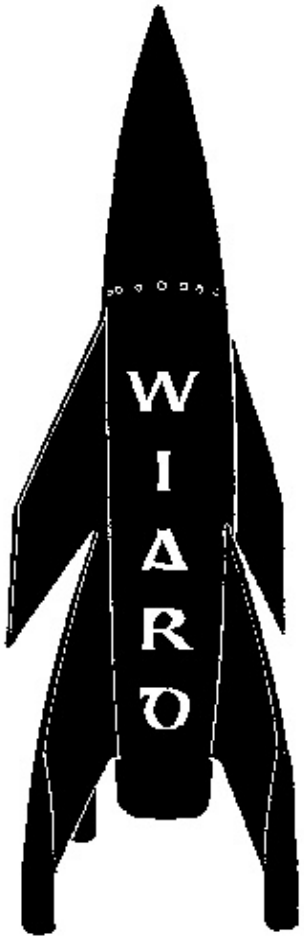
Wiard Synthesizer Company



Socket Rocket

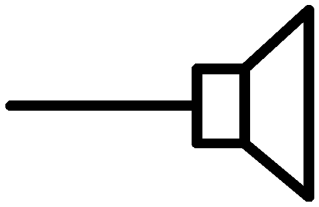
Wavetable Application Guide

Final Revision

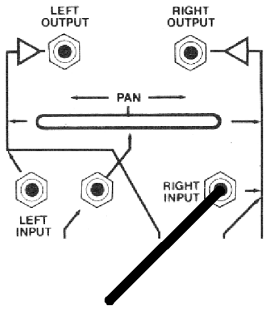
Monitoring the Mini-Wave

A monitor or amplifier/loudspeaker combination is shown schematically with this symbol

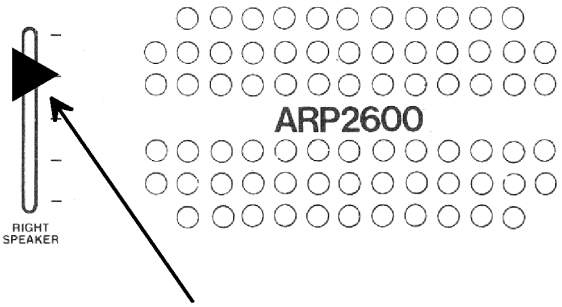
MONITOR



On the ARP 2600 the simplest monitor patch is as shown below



Plug the patchcord here



Adjust the monitor volume here

Any amplifier/oudspeaker combination can be used where the schematic symbol is seen.
Be careful of the +/- 5 volt signal levels in ARP compatible modules such as the Mini-Wave.
To avoid damage to High Fi system speakers, you should always start with the amplifier volume turned completely down. Connect the Mini-Wave and advance the volume control VERY slowly to a comfortable listening volume.

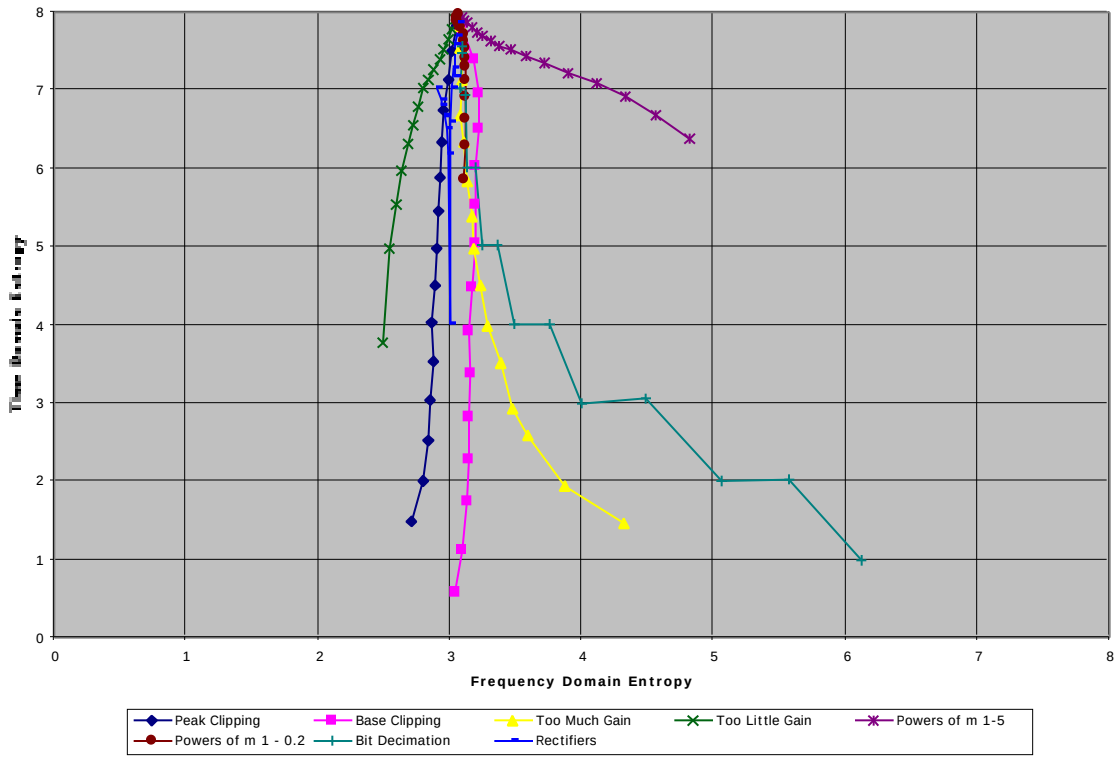
The sample patches use the ARP 2600 as examples.
Good illustrations are available which make the process much simpler.
Reading the ARP 2600 owners manual is recomended for anyone interested in analog synthesizers.

The ARP 2600 Owners Manual can now be purchased from the original author.

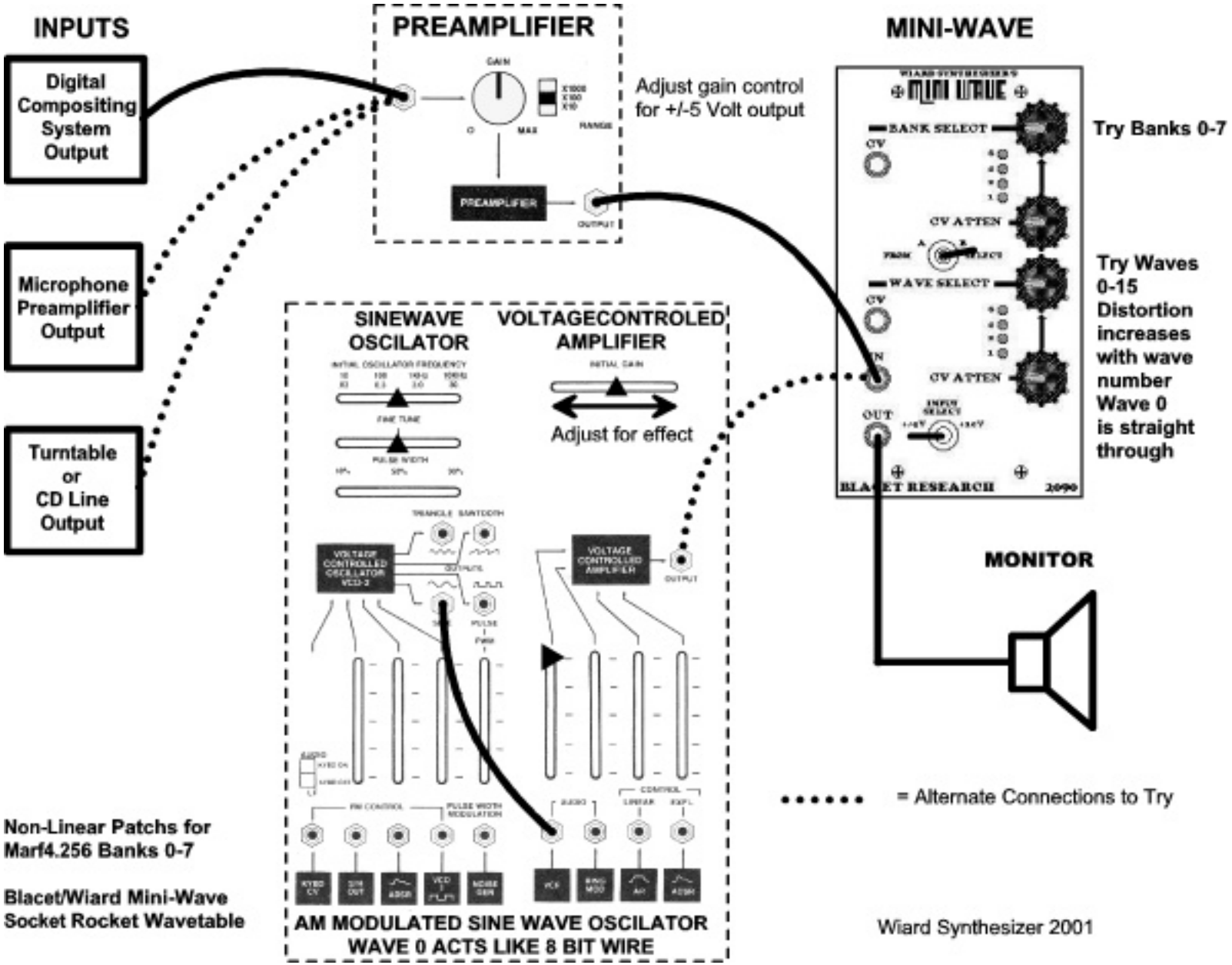
Contact Mr. James Michmerhuizen

http://theworld.com/~jamzen/theBachWorks/arpman.html

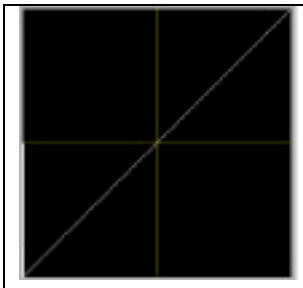
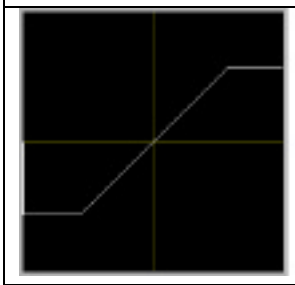
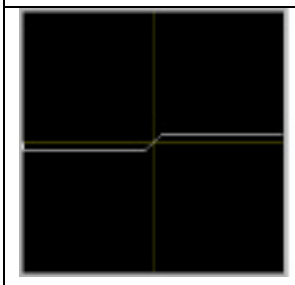
Non-Linear Functions



Entropometer Data

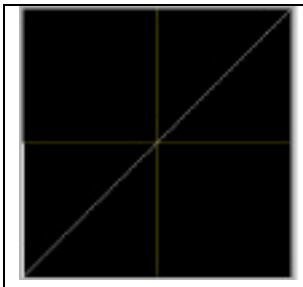
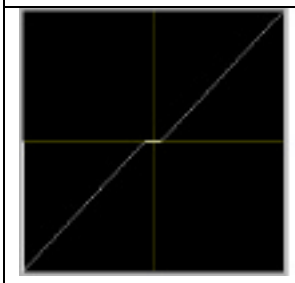
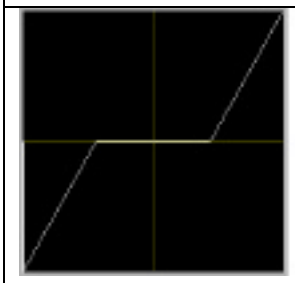
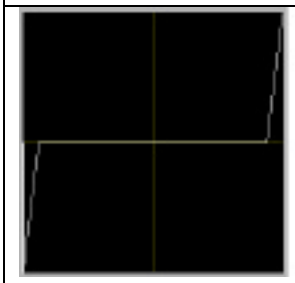

INPUTS
Digital Compositing System Output
Microphone Preamplifier Output
Turntable or CD Line Output
PREAMPLIFIER
GAIN
PREAMPLIFIER
Adjust gain control for +/-5 Volt output
MINI-WAVE
BANK SELECT
CV
CV ATTEN
WAVE SELECT
IN
OUT
BLACET RESEARCH
Try Banks 0-7
Try Waves 0-15 Distortion increases with wave number Wave 0 is straight through
SINEWAVE OSCILATOR
VOLTAGECONTROLED AMPLIFIER
Adjust for effect
MONITOR
= Alternate Connections to Try
Non-Linear Patchs for Marf4.256 Banks 0-7
Blacet/Wiard Mini-Wave Socket Rocket Wavetable
AM MODULATED SINE WAVE OSCILATOR
WAVE 0 ACTS LIKE 8 BIT WIRE
Wiard Synthesizer 2001

Bank 0 “Peak Clipping”

	**Wave 0 – 8 Bit Wire**
	**Wave 7 +/- 2.656 Volts**
	**Wave 14 +/- 0.332 Volts**

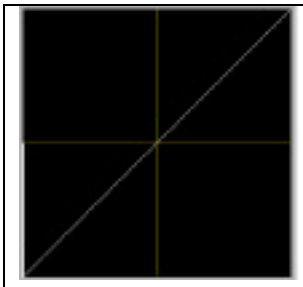
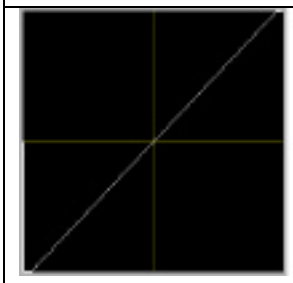
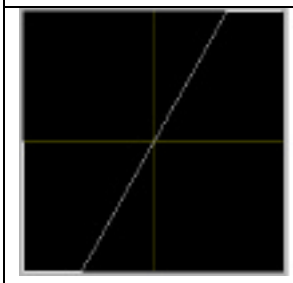
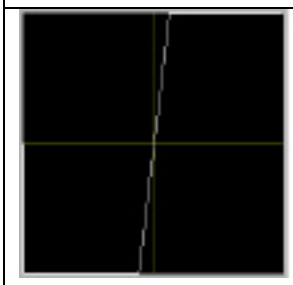
Notes:

Bank 1 “Base Clipping”

	**Wave 0 – 8 Bit Wire**
	**Wave 1 +/- 0.332 Volts**
	**Wave 7 +/- 2.656 Volts**
	**Wave 14 +/- 5.312 Volts**

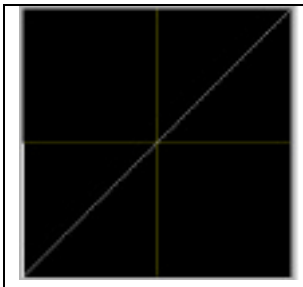
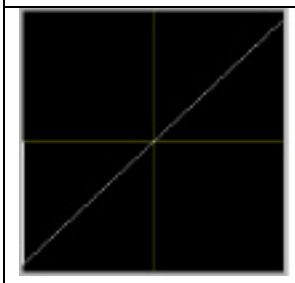
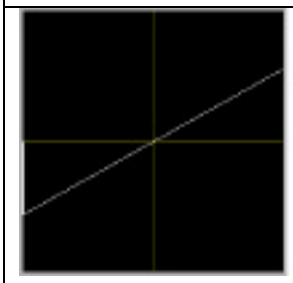
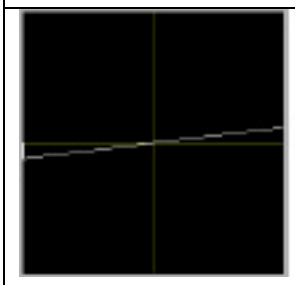
Notes:

Bank 2 “Too Much Gain”

	**Wave 0 – 8 Bit Wire**
	**Wave 1**
	**Wave 7**
	**Wave 14**

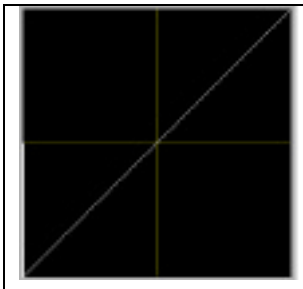
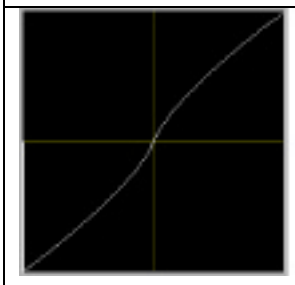
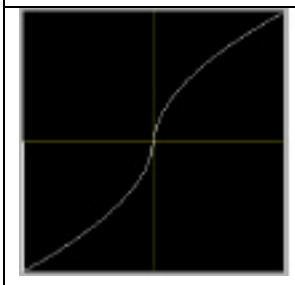
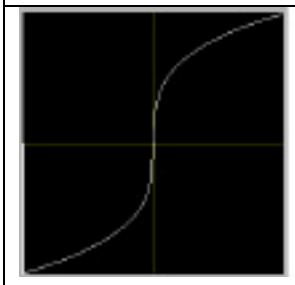
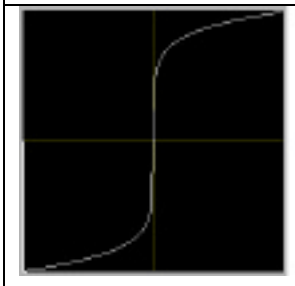
Notes:

Bank 3 “Too Little Gain”

	**Wave 0 – 8 Bit Wire**
	**Wave 1**
	**Wave 7**
	**Wave 15**

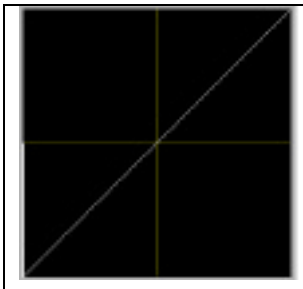
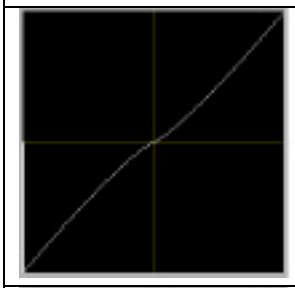
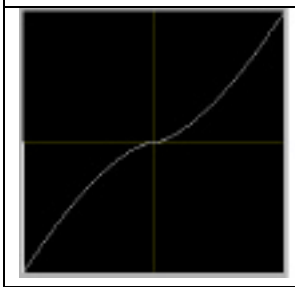
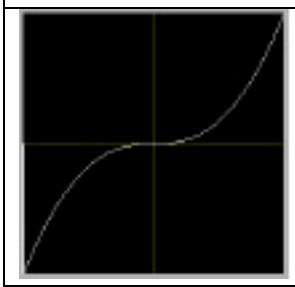
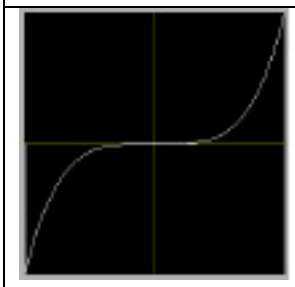
Notes:

Bank 4 “Powers of m = 1 to 5”

	**Wave 0 – 8 Bit Wire**
	**Wave 3 m = 1.75**
	**Wave 7 m = 2.75**
	**Wave 12 m = 4**
	**Wave 15 m = 5**

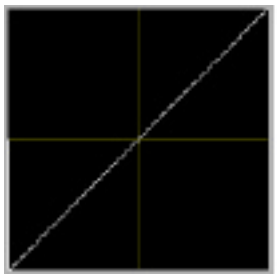
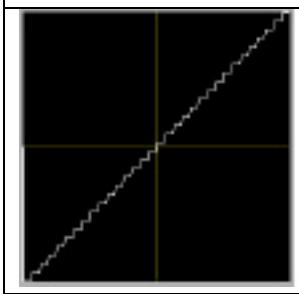
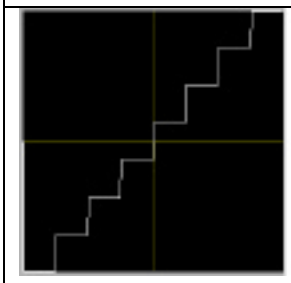
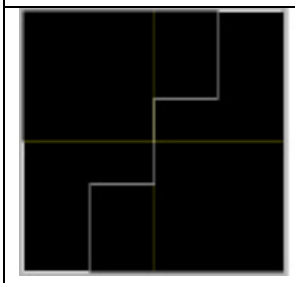
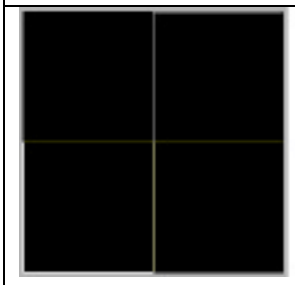
Notes:

Bank 5 “Powers of m = 1 to 0.2”

	**Wave 0 – 8 Bit Wire**
	**Wave 3 m = 0.85**
	**Wave 7 m = 0.65**
	**Wave 12 m = 0.4**
	**Wave 15 m = 0.2**

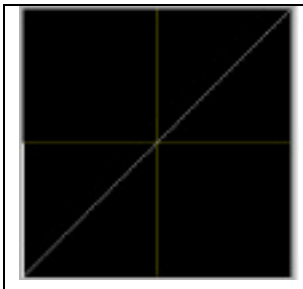
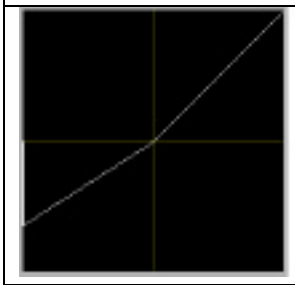
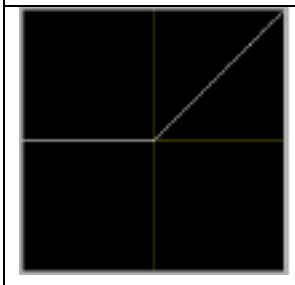
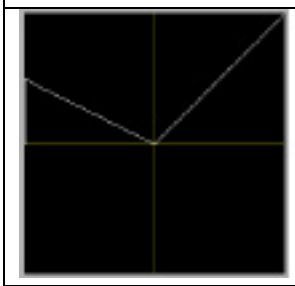
Notes:

Bank 6 “Bit Descimation”

	**Wave 0 – 8 Bit Wire**
	**Wave 7 – 4 Bits**
	**Wave 11 – 3 Bits**
	**Wave 11 – 2 Bits**
	**Wave 15 – 1 Bit**

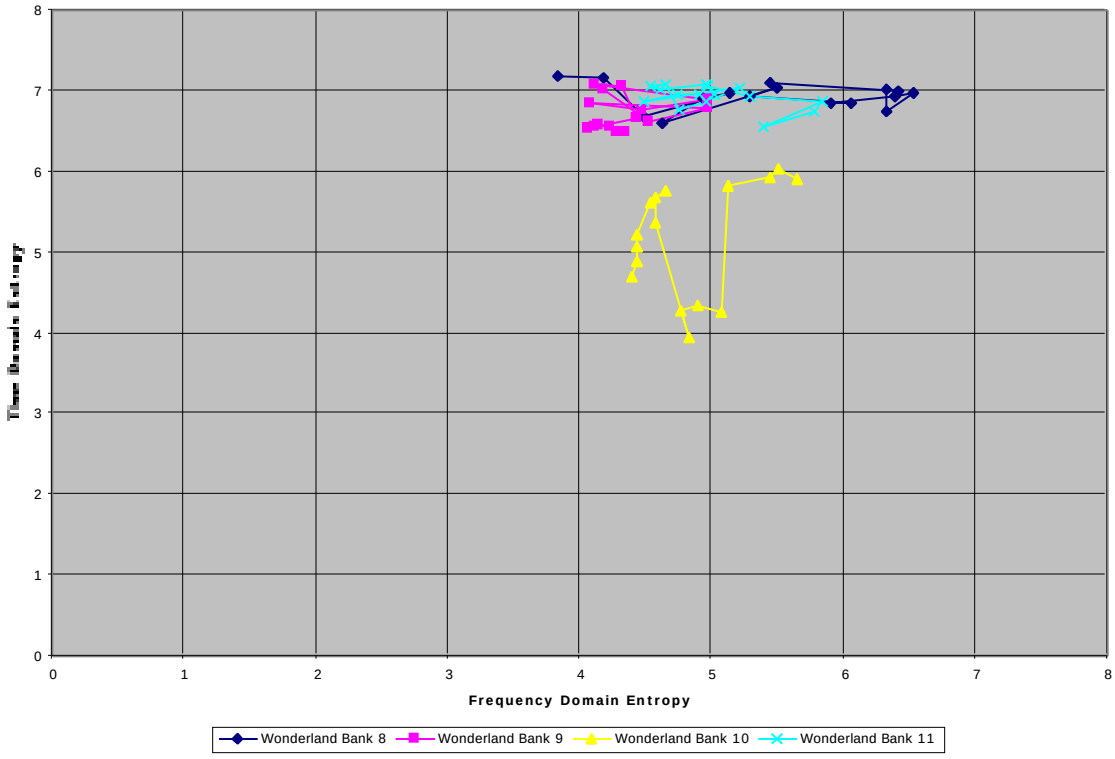
Notes:

Bank 7 “Rectification”

	**Wave 0 – 8 Bit Wire**
	**Wave 3**
	**Wave 8 – Half Wave**
	**Wave 12**
	**Wave 15 – Full Wave**

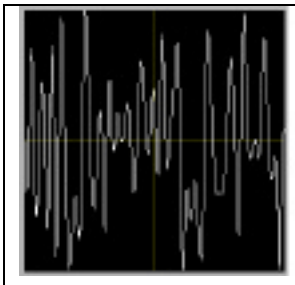
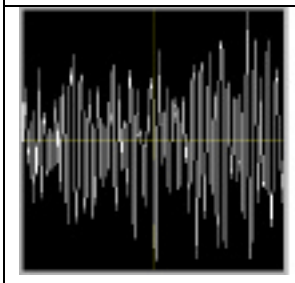
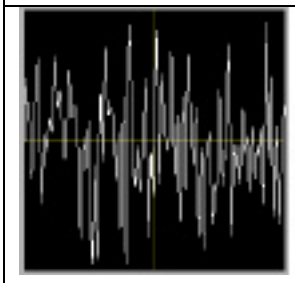
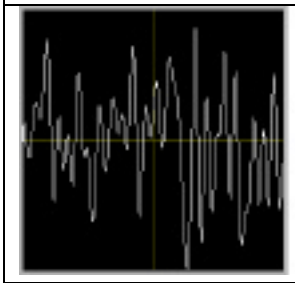
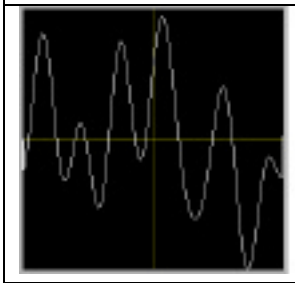
Notes:

ESQ Wonderland



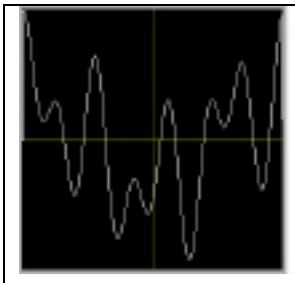
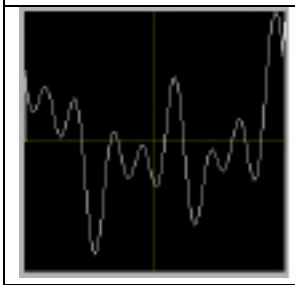
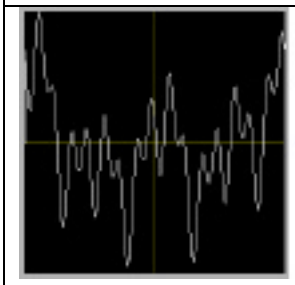
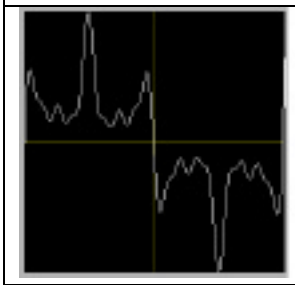
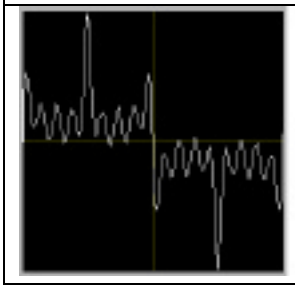
Entropometer Data

Bank 8 “ESQ Wonderland #1”

	**Wave 1**
	**Wave 3**
	**Wave 7**
	**Wave 12**
	**Wave 15**

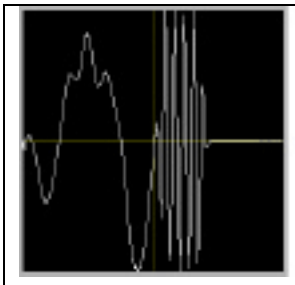
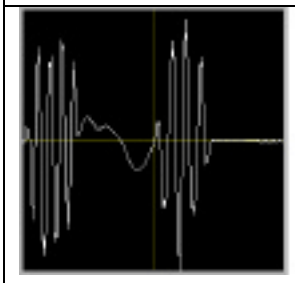
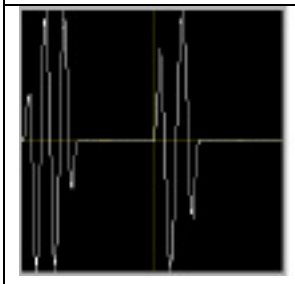
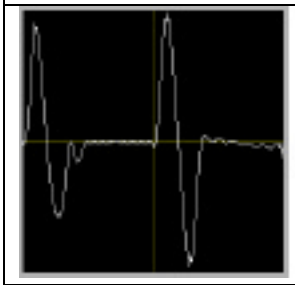
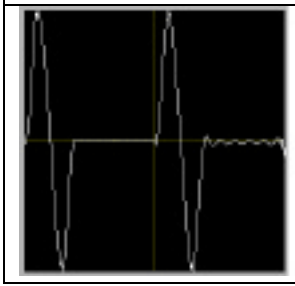
Notes:

Bank 9 “ESQ Wonderland #2”

	**Wave 0**
	**Wave 3**
	**Wave 7**
	**Wave 9**
	**Wave 15**

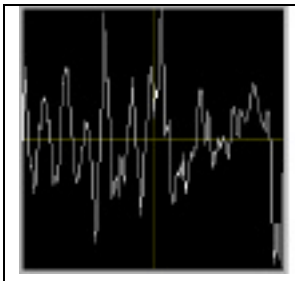
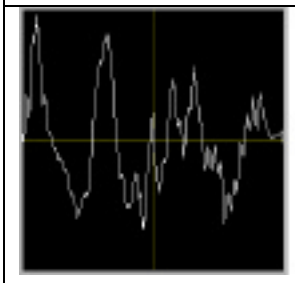
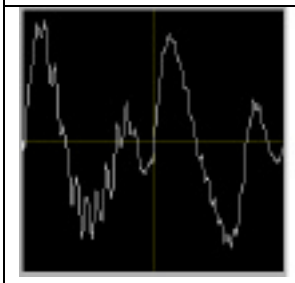
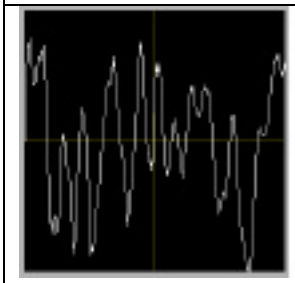
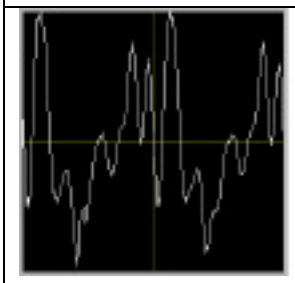
Notes:

Bank 10 “ESQ Wonderland #3”

	**Wave 0**
	**Wave 3**
	**Wave 7**
	**Wave 12**
	**Wave 15**

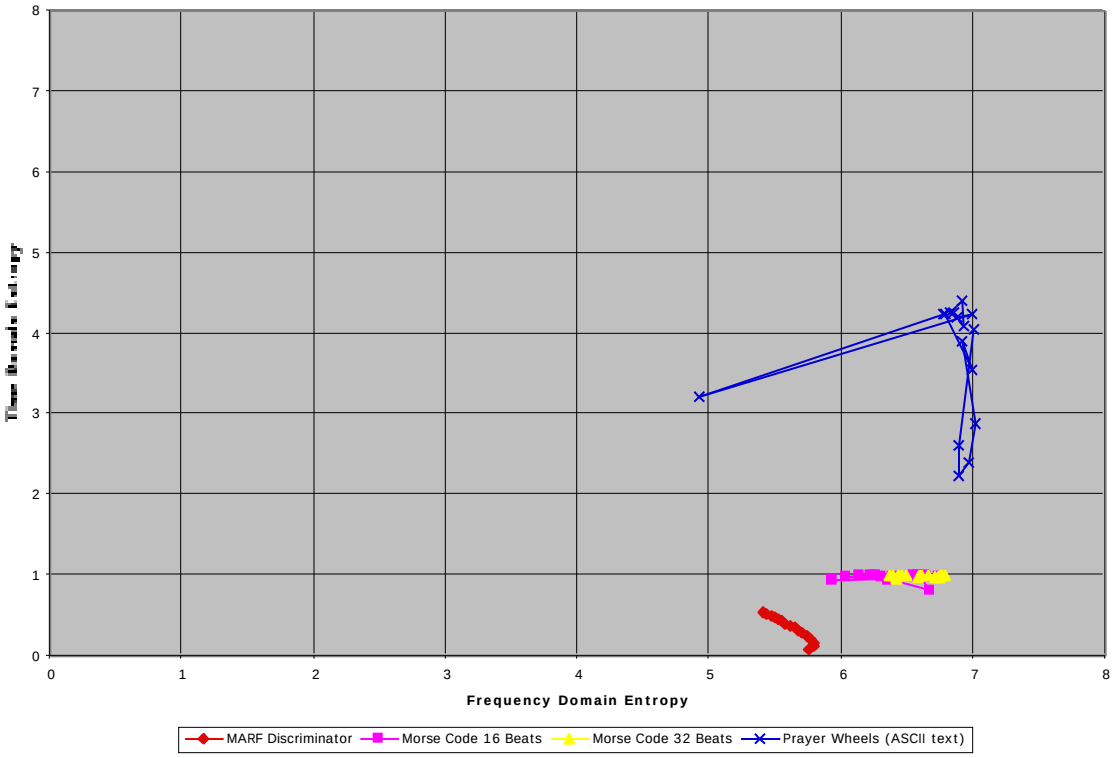
Notes:

Bank 11 “ESQ Wonderland #4”

	**Wave 0**
	**Wave 3**
	**Wave 7**
	**Wave 11**
	**Wave 15**

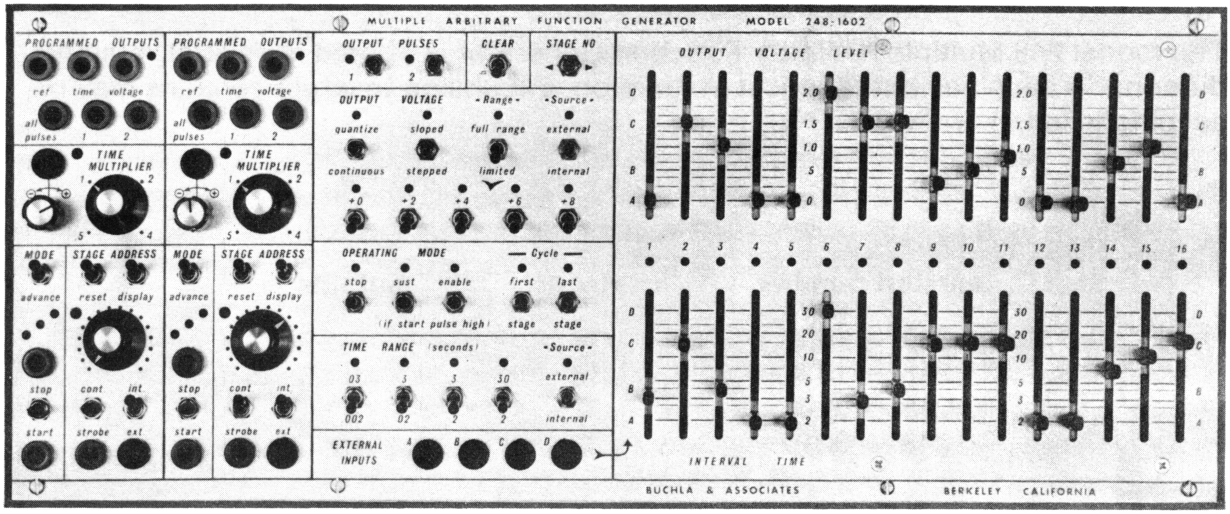
Notes:

Signaling Channels



Entropometer Data

MARF Discriminator



Buchla and Associates Model 248 Multiple Arbitrary Function Generator

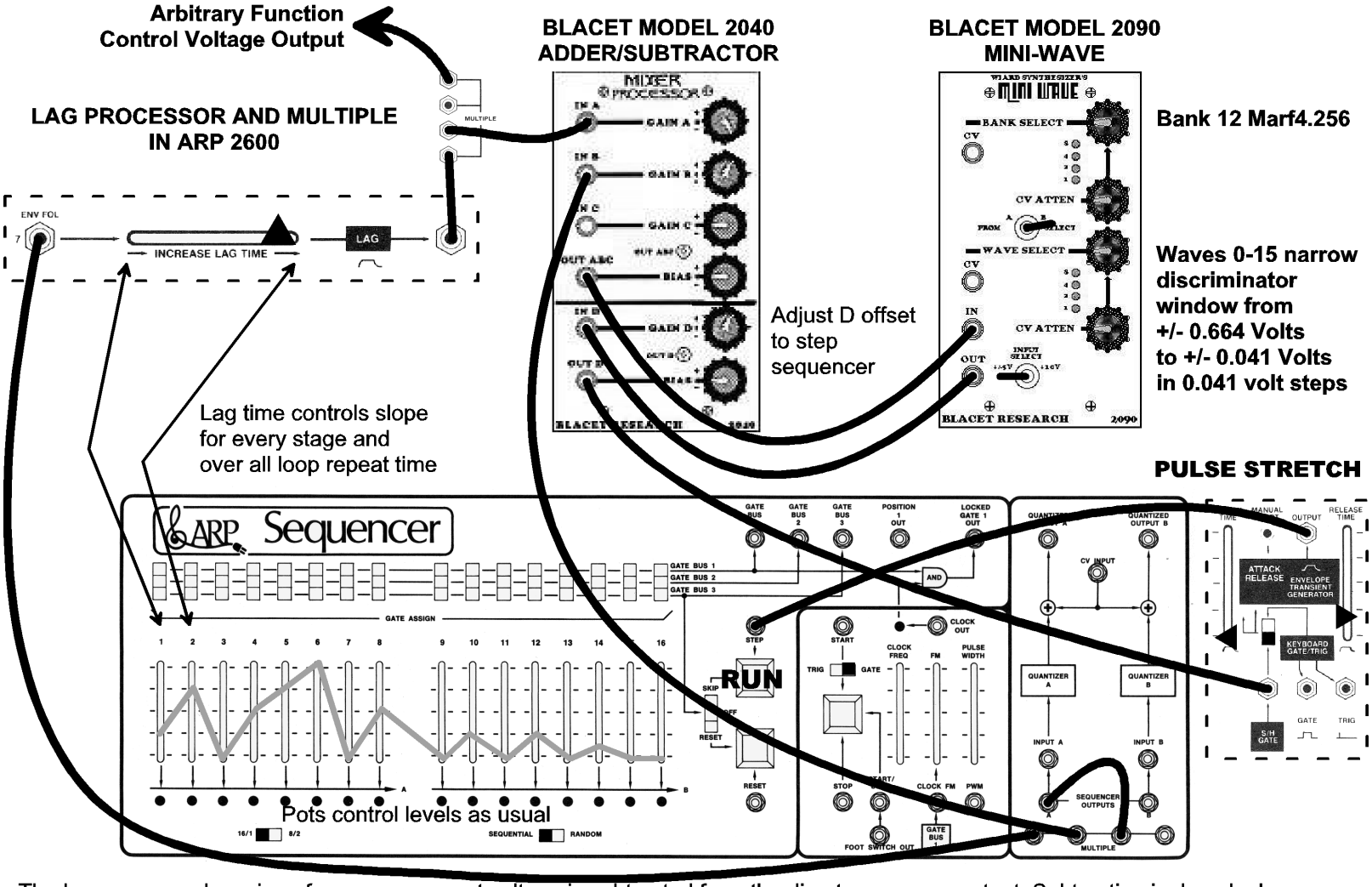
The **M**ultiple **AR**bitrary **F**unction Generator (or MARF for short) introduced new ideas and blurred the line between a sequencer and an envelope generator. While none of these patches will replace a real MARF, they will allow you to experiment with some of the ideas presented in the original device. The MARF has independent control over time per step, voltage per step and whether the transition is stepped or sloped.

This can also be accomplished by patching it up on a modular. The following patches use the ARP sequencer, but any sequencer and modules that provide the functions will work. The transfer function produces a high level when the input is within an adjustable voltage near zero, approaching from either the positive or negative direction. Using a subtractor and a slew rate limiter (lag processor) you can use it to step a sequencer when the slope has completed.

Note that these are experimental patches and take a good deal of tweaking to get to run continuously. If the step voltage is less than the discriminator window, the sequencer will not step. This can be used to stop the sequence for use as an envelope. A pulse to either the reset or step input will cause the sequence to start again.

MARF Discriminator Patch 1

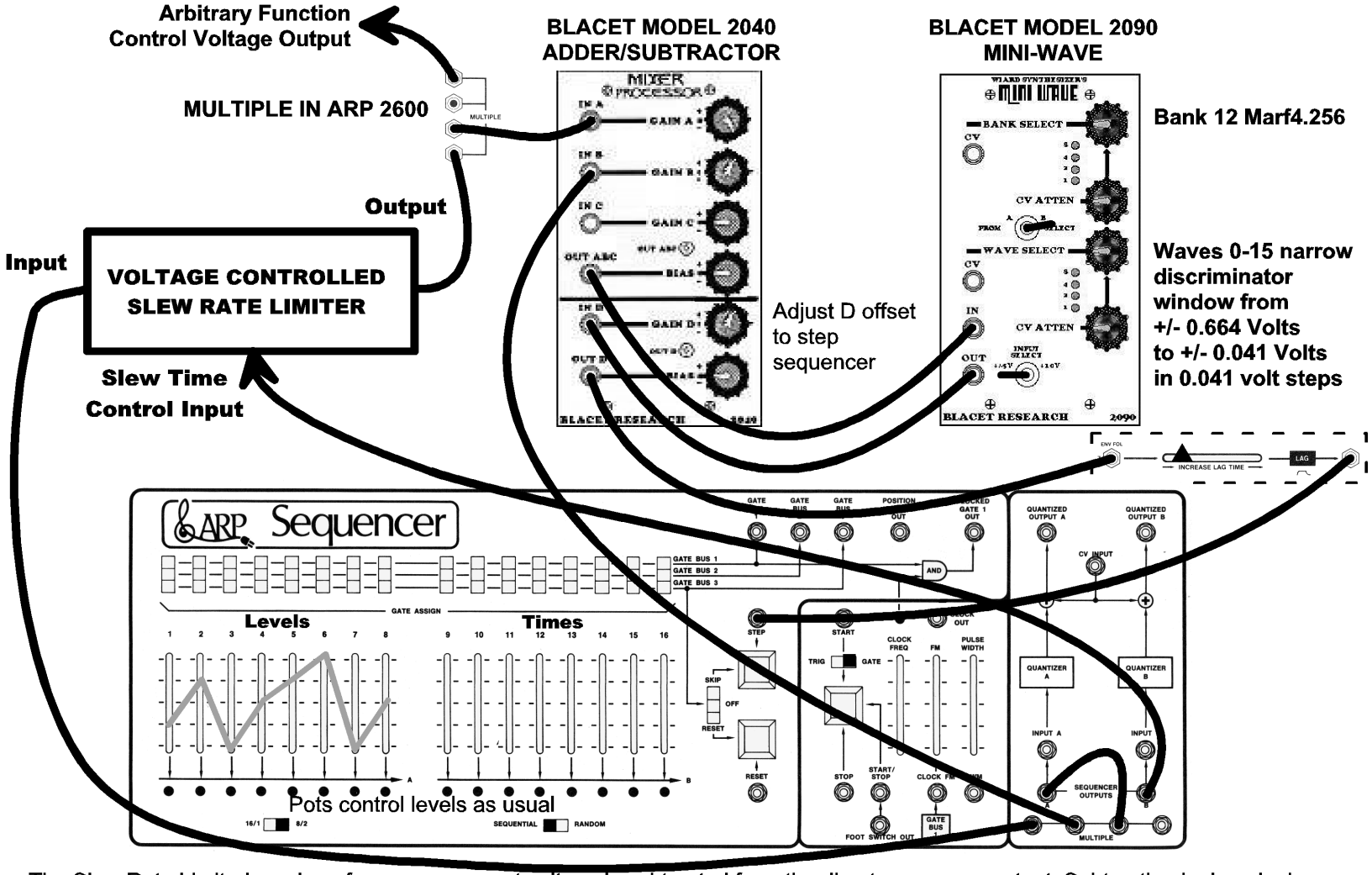
Generates continuous slopes between sequencer levels



The Lag processed version of sequencer ouput voltage is subtracted from the direct sequencer output. Subtraction is done by by adding the negative polarity. After some amount of slope time, the difference between the direct and lag processed outputs becomes small enough to fall inside the bipolar comparator window and generate a pulse. The pulse steps the sequencer to the next stage and the process is repeated for all stages. The wave number controls the width of the window, 0 is 1.3 volts and 15 is 0.082 volts.

MARF Discriminator Patch 2

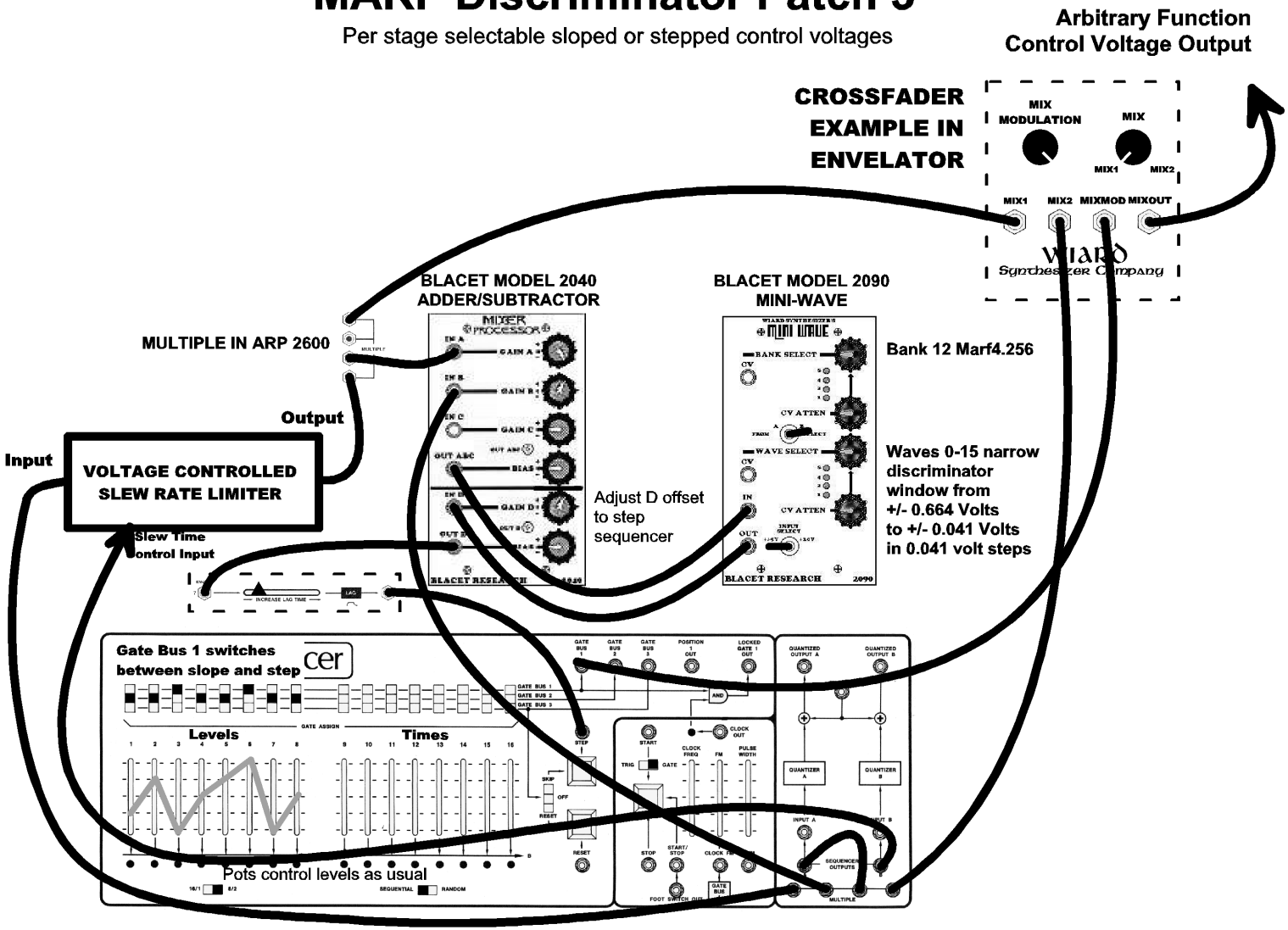
Generates per stage adjustable slopes between sequencer levels



The Slew Rate Limited version of sequencer ouput voltage is subtracted from the direct sequencer output. Subtraction is done by by adding the negative polarity. After a voltage controlled amount of slope time, the difference between the direct and lag processed outputs becomes small enough to fall inside the bipolar comparator window and generate a pulse. The pulse steps the sequencer to the next stage and the process is repeated for all stages. The voltages of the second sequencer bank sets the slope times for each stage.

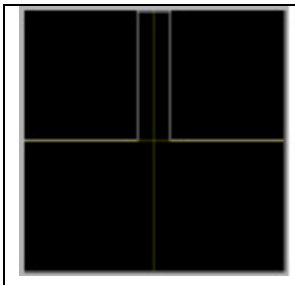
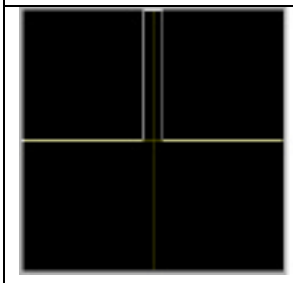
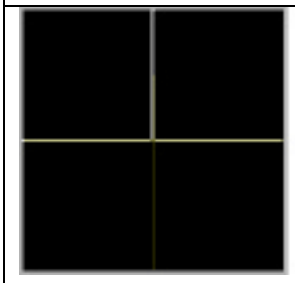
MARF Discriminator Patch 3

Per stage selectable sloped or stepped control voltages



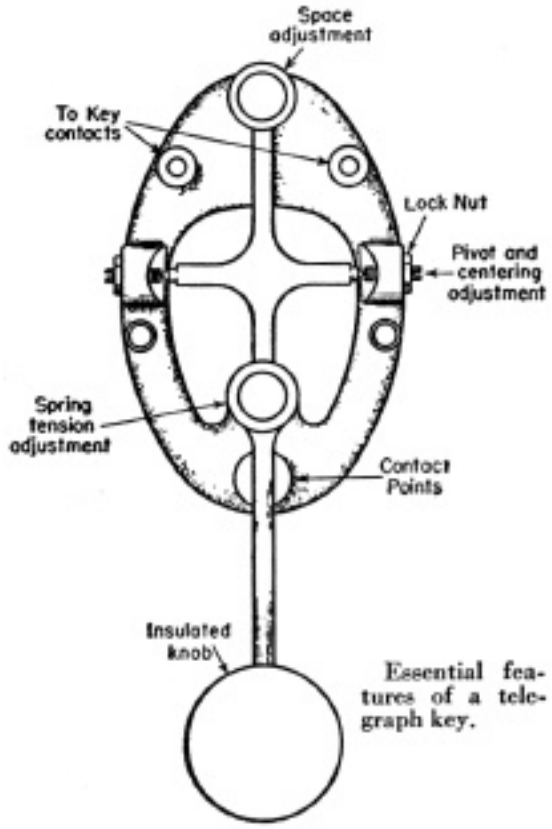
In this version, a crossfader or electronic switch is used to select a stepped or sloped transition.
The switches of Gate Bus 1 select stepped, leave at Gate Bus 2 for sloped.
The voltages of the second sequencer bank sets the slope times for each stage.

Bank 12 “MARF Discriminator”

	**Wave 0 1.328 Volt aperature (+/- 0.664)**
	**Wave 7 0.664 Volt aperature (+/- 0.332)**
	**Wave 15 0.083 Volt aperature (+/- 0.0415)**

Notes:

Telegraphy



Essential features of a telegraph key.

Electronic Morse Code Repeater Patch

SINEWAVE OSCILATOR
SET BETWEEN 500 AND 800 HERTZ

VOLTAGE CONTROLLED AMPLIFIER

MONITOR

Gated Sine Waves

VCA gate signal

SAWTOOTH OSCILATOR
KEYING RATE

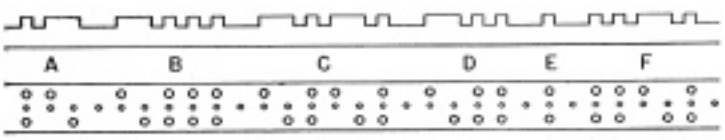
This frequency sets the words per minute rate

MINI-WAVE

Bank 13 or 14

Try Wave 0 - 15 for different loops

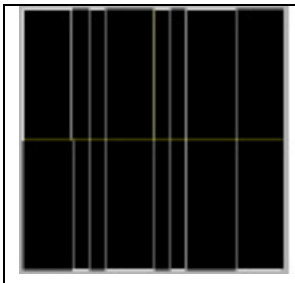
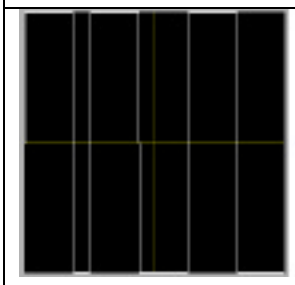
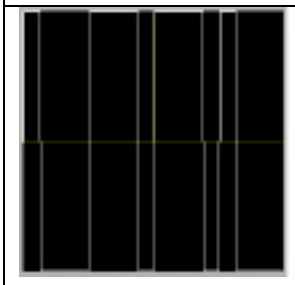
+10 Volt Range



At the top, above the corresponding text letters, is shown the appearance of inked slip as it comes from the recorder. The same text is shown below in the representation of Wheatstone perforated transmitting tape. The latter is distorted in length to make it coincide with the slip text. The center line of small perforations fits the driving-wheel gear teeth. Of the larger holes, the top row operates a "make" contact relay, the bottom row a "break" contact relay.

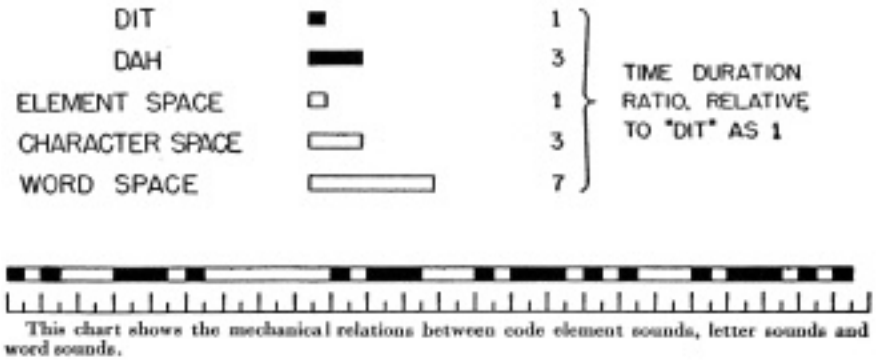
Some examples of mechanical Morse repeaters

Bank 13 “Morse Code Loops 16 Beat”

	**NA** Wave 0
	**MT** Wave 7
	**EG** Wave 15

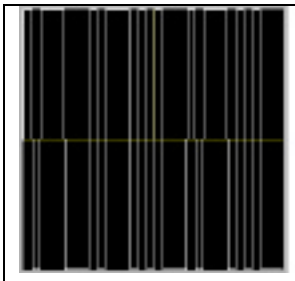
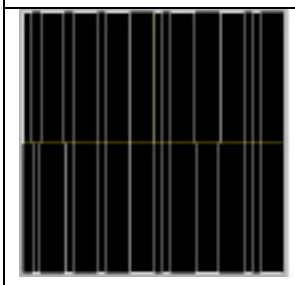
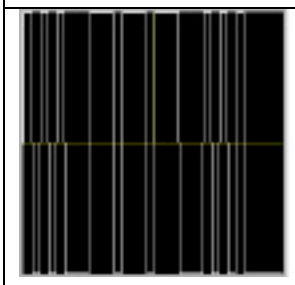
Notes:

Bank #	Letter Group
0	NA
1	SA
2	Y
3	BE
4	TU
5	H
6	IR
7	MT
8	WE
9	TR
10	AN
11	Q
12	J
13	AS
14	SN
15	EG



This chart shows the mechanical relations between code element sounds, letter sounds and word sounds.

Bank 14 “Morse Code Loops 32 Beat”

	**ALL** Wave 0
	**JAN** Wave 7
	**SOS** Wave 15

Notes:

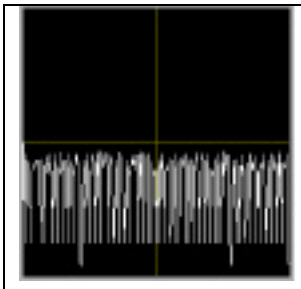
Bank #	Letter Group
0	ALL
1	ARP
2	BAG
3	BASE
4	EYES
5	GOT
6	HEAD
7	JAN
8	MISS
9	NASA
10	NOTE
11	PUN
12	RAIN
13	URL
14	VAL
15	SOS

Prayer Wheels

ASCII Encoded Sacred Texts

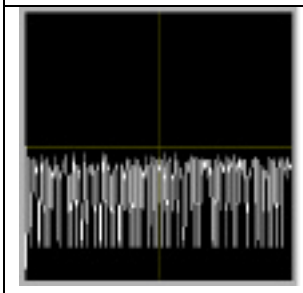
Please note that no disrespect is intended to any religious group by the use of these texts.

Bank 15 “Prayer Wheels”



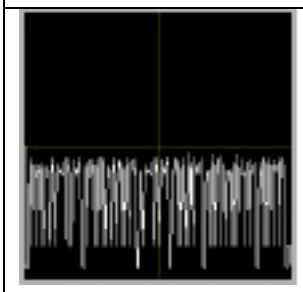
In the beginning God created the heaven and the earth.
And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.
And God said, Let there be light: and there was light.

Wave 0 - Bible



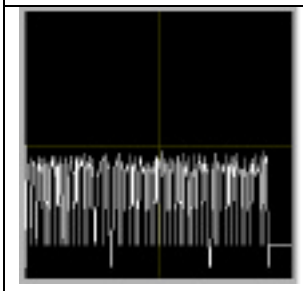
Our Father, who art in heaven, hallowed be thy name. Thy Kingdom come, thy will be done, on earth as it is in heaven Give us this day our daily bread. Forgive us our trespasses, as we forgive those who trespass against us. And lead us not into temptation

Wave 1 - Bible



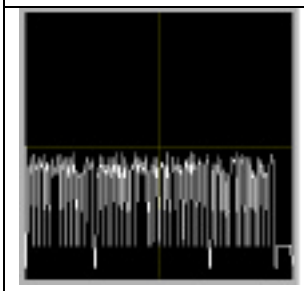
In the name of Allah, the Beneficent, the Merciful.
All praise is due to Allah, the Lord of the Worlds.
The Beneficent, the Merciful.
Master of the Day of Judgment.
Thee do we serve and Thee do we beseech for help.
Keep us on the right path.

Wave 2 - Koran



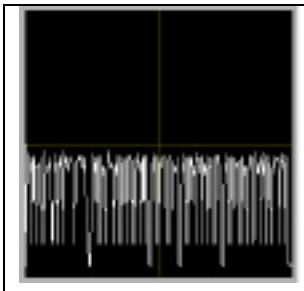
This Book, there is no doubt in it, is a guide to those who guard (against evil).
Those who believe in the unseen and keep up prayer and spend out of what We have given them.
And who believe in that which has been revealed to you

Wave 3 - Koran



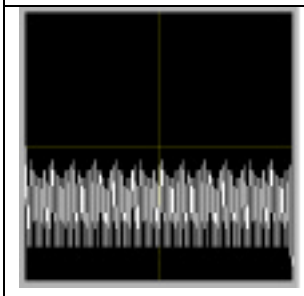
Often will those who disbelieve wish that they had been Muslims.
Leave them that they may eat and enjoy themselves and (that) hope may beguile them, for they will soon know.
And never did We destroy a town but it had a term made known.

Wave 4 - Koran



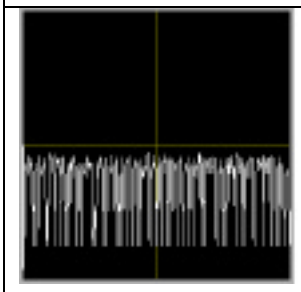
Never to kill any beings (even tiny bothersome mosquitoes)!
Never to take anything that is not ours or given to us
Never to misuse our bodies
Never to speak words that are not true
Never to drink or take drugs (except what the doctors give us)

Wave 5 - Buddhist



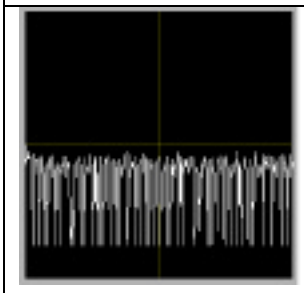
Om Ara Pha Sa Na Dhi Om Ara Pha Sa Na Dhi Om Ara Pha Sa Na Dhi Om Ara Pha Sa Na Dhi Om Ara Pha Sa Na Dhi Om Ara Pha Sa Na Dhi Om Ara Pha Sa Na Dhi Om Ara Pha Sa Na Dhi Om Ara Pha Sa Na Dhi Om Ara Pha Sa Na Dhi Om Ara Pha Sa Na Dhi Om Ara Pha Sa Na Dhi Om

Wave 6 - Buddhist



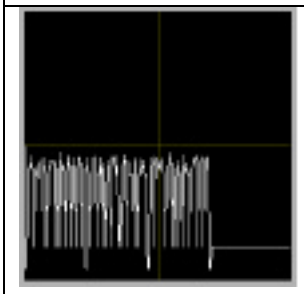
Hinduism and Buddhism, mystic words used in ritual and meditation. A mantra is believed to be the sound form of reality, having the power to bring into being the reality it represents. There are several types of mantras. Sanskrit verses used in the Vedic s

Wave 7 - Dictionary



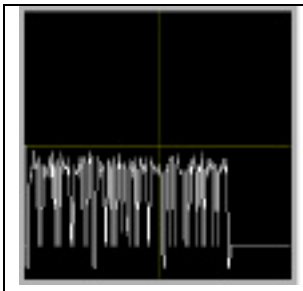
mystic words used in ritual and meditation. A mantra is believed to be the sound form of reality, having the power to bring into being the reality it represents. Bija-mantra or "seed-sounds, used mainly in Tantra, are syllables without semantic value havin

Wave 8 - Dictionary



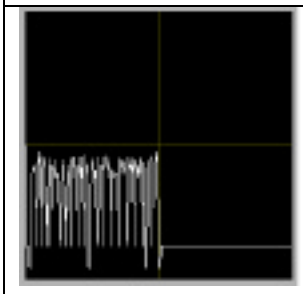
Having cleansed the mirror of my mind with the dust of
the lotus feet of Shri Gurudev, I now proceed to describe
the untarnished glory of Sri Ram which bestows four fruit

Wave 9 - Hindu



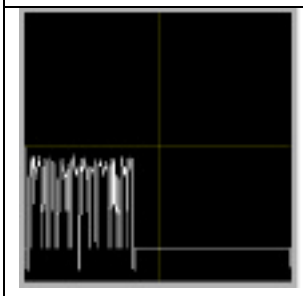
Realizing the inadequacy of my intellect, I meditate upon you Hanumanji (son of the wind-god); grant me strength, intelligence and true knowledge, and remove all my hardship and blemishes

Wave 10 - Hindu



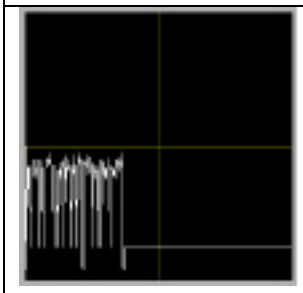
Taking you into His embrace, Shri Rama stated that even Sesnag (the thousand headed serpent) sings praises of Your glory

Wave 11 - Hindu



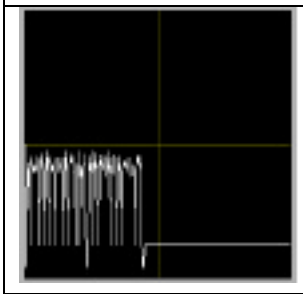
You swallowed the sun from a distance of sixteen thousand miles, considering it to be a sweet fruit

Wave 12 - Hindu



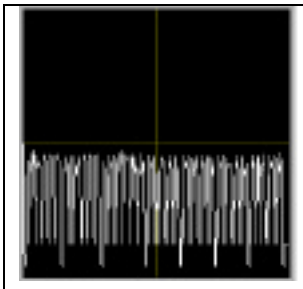
All diseases are destroyed and pains vanish when your powerful name is repeated incessantly

Wave 13 - Hindu



And together with any other desires any devotee may have, they will ultimately secure the imperishable fruit.

Wave 14 - Hindu



To every thing, turn, turn, turn,
There is a season, turn, turn, turn,
And a time to every purpose under heaven
A time to be born, a time to die
A time to plant, a time to reap
A time to kill, a time to heal
A time to laugh, a time to weep

Wave 15 - Bible

Notes: