

This dynamic musical instrument lets you:

play from one to eight voices at once
control note dynamics such as timbre, loudness, sustain, tremolo and portamento
see the notes and chords in real time and full color
record over 3000 notes in a single session-or record short base lines
save what you have recorded on disk
playback your recordings with variable speeds and timbres; playback with 'echo' for repeating sequences
play along with your recordings during playback
create your own custom sounds and instruments
change instruments during play and record, and transpose keys dynamically, too
conduct the musical effect during play and playback
learn about sound shaping, control and expression
enjoy a unique music and sound experience... over and over

AN ALPHA for the teacher

Abstract:

Stanford University has developed, used and tested a successful computer assisted music program as an adjunct to basic courses in music theory. The system has been used for drill and practice, review and testing of basic music skills with primary emphasis on ear training and auditory perception. It has also been used for fundamental research in music perception and performance in the ear training context.

With a grant from the Apple Educational Foundation, the curriculum system for CAI in Basic Musicianship has been placed on a microcomputer.

Curriculum

The curriculum has been developed using drill and practice and tutorial formulas that introduce the elements of the sound of music and its notation. Included are:

- * Major and minor keys in treble and bass clef, with key signatures.
- * Intervals. Tonal relationships involving two pitches.
- * Melodies using pentatonic, major, and minor modes.
- * Triads and chord inversions.
- * Chord progressions. Various progressions and cadential formulas.
- * Note values and rhythmic patterns.

Program enhancements for keyboard input:

Responding to instruction via a piano keyboard is an effective and natural method. One of the key contributions of this project will be to interface a keyboard to the curriculum which will make possible responding from this keyboard to the instructional program. Students will be able to respond directly from the keyboard to the instructional exercises.

Keyboard Input:

The alphaSyntauri keyboard features a 61-note keyboard with velocity sensing on each key for dynamic control. The eight octave range (from F to F on an even tempered scale) provides a standard keyboard environment for music instruction. This keyboard, which works with the Apple II and Mountain Hardware MusicSystem provides the final component.

The simultaneous display of music notation, while sound is being generated, combine the kinesthetic (keyboard input), the aural (sound), and the visual (TV monitor) senses, creating an intense and unified environment for a very effective learning situation.

**Excerpts from paper delivered at ADCIS conference, March 1981: A Microcomputer Based Curriculum System for Basic Musicianship, by Wolfgang Kuhn (Stanford Univ.) and Paul Lorton Jr., (Univ. of San Francisco)

NEW YORK DEBUT: an historical note

New York, Aug. 16, 1980. Syntauri today announced an expanded alphaSyntauri™ digital musical instrument, a computer controlled digital synthesizer which is the first modular 'soft instrument'. Linked to an inexpensive Apple II microcomputer, the alphaSyntauri synthesizer gives musicians sound and control options typically found on very expensive large synthesizers.

Modular design means you can now choose between two hardware oscillators - the 8-voice Mountain Computer MusicSystem™ which is waveform controllable, and the ALF 3-voice cards (which can be combined to give you up to fifteen voices.)

Our term the soft instrument means flexibility, expandability and control for both accomplished musicians and beginners. Software and hardware are independent.

"You can define your own instruments, your own sounds, with the alphaSyntauri synthesizer and reproduce them accurately at any time," commented Scott Gibbs. "Musicians can record digitally from the keyboard... Even the instrument velocity sensitivity can be tuned to affect loudness effects to suit a player's style."

on becoming a wavemaster

WAVE III, a program supplied with the alphaSyntauri system, gives you a direct and graphic way to build your own sounds. By specifying the harmonics or overtone series for the target sound, and tuning by adding and subtracting harmonics, you can achieve your own complex timbres. This is the process of additive sine synthesis.

Waveforms by themselves, however, do not constitute all that we characterize as a differentiable sound. An envelope must be applied to give the sound a dynamic in time. Thus, the alphaSyntauri is designed to give you maximum flexibility to quickly tune envelopes once your basic sound quality has been created with WAVE III.

Analysis of stored waveforms is also possible with the ANALYZER III program. A simple digital filter algorithm is executed for each of the first 20 harmonics (more if desired.) The resulting display gives the waveform graphically and then lists the relative amplitude of each harmonic.

ANALYZER III can be used, of course, to resolve any contiguous 256-byte data set (the 6502 zero page or hardware stack for instance!) WAVE III will then recreate a smoothed version of this waveform for future fun and entertainment. SWG



What musically successful secret do Linda Ronstadt, Oral Roberts Univ., the Boston Symphony Orchestra, Pink Floyd, and alphaSyntauri share?

Palo Alto, April 3, 1981. Syntauri Corporation today announced alphaPlus™, a new enhanced operating system for the alphaSyntauri™ digital synthesizer. Synthesists and musicians now have the controls they need to create new, unusual, and fat sounds.

alphaPlus continues the pioneering Syntauri Corporation's commitment to modular, flexible and expandable digital synthesizer technology.

"We believe in giving people the greatest opportunity to make outstanding sounds! And, giving you the most synthesizer for your dollar, alphaPlus uses the mass marketed 48K Apple II computer, the Mountain Computer MusicSystem™ oscillators, and our keyboard and software - an unbeatable combination!" commented Ellen V.B. Lapham, Syntauri's pres.

GOOD VIBES!

Vibrato. The alphaPlus vibrato captures the richness of the human singing voice and the dynamism of a cathedral organ. Now even your harpsichord may have vibrato! And, because all settings are digital, they may be tuned, remembered, and reproduced over and over again.

Beyond natural instruments, alphaPlus can take you to sounds which defy description. For especially rich effects, you may combine vibrato with the alphaSyntauri synthesizer's standard secondary channel frequency offset. Here, extreme settings can even produce the sounds of clapping and stomping.

The variation in frequency which characterizes vibrato is achieved in alphaPlus through software simulation of an LFO (Low Frequency Oscillator) with dynamically controllable rate, depth, and waveform.

Special effects (FX Routines). Responding to synthesists and composers who want unique and unusual sounds from their synthesizers, Syntauri's alphaPlus adds fully polyphonic software special effects.

A new 'x' command puts you into special effects mode; fully digital technology ensures that the effects are exactly reproducible.

Some of the FX routines provided are:

M2: When you play, each note you strike on the keyboard triggers a pattern of sequenced sounds. Each sequence is comprised of up to 10 different timbres. Sequence speed is dynamically variable by the player. At low speeds, the effect is a smooth melodic pattern which can set a mood or bass line. At higher speeds, the impression is that of a burst of machine gun fire.

SW: (The Something Weird effect). A form of digital frequency modulation, SW can produce swoops of sound merging with staccato buzzes, with the natural polyphony of the alphaSyntauri synthesizer used to create dense textures. In short, "Something Weird" for everyone.

Microtones. Microtones are defined as intervals smaller than semitones (1/12 of an octave.) alphaPlus, however, gives musicians absolute freedom of tuning within the resolution and tempering of the instrument.

Musicians can specify from one to as many as 61 equally tempered tones per octave. As an experiment, tuning the entire keyboard to a single frequency and adding vibrato plus frequency offset can result in subtle and complex polyphony.

(Note: instrument resolution is to a hemidemisemidemihiemitone.)

Colorful new display. To obtain time for special effects and greater musical versatility, the alphaSyntauri synthesizer's real time display has been speeded up.

As your fingers fly up and down the keyboard, colored rectangles appear on the video screen. Each 12-tone octave has its own row and each note has an individual display. Note colors can be reassigned, from the available 15 hue palette.

SYNTAURI HIRES A CLOCKWATCHER

A new software timekeeper in alphaPlus is responsible for the accuracy of the alphaSyntauri synthesizer. For instance, the clockWatcher™ ensures that the keyboard is fully responsive and expressive when you play live against a pre-recorded piece.

Maintaining accuracy to within 16 milliseconds, the clockWatcher synchronizes the instrument process loop, using the 6502 maskable interrupt (enabled by the Mountain Computer MusicSystem™ hardware) to give 8 millisecond time references; and needs only 0.54 millicurries soma/fortnight. Possible applications of the clockWatcher include click tracks, 'software metronomes', and rhythm effects.

alphaPlus will be available from Syntauri Corporation on June 1.

MEET CHARLIE KELLNER: CREATOR OF THE alphaSyntauri DIGITAL SYNTHESIZER

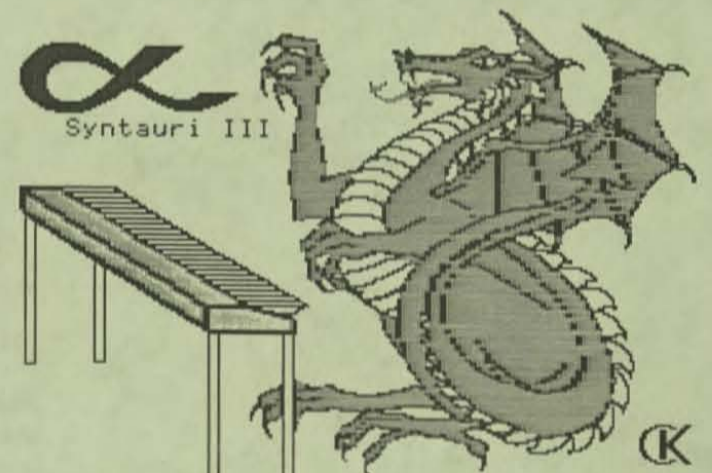
My college studies were diverted by explorations into new music. In fact, I met my wife, Jo, because of some bizarre sounds. Our study breaks were spent listening to Perry and Kingsley's pre-Moog music. We were intrigued by their non-standard techniques: these composers had a wall filled with tapes, an inventory of sounds. When they wanted a particular note, why they'd go to the wall, snip off a one-inch segment, and splice it in. The music was remarkably human.

Then they got a Moog, which really cut down the time to compose. But, to completely master a large complex synthesizer, it takes a person who is both an artist and an accomplished technician. (And, very wealthy.)

THERE MUST BE A SIMPLER WAY TO DO IT!

The alphaSyntauri circuitry is in software, and the essential difference is that we have put a computer in the creative loop and simplified the controls.

I believe in simplicity, and building tools which are for people. A synthesizer gives you something in the sense of power. But it also takes away, in the sense of human nature. By the very act of making the music process more flexible,



it makes it harder to be creative. You have more variables to control.

I see the computer as a bridge between the supertechnical synthesizers and the joy and simplicity of just being able to sit down at the piano and play.

- Charlie Kellner

Charlie Kellner is a Senior Software Engineer at Apple Computer, Inc. He developed the alphaSyntauri because of his love for music and his love for computers.

Laurie Spiegel

Her lower Manhattan loft is a miasma of electronic high technology. There are tape recorders, an Apple II computer, and a workbench littered with solder, wire, voltmeters, and circuit boards.

(Laurie Spiegel) is a composer, schooled at Juilliard, who uses computers and a polyphonic synthesizer (the alphaSyntauri) to create something which is simultaneously music and art. Her compositions are contained in magnetic disks of binary computer coding. She slips one of them into her Apple and flips some switches.

From the stereo emerges a series of simplistic, repetitive musical phrases, while the room's TV screens display an analogous pattern of thin, fleeting colored lines. Gradually the music grows richer and more dense; the pace and variety of sound expand...soon the loft resounds in a riot of visual harmonics, images flashing in unison to the composer's musical desires.

Young composers like Spiegel...personify a musical renaissance that promises to change the way we hear, think about, and compose music in years to come. The computer is central to this expansion of aural awareness.

Spiegel uses her computer for a variety of musical tasks. "It is an incredible labor saving device... (the) computer can also play the music as I'm composing, in case I want to change something right away. With traditional composition, you have to hear all the elements of the works in your head."

"As a musical tool, the computer will parallel the invention of musical notation."@

@The Endless Scale, March 1981.
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microtones.

Small tones marching up and down the key board. How small? As small as the smallest interval you want to use, say from a 5,6,31, or 61 tone scale!

How?

With your alphaSyntauri (alphaPlus version). A few simple commands at the Apple keyboard, and you're now a microtonal musician who can experiment with new sounds and "playing between the cracks of the keys."

Why?

Listen to Ivor Dargé, the "grand old man of microtonalists...." I've always wanted to escape the music establishment's squirrel cage...It changes the mood profoundly by adding four or five new musical modes to the vocabulary. There are certain chords and combinations of sound that are impossible in an ordinary twelve-tone system."@

WHICH IS LONGER? LUCY IN THE SKY WITH DIAMONDS, OR THE STAR SPANGLED BANNER?

You can easily explore this wonderful musical parameter on your alphaSyntauri by just playing back a pre-recorded piece. You'll get the notes count on the video screen any time you interrupt the playback or when the piece ends. (You have up to 3200 notes before your recording/playback space is full.)

education bulletin

Dear Educator:

Thank you for your enthusiastic response to our alphaSyntauri instrument at the ASUC, ADCIS, ACCME, MCEE, and CME meetings. In response to your requests here are our recent CAI (Computer Aided Instruction) developments:

*Our user-defined microtonal scales are now available (alphaPlus) and the sounds are wonderful.

*As you know, Dr. Wolfgang Kuhn of Stanford has done outstanding work in the CAI field. He is currently adapting the curriculum for presentation via the Apple using our alphaSyntauri instrument. We know you are anxiously waiting for the results and

HOW MANY ANGELS ON THE HEAD OF A PIN?

How many separate alphaSyntauri instruments can you store on a single DOS 3.3 diskette (without DOS)? Our technical wizard has calculated 190.

What is the largest number of on-line musical instruments possible? (We'll publish some of the most creative responses in a future issue.)

production update

In December, 1980, after months of debugging, redesigning, wirewrapping prototypes, coding software, and writing manuals, the first alphaSyntauri musical instruments were shipped. All Syntaurians rejoiced!

The first systems were difficult to put together because we were at the beginning of our learning curve.

Today, our manufacturing facility in Fremont, California, is running like a well-oiled synthesizer. (Well, almost.) Each machine is individually tested and tuned thrice before it is placed in its chassis. A fourth and final test and fine-tuning is required immediately prior to each shipment to insure a fine, high quality product. Then, these alphaSyntauris are shipped to customers throughout the world.

BALLOONS AND THE alphaSyntauri SYNTHESIZER

In answer to the oft-repeated question... "yes, the alphaSyntauri is a dream music maker; but, can it fly?" We offer the balloons! To make music with a balloon - blow it up then stretch the mouth piece with your fingers and listen. To make the alphaSyntauri fly - - - play it!

-Jules Verne



alphaSyntauri™ a computer-based digital music synthesizer

A professional keyboard	_____	C to C, 61-note velocity sensing, AGO (American Guild of Organists) standard
Tunable velocity sensing effects	_____	Note loudness increases as keys are depressed sharply. Keyboard response may be made stiffer or looser when the system is 'initialized'
Wide frequency range	_____	From 30 Hz to 13,000 Hz
Keyboard transposition	_____	The keyboard may be transposed up and down in quarter tone steps. Fine tuning adjustments to 0.5 Hz may be made during initialization
Polyphony	_____	Eight simultaneous notes (two waveforms per voice or note)
Envelope control	_____	Each waveform has its own 4-stage envelope; the primary waveform has standard ADSR, the percussion has a PFSF envelope
Waveform control	_____	Additive synthesis used to create unique waveforms from pure sine or complex composite waveforms (square, sawtooth and triangle waveforms are built in)
Instrument banks of 10 instruments each. Any number of banks may be created	_____	Instruments are defined by their waveforms (two each) and envelopes; plus special parameters
Foot pedals	_____	Sustain and portamento
Real time recording	_____	Over 3400 notes per session. Sessions—compositions and improvisations—can be named and stored on disk
Playback with 'echo'	_____	Any length session can be continually repeated during playback
Playback with variable speed	_____	Pitch does not change during variable speed playback. Range is from 50 to 100% of input (original playing) speed. Fast forward mode gives a 100 to 200% playback speed range
Overplaying during playback	_____	The keyboard may be played while a prerecorded piece is being played back. Foot pedals (also considered keys) may be used here for effects
Phase offset	_____	The two waveforms are offset by 0.5 Hz as standard. Offset amount is adjustable at initialization
Dynamic instrument controls	_____	Change instruments, add tremolo, sustain and portamento. Alter the envelope and transpose the keyboard. Change waveform mix and relative timbre loudness and phasing
Optional scales	_____	The standard scale is well-tempered. Other 24-tone scales built into the instrument are International (ca. 1850) and Just ('scientific')
Tutorial manual	_____	For self-teaching the alphaSyntauri™ instrument, the principles of sound and psychoacoustics. Extensive exercises for waveform control and envelope control are provided
Oscillators	_____	One Mountain Computer, Inc. 16-voice MusicSystem™

alphaSyntauri in CANADA

A letter arrived the other day from composer Paul Hoffert in Toronto, who commented "I will be using the alpha keyboard for several professional applications including radio and television commercials, feature films, and some performing".

We called him to see how he was doing, and he let us know that the alphaSyntauri was used to generate effects for the GENIE awards (Canada's Oscars) and is now being worked as a composing tool for a musical being tried out in Toronto. He commented that "the keyboard sounds are really good."

We also discussed the design of musical instruments, and especially the interface between the musician and the instrument... what is called ergonomics. Paul added that "...as I am familiar with and have extensively used other well known synthesizers, I intend to put it through some tough evaluation. Your product seems to be one of the best thought out in the area of music systems for computers... (and) it is very well human engineered."

We'll keep in contact with Paul as he continues his alpha explorations.

DISCOVER SL #1

For all of you who have wondered about preset master (10-instruments bank) called SL #1, we've gone to the source, Steve Leonard, who is keyboard man for the Cretones. "These are the instruments I use in both live and studio performances. I created most of them with up to 30 harmonics, and each alphaSyntauri sound I create frees me from having to travel with another keyboard." The sounds are:

No. 0	LOST	Oberheim OB-X
1	B-3 #1	Hammond B-3 organ
2	B-3 #2	Hammond B-3, fatter
3	CLAVINET	
4	RMI PIANO	a rock 'n roll favorite
5	PIPE ORGAN	
6	VIBES	a soft vibraphone
7	HORNS	Electric horns
8	VOX	VOX organ
9	HARPSICHORD	

we promise that you will be the first to know!

*Dr. David Cohen of Arizona State University is developing a high resolution conventional musical notation graphics package—a very desirable feature!

*Dr. Don Pederson of the Univ. of Tennessee is developing a composing package so that you will be able to lay down tracks using the alphaSyntauri instrument.

TO all you wonderful educators who have given us your ideas, feedback and support—Thank you, Ilana Wiedhopf

Syntauri Corporation, in cooperation with its dealers, offers a discount to accredited educational institutions. Contact Syntauri for details.

Computer Retailers Have a SOUND Policy

"I would have an alpha in our store even if I weren't selling them. I AM selling them. Our store is next to a Radio Shack and people come over and ask me to compare the two computers... At that point I flip a switch and let the music roll."

Russ, Computerland of Concord, CA.

"Our customers are primarily interested in business applications. The negotiations are complicated. Our alphaSyntauri synthesizer playing in the background improves the atmosphere and always reduces the tension."

"Customers discover that their Apple can not only balance checkbooks but can also deal with the complex process of making music."

"We all feel the alpha has contributed greatly to our store."

Connie, Computer Plus, Cupertino, CA.

ALPHASYNTAURI SYNTHESIZERS AVAILABLE WORLDWIDE

The alphaSyntauri is sold and supported throughout the United States, Canada, England, Sweden, Australia, and Japan.

Our California dealers are:
Byte Shop, Sacramento
Computer Plus, Sunnyvale
Computerland, Concord
Computerland, Santa Clara
Computer City, Brea
Consumer Computers, La Mesa
Rainbow Computing, Northridge (L.A.)
Computer Merchant, San Diego
Computique, Santa Ana
Computer Store, Santa Monica

You may contact Syntauri for the name of your nearest dealer, or better yet, go to your local Apple dealer. If he or she doesn't yet carry the alphaSyntauri, have them contact us for dealer information.

ANSWER: ANVIL™ carrying cases. Syntauri is making a rugged, ATA-rated professional Anvil case available. It holds your alphaSyntauri keyboard, diskettes, spare oscillators, tools, manuals, and miscellany. The case is white with bold 'alphaSyntauri' logo. Your dealer can order one for you.