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I find that the disadvantage with improved conditions since '69 for information storage and retrieval causes one to give and get more than you want to know. Included are photos and the following blurb retrieved from my Word file. You asked about the size space. The biggest was the Miller Outdoor Theater in Houston (about 5000 came and camped), the smallest was the Hubbard Gallery, Chicago, 60' X 40' (about 50 came). Good luck and best wishes.

July 23, 1989 – Program note for White Street
THE SAL-MAR CONSTRUCTION, a real-time composing/performing instrument.

The SMC was designed, financed and built in 1969 – 1972 by engineers Divilbiss, Franco, Borovec and composer Martirano here at the University of Illinois. It is a hybrid system in which TTL logical circuits (small and medium scale integration) drive analog modules, such as voltage-controlled oscillators, amplifiers and filters. The SMC weighs 1500lbs crated and measures 8'x5'x3'.

It can be set-up at one end of the space with a "spider web" of speaker wire going out to 24 plexiglass enclosed speakers that hang in a variety of patterns about the space. The speakers weigh about 6 lbs. each, and are gently mobile according to air currents in the space. A changing pattern of sound-traffic by 4 independently controlled programs produces rich timbres that occur as the moving source of sound causes the sound to literally bump into itself in the air, thus effecting phase cancellation and addition of the signal.

The control panel has 291 touch-sensitive set/reset switches that are patched so that a tree of diverse signal paths is available to the performer. The output of the switch is either set 'out1' or reset 'out2'. Further the 291 switches are multiplexed down 4 levels. The unique characteristic of the switch is that it can be driven both manually and logically, which allows human/machine interaction. Most innovative feature of the human/machine interface is that it allows the user to switch from control of macro to micro parameters of the information output. This is analogous to a zoom lens on a camera. A pianist remains at one level only, that is, on the keys.

it is possible to assign performer actions to AUTO and allow the SMC to make all decisions. During Musique et Ordinateur, May 3-19, 1983, at the University of Paris, d'Orsay, on May 4th, I played a 45 minute piece which was followed by questions and a discussion with the audience. At the conclusion of this exchange I assigned my role in a performance to AUTO. The SMC remained in place for the duration of the of the Conference.

I was able to teach a French student, a bright computer science major, to play the SMC in about 6 hours. Since the control panel is made of kitchen counter top, Formica glued to flakeboard (washable), I labelled the functions of the most important switches directly under the switches. He remained with the SMC during the rest of the conference and allowed visitors to try it with great success. I heard later, second hand, that a few chauvinists claimed that his performance was better than mine. I'm sure it was a slower paced performance.

2. Past Research

Since 1964, Salvatore Martirano has formed interdisciplinary collaborations to develop real-time systems for music: **Sound Rotation (1964)**; **The Malmstadt-Enke Blues (1967)**; **Marvil Construction (1968)**. Most relevant to the proposed project are **SAL-MAR CONSTRUCTION (1969-72), Matrix Walk (1986), The yahaSALmaMAC (1987-88)** and **The Permutation Program (1990-91)**.

The **SAL-MAR CONSTRUCTION (1969-1972+)** was an interdisciplinary project involving Martirano, computer science graduate student Sergio Franco, and ILLIAC III designers Rich Borovec and James Divilbiss. The Sal-Mar provided the performer with real-time control over the *spectra of digital waveforms*. It was based on the idea of "zoomable" control, that is being able to apply the same controls at any level, from the micro-structure of individual timbres to the macro-structure of an entire musical composition (just as the zoom lens of a camera allows you to capture anything from an extreme close-up to a portrait or a landscape.) Weighing in at 1500 pounds, the Sal-Mar Construction provided digital control over analog synthesis modules through a unique touch panel consisting of banks of switches assignable to any level of control. The Sal-Mar is described in Franco's doctoral dissertation and was used in more than 75 concert performances by Martirano in both the US and Europe.

In **Matrix Walk (1986)**, a set of allowable chord to chord transitions was defined. The system created music by selecting and orchestrating (solo, duo, trio or quartet) chord transitions from the allowable set. With radio buttons and scrolls on the Mac Plus screen and the mouse, the performer controlled state to state rate, register, redundancy and volume in real-time.

The **yahaSALmaMAC (1987-88)** is a real-time answering service consisting of a Macintosh II computer (Dove upgrade), a Yamaha "music engine", 25 synthesizers and a percussion unit, (DX7 (E upgrade), TX8-16, REV7, 2 TX81Zs, RX5), a Zeta violin and a program written in Le_Lisp by Salvatore Martirano and David Tcheng named **Sound and Logic** (SAL).

In **Sound and Logic (1987-88)**, a set of phrase transformations are created (e.g., order inversion of a sorted list of notes played, cyclical permutation, retrograde, transposition, note skipping, and orchestration) by random selection within a network of windows bounded by probability ladders with min and max values. The system applies these transformations to phrases extracted from streams of notes from up to two synthesizers that generate MIDI data and from functions that are called from the terminal keyboard during a performance. In Sound and Logic, a history of about 30-60 seconds was considered. Phrases extracted from the past 30-60 second duet are transformed to become the accompaniment for the current 30-60 second duet.

The **Permutation Program (1990-91)** in 'C' programming language by Martirano and Cherry Zinger contains *three different permutation algorithms*. Each algorithm permutes "note groups" which are sets of contiguous notes with the property that there is at least one note down at all times. The first algorithm is based on the idea of a derangement index. The original composition is broken down into "selections" which is a constant number of adjacent note groups. For each selection, a derangement index is selected. This index is an integer representing how "different"

the permutation will be from the original selection. The second algorithm was a refinement of the first. In addition to note groups, the music is broken down into beat groups and measure groups. The third permutation algorithm is based on the idea of group multiplication. A sequence of note group orderings are calculated as follows: two initial orderings are either entered by the user or selected at random by the program. These two orderings are multiplied to create a new order, which is used to permute a selection. Then the second of the initial orderings is replaced by the new one, which is used to calculate the next ordering.

1963   Octet (8 minutes)

        8/88   New Music Associates, Cleveland, E. London cond.

        3/10/89   New Music Associates, Cleveland, E. London cond.

1966   L's. G. A

        9/22/89   White Street Art Center

1969-72 SAL-MAR CONSTRUCTION (20 minutes this time)

        9/22/89   White Street Art Center

1984   THROWN for winds and percussion (18 minutes)

        10/11/88 Eastman Musica Nova, Rochester. NY

        2/22/89   Northern Illinois University, TRR

        2/23/89   Northwestern University, TRR

        2/24/89   Bowling Green State University, TRR

        2/25/89   Festival 19, Ball State University, TRR

        2/26/89   Wabash College, Crawfordsville, IND, TRR

        5/1/89   Arizona State U. Tempe, New Music Ensemble

1985   SAMPLER: Everything Goes When The Whistle Blows

                  for violin and the yahaSALmaMAC MIDI orchestra (12 minutes)

        3/18/88   University of Miami, Coral Gables - D. Martirano

        3/18/88   South Florida Composers' Conference - D.M.

        3/20/88   University of South Florida. Tampa - D.M.

        3/26/88   Ball State University, Muncie - D.M.

        9/29/88   The 26th Annual Allerton Conference on

                  Communication, Control, and Computing - D.M.

        10/13/88 Installation Gallery. San Diego, Erica Sharp

        10/18/88 University of California, Dominguez Hills

        10/20/88 University of California, San Diego

        10/24/88 University of Arizona, Tempe

        10/88   Arts Watch, Kentucky Center, Erica Sharp

        10/31/88 Ball State University, Erica Sharp

        11/4/88   Northern Illinois U., Erica Sharp

        11/18/88 Walker Center for the Arts, Milwaukee, D.M.

        2/12/89   University of Wyoming. Erica Sharp

        5/2/89   Roulette, NY, Erica Sharp

        9/22/89   White Street Art Center, Urbana

        10/12/89 Texas Southern University, Houston

        10/16/89 University of North Texas, Denton

        10/20/89 Central State University, Edmond, Oklahoma

        2/10/90   Mills College, Oakland

        2/13/90   University of Oregon, Eugene

        6/26/91   EXPO '91 KBS Television. Seoul, Korea

1987   Three not Two (20 minutes)

                  The yahaSALmaMAC using the Sound and Logic program (SAL)

                  Salvatore Martirano, DX7 Keyboard

        3/9/88   University of Maryland, Baltimore

        3/11/88   Shenandoah Conservatory of Music, Winchester

        3/18/88   University of Miami, Coral Gables

        3/18/88   South Florida Composers' Conference

3/20/88	University of South Florida, Tampa
3/26/88	Ball State University, Muncie
2/13/90	University of Oregon, Eugene

1988   Four not Two (20 minutes)

> The yahaSALmaMAC using the Sound and Logic program (SAL)
> Dorothy Martirano, Zeta Violin
> Salvatore Martirano, DX7 Keyboard

9/29/88	The 26th Annual Allerton Conference on Communication, Control, and Computing
10/18/88	University of California, Dominguez Hills
10/20/88	University of California, San Diego
10/24/88	University of Arizona, Tempe
11/18/88	Walker Center for the Arts, Milwaukee, Wisc.
9/22/89	White Street Art Center, Urbana
10/12/89	Texas Southern University, Houston
10/16/89	University of North Texas, Denton
10/20/89	Central State University, Edmond, Oklahoma
2/10/90	Mills College, Oakland
6/26/91	EXPO '91 KBS Television, Seoul, Korea

1988   PHLEU for amplified flute and synthetic orchestra (12 minutes)

8/20/88	Darmstadt, Germany J. Fonville
9/29/88	The 26th Annual Allerton Conference on Communication, Control, and Computing, L. Olson
10/18/88	University of California, Dominguez Hills, J. Fonville
10/20/88	University of California, San Diego J. Fonville
2/23/89	Peabody Conservatory, Baltimore R. Willoughby
3/10/89	House Theater, Urbana L. Olson
3/27/89	Prairie Winds, Eastern Illinois U. L. Olson
4/89	University of Maryland, Baltimore L. Olson
5/89	Berklee School, Boston Wendy Rolfe
8/12/89	Flute Convention, New Orleans Patricia Spencer
1/90-8/90	a number of performances by Lesley Olson in Germany
9/29/90	Flute Resonances, Patricia Spencer
11/1/90	Indiana State U. Patricia Spencer
11/4/90	Indiana State U. Patricia Spencer
6/25/91	Hanyang University, Seoul, Korea, Fred Lau

1989   LON/dons for chamber orchestra (18 minutes)

2/6/89	Cleveland Chamber Symphony, Cleveland, E.L.
2/8/89	Oberlin College, Oberlin Ohio, CCS, E.London cond
3/1/89	U. of Cal. San Diego, SONOR, J. Silber, cond.
11/2/89	Cleveland Chamber Symphony, Ed London cond
11/5/89	Cleveland Chamber Symphony, Ed London cond
11/3/89	ICMC at Ohio State, Columbus, CCS Ed London dir.
2/1/90	U. of Illinois, Sal Martirano cond.

1990   undisNONcon for yahaSalmaMac and Poet

9/22/89	White Street Art Center

1991   UIUS & Jest Fa'laffs for flute, clarinet, double bass and synthetic orchestra (14 minutes)

2/30/91	KCPA, Ciosoni

4/5/91	Northwestern U. ad hoc ensemble
5/ /91	U. of Illinois, Contemporary Chamber Players
10/25/91	SEAMUS '91, Ciosoni

VIDEO (both sound and visuals) Many (more than 10) performances during '88 - '89
1982	UNDERWORLD (26 minutes)
1983	Omagio a Sally Rand (40 minutes)
1984	Look at the back of my head for awhile (12 minutes)
1985	L's. G. A. (update) (25 minutes)
1986	DANCE/PLAYER I (8 minutes)
1986	DANCE/PLAYER II (14 minutes)

RECORDING   Centaur CD

1988   SAMPLER: Everything Goes When The Whistle Blows (1985)12'
              for violin and synthetic orchestra (revised 1988)
              Artist: Dorothy Martirano, violin
              The YahaSALmaMAC MIDI orchestra