmonic series (in an ideal version, this piece might be played on a marimba tuned in that fashion). In FVC #5 for "generalized" percussion, the canon is applied to duration, timbre, and accents. Both of the percussion versions are dedicated to my friend, colleague, and frequent collaborator William Winant, who has been instrumental in their development. In fact, the score for #5 only suggests which specific instruments to use, and the final choices are the result of a long collaboration between Mr. Winant and myself (I am not interested, however, in this particular realization precluding others). The recordings of the first three parts were performed by him, and recorded by the composer (#5) and Richard Povall (#4) at the Mills College Center for Contemporary Music.

Instruments used in FVC #5 include: tambourines (both western and non-western), wood blocks, an oil filter pan (donated by Lou Harrison), a Harrison-Colvig Javanese style gambang (two pitches), bass drum, concert toms, a roto-tom, amglocken, and a large stainless-steel salad bowl (a wedding gift).

FVC #3 (for computer) was realized and composed at CCRMA at Stanford and is the most "complete" application of the canon — to over twenty parameters (most of which are very subtle timbral changes) of each voice. By using the computer, I was also able to achieve the highly complex rhythmic ratios of which the percussion pieces are just an approximation. Thanks to Andy Moorer and Scott Kim for invaluable assistance with the mathematics and algorithm used in that work. Another earlier canon (FVC #2) also exists, for computer as well, but for an analog hybrid system developed by myself and Bob Hoover.

Four Voice Canon #6 was composed and generated on the HMSL (Hierarchical Music Specification Language) computer system at Mills College. This system was developed, built, and programmed by myself and my colleagues David Rosenboom and Phil Burk. The algorithm in this case runs as part of a real time stimulus response environment which is part of the language, controlling various synthesis equipment in the studio. In this case, the piece uses a rather primitive notion of digital sampling (integrated into HMSL), using "found sound objects" at the CCM. One rather unusual aspect of this realization is that the computer algorithms and language used make it possible (and something I will most likely do in a next version, #7, for woodwinds) for a live and highly interactive version of the piece to be performed, one in which the canon might be computed in real-time by the machine in response to a performer's sonic input.

FVC #5 will be released shortly on the next Cold Blue Anthology Record, and FVC #3 will be available late this spring on the Mills College Centennial Album.

CANTILLATION STUDIES #1 and #2

ת 'ע'רׂ?

(B'rey'sheet) (In the beginning...)
(Cantillation Study #1)
for female voice and live computer (HMSL)

The version of ת 'ע'רׂ?

played tonight is a taped document of a live performance premiered about
a month ago at the Mills College Center for Contemporary Music. The
equipment on which this piece was realized, a real-time microcomputer
music system called HMSL (designed and built by myself, David Rosenboom,
Phil Burke, Scot Gresham-Lancaster, and others at the CCM) is unfortu-
nately not portable, moving it would disrupt several composers work. Al-
though I am presently "porting" the language to more portable, cheaper,
and more common computer environments (like the Amiga and the Macintosh),
this first version represents to me an important step in my work, and I
feel this taped document merits playing even in a concert otherwise com-
prised mostly of live performances.

The form of the piece involves the real-time computer successively narrowing transformations of the live vocal material, the Masoretic cantillation melodies (Shabbat morning) for the first 17 verses of B'rey'sheet (the first book of Torah). Since all the pieces in this set take their names from the first word of the section which they set (as do Torah books, chapters, and "parsha" or portions themselves), the title of this piece is the same as the title of the first book of the Torah. The text begins with:

> "B'rey'sheet bara elohim et ha-shamayim v'et
>   ha-aretz..."
>
> (In the beginning elohim made the heavens and the
>   earth)

The voice part is unadulterated trope. The computer algorithms used are rather unified — the machine listens to the voice and decides "how much attention" to pay to its material (as manifested in various musical parameters) based on how far the piece has progressed. Thus, at the beginning of the piece, the computer does not let the voice influence its musical decisions very much, and at the end (the last verse), the computer is attempting to follow the voice exactly. In fact, the piece (like V'leem'shol) is in a way backwards, it presents the most developed · material at first and modulates to the simplest.

The computer transformations affect several musical paramters: dynamic spectral modulation (with the source being sine-waves as in the last verse), harmonic factors (tonality is considered in relation to the pitch class based on the scale in which the tropes are sung), temporal density of events, and the range of variation of events. All these functions are gradually changed over the course of the piece by a single variable which is simply the number of the verse being sung.

The software for this work was written in FORTH and HMSL. Phil Burk, a programmer at the CCM, was particularly helpful in significant refinements of the pitch-following algorithms.

(V'leem'shol) (...and to rule...)
(Cantillation Study #2)
for 5 flutes
for Ann LaBerge and David Rosenboom
(1984)

Ann LaBerge, live and tape flutes

is the first completed work of a set of (so far) three pieces based on Masoretic Torah cantillation melodies in conjunction with intelligent morphological transformation systems, live and electronic. It is written for flutist Ann LaBerge, and is based on the second 17-verse section of B'rey'sheet, beginning with:

> "And to rule by day and by night, and to divide
> between the light and the darkness, and elohim saw
> that it was good"

The flute parts are derived from computer generated transformations on the primitive melodic tropes of the shabbat morning Torah melodies. The work is essentially a canon for four flutes above the trope itself. The computer was used to select types of transformation of the trope shapes, beginning with the most complex (involving free figuration, inversions, embedding of recursive forms into the shapes themselves, transposition, and others), and gradually constraining the morphogenetic processes until at the end, a given voice is in unison with the trope in Flute V (on tape). In addition, each voice is telescoped in time to achieve its transformative path in less and less time directly proportional to its entry in the piece (at verses 1,5,9 and 13 respectively). In addition, a given voice will always, as closely as possible, directly reference the melodic material of a previous voice at the same stage in its transformation, and above the same trope. This means that ideally, the first voice contains all the material for the piece, though I made certain non-algorithmic changes to the succeeding voices when it interested me to do so. One such choice was to write a relatively simple chorale the two times the text and melody for the text "and it was evening, and it was morning, the (fourth, fifth) day" appeared, which has the rather abrupt effect of interrupting the active transformations.

In a sense, V'leem'shol and B'rey'sheet are two versions of the same piece. They have the same form: from high bandwidth of transformation to (practically) no bandwith of transformation. However, in the flute work the transformations are motivic, or morphological. In the voice and computer piece, all of the computer decisions are made on statistical bases, and the computer does not in any way "understand" the melodies that are being sung.

The software for the piece was written in FORTH, using early ideas that were later to become implemented in the design of HMSL (with David Rosenboom), and the piece was composed in March, 1984. The score was copied by Richard Povall with the assistance of a Mills Faculty Rsearch Grant. It was recorded at the Center for Contemporary Music by the composer and Richard Povall. V'leem'shol has an optional introduction in which the trope is sung by a female voice, with computer generated tape and/or live accompaniment.

One of the intents of both of the Cantillation Studies is to use the primitive melodies as simple and fertile "ur" shapes upon which generalized ideas of motivic transformation might be made. Whether in fact this musical idea paratactically relates to a spiritual and intellectual morphogenesis from fundamental canons is left to the listener, but it is certainly my intent that the melodic transformations be direct attacks on orthodoxy of all sort. In addition, the complexity of the pieces, particularly as expressed in the rather simple and uncompromising flute, sine-wave and voice sounds, is meant to be impenetrable and at the same time expansive and evolutionary, firmly believing that one's musical, political and social movement through the world must be of sufficient complexity to be a new language, one that generates its own grammar, semantics, syntax, paratax, and hypotax. Consequently, I hope that the piece will be both understood, and in a benevolent fashion, not understood.

A third cantillation study, E'leh Tol'd'ot (These are the generations...) for four marimbas and two voices of computer commmentary has been written but not yet "realized". It was composed for William Winant, and will hopefully be premiered sometime in late 1986, or early 1987. A projected fourth study, Va'yi'behn will be for mandolin and computer.

THREE MONK TUNES -- Larry Polansky

The Three Monk Tunes were written in 1981-2 at the request of Anita
Feldman, who is still the only dancer who has been able to perform them.
Each movement is an experiment in the transformation of rhythmic and me-
lodic morphologies according to theories of "metrizeable function spaces,"
with which I have been working for the last several years. These pieces
are a kind of manual realization of many of the ideas that I have been
implementing in computer-based composition systems.

Many of my works use some aspect of American music as a jumping off
point, and the Monk Tunes are a very deliberate homage to the music of
a composer and musician who has been a tremendous influence on my life
and work since I was a child. There is a common legend about Monk danc-
ing around on stage whenever the music moved him, and this seemed a par-
ticularly apt poetic image for the piece.

Much of the score was written in close communication with Anita, who
was anxious to experiment with the expansion of tap technique through
complex rhythmic ideas and more sophisticated formal procedures. The
rhythms, and most of the sounds of the tap part are notated, but the re-
mainder of the choreography is left to the dancer (although I tried to
suggest certain aspects of this in the score). The score is quite dif-
ficult even for the percussionist, and it has been a source of no small
amazement to me that Anita has been able to perform it so meticulously,
much less memorize it.

The first movement, Bemsha Swing, is the clearest statement of the
rhythmic transformations, and is dedicated to my colleague and fellow
composer David Rosenboom, whose work has been an important factor in the
formation of my own musical ideas. The second movement, Round Midnight,
uses a process of deformation of various grupetti, and though it is the
slowest, is the most difficult to perform, especially in its use of com-
plex rhythmic ratios. It is intended as a kind of ballad, and is my per-
sonal favorite. It is dedicated to the NY choreographer Ann Rodiger. The
third movement, I Mean You, dedicated to my wife, California composer
Jody Diamond, is the simplest of the three structurally, but perhpas the
most enjoyable to perform.

The Three Monk Tunes have been performed over thirty times across the
United States, both in music and dance spaces, by Ms. Feldman, Mr. Schall,
and often on the West Coast with percussionist William Winant. I have
written so far one other piece for Anita, entitled Milwaukee Blues (based
on a Charlie Poole song) for two tap dancers and five sax players. That
piece has not yet been performed, but should be premiered next fall with
Anita performing one of the tap parts on tape, and New York saxophonist
and composer Lenny Pickett performing all the instrumental parts. Plans
also exist for a version of the Four Voice Canons for solo tap dancer and
electronics (#8?).

THE PERFORMERS

Since 1982 ANITA FELDMAN has been collaborating with new music
composers to make experimental tap dances. She has performed her
work in theaters and colleges across the country, including
at Lincoln Center Out-of-Doors, Roulette Center for New Music,
P.S. 122, Cal Arts New Music Festival, University of California
at Berkeley and Oberlin College. She is a 1986 recipient of a NY
Foundation Choreography Fellowship. This June, she and
percussionist Gary Schall will be performing throughout Japan.

ANN LABERGE, flutist and composer, currently resides in San
Diego. She has performed with many of the leading musicians and
composers in the country, and has premiered many new American
works for flute. She is one of the most active exponents of the
use of extended flute techniques, and has composed several works
for the instrument. This summer, she will be a resident performer
at the June in Buffalo Festival.

LARRY POLANSKY is a composer, theorist, writer, performer and
computer music systems designer currently living in Oakland,
California, where he teaches at Mills College and is a Staff
Member at the Center for Contemporary Music.

GARY SCHALL has been a member of Steve Reich and Musicians since
1975. He has also performed with Newband, directed by Dean
Drummond, and with the NY Philharmonic, the Brooklyn
Philharmonia, the Group for Contemporary Music and the New Music
Consort. He recently performed with the Laura Dean Dance Company
in the premiere of "Impact" at Brooklyn Academy of Music's Next
Wave Festival. Currently he is the head of the music department
at Augustine Fine Arts in the Bronx. He and Ms. Feldman have
performed together since 1983.

WILLIAM WINANT, percussionist, has collaborated with many
avant-garde composers, including David Rosenboom, James Tenney,
Larry Polansky, Chris Brown, Gordon Mumma, Michael Byron, Peter
Garland and others, as well as giving numerous world and American
premieres of important twentieth century works. His playing is
featured on the Lovely Music and Cold Blue Labels, and he has an
active career as a new music solo recitalist.