SAN DIEGO: UNIVERSITY OF CALIFORNIA
LA JOLLA, CALIFORNIA 92037

Aug. 24, 1969

Dear Will,

For the past four years I have devoted considerable time to the study of electronics. My goal has been to learn enough that I might eventually design my own circuits for various compositions and to gain a basic understanding of Electronic Music Systems.

As you surely know, there is no place available where one can go and find an established course of study which covers adequately these interests. I have had to waste considerable time wading through material of no use to me in order to learn the little bit I know. (This is constantly of Educational state.)

As I see it the student of Electronic Music has a lot of ground to cover. It is not enough to superimpose past compositional techniques on electronic material grafted on to tape. The 19th century ideal of even quality throughout a range becomes ludicrous with an audio generator of constant wave form. The search for new resources in timbre then has become somewhat frantic and opened a new

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frontier for musical research: The time parameter exhibits the same search when motor rhythms are so easily exploited with sequential programming circuits and we start plunging toward the Lorentz Transformation and the fourth dimension.

Space and audience relationships need radical solutions. (Stockhausen wanted audience on floating platforms passing through speaker multiples.)

Straight rows of people facing proscenium with loudspeakers at stage left and right is cartoon like.

Loud speakers expose the space and one becomes conscious of space timbre. Consciousness of spacial color is not new but the critical relationship of audience - space - electronic music is.

I like for audiences to lie down if they want to. There is no necessity for tightalertness and allegiance to social amenities when one has the opportunity to float away on a wave train.

There must be a more efficient way to move air than the primitive mechanical ~~one~~ cone loaded Coloramters we have now. Where in the future are they?

To: Research Committee

Subject

~~Re~~ Project mistitled Modular Parameter Controlled Multi-Channel Audio Mixer

Please change this title to read: Multi-Channel Voltage Controlled Directional Audio Mixer, hereafter referred to as DAM.

DAM is in its final research stage and construction is expected to begin in about six weeks.

DAM will enable composers and performers to control the directional aspects of electronic music. Eight separate sound sources can be moved independently and simultaneously anywhere within a space defined by eight speakers arranged in a cube by means of voltage-controlled x, y, and z axis inputs.

Directional aspects of a composition may be pre-programmed in the studio onto tape through DAM, or live electronic sound sources may become directional during performance through DAM.

Some research has been devoted to directional influences of space, ~~but our hands are tied until we have some idea about the future of our theater.~~

Mr. ~~Huet~~ HEWETT spent several weeks at UCSD last spring to make a study of our existing audio input facilities; i.e. the Moog and Buchla Electronic Music systems, to make the design of DAM compatible.

Most of the research effort has centered on evaluation of integrated circuits and field effect devices for the VCA stages of DAM to find a unit of high quality audio specification and non-leakage of the control signals to the audio signals.

~~The control inputs can be manipulated by our existing equipment, however, in a limited way.~~

The next and necessary research stage is to find new controlling devices such as an x,y,z axis joy stick which can give a performer directional control over three inputs with one hand.

The design and construction of such ($1000) devices is beyond the budget of the present grant. Funds are also necessary for the construction of an ($1200) 8 channel power amplifier and ($2000) for purchase of eight performance speakers of matched quality to fully utilize the DAM possibilities.

Furthermore, extensive research into audience space and directional influences is also necessary.

Paulnie Olweiss

SAN DIEGO: UNIVERSITY OF CALIFORNIA
LA JOLLA, CALIFORNIA 92037

September 25, 1969

ACADEMIC SENATE RESEARCH COMMITTEE

SUBJECT: Project mistitled Modular Parameter Controlled Multi-Channel Audio Mixer. Please change this title to read: Multi-Channel Voltage Controlled Directional Audio Mixer, hereafter referred to as DAM.

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Directional aspects of a composition may be pre-programmed in the studio onto tape through DAM, or live electronic sound sources may become directional during performance through DAM. Some research has been devoted to directional influences of space.

Mr. Hewett spent several weeks at UCSD last spring to make a study of our existing audio input facilities; i.e. the Moog and Buchla Electronic Music systems, to make the design of DAM compatible.

Most of the research effort has centered on evaluation of integrated circuits and field effect devices for the VCA stages of DAM to find a unit of high quality audio specification and non-leakage of the control signals to the audio signals.

The design is complete, materials purchased, and DAM will be completed during November and December.

The next and necessary research stage is to find new controlling devices such as an x, y, z axis joy stick which can give a performer directional control over three inputs with one hand.

Pauline Oliveros, Assistant Professor
Department of Music

Communique PROFESSIONAL MANAGEMENT

784 BROADMOOR BOULEVARD
RICHMOND, BRITISH COLUMBIA
TELEPHONE: (604) 277-2125

January 21, 1970.

Prof.
Pauline Oliveros,
Department of Music,
University of California, San Diego,
P. O. Box 109,
La Jolla 92037, Calif.

Dear Professor Oliveros: Re: Allan Hewett DAM Project

As of January 1, we act for Allan Hewett as manager and business agent, with the hopeful effect of freeing him to a degree from the burden of front-office detail work.

In the matter of the DAM, we note that while the design of the unit has been commissioned and half of the fee advanced, no formal arrangement seems to have been made for fabrication and installation. Allan was preparing to drive to La Jolla this month and build it on-site, but we have asked him not to do this pending a more complete definition of that part of the project.

It would be foolhardy from a business viewpoint to make such a journey and undertake that kind of engineering job without at least a general understanding regarding costs, materials and facilities. We would suggest instead that Allan prepare working drawings of his design and send them to you for fabrication by technicians at UCSD or a nearby electronics engineering shop. A competent craftsman would have no difficulty assembling it from Allan's schematic diagrams and specifications. Materials would also prove far less costly if obtained by UCSD rather than a private purchasor.

If necessary, Allan could fly in for a final checkout and lineup of the DAM, at a fraction of the cost involved in building it on the spot. This would likewise minimally disrupt his current schedule of design-engineering assignments.

Please let us know if this seems sensible to you.

Cordially,

W. H. Phillips

WP/mm

Feb. 9, 1970

W. H. Phillips
Communique Professional Management
784 Broadmoor Blvd.
Richmond, B.C.

Re: Allan Hewett DAM Project

Dear Mr. Phillips:

The original arrangement for DAM reads Design and construct. Also Mr. Hewett was paid per diem expenses and air fare to come to UCSD for two weeks consultation which he did do. Mr. Hewett is under no obligation to return to UCSD for the construction of DAM and that was his own idea. However, we need to find the best solution for the construction problem for both parties--given the difficulty of the border situation. Bear in mind that the $750 fee of which 50% has been paid was for design and construction.

I spoke to Mr. Hewett by telephone before your letter arrived and was assured that I would receive schematics, construction suggestions, specifications and application notes within one and a half weeks.

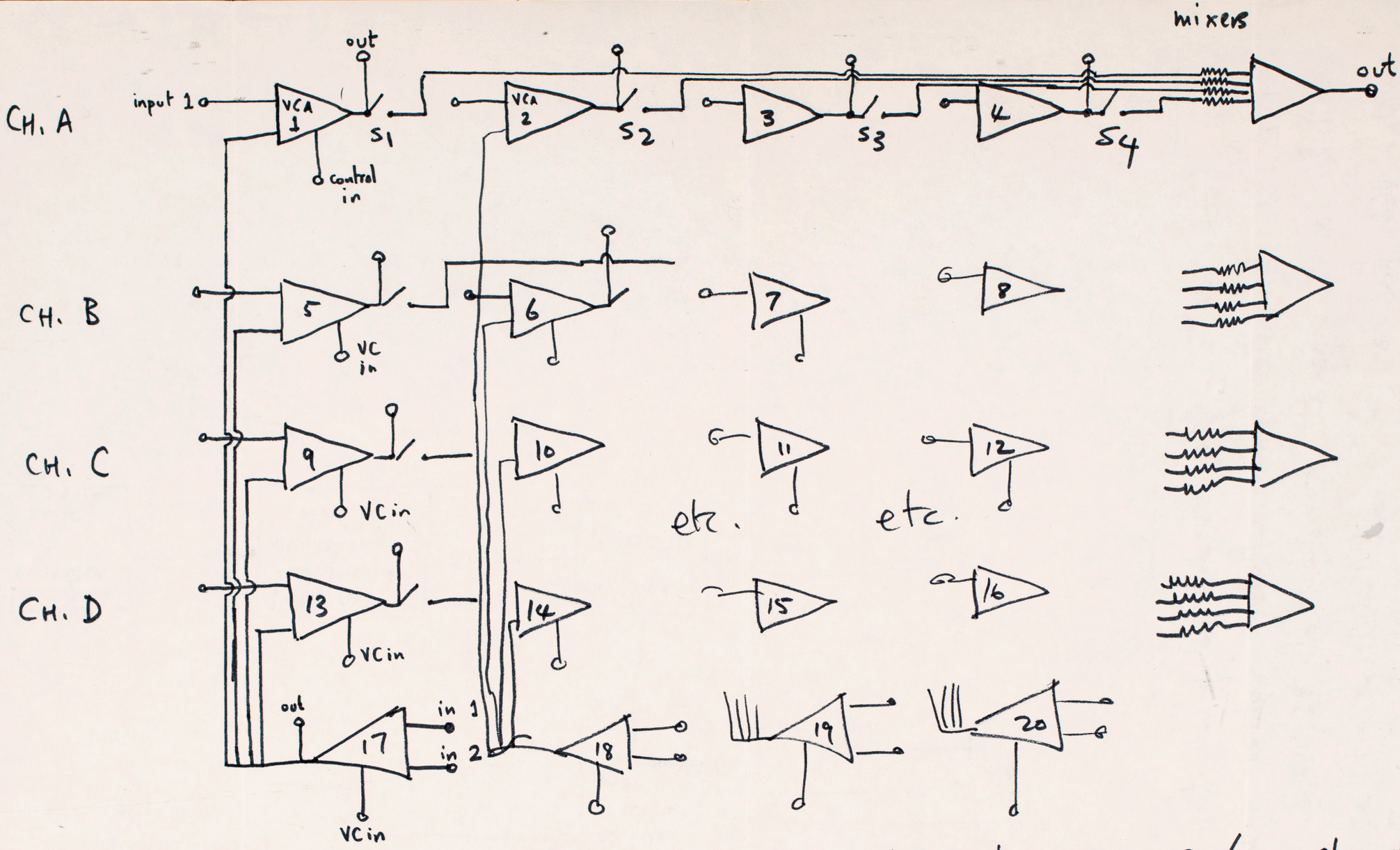
I have no objection to fabrication by another technician; however, some adjustment would have to be made in the original agreed-upon fee for design and construction.

I would appreciate knowing just what the border duty or the determination would be for fabrication of the equipment in Canada with USA parts.

In any case, immediate delivery of design and construction plans will be necessary for me to determine the best solution to the problem.

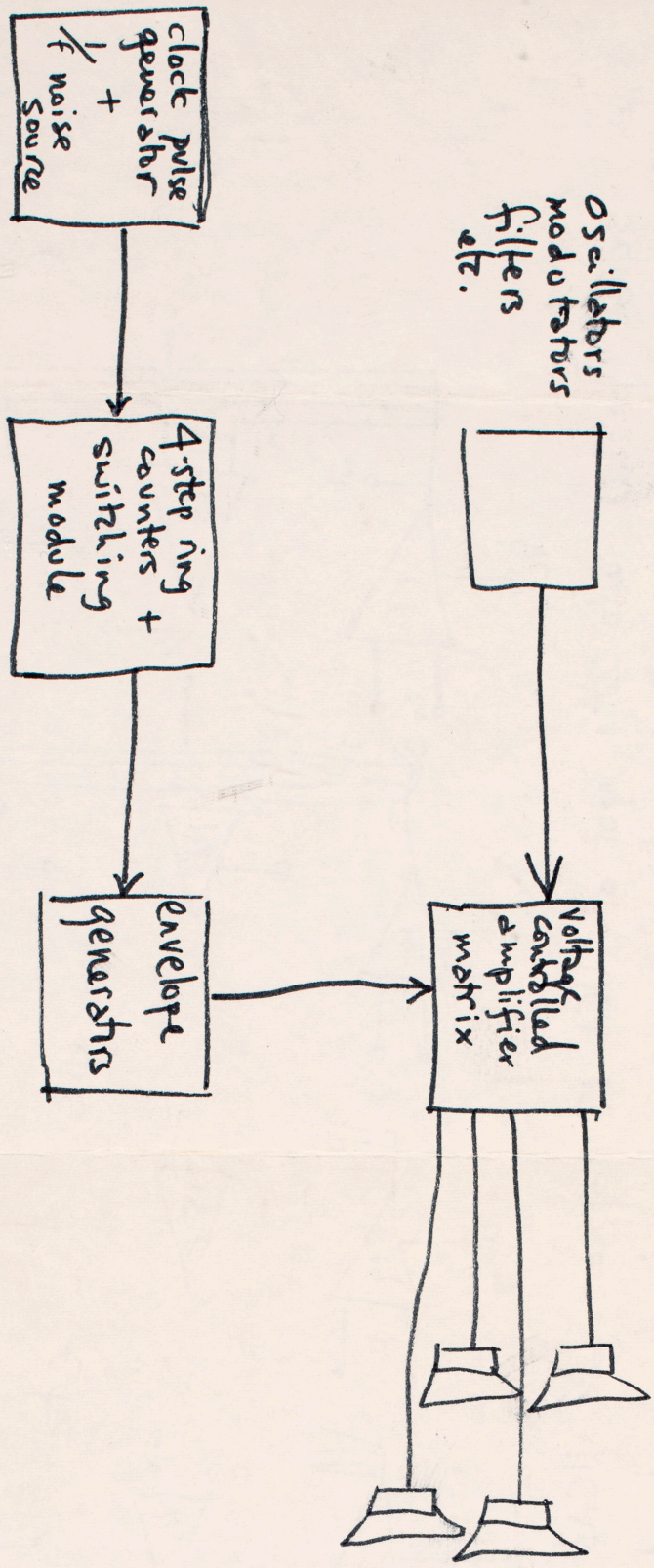
Sincerely yours,

Pauline Oliveros
Assistant Professor of Music

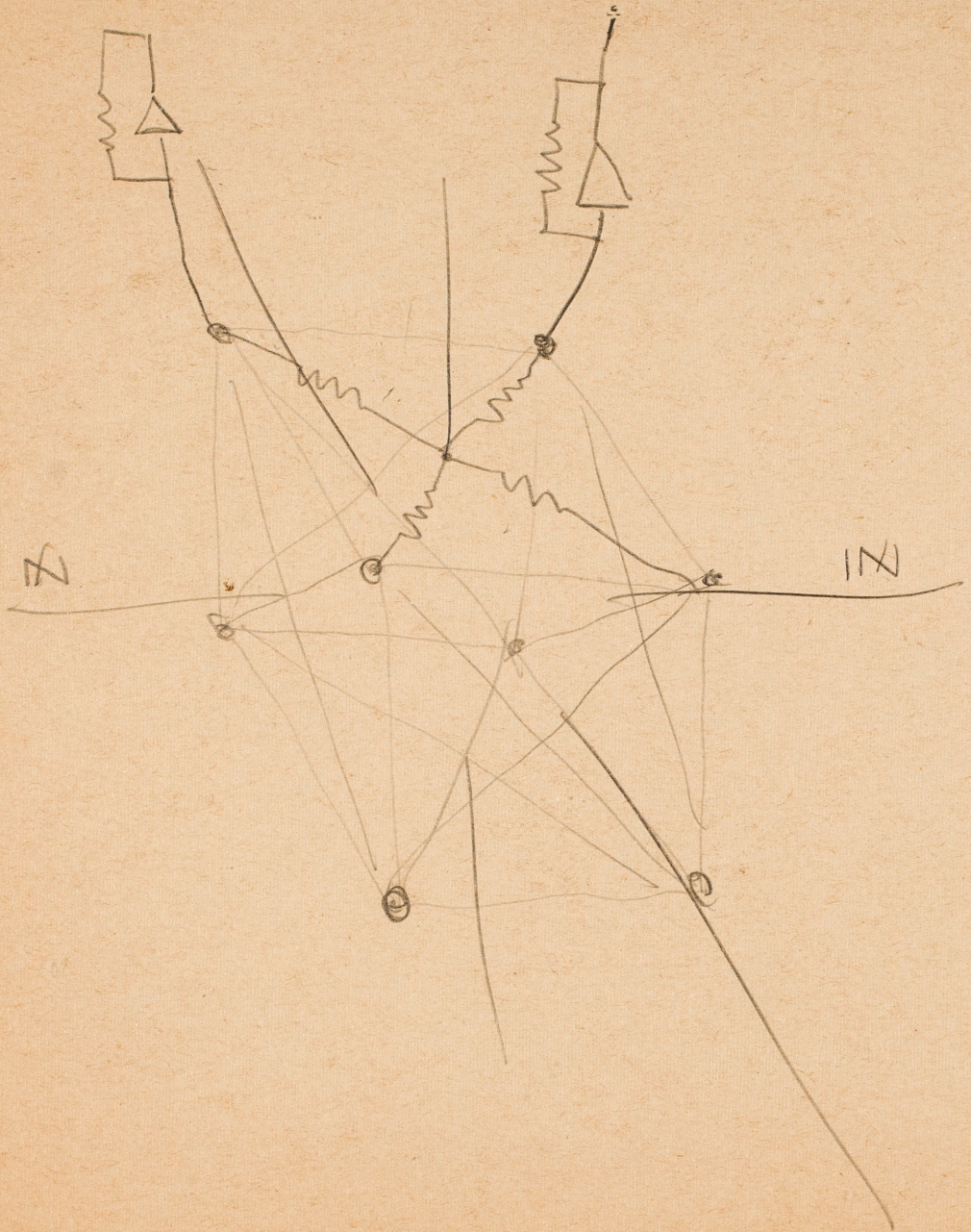


a signal patched into either input of VCA 17 appears at VCA's 1 5 9 + 13 (e.g. channels A, B, C, D)
the apparent motion of the signal from channel to channel depends on the control voltages being applied to the 4 VCA's. If a sequence of control voltages turns on VCA 1 then VCA 5 then VCA 9 then VCA 13, the signal will appear to move A → B → C → D. Any other pattern is available, depending on control signal generating devices.

P.T.O.



Note. Each VCA may be used independently if switches S1,2,3,4 etc. are open. Thus amplitude modulation is available as a separate function of the VCA's. Also each VCA has a fixed-control-voltage pot as a manual volume control. The module may thus be used like an ordinary mixer. The VCA's are very simple but efficient; were designed by Bill Hearn, superengineer, designer of IC's, modified ~~TV~~ colour TV sets, electronic music modules + a member of a coven of witches. The overall schema is ~~my son~~ a product of my own disordered intellect. OM.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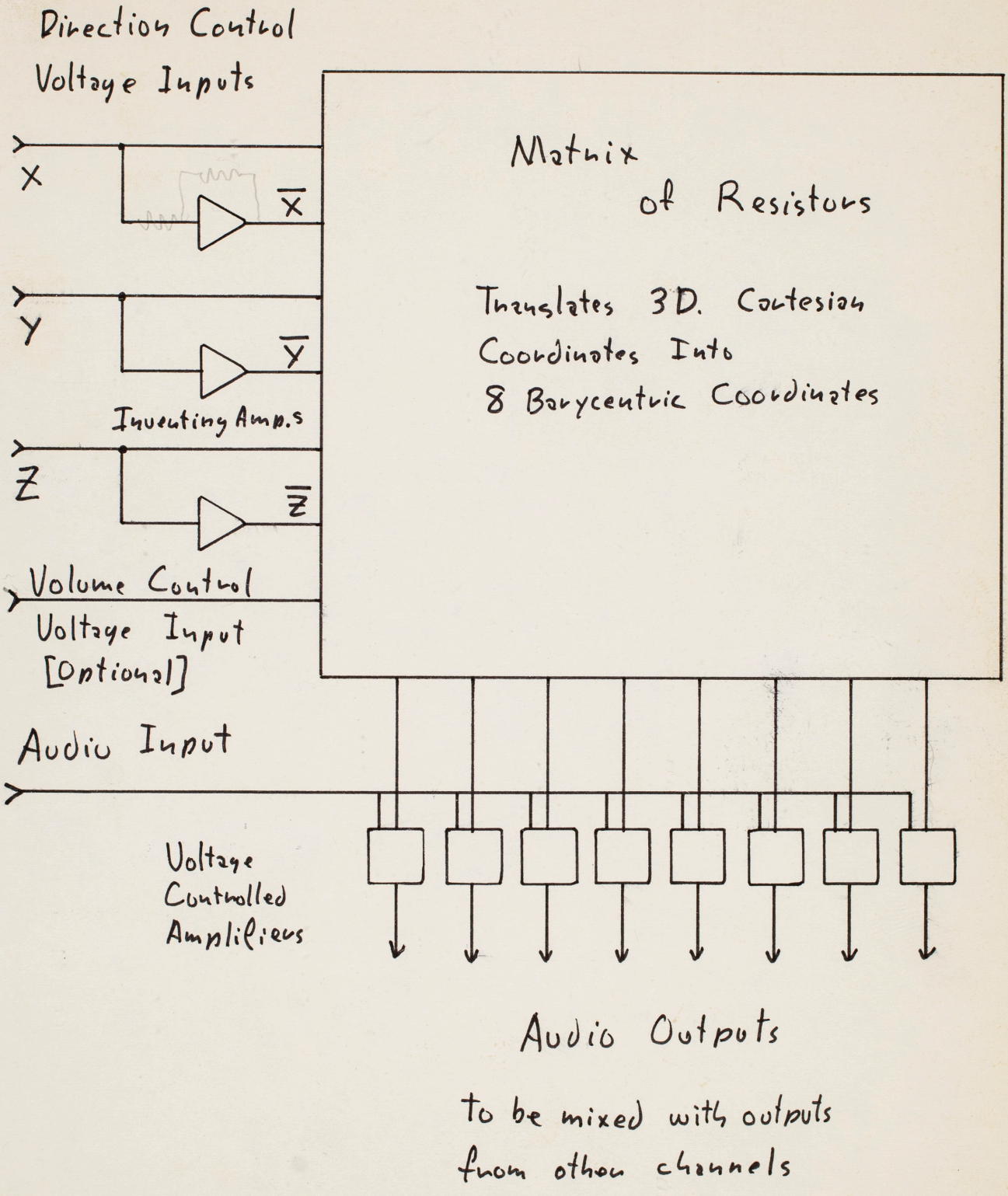
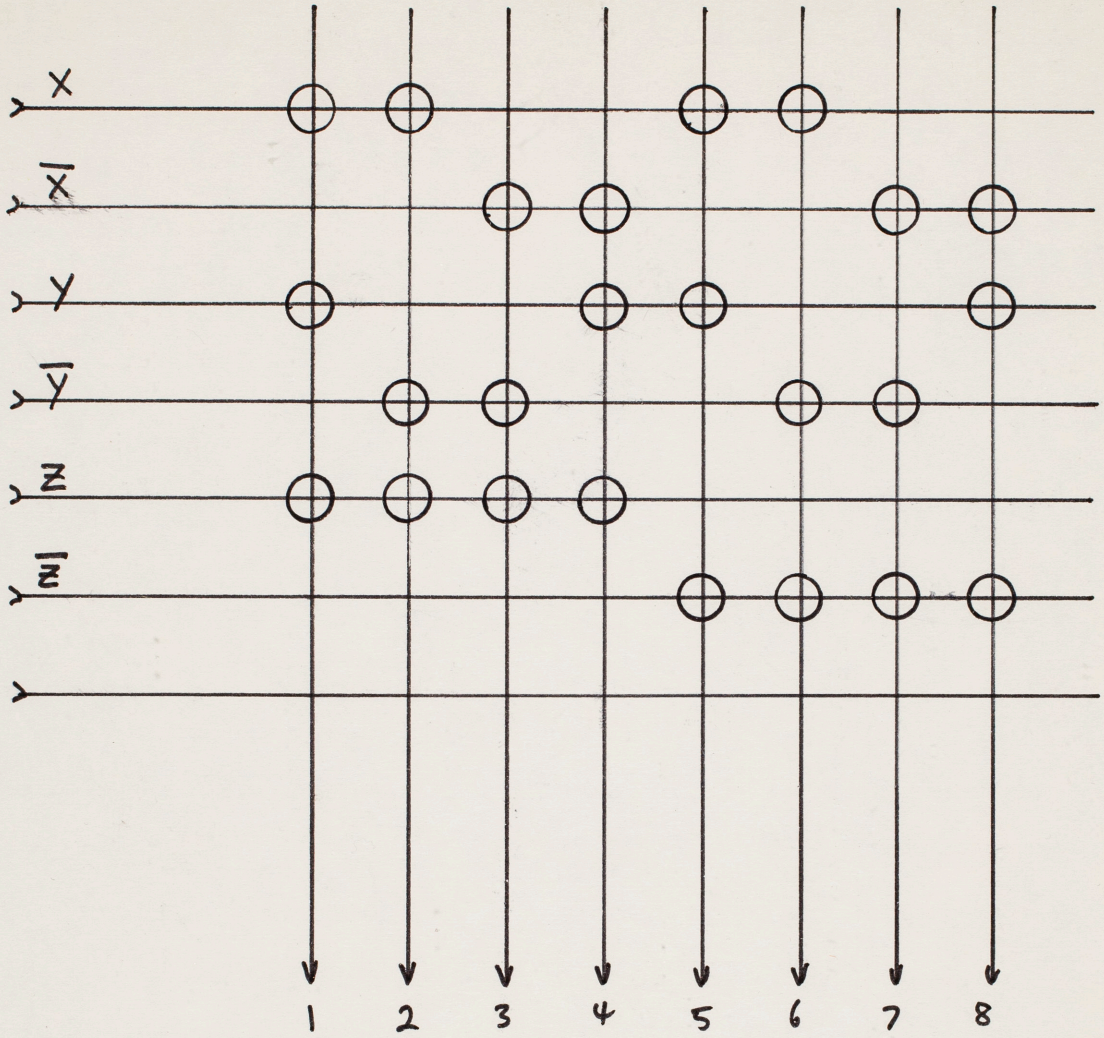
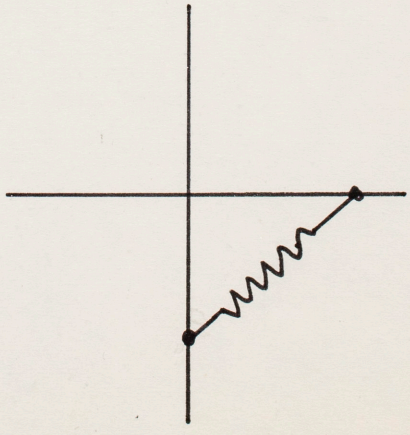
Block Diagram of One Channel



Schematic Diag. of Matrix



Circled junctions



731-8608 Alan Huett

Research of direction influences of Space.

check of, on printed circuit labs

Evaluating VCA amplifiers

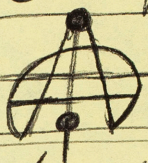
32 necessary

which don't distort

Field effect devices

People relative to speakers.

DC to 10 cps



Experimental

Distortion

Leakage of control signal into Audio

Etched circuits

Modular Audio Parameter Mixer controlled ~~Acoustic~~ multi channel

3 dimensional control — 8 channel ~~mixer~~ VC directional mixer

Further development expensive

Cling vinyl sheets of black electricians tape

Paint stores

Kit

Armaco

80 RMS watts per channel 5 to 25K unit 80 ¼ to ⅒ % dis

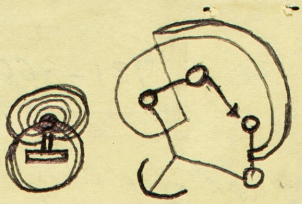
180 RMS Watts same distortion & response

8 ch. power Amp and 8 speakers

$58 $400 $1200

State of 315

Different light in 315



Hum problem

Interuption problem

Who fixes and how soon?

Maintenance problem.

Freq Shift

Ring mod.

Why were patch out puts not paralleled?

Air conditioner is bad sound.

Stands for the speakers

movable

Keyboard trolley

4 channel deck in 315

clarfication of technician responsibilities

Priorities on break downs

Trouble Shooter concept.

Studio troubles

Conflicting orders due to difference in point of view

Dick Moore Murray Hill

XYZ Pot. Joy Stick

$100

Kraft Systems in Vista

450 Calif. St

3 axis Stick $30