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# REALITY

## Hackers

SPECIAL MUSIC & CONSCIOUSNESS ISSUE



ISSUE #6  
WINTER  
\$3.95



### eno

adrian belew

sound/mind discoveries

vismusic & chaos

blue oyster cult

hi-tech paganism

heavy metal  
mythology



.sun ra



# aditorial

## OLLY-OLLY-OXEN-FREE!

"The lovely human beast always seems to lose its high spirits when it thinks well; it becomes 'serious.' and 'Where joy and laughter are found, thinking doesn't amount to shit': that's the prejudice of this serious beast against all 'joyous science.'"--Well then, let's prove that this is a prejudice!"--Friedrich Nietzsche

"A hacker...is someone who enthusiastically probes and explores and *plays* with anything out of love and intellectual excitement, with strong initiative and persistence."--Ted Nelson

## RECESS TIME!

Where does one go to play these days? What jungle gym for the mind & spirit in sapless suburbia? --in benighted holes where only a "7-11" sign beckons on the horizon? To the magazine racks! And to the benevolent beaming Illuminatus Eye of *Reality Hackers*!

## HACKING

*Reality Hackers* hacks playfully yet mercilessly at static notions or fossil models of "Reality." We commit unspeakable acts of mayhem and violence on your pet realities. Playful yet serious messing. Games with no fixed rules.

Grapple with the wildly thrashing multi-tentacled interdisciplinary creations of rogue scientists! Explore black-hole tubes with overalled quantum mechanics! Float in a neuro-nutrient-rich Petri dish in animated suspension of belief! Experiment on yourself and friends with ever-sharper instruments of inquiry! We offer no dilute solutions--we are *part of the problem!* We'll take you to the Edge--it's your turn from there. **YOU'RE "IT!"**

## MIND-PARASITES AND SCREAMING MEMES

*Reality Hackers* is actively conspiring with holographers, video-artists, musicians, software designers, cartoonists, mystics, Hidden Masters, Hidden Mistresses, and kept muses. We have formed a Media House to bombard unsuspecting America with broad-bandwidth

clear-channel mind-parasites and screaming memes. The *Reality Hackers* Media House is a Simultaneous-Translation Plagiarism-Vortex where agents from the ever-stretching Edge meet to cross-pollinate, lift, and transfer things from one medium to another--a decrypting and encoding station for polysensory depre-dation.

## TAKE A DEEP BREATH--THIS IS A CONSPIRACY

Have you ever wondered about the numerological significance of "7-11" stores? Yes, we know you have--in your private moments. You know, of course, who operates these twenty-four-hour surveillance bureaus? Un-huh. That's exactly right. And *you* thought you picked up this magazine by accident--mistaking it for *People*. That's right--we send *all* our magazines out with double covers. Deep-cover double-agents, they are. *Time*, *Sports Illustrated*, *PC World* are on the outside, but *we're* insiders.

We have impregnated this magazine with pheromones. It is both physically *and* psychologically addictive. It is too late now to put it down. You will follow our Three-Point Plan:

1) Subscribe to *Reality Hackers* by filling out the enclosed card.

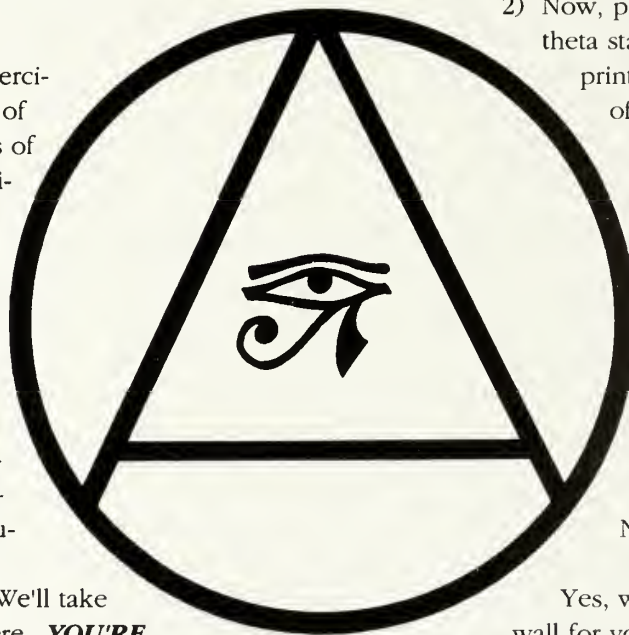
- 2) Now, plunge into a deep theta state and firmly imprint the full contents of this magazine on your neo-cortex.
- 3) Await further instructions!

**"Excuse me, my friends if I have ventured to paint my happiness on the wall."**

Friedrich Nietzsche

Yes, we've gone to the wall for you, kind readers, and we're really enjoying ourselves--so, grab a copy of *Reality Hackers* and a spraycan and show us what *you* think, America.

--Morgan Russell



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IF YOU DARE



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# soapbox

Information is true capital. Grain rots, you can't eat gold, you might not need medicines. All of these commodities, capital, have been used for centuries as barter. But what makes doctors, genetic engineers and, for that matter, plumbers, wealthy? Knowledge, information, data. You can learn to grow crops, mine gold, practice alchemy. Proudhon stated the crux of the matter in three simple koans: "Property is theft. Property is freedom. Property is impossible." Information equals property.

Property is theft. All that we know, we have learned. All that we have discovered has been extrapolated. We have simply stolen and built upon the ideas of those who have gone before us, from language to the lever, from agriculture to the atom bomb.

Property is freedom. No one can steal your ideas. While others may utilize your concepts for their own gain, you can still profit from them as well. Einstein articulated the concept of General Relativity and atomic theory, which much to his chagrin was used to develop nuclear weaponry. Nobody owns ideas and nobody can control them.

Property is impossible. Information is free. In fact information is taken for granted, as we daily communicate with symbols and concepts developed by people other than ourselves. We build the tools to build the tools to build the tools. The Zen meditation on Proudhon's concepts is left to the reader.



DID YOU KNOW?!?! You can not see the stars in space!?! We live in the interior of the hollow sun!?! Electricity is our externalized soul force!?! Colors are not contained in light!?! AIDS is not a virus!?! These ideas + much more (including the Cosmic Weather Report) are explored in THE JOURNAL OF BORDERLAND RESEARCH, issued to Members of Borderland Sciences Res. Found.

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The personal computer revolution has vastly empowered the individual. Yet it is a fragile and vulnerable system. Individuals have at their command the means to capriciously misuse the technology. Those who hoard, damage, or destroy signals are committing a crime against Species Intelligence. The hacker is a true Promethean and the guardian of personal liberties. Yet the hacker must forge a new ethic to guide him--or he's in danger of being scapegoated for what is mostly inter-corporate sabotage. The computer virus issue is likely to rage over the coming months. Send us your thoughts!

The communication of ideas is the very essence of this magazine. We promote and endorse maximum neural flexibility. A continuous stream of data allows you to integrate new models into your self-created reality, and discard outmoded ones. There are those who cling tenaciously to the security of their present belief system. And there are the intellectual faddists who will exchange their current model in favor of *any* new model. *Reality Hackers* believes the best model is what works — more importantly, what works for *you*. But be aware. We attempt to widen the bandwidth and present as many and varied ideas as possible. We are willing to entertain nearly any notion provided that it's resonant and interesting. So don't believe everything you read. Think for yourself.

--Jas. Morgan and accomplices



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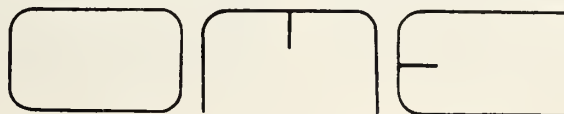


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Portions of this article can be found in "The Ultimate Machine" by Ken Freed



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# hacker profiles

**Ralph Abraham:** Ralph has been a professor of mathematics at UC Santa Cruz for (gasp!) nearly twenty years, and has been a student of Classical Indian Music for nearly as long. He has also become, of late, an intellectual historian of great power and subtlety, and a popularizer of the abstruse ideas of Non-Linear Dynamics, of Fractals, and Chaos. His four volume set, *Dynamics: The Geometry of Behavior*, is a graphic feast for the mind (Aerial Press). He is currently working on a popular book on Chaos for Harper & Row. He can be reached at Box 7920, Santa Cruz, CA 95061 or UUCP: !ucbvax!ucsc!D:abraham.

**Charles Amirkhanian:** Charles joined Laurie Anderson, Yoko Ono, and John Cage in *"The Guests Go in to Supper"* (Burning Books, 1986). Not merely a composer, he is music director at Berkeley's KPFA, and heads the San Francisco Exploratorium "Speaking of Music" series. He also founded the enormously successful Composer-to-Composer Festival in Telluride, Colorado. The first CD of his work was released in September by Perspectives on New Music (music DN-10, U. of Washington, Seattle, WA 98195-\$15 pp.). His latest commissioned work includes Tibetan gongs and talking parrots with Synclavier.

**Faustin Bray and Brian Wallace:** Faustin and Brian are cutting edge, pure signal transmissions. Their company Sound Photosynthesis constitutes one of the great cultural resources of the New Age community. They produce a vast array of "New Ideas" audio/video tapes and CDs. Having studied with Indian sarod master Ali Akbar Khan, they apply their musical skills to their band *Intuit!*. They can be reached at P.O. Box 2111, Mill Valley, Ca. 94942.

**Bruce Eisner:** Bruce began writing for the Underground Press back in the 1960's. He is known to readers for his work in *Omni* and *High Times*. His forthcoming book, *Ecstasy: The MDMA Story* (Ronin Press, Berkeley) is scheduled for a January '89 release. Affiliated with the Saybrook Institute in San Francisco and manning the helm at Mindware Inc., a distributor of psychoactive software, Bruce always finds time to participate in marathon encounter sessions with the Federal Government over the legality and ethics of certain Entheogenic substances. Mindware is at 1803 Mission Street, Suite 414, Santa Cruz, 95060-5296.

**Tom Erikson:** Tom Erikson teaches interactively at the San Francisco Exploratorium and believes in it. His photos have appeared on a number of arcane record albums. Latest one: Ex-Dead Kennedy Klaus Flouride's solo album (Alternative Tentacles, S.F.). His interview and photos of John Cage appeared in *Conversing with Cage* (Limelight Editions, N.Y. 1988). He is currently writing a book of interviews and live portraits of musicians. He listens to Captain Beefheart and his Magic Band and sees creative forms of communication as HOPE.

**Gracie and Zarkov:** An over-educated couple with advanced degrees in psychology, philosophy, anthropology, natural science, and international finance--they are perhaps the most colourful and exotic dyad around. Gracie is a belly dancer in her "on" moments and Zarkov is financial adviser to the Vatican. Music remains one of their three favorite obsessions (guess the other two). They juggle an amphibious existence as high-tech investment bankers weekdays, and designer heads on weekends. They spend their quality time luxuriating in the pleasures of Magick Theatre.

**Eric Gullichsen:** Eric notes: "Dynamic interaction with cyberspace computer interfaces can be of arbitrary dimensionality, in a phase space of the user's choosing. The perceptual experience of living in the world is 3-D. Imagery projected on paper, or the computer screens common today, is 2-D. Any

words I can write here are prisoners of the single-dimensional printed line, of the tyranny of conventional typography." Specific questions can be addressed to him at Autodesk, Inc. in Sausalito where he writes software systems to permit greater intimacy with computer appliances (electronic mail code: acad !egulich@sun com).

**Nick Herbert:** One of the original "Dancing Wu Li Masters," and long time student of the Quantum Mechanics of Everyday Life, Nick's writing has spanned the whole of Fringe Science from Nikola Tesla, Bell's Theorem, and the physics of Psi Phenomena, to Houdini, the Metaphase Typewriter, and the sexing of quartz crystals. His book *Quantum Reality: Beyond the New Physics* (Doubleday, 1985) has been translated into six languages. His latest book on time travel, *Faster Than Light: Superluminal Loopholes in Physics* is just out (New American Library, hardcover, \$18.95).

**Michael Hutchison:** Michael wrote the book on isolation tank techniques, *The Book of Floating*, which sparked a fascination with mechanical mind expansion equipment and methods. His most recent book is the best-selling *Megabrain* (Beech Tree Books). Mike travels extensively, giving exposure to these "Nautilus machines for the mind" in his *Megabrain Workshops*. Those interested in his workshops or his soon-to-open Brain Research Institute, should contact him at 193 Stanford Ave., Mill Valley, Ca. 94941; 381-1731.

**Timothy Leary:** As Cyberdelic Guru of the '80's, he is now utilizing computers and software to effect brain change. His *Future History Series* is enjoying a renaissance through a new release by Falcon Press, who's also scheduled to publish his latest *Millennium Madness: The Cyber Society*. Tim's software company, Futique Inc., is progressing towards *Head Coach*. A newly-released annotated bibliography of his work (Shoestring Press, hardcover, \$37.50) should once and for all establish him as MVP (most valuable philosopher) of the twentieth century!

**Terence McKenna:** Logomagician and philosopher, is author, with his brother Dennis, of *The Invisible Landscape*. In California he is currently writing, lecturing, and managing Lux Natura, a publishing facility which distributes his *Timewave* computer software, books, and numerous audio tapes including a talking book, *True Hallucinations*. In Hawaii he is secretary-treasurer of Botanical Dimensions, a non-profit research facility which cultivates and preserves plants of ethnopharmacological value.

**Alexander T. Shulgin:** Affectionately known as "Sasha," Shulgin is one of the foremost researchers in the area of psychoactive drugs. A ready resource and gentle advisor for young researchers in ethnopharmacology, he is also one of the chief authorities on that class of compounds known as "empathogens." His book, *The Controlled Substances Act* (Fall '88), is *the* definitive manual on the current status of federal drug laws. An exhaustive compilation, organized by drug name, structure, & code numbers, it includes drugs, solvents, vitamins, foodstuffs, "and even things unrecognized." A must! (383 pp. Available through mail order from A.T. Shulgin, 1483 Shulgin Rd., Lafayette, CA 94549. \$24.95 plus \$1.62 CA tax and \$1.60 postage).

**Peter Stafford:** Peter Stafford, P.I. (Psychedelics Investigator) and Circuit Rider, co-authored *LSD: The Problem-Solving Psychedelic*, was advisor on psychedelics for *Life* magazine, and authored *Psychedelic Baby Reaches Puberty*. Currently rewriting his *Encyclopedia of Psychedelic Substances* (3rd ed. due from Tarcher Books next spring). He is also writing two new books: *Experiments in Short Term Memory Loss* and *Be He Male or Female*. He can generally be spotted in Hollywood wearing one of his favorite T-shirts: "Everything's Peculiar," "Communist Party Animal," or "Absolutely NOT BUSH." He will accept alms, volunteer project assistance, or royal patronage. Contact him at: 1625 Woods Drive, Los Angeles, CA 90069; (213) 650-7512.

(continued on page 80)

# reality hecklers

Reality Hackers:

What gives with the name-change? One day I go to the kiosk and can't find a single copy of *High Frontiers*. What I *do* find is *Reality Hackers* . . . between *Soldier of Fortune* and *True Detective*. Obviously the newsie thinks *Reality Hackers* is some S & M sicko mass-murder magazine . . . I tell him to check it out, that it doesn't belong there. Next time I come by it's been moved. It's in with *Apartment Life* and the real estate guides. He thinks *Realty Hackers* is a journal for real estate sharks and subdividers. Are you guys having an identity crisis or just fucking with my heads?

Quizzically,  
Eddie Esposito  
NYC

Reality Hackers:

*Artificial Reality Technology* by Leary and Gullichsen in Issue 5 makes me question the motives of the esteemed authors.

The article brings up the issue of devices, sometimes known as waldos (Heinlein), battle armor (Heinlein and Haldeman), telefactoring units (Zelazny), or full body prosthetic appliances (medical science).

*Humans need not be sent into the vacuum of space or the eye of the battlefield, except virtually.* — page 26, issue 5 of *RH*.

While the major emphasis in fiction has been the military use of such devices, and the major funding for biocybernetics (man/machine interfacing) comes from Defense Advanced Research Projects Agency (DARPA), the warping of such technology to military ends should be resisted.

I understand it makes good copy, but I would like to see waldos used to allow paraplegics and quadruplegics to walk and function as well as I do, not as a better weapons system.

Making life better for the handicapped, or applications in space/planetary exploration, or those areas dangerous to life (chemical/biological/nuclear hazards, firefighting, et al) should be the main focus for the designers.

Devices such as waldos should be developed by the free-market for free-market use, as we know the

success rate for technically complex government projects.

My hope is that Timothy and Eric are simply writing pop cyberpunk in contrast to their having decided that any government project should be supported.

Hagbard Celine  
Gold & Apfel Transfers

Reality Hackers,

Recently on the Usenix newsnet an accusation was leveled at Timothy Leary as being popish and *Reality Hackers* for being stupid and parasitical. This piece referred to Leary and associates as a "semi-underground culture" and accused you folks of foolishly thinking that computers are "miracle machines." He also referred to you as "junkies" and accused you of having too much fun..

I fail to perceive anything "underground" about Leary these days. Leary's commentaries on social, technical, and political issues have recently appeared in such mainstream publications as *Rolling Stone*, *Atlantic Monthly*, and the *LA Times*.

Computers aren't miracle machines? Webster's defines a miracle as: "an extremely outstanding or unusual event, thing, or accomplishment." Today, my personal computer permits me to interactively view realistic 3-D scenes, efficiently communicate around the globe, rapidly explore mathematical hypotheses, and store, search, and organize vast amounts of diverse information. Continuing growth in processor speeds make sensory-encompassing interfaces seem an inevitable next step. Where else to put the user, who is today in direct control of the internal processing of the machine, than "through the looking glass."

Finally, as a recent advertisement for *RH* proclaims, Reality Hackers are bringing together forces to create a future of abundance, individual freedom, creativity, and novelty. As one who believes in this goal, I support and applaud this effort.

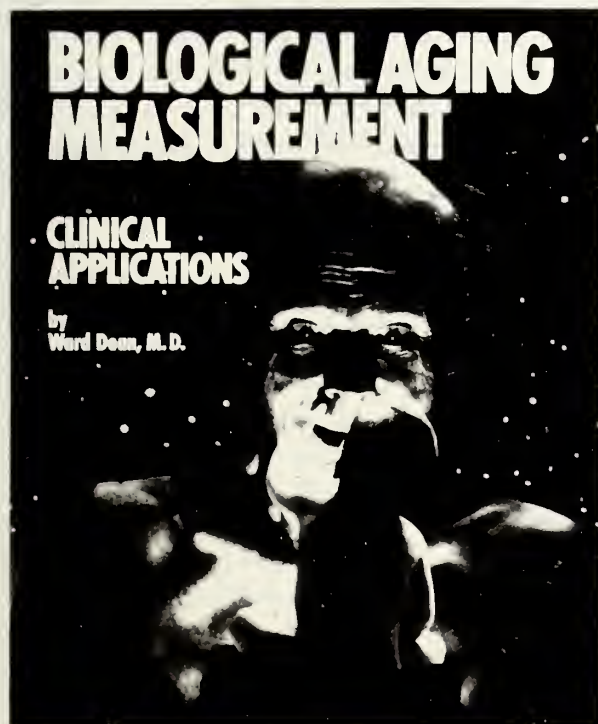
Eric Gullichsen  
Autodesk, Inc  
Sausalito, CA

Dear Reality Hackers:

Hello from Down Under! We are and remain deeply impressed by your magazine — we received an autographed earlier copy from Anton Wilson. According to our mindset, your mag is most aptly named and certainly top of our list of inspiring and encouraging

( continued on page 78)

# Is your life extension program really working?



A glaring shortcoming in almost all of the popular life extension books is the absence of a method to test the effectiveness of proposed anti-aging regimens. Without such testing there is no way to evaluate the beneficial claims made for high dose multi-vitamin, anti-oxidant, nutritional, and exercise programs.

Now, Ward Dean, MD, tells you how to measure your biological age and evaluate your life extension program in his new book, **Biological Aging Measurement: Clinical Applications** (8 1/2 x 11 inches, 440 pages). Dr. Dean is a leading life extension physician, scientist, author, and the world's leading authority on aging measurement.



## Here's what others say about this book:

**Durk Pearson and Sandy Shaw**, authors of *Life Extension*:

*"This is a greatly needed book which will be of particular value to individuals wishing to make practical use of available life extension technology."*

**Roy L Walford, MD**, Professor of Pathology, UCLA and author of *Maximum Life Span*:

*"Highly recommended for anyone involved in anti-aging therapy or experimentation."*

**John A. Mann**, author of *Secrets of Life Extension*:

*"This book is an absolute must for anyone on a life extension program...the most pertinent life extension book available."*

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Imagine a world made of music instead of solid objects.

The essence of music-world is vibration. There is nothing in this world that isn't vibrating, buzzing, ringing, clanging, self-possessed by its own rhythm. Taken together, these numerous rhythms sometimes harmonize, sometimes clash, but never does the clamor cease. Since it is the very substance of the world, as long as the world exists so does the rhythm. The music goes on forever.

The science of music-world is not tinker-toy mechanics but a science of vibration, a deep appreciation of the ways that waves work. The first chapter in the book of undulatory wisdom is a catalog of basic waveforms. The number of possible waveforms is infinite, so only the most interesting and useful waves are pictured here. In chapter one the wave scientist can find the waves produced by organ, cello, cymbals, piano, saxophone, tuba, violin, drums, human voice, and hundreds of other musical instruments. Waves created by electronic circuitry are here as well: the square wave, sawtooth wave, triangle wave, the quick digital blip called "impulse wave," and the mathematically perfect oscillation named "sine wave" after the familiar trigonometric function. Each of these waves stands not only for itself but for an entire waveform family. The sound of a Steinway grand, for instance, sounding C-sharp is a member of the piano-wave family. The other family members are the other notes that the piano is capable of putting out. In principle, the piano-wave family, and all others contain an infinite number of members, one wave for each possible frequency of vibration.

Chapter two in the Big Book of Waves describes how waves come together to make new waves. The most important tool for building waves from one another is called the "synthesizer theorem" which states that any waveform whatsoever can be synthesized by putting together (in the proper proportions) members of any one of the waveform families.

As a simple example of the synthesizer theorem, imagine speaking the word "music." Your speech act produces a particular waveform in the air, a complex, transient pattern of sonic vibrations. The synthesizer theorem says that this sound can be exactly du-

## fringe science

By Nick Herbert



plicated in an infinite number of ways corresponding to the infinite number of waveform families that exist. For instance, a proper combination of triangle

waves could produce the sound "music" complete with all the subtle intonations peculiar to your own vocal tract. Music synthesizers work on this principle, commonly using either impulse waves or sine waves to duplicate the sounds of various musical instruments and to create entirely new sounds.

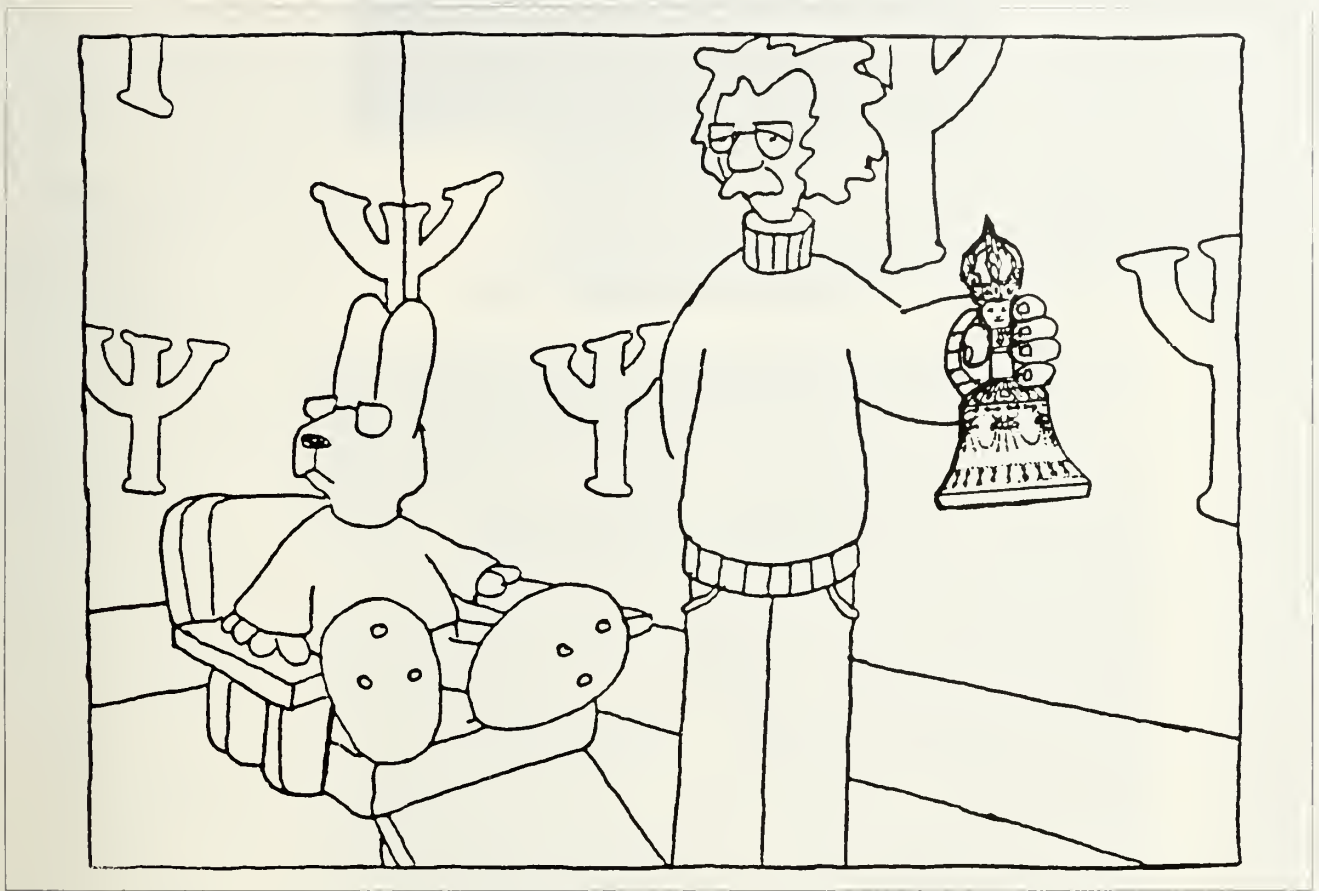
Performing the synthesis operation in reverse, any wave may be analyzed, broken down into elementary waveforms belonging to any one of the various waveform families. Here is the most important difference between music-world and a clock-work-style universe made of ordinary objects. A clock comes apart in only one way, separating into its unique pieces. But a wave has no parts — it can be broken apart in an infinity of different ways, corresponding to the infinite number of waveform families one might choose as a basis for waveform analysis.

Now imagine that music-world has just been discovered by a race of intelligent beings — the "Exxons".

These beings are completely deaf — they cannot hear the music —

but their technology is sufficiently advanced to have produced a variety of spectrum analyzers with which to indirectly probe music world's complex vibrations. The Exxons, for instance, can determine the sine-wave content of this new world. Because it is made of waves, not things, music-world obligingly responds to the Exxons' probings by breaking up into any waveforms they happen to choose. Each of these ways of probing music-world is valid, but each represents only a partial truth. Even if they could hear the music directly, the Exxons would miss much of music world's import, for hearing, itself, is only one particular kind of spectrum analysis. Because it is made of waves, not things, music-world is simply richer than any one description can encompass.

If you are reading this column hoping to discover some new outlaw edge, as the title Fringe Science suggests, then you are in for a surprise. What I have fancifully called "music-world" is just our own world as described by quantum physics, more than sixty years old, the mainline, hardcore, establishment



science, the basis for computer chips, lasers and much of today's matter-of-fact technology.

Our world is made of atoms, but as quantum pioneer Werner Heisenberg put it, "Atoms are not things." Atoms are, in essence, a certain kind of wave, ceaselessly vibrating, extended disembodied oscillations, individual notes in the music-world symphony we all take part in.

Like the Exxons, we humans cannot directly hear atomic music, but we can probe this world with a few spectral analyzers. One of the most peculiar features of quantum physics is that every physical attribute — position, momentum and rotation, for example — corresponds uniquely to a particular waveform family. This means that when a physicist makes a position measurement on the quantum music-world, he is, in effect, spectrally analyzing that world into the waveforms that correspond to the position attribute which happens to be the "impulse wave." Measuring an atom's momentum attribute corresponds to analyzing the atom's music into sine waves; measuring the atom's rotation corresponds to breaking up its music into waveforms called "spherical harmonics."

Whenever we make a measurement on music-world, we are not quite measuring what's inherently there but are looking at the results of one particular

way of splitting up the world's waviness into component waveforms. The quantum world, in the manner of all worlds made of waves, obligingly splits apart any way we slice it — this is what physicists call the "observer-created reality" feature of the quantum world. What we see is partly a function of how we choose to look, or how we choose to fracture the world's deep musical unity.

If we break the music up into impulse waves, for instance, we have chosen to measure "position." Hence we see the world as a fixed pattern of localized events. If we break the world into sine waves, we have chosen to measure "momentum" and see the world as a pattern of rapid movement. Because it's made of waves, the quantum world can be construed in an infinity of ways. Unlike the Exxons, Homo Sapiens' choice of spectrum analyzers for the quantum music-world is severely limited, consisting of our ordinary senses and their technical extensions.

The gist of quantum physics — our mainstream scientific wisdom — is that we live in a world made of music. The ancients were right. Not only the world but our own bodies are made of this quantum music, and probably our minds as well. Matter is made of it, more basic than life itself, the music in your ears is the music of the spheres.

C an an old tripper, Kathmandu Class of '69, still find paradise in the steamy labyrinth of tropical Asia? Have twenty years of American Imperialism and dope-running tarnished forevermore the dream cities of Southeast Asia? Poignant questions to ask 33,000 feet above the Pacific and headed toward a continent I haven't seen since the Nixon administration.

It is February 1988, and this is *not* a vacation. This is an assignment. Real Work. Check out Southeast Asia. Clad in full safari drag, courtesy of the Banana Republic, corseted with hidden money belts, and festooned with camera gear, I make a comic apparition. "Our Man in Nirvana" the editors at *Trips* magazine have styled me. My expectations flicker like the lights of Bangkok beneath me. Editors operate on the Impact Theory of Travel Journalism: Shoot the writer at the target and pick up the pieces.

The seatbelt sign comes on, the flaps go down. I brace myself for the descent. Clutching my APA guidebook like a talisman, I get jostled through Customs and disgorged into the sultry Bangkok night. And now I remember the smell of Asia, smell of dust, diesel fuel, human sweat . . . and something else. Is it ganja or air pollution? It is — I realize with delicious shock — *adventure*.

Koh Samui . . . accounts differ. Is it a burnt-out scene, now abandoned to European sex freaks? Or has the scene moved on to other beaches, other islands, leaving Nirvana to itself and to me? On the morning flight to Surat Thani I mull the questions over in my mind. I am braced for adversity, fended against disappointment, but even Bangkok seems wonderful to one so long away from Asia. Hey, this is beginning to feel like fun.

I have found the *world* in Koh Samui. By yesterday afternoon the mist-filled valleys and rugged heights were jutting out of the Gulf of Thailand ahead of me. I chose my destination with an eye to avoiding German tourists. Fate, nevertheless, dished me up a truck-taxi filled with them. "Chaweng, Chaweng," they intoned gutterally. I was dumped out at Bo Phut beach. The bungalows were of brick and teak. The people seemed friendly so I settled in. Four minutes later I had scored some ganja and embraced the place. The beach sweeps away in a white coral curve in both directions. Across the water, forty minutes away, is Koh Phangan, equally beautiful, still more remote.

## psychopharmacognosticon

By T E R E N C E M C K E N N A

# Our Man In Nirvana: Koh Samui

Koh is Thai for "island," and more than fifty islands comprise this archipelago off the southeastern coast of Thailand.

At dinner I overhear talk of mushrooms and meet Tas, an Eritrean medical student traveling with his German girlfriend, Petra. The sound of the surf and the ganja combine to open into deep dreams. It rains lightly; next day I will explore the waterfalls and beaches. This place feels very *right*. Bo Phut is mellow and unspoiled — and deep as only Asia can be.

It is becoming clear that Thailand itself is in full flower. The rumors were true. A golden moment shimmers and shudders like a soap bubble whose delicate beauty is always about to dissolve. The basic concern of the Thais seems to be to have a good time. There is a real exuberance in the food, the culture, and the people — a sort of tropical Japan with a Latin beat.

The larger waterfall is called Na Muang. It is a kilometer's walk off the main road to Lamai, a crowded party beach. Butterflies settle on the wet sand at the base of the falls and rise upward in a startled variegated cloud. Later we hitch a ride back to Na Thon, the port and largest town on Samui. Na Thon teems with the low-budget international tourist set. There are very few Americans on the road in Asia. We seem to have abandoned it to the ubiquitous Germans and the French.

Everything goes on in Koh Samui as if in a dream. All the pleasures of the flesh are taken for granted. Thais seem naturally modest and at ease. Excesses, though not flaunted, are no cause for comment. I make my first serious visit to the beach and find the water a milky turquoise, the level of beach nudity high, and the vibes thick. No question about it, this is lotus-eater land. Name your pleasure and you will find it at hand.

Several of the local hotels have signs posted with messages on the theme, "Yes, we have Magic Mushroom" and "Today Yes Mushrooms Today." The doorway to the psilocybin spaces shimmers and opens on Koh Samui. Hard not to be won over.

At Chaweng and Lamai beaches the sound of distant rock & roll fills the air at night and there always seems to be a party going on in the next coconut grove. That side of the island swarms with libidinal energy; the meeting of tropical softness with the slightly frantic juices of the mostly youthful travelers. Chaweng beach has ocean surf and seems an endless



succession of beach clubs and bungalows fronted by nearly nude sun-bathers. For contemplative types there are other options: Meanam and Bophut are restful places, pristine and apart.

In Na Thon, I see handmade signs offering a six-year lease on a working restaurant of twelve beachfront acres for an amount of money that I dare not report for fear of causing mass migrations. For cheap one could become the master of a self-sustaining settlement in Paradise.

Every Chaweng restaurant worth its reputation offers movies each night on VCR. These are usually ripened American action pictures. Pursuing elusive drugs, plants, women, or contraband sculpture might be good strategies for adventure. But it would seem somehow forced under the circumstances. I doubt if Dr. Hunter Thompson himself could squeeze much horror out of this. Mellow has seized the high ground on Koh Samui.

World Bungalows at Bophut Beach, at six dollars a night, remains a favorite. There are more comfortable upscale digs but then one crosses the line between traveler and tourist and becomes anathema to really interesting people. Pursuing the latter, I compliment a young Italiana on her dragon tattoo edging thighward. I ask if she had got it in Asia. Suddenly *adventure* raises its goatish

head. Yes, she replies, she had gotten it only hours before in Na Thon. She remarks on the traditional Thai skill in tattooing and instantly I feel the hot breath of *excess*  
(continued on page 96)

Photo by Faustin Bray/Sound Photosynthesis



PSILOCYBE WASSONII Heim

## megabrain update

Michael Hutchison

(as told to Eight-Circuit Eddie)

One of the most interesting areas in neuroscience is determining the key to memory. Gary Lynch and his UC Irvine associates have extensively researched memory and its formation. Lynch and associates have since found that the key to memory consists of a two-part process they call Long Term Potentiation, or LTP.

Long Term Potentiation requires a specific type of neural firing consisting of a voltage change in the neurons in the hippocampus. Then, a specific neurotransmitter, such as glutamate, must shoot into the receptor site of different neurons. The first part is like cocking the trigger of a gun and the second part, like firing it.

In recent months, Lynch and associates have been using Direct Electrical Stimulation of the brain to generate LTP. They've found that LTP is particularly effective when a second electrical stimulation, or pulse, follows the first, or primary pulse, by two hundred milliseconds. The effect intensifies when ten pairs of these 200 ms pulses are applied at five second intervals. The frequency of this electrical stimulation mirrors the theta rhythm. An excited Dr. Lynch proclaimed, "We have found the magic rhythm, the theta rhythm...the natural endogenous rhythm of the hippocampus."

Theta is the brain rhythm we go into during those moments between waking and sleep. In this state (slower than alpha), the brain throws up all kinds of spontaneous unpredictable imagery, creative ideas, and vivid memories. Theta is where the light bulb flashes on and we say, "Ah-ha! We have a solution to our problem."

Theta is a very difficult state to stay in without rapidly falling asleep. However, people can train themselves to remain there. Research shows that long-term meditators are able to produce large quantities of theta waves.

A study of Zen monks showed that in their meditative state, brainwave activity slowed down from beta into alpha, and then from alpha into theta. The most interesting discovery was that the monks who entered theta the quickest, and with the greatest ease, were the

ones who had meditated for over twenty years. By using an electronic device to access this state, it's now possible, in a sense, to bypass twenty years of meditative training!

A new machine I'm using in *Megabrain* workshops is called *The Twilight Learning Device*. This was developed from the work of biofeedback researcher, Dr. Thomas Bidzinski, who's been investigating the use of the theta state for accelerated learning. Bidzinski said "Theta, the twilight state, is where a lot of learning gets done very quickly; where you can get lots of information into the brain in a short period of time." In other words, theta is an ideal state for learning. What you learn there becomes a part of your long-term memory.

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An excited Dr. Lynch proclaimed, "We have found the magic rhythm, the theta rhythm... the natural endogenous rhythm of the hippocampus"

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*The Twilight Learning Device* is a very advanced biofeedback tool that uses an EEG to measure brain wave activity. The EEG is hooked up to a series of tape recorders with audio headphones for monitors. When your brain begins to produce sufficient quantities of theta, and only then, a tape plays the information you wish to learn. If something happens to disturb you, the machine will switch off

until you get back into theta. It's an elegant little accelerated-learning device that guarantees you'll only receive the information when you're in an optimal learning state.

Another brain machine, *Genesis*, accesses the theta state. It's an eighteen-sided aluminum/titanium frame resembling two geodesic domes joined together. In the middle of this frame there's a cushioned platform that the user lies on suspended four feet above the ground. A number of specially-designed sensors, transducers, and speakers are mounted on the frame's superstructure, under the platform. These interface with a sophisticated electronic console that controls an array of computers, electronic synthesizers, power amplifiers, and graphic displays.

As music plays from all sides, sensors monitor vibrational frequencies the body accepts or rejects by decoding energies given off by tensed or relaxed muscles. The computer then calculates the data and reprograms its field processor to intensify and enhance the various musical densities (frequency, phasing, equalization,

equalization, and acoustical amplitude) that produce optimal resonances for the user.

As you relax, the music's tonal quality changes. So, in essence, you can *bear* yourself. You hear your physical and mental states in tandem with the music you feel resonating in your body.

Although *Genesis* is currently being marketed to the corporate audience as a stress reduction device (It's quite expensive — around \$50,000 - \$60,000), my sense is that it offers more interesting possibilities than simple stress reduction. I'll be experimenting with *Genesis* in depth over the next few months and will issue a first-hand report on my experiences.

I've spent quite a bit of time at the Monroe Institute where I went through their *Gateway Experience* program. They've recently developed a special week-long training session called *H-Plus*, or *Human Plus*, for people who have completed the introductory *Gateway*. This incorporates some of Bob Monroe's new research into tapping higher human powers. I'm going to be there in October for the session and I'll write about that, too.

I'm also involved with a group that's opening the Brain Technology Research Institute in San Francisco. This non-profit facility is dedicated to conducting research on the effects of various mind machines and technology on brain functioning. We plan to gather objective data on these *Megabrain* devices. Manufacturers have made a lot of claims; we want to separate *hard* evidence from speculation, to determine what really works and in what combinations. Hopefully, the Institute will be open by early '89.

# MEGABRAIN

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**HEMI SYNC** delivers precisely tuned sound waves of differing frequencies to separate ears, increasing neural organization and mental acuity and producing altered states of consciousness.

**THE DAVID I** - A sound and light device that synchronizes brain wave activity and induces altered and enhanced states of consciousness.

Other devices include **TRANQUILITE**, which produces an audio-visual "blank out" state and has been called a "portable floating tank"; **HYPNO-PERIPHERAL PROCESSING, THE ALPHA-PACER, THE PULSED ELECTROMAGNETIC FIELD GENERATOR** and many more.

To learn more about these and other devices, read *MEGABRAIN: NEW TOOLS AND TECHNIQUES FOR BRAIN GROWTH AND MIND EXPANSION* by Machale Hutchison, a writer described by *THE NEW ORKER* as "out on the cutting edge" and by Dr. John Lilly as "superb" (available in Ballantine paperback at your local bookstore for \$4.95, or add \$1.00 for postage and send check or money order to the address below.) FOR INFORMATION about the dates and locations of MEGABRAIN WORKSHOPS, and to learn more about how you may purchase Megabrain devices, write or call:

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**a** psychedelic soiree to benefit the Albert Hofmann Memorial Library was recently staged at Hollywood's John Anson Ford

Theater. Over two hundred psychedelic cognoscenti, at \$50 a plate, milled and mingled about on the stage. They were later joined by an additional 1500 persons for a presentation called "Beyond the Doors of Perception."

Dr. Oscar Janiger, the psychiatrist noted for turning on a bevy of celebrities and artists, compared the library to a time capsule, or fossil record, which will contain books and memorabilia of the half century since Hofmann made his fortuitous discovery of LSD. The library will also house a psychedelic art gallery. Some of the art will be from artists who were turned on by Janiger back in the late 50's and early 60's. Dr. Janiger used to give his subjects a Hopi Kachina doll and ask each one to paint it before LSD and again later, while on the psychedelic.

The terrible triumvirate from Harvard, Leary, Alpert, and Metzner, came together publicly for the first time in a quarter of a century. Metzner cleared up the misconception that he, too, had been fired by Harvard. "I am happy to point out that I wasn't fired. I didn't have a job there. I was a grad student. Subsequently, I changed my story because I realized it was much more interesting if I said I was fired . . ."

Richard Alpert (introduced by MC Paul Krassner as "Just Plain Ram Dass") gave a progress report on his well-documented journey, promising another such report ten years hence. He began by clearing up his drug-taking status. "People are always asking me, 'Well, you have stopped using drugs, haven't you?'" He responded, "No, I take LSD about every two years to find out what I forgot and to have faith in who we are." He said that he would have remained a middle-class neurotic if not for Timothy Leary and the experiences that propelled him on his well-chronicled journey. "As long as I live, I will be growing into what happened to me on my first psychedelic experience."

Timothy Leary paid homage to seminal brain explorers and predicted that in ten years, 1998 — 75% of

## psychedelic scenarios

By Bruce Eisner & Peter Stafford

Janiger promises the library will be open by year's end and other benefits are in the works. If you would like to donate money, psychedelic memorabilia, or exhibits or just want more information, write The Albert Hofmann Foundation, 1328 Westwood Blvd. Suite 36, Los Angeles, CA 90024. Its phone number in L.A. is (213) 470-1624.

MDMA is in Schedule I again. The seesaw battle over MDMA's legal status may have ended in February, with the DEA administrator again placing it into the most severe category in the drug schedules.

During the past three years, its (MDMA) legal status has resembled the trajectory of a ping-pong ball.

During the past three years, its status has resembled the trajectory of a ping-pong ball. Of course, the ball always ends up back in the DEA's court and they always whack it back into Schedule I.

Until 1985, MDMA was as legal as table salt. After the DEA attempted to place it in Schedule I, a group of researchers protested and hearings ensued. In the midst of the hearings, the DEA used its new emergency powers to temporarily ban it. Appeals courts later found this unconstitutional because, at that time, the DEA didn't have the authority.

At the conclusion of the hearings, the DEA's own judge recommended placing it in the more benign Schedule III. DEA Administrator John Lawn simply ignored the recommendation and whacked it back into Schedule I.

The researchers — led by Lester Grinspoon, M.D. of Harvard — successfully appealed. The First Circuit Court ruled that it should be taken off Schedule I and reconsidered by the DEA. It did not take long for the DEA to "reconsider" and put it back in Schedule I. At this point, those who have opposed the scheduling are ready to give up. "When you're defanging a bear one tooth at a time, you still got a problem," said a noted chemist and researcher.

One diehard who is still hoping to get research going again is Rick Doblin of Cambridge, Massachusetts. His organization, MAPS, has conducted animal

the members of the House of Representatives and 60% of the Supreme Court judges will have been Bob Dylan fans. He declared, "The fun has hardly begun!"

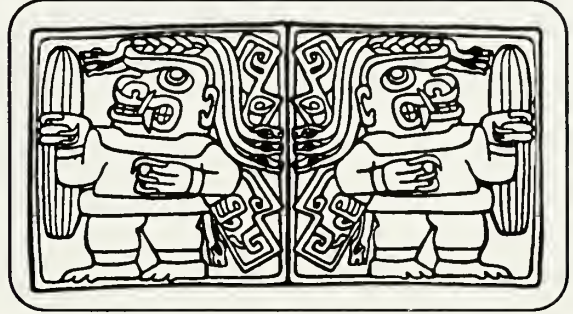
research to examine the charges of possible neurotoxicity lodged against MDMA. His conclusions are contained in a report titled "Risk Assessment: The FDA and MDMA Research." (The report appears as an appendix in Bruce's book, *Ecstasy: The MDMA Story* from Ronin Publishers in Berkeley, CA.)

*The non-medical use of MDMA has not stopped with its scheduling and continues at a very significant rate in the United States while, at the same time, MDMA has a great, but undeveloped, therapeutic potential. If it can be demonstrated that MDMA-induced neurotoxicity is temporary, and that there is a no-effect level around the human dose level, the risk of using MDMA infrequently in research seems very minimal.*

*Even if neurotoxicity does occur, there are presently no behavioral or functional effects that have been associated with it. Once careful risk/benefit analyses can be conducted, rational decisions can be made concerning future research. If the data comes in as preliminary indications suggest, there can be hope that the FDA will permit direct MDMA research in humans to begin.*

Those of you who are interested in donating time or spinal fluid to Rick's studies can contact him at: (617) 547-7271.

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# it's a great time to be a musician



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## INTERVIEW WITH ADRIAN BELEW

*I met Adrian Belew at the Miyako Hotel, in San Francisco's Japantown, a couple of days after hearing him speak at S.F. State's music seminar series. Adrian was in San Francisco on tour to promote a new record by the Bears, an Ohio-based rock band he has put together as an attempt at a more commercial sound and as a collaborative experiment with other musicians from his home turf.*

*Adrian Belew's innovative guitar technique is legendary. Although probably best known for his work with Frank Zappa, David Bowie, King Crimson, the Talking Heads, and Laurie Anderson, Belew's solo albums rank among the most original pop music written and performed in the 80's. It's this more personal work that drew my attention to Adrian's writing and moved me to include him in my documentary project Musicians' Musicians.*

*Enjoying the energy of the new tour, Adrian was extremely willing to talk about his music, as well as the part he has played in the music of others.*

Tom Erikson

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**A**drian Belew appeared at S.F. State College to deliver a "lecture" to the music department. Rather than lecture, Adrian simply took questions from the large crowd that gathered for this free appearance. Adrian displayed the same unpretentious good humor that comes across in his music and song lyrics. Quotes from the lecture are interspersed throughout this interview. Audience questions are in italics.

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Photos by Jay Blakesberg

**REALITY HACKERS: What part does music play in your life?**

**ADRIAN BELEW:** Well, it's been since my childhood that I've had music running through my mind almost constantly, like a record or something. For instance, *Lone Rhino* was written at 3 o'clock in the morning. I had no instrument. I just imagined the whole song in my mind and wrote it down as well as I could. It's just such an integral part of my life. I don't listen to a lot of other music, and for that reason I have a lot of music going around in my own little mind.

**T**he future of the guitar synthesizer is up to the imaginations of all us guitar players. The technology is getting better and cheaper. For me, it's increased my vocabulary a lot. I can't play some of the things I play now without guitar synthesizer. At the same time, I'm very careful to balance these things with things like Dobro, acoustic instruments, and regular guitars. I don't want to get to be just a synth nerd.

**What is the precedent for your animal sounds?**

It just came naturally to my way of playing. In trying not to sound like anyone else, I was left with just finding ways to make the guitar sound like other instruments or unique sounds. One of my favorite things to do is plug in a new electric gadget and see what I can get it to do. I almost always stumble onto something new. I've got a million sounds.



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**T**he Lodger album was done without me ever hearing the songs previously, or even knowing what key they were in. In fact, I was in a different room — away from the control room. I couldn't see them (Eno and Bowie). There were video cameras. They could see me and I couldn't see them. They'd just say "Play now!" Voice of god, Brian Eno! It was fun that way. It made me come up with a lot of things I would never have thought of doing.

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**Is there a danger in that?**

Yes, there is a lot of danger in it, and I'm very conscious of that. So what I do is write a lot on acoustic guitar. That way, I'm more apt to come up with a piece of music that sounds complete in itself. Then you just orchestrate it with all these tools. I look at synthesizers and flangers and guitar effects as paint. They're like little colors on your palette and hopefully you can use them judiciously.

---

**W**as the rubberneck guitar in the movie *Home of the Brave* your idea?

Yes. The wonderful thing about making movies is that you have a prop department. These guys are just waiting for you to say something like "Build me a rubberneck guitar!" And they run off and build one! It's incredible. If I had more time, there's no telling what we'd have come up with! It didn't work as a guitar. In fact, they kept having to re-pour the rubber mold to find a consistency that worked at all. They had to do three of them before they finally got limber enough. But you couldn't play. I was faking it. It was prerecorded. It *did* look pretty good, didn't it?

---

**You've pushed the guitar into new territory, like Hendrix. And you've been very influential. How did your playing evolve?**

From the time I was a child, age four I think, I used to sing all the time. People would put money in the jukebox; I would sing along with the records. I was kind of an extroverted little child. That's how it began. That fueled the next step, which was actually just having a passion for music itself, listening to it all the time, being overwhelmed by it, and getting that real

warm feeling from it. The third step was kind of, "OK, now I want to learn to play an instrument," and getting absolutely passionate about it and doing it every day of my life. I would be the one kid who would go back to school after summer vacation, and I'd be pale white, because I'd been sitting in my room all day playing the drums and listening to songs and figuring out this and that.

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**I** do like banging on things. Yeah. It started when I was 10.

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**So you started from a rhythmic point of view.**

Yes. At age ten, I started playing drums. I still play that way now, and I think it became an integral part of how my guitar playing is different. A lot of things I do with the guitar are rhythm-oriented, and the rest of them are sound-oriented. I've pushed the guitar into other areas out of a consistent program of saying, "I won't sound like someone else." It's just something I forced on myself. My lucky break came from realizing that the biggest joy for me was making a guitar sound like something other than a guitar. I also enjoy making a guitar sound like a guitar, but it thrills me no end when all of a sudden I find a new sound and it breaks open a whole new area.

**Have you been able to achieve a direct mind-to-guitar-link at times?**

There are periods where you feel like you are transcending and you might even get lost in what you're doing. I have that happen in songwriting, as well, and those are usually the most incredible moments. It's very hard to bring that out because in our society you're just pounded to death with so much information and stuff. I tend to tighten up all the time, so I'm always working to loosen up. I'm always stretching my body and I'm always trying to loosen my mind up and let that stuff pour out more. It's hard to do

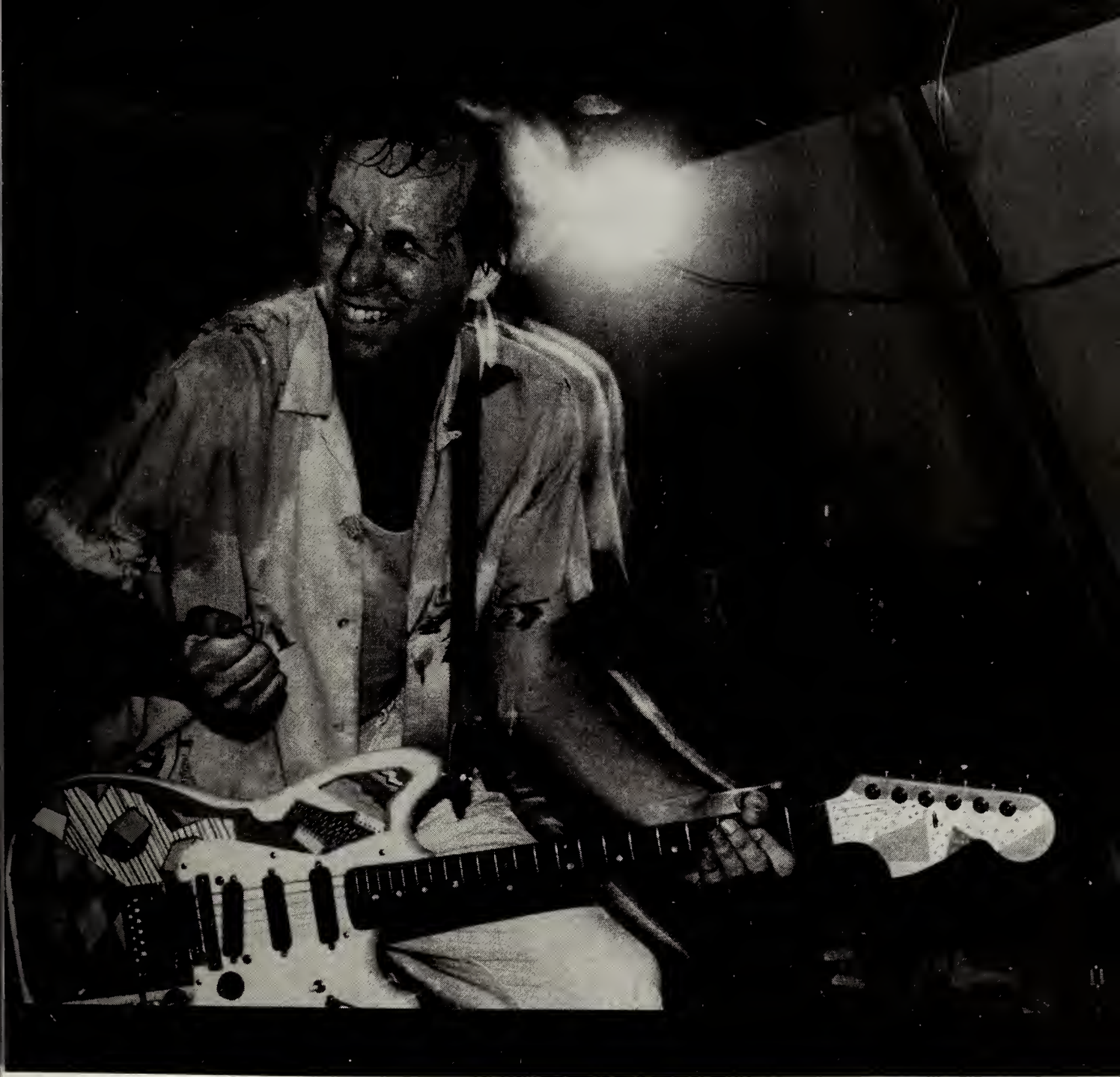
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**L**aurie Anderson let me have a lot of room to do whatever I want. Usually she would say something like "Try to make it sound sorta like a chicken chasing a steam roller." And I'd come up with something.

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**Do you use physical and mental exercises?**





Yes, I do some yoga exercises. I do some Tai Chi. I do some meditation. Mainly, I do a lot of thinking. I bet I *think* more music than I actually play.

**W**hat's my opinion about sampling? Well, of course, we artists don't get paid when someone tapes our records. That's very annoying — put us right out of business. But I think sampling can be used in wise ways. You can put samples together,

you can turn them around backwards. It's simply another tool.

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**Have you considered doing music for film?**

I always think in cinematic terms when I'm doing music. I try to produce, mix and write music in that way. The depths and dimensions of it do take on film-like qualities. I'd like to do some film music. We'll see what happens.

*(continued on page 94)*



## Visual Music Instruments & **CHAOS**

CHAOS THEORY HAS GIVEN  
BIRTH TO VISUAL MUSICAL  
INSTRUMENTS. RALPH ABRAHAM  
TRACES THE GENESIS OF  
**THE MIMI PROJECT**

.....  
*By Ralph Abraham*  
.....

Readers of James Gleick's *Chaos* will recall the quixotic Ralph Abraham and his Chaos Cabal nestled in the witchy-woods of the Santa Cruz Mountains. For years they met secretly in catacombs under the U.C.S.C. Campus tinkering on rusty icons like the Syston-Donner analog computer. The Dynamical Systems approach was initially seen as a dangerous mind-parasite by both the physics and mathematics departments.

Yesterday's heresy or dangerous sectarianism is today's — well, if not exactly orthodoxy — let's say: *Hottest new way of looking at the universe*. Now two of his experimental projects in chaos and vibration theory have finally evolved into a digital-video based instrument. Here he traces the genesis of MIMI or *Mathematically Illuminated Musical Instrument*.

— Queen Mu

### **MY WALKABOUT IN CHAOS**

Once upon a time, I worked on a single mathematical problem for six years. The project culminated in two books, written simultaneously. When the manuscripts were done, I looked up to see what was happening in ordinary reality. It was Princeton University in 1967. The Sixties were happening. A full-bore revolution was on. A lot of people were departing ordinary reality for one-day trips. Like Joseph Knecht, I decided on the spur of the moment to try it out. For me, this was no one-day trip. When I came down, it was 1973.

During this six-year walkabout, I moved from Princeton to the University of California at Santa Cruz (UCSC), toured spiritual groups and techniques, saw my family expand and contract, took leave to explore

Europe Hippie style, searched the Himalayan foothills for traditional knowledge, trekked to the borders of Tibet. In Santa Cruz there were rock concerts with light shows. In Amsterdam there were esoteric books and video artists, and floors to sleep on. In India there were yogis, gurus, classical North Indian music teachers, Sanskrit texts in English translation, and caves to sleep in.

Reentry was difficult. After a cooling-off period in Tahoe, supported by mathematics applied to black-jack\*, I returned to my post at the University of California in January, 1974. I tried to integrate what I had gained from my journey with my work as a professor. I gave seminars in vibrations, combining the Vedic concepts with European mathematics. My goal, inspired more by desperate need to communicate than the ideals of Boddhisatva or Toynbee, was to share the essential visual aspect of the vibratory fields I had seen in my travels. The whole experience of the Logos could not be shared, but perhaps a visual representation would excite the full field in the viewer's mind through morphic resonance.

The underlying idea was a vibration analogy for mind, brain, and human behavior. At present, similar ideas have become widespread and familiar, in the form of neural nets, excitable media, cellular automata, and complex dynamical systems. But at the time, they belonged to the fringe. Further, the edge of the chaos revolution wave had just arrived at the shores of the physical sciences. Some students, still under the influence of the lost Sixties, were attracted. Together, we began the macroscope project.

### THE VIBRATION METAPHOR

During the European phase of my walkabout, in February, 1972, I was invited for a short visit at the Institut des Hautes Etudes Scientifiques near Paris, the French equivalent of our Institute for Advanced Study. This is the home institution of Rene Thom, who invented catastrophe theory in 1966, and David Ruelle, who brought chaos theory to the attention of physicists in 1973. Thom showed me Hans Jenny's book, *Kymatics*. I was immediately struck with a feeling of urgent importance. I called Jenny in Basel to arrange a meeting. Soon I was at Jenny's home, where he showed me slides and films of his work, and shared his ideas on the significance of vibrations and Chladni patterns in human physiology. He was a follower of Rudolph Steiner.

Later that year in India, Jenny's ideas were echoed in my reading of the *Vedas* and the teachings of the yogis and gurus, especially Neem Karoli Baba. My

own experiences, repeated during regular inward journeys over the six years, provided further teachings on the vibration model for mind and consciousness. My study of Indian music furthered my understanding of the wave metaphor, which is basic to the Samkya philosophy.

Dynamical systems theory, including catastrophes and chaos, provides a mathematical framework for the elaboration of the vibration model. Indeed, this elaboration was already underway in the work of Thom. In fact, Christopher Zeeman described his own explicit model for memory, based on catastrophe theory and excitable media, to me in Amsterdam, shortly before I flew to India. However, it was Jenny's work, providing visual representation of the basic concepts and phenomena, which seemed to me to have the greatest potential for furthering our understanding of human consciousness.

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The idea was a vibration analogy for mind, brain, and human behavior. At present, similar ideas have become widespread... neural nets, excitable media, cellular automata, and complex dynamical systems.

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### THE MACROSCOPE

With the aid of students from my UCSC seminar, I reproduced Hans Jenny's kymatic device in my lab. Our device was larger and less precise than Jenny's. We used a four-inch dish for the water/glycerol solution, four-inch telescope mirrors loaned by Lick Observatory, and a color Schlieren filter developed by Gary Settles. An analog electronic tone synthesizer was built especially for the device, and an industrial xenon arc lamp provided the illumination. When finished, I aligned the optics, approximating by eye, turned everything on, and glanced at the screen. I was astonished to see a perfect Jenny-style Chladni pattern, in full color. The experience overwhelmed me, and I re

\* For an entertaining read see Thomas Bass' *The Eudaemonic Pie*, Vintage, 1986, described by the N.Y. Times as "electronic Gonzo journalism" and a "veritable pinata of a book."



ERNST CHLADNI. A contemporary of Mozart and Beethoven, he founded modern acoustics while trying to improve the tone of Ben Franklin's glass harmonica. Reproduced from Mary Waller (1961), Plate 1.

ired to the corridor outside the lab to recover my composure.

An official opening was planned for the lab, re-named the JENNY FOUR-INCH MACROSCOPE, in July, 1974. On impulse, I asked my Indian music guru, S.D. Batish, to sing at the opening. We attached a microphone to the amplifier that vibrates fluid in the dish, in place of the pure tone generator. This event provided my first experience of visual music based on Chladni patterns, the essential forms of vibration in three-dimensional media. It connected, all at once, my

experience with Indian music, Samkya vibration theory, Thom's catastrophe theory, and the light shows of the Sixties. Math, music, mysticism — all are one!

Subsequently, we made systematic use of the instrument (with the tone generator, not my master's voice) to study the bifurcations of chaotic motions of vibrating waves until 1979. A video describing the instrument and the experiments is available from Aerial Press. No other direct reports have been published in scientific journals, but the understanding gained from my experience with the Macroscope has illuminated all of my writings (especially those collected in my books *On Morphodynamics* and *Complex Dynamics*). Recently we revived the macroscope to record a "music video" of Jill Purce's overtone chanting. The routine use of such a device for visual music is inconvenient but highly recommended, and this direction has been developed by Gary Settles.

### THE VISUAL MATH PROJECT.

Soon after beginning the Macroscope Project, computer graphics arrived at UCSC. In 1975, with computer scientist Evan Schaffer, I taught a special section of calculus using computer graphics for demonstrations. This grew into a state- and federally-



MARY DESIREE WALLER. Here she demonstrates her method, an extension of Jenny's work, for television. The sand pattern is formed on a square plate, under the action of a vibration maintained by dry ice. Reproduced from Mary Waller (1961), Plate 2.

funded project to develop a massive teaching system for beginning math courses, called VISMATH. It ended in 1982.

Part of our VISMATH program was an annual film show, at which almost all computer graphics films on mathematics were shown. Each year it was longer, and eventually multiple shows were necessary. As film artist John Whitney and his family, co-workers, and followers were using mathematics in their works, we added a number of art films to the programs. In this way we became familiar with the visual music medium, as used by frame-by-frame film animators. We also got to see Tom Banchoff's great classic of mathematical animation, *Hypercube*, and Nelson Max's all-time great *Inversion Of The Sphere*, and to meet their authors. In these two films, in particular, I recognized actual images from my own inner experiences during my walkabout. Some were so accurate that a prior experience in 1969 might almost have been a precognition of sitting in the film show in the UCSC auditorium in 1975. Patiently, I waited for computer graphic hardware to evolve the capability to create and manipulate these images in real-time, so that I could use it to share my own inner visual experiences with other people. Meanwhile, I tried to create suitable images with video feedback. Although these efforts failed, they did provide some fundamental concepts relating dynamical systems theory (especially bifurcation theory and chaos theories) to the visual music context. Some of these are illustrated in an excellent video made by Jim Crutchfield with an analog video synthesizer, available from Aerial Press. But we wanted affordable, programmable digital video.

### THE MIMI PROJECT.

In the early 1980's, satisfactory digital video hardware became available. The Fairlight *Computer Video Instrument* (CVI) was an early application. Soon, a Cellular Automaton Machine (CAM) appeared at scientific conferences. The new era for digital video music had arrived. For me, this meant the possibility of replacing the Macroscope with a digital clone. This could be *portable*, *affordable*, and *programmable*. Further, because of the recent evolution of the MIDI standard for interconnection of digital musical instruments, a digital video-based visual musical instrument could be *playable*, via keyboard, guitar, flute, violin, or even voice.

In 1983, people began inviting me to speak at non-mathematical events. My path along the New Age campsites eventually led to a stage in Hollywood, where I proposed a design for a *Mathematically Illu-*

### Box 1: THE HISTORY OF VISUAL MUSIC

Visual music is a traditional art medium, with an extensive (if little known) history. It probably played a basic role in the arts and rituals of the cave cultures of the European epipaleolithic, and the early civilizations of the Anatolian neolithic. Cave sanctuaries, rituals of Minoan Crete, and the derivative mystery schools of Ancient Greece may have continued this artistic tradition, along with its mystical religious associations. Father Castel's Paris performances of color music created with candlelight and cloths were famous in the eighteenth century.

In recent times, visual music reappeared in the Theosophical Revival at the turn of this century. Aleksandr Scriabin intended *Prometheus: The Poem of Fire* (1910) to be accompanied by a light show. (By the way, it begins in chaos.) Alexander Wallace Rimington performed live color music in London at about this time. Claude Bragdon and Thomas Wilfred in New York created keyboard instruments for live performance of color music in the 1920's. In the same period, Arnaldo Ginna and Bruno Corra in Italy, and Oskar Fischinger in Germany, laboriously made color music compositions in the form of animated films. In 1936 Fischinger moved to California, where he continued his work, influencing John Whitney and other major groups of color music film artists in America.

The live performance of color music survived in the work of Mary Hallock Greenewalt in Philadelphia in the 1940's (she invented the rheostat for her organ), Charles Dockum in New York and California in the 1950's, and of course in the Hippie culture of the 1960's.

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chaotic bifurcations  
of vibrating fluids may be called  
up by the visual artist in real-time  
performance... a new level of reality  
hacking for the future

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*minated Musical Instrument* (MIMI). This is nothing but a digital-video based clone of the Macroscope, connected via MIDI to a digital keyboard instrument. Sitting at the keyboard, one might sing, play sound, and play picture, all at once. The picture part was envisaged as a modulation upon ordinary reality, in the form of real-time video. This sort of reality hacking is used in the Fairlight CVI. However in MIMI, the operation on a real picture would be defined mathematically, through the algorithms of dynamical systems theory. Among these algorithms are the cellular automata invented by Von Neumann to simulate the human brain, cellular dynamata based on the heat and wave equations of mathematical physics, neural nets, excitable media, turbulent fluids, and so on.

For example, with no keys pressed, we might be

## Box 2: THE HISTORY OF ACOUSTICS

The glass harmonica was invented by Benjamin Franklin in Paris in 1761. It was popular until about 1800, and many composers use it, including Mozart and Beethoven.

Ernst Chladni was the father of modern acoustics.

Born in Wittenberg, Saxony (near Bonn, Germany) in 1756, he earned a degree in jurisprudence at Leipzig in 1782. An amateur musician, he designed and constructed two glass harmonicas. In connection with this work, he developed the technique (now called *Kymatics*) of sprinkling sand or powder on glass plates, and bowing them with a cello bow. The sand would move to a filigree of ridges, like ridges of sand dunes, now called the Chladni Nodal Lines. The regions between the nodal lines, called Antinodes, are responsible for the sound produced by the vibrating glass plate, its pitch, timbre, and so on. Chladni searched for designs that would have a specified timbre, like the electronic synthesizer programmer of today. His first report of this research was published in 1787. In addition to pursuing his acoustic researches at home in Wittenberg, Chladni travelled extensively around Europe giving performances and demonstrations of music and sand figures. In 1800, he arrived in Paris and made a presentation to the Academy of Science, at the invitation of Laplace. Chladni had a private audience with Napoleon, which resulted in a prize competition in 1809 for a mathematical explanation of the nodal lines. Napoleon's prize was won in 1815 by Sophie Germain, one of the first great woman mathematicians. As women were prohibited from attending university classes at that time, she obtained her mathematical training by impersonating a truant male student, Lucien Leblanc, at the Ecole Polytechnique in Paris. Her prize paper founded the branch of mathematics, now known as Continuum Mechanics, — the basis for the modern science of acoustics and mathematical theory of nonlinear vibration.

Chladni's experimental work has been repeated and extended regularly over two centuries, most notably by Mary Waller (London, 1961), and by Hans Jenny (Basel, 1972).

watching an ordinary video of a dancer or surfer. When pressing a key and holding it down, we get a note. An organ tone *and* a MIMI note. The MIMI note stops the ordinary reality action on the screen, and begins a mathematically defined deformation of the freeze-frame image. In the case of an image processing algorithm based on the heat equation, the picture would fade slowly to grey. This process would continue as long as the key was held down. The pace might depend on key pressure or velocity, pitch wheel, or other MIDI controller. Upon release of the key, the grey would fade back into the ordinary reality of the moving surfer. Similarly, there are different ways to interpret a MIMI interval. Two keys pressed at once could initiate a combined effect, which may be totally unrelated to the individual effects programmed to follow each of the two keys singly. The program attaching a dynamic image process to a key (or combination of keys) runs in a personal microcom-

puter, and is available to the performer. Finally, the dynamic image process (a mathematical rule followed by the digital video processor) may have parameters under control of the performer via breath controllers or other MIDI devices. Thus, chaotic bifurcations of vibrating fluids such as seen in the Macroscope may be called up at will by the visual music artist in real-time performance. This may provide a new level of performance for reality hackers of the future.

The first prototype MIMI is now under construction at UCSC, under a contract from Pacific Shift, a high-tech studio in Santa Fe, NM. It consists of a MIDI keyboard and sound synthesizer, a personal computer with MIDI interface, a real-time digital-video image processor, and a rack of analog video studio gear. All this has cost about \$100,000 so far, but prices are rapidly falling for most of the components.

**ACKNOWLEDGMENTS.** In Paris, Harold Rosenberg and the Institut des Hautes Etudes (especially the director, Nicolas Kuiper) were very supportive. In Amsterdam, Simon Vinkenoog, Judith Schavrien, Thatcher Clarke, Bill Levi, Jack Moore, and the Matema-tisches Instituut were most helpful. In Uttar Pradesh, Neem Karoli Baba and many Pahari people were very generous. My reentry in Santa Cruz was facilitated by Terence McKenna, Ray Gwyn Smith, the Batish family, and the Abraham clan. It is a pleasure to acknowledge the support of the University of California and the assistance of my students over the years in the macroscope project (esp. Paul Kramerson) and the Visual Mathematics Project (esp. Peter Broadwell), and the support of Pacific Shift for the MIMI project. Bill Moritz generously shared his rare knowledge of the history of visual music. I am very grateful to all of these people and institutions for their kind support through these many years and changes. Thanks are also due to Hillevi Wyman and Rebekah Levi for their comments on the manuscript.

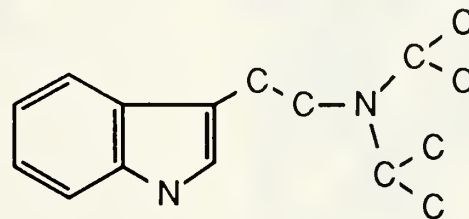
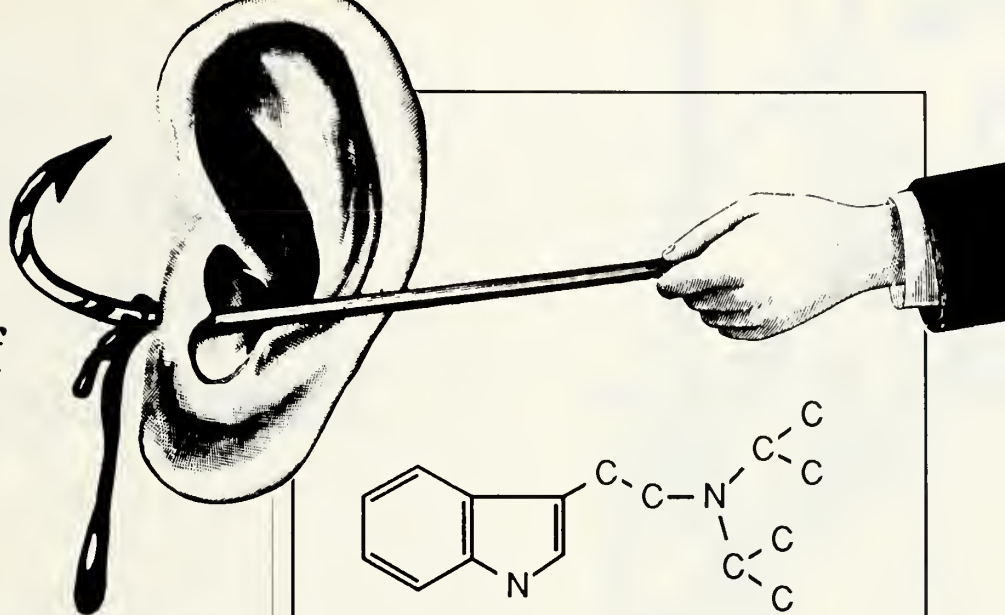
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# DIPT:

## The Distortion of Music

By Dr. Alexander T. Shulgin



N,N DI-ISOPROPYLTRYPTAMINE

Generally the effect of psychedelic drugs on the perceived quality of music is a positive one. Psychedelic drugs usually promote eyes-closed imagery furnished with figures, structures, patterns, and designs that create a synthesis with the music.

One family of such drugs is represented by the dialkyl tryptamines. These indole bases are all relatives of DMT (N,N-dimethyltryptamine), the simplest and best studied of the group and a component of toad venom and several South American snuffs. DMT, like its close allies DET (N,N-diethyltryptamine) and DPT (N,N-dipropyltryptamine), is inactive when taken orally: it must be absorbed parenterally [outside the intestine]. A well-known exception is psilocin (4-hydroxy-N, N-dimethyltryptamine) and its phosphate ester, psilocybin — the major active components of Mexico's magic mushrooms — which *are* orally active. These drugs are noted facilitators of visual imagery in conjunction with music.

DIPT (N,N-diisopropyltryptamine), the structural isomer of DPT with branched chains on the nitrogen, is exceptional among the DMT congeners in that it is orally active. Visual effects are non-existent. Its most remarkable effect is to produce distortion in the hearing or perception of sound, whether voice or music.<sup>1</sup>

The effective level of DIPT is from 20 to 50 mg. Onset of symptoms occurs about half an hour after ingestion; the full effects last from one to two hours; with recovery to a symptom-free state by the fourth hour. Side effects can include mild nausea and mydriasis.

It is the subjective effect of DIPT that is most unusual — that being a consistent disturbance in the auditory process. Most subjects note that observers' voices sound much lower in pitch. Women's voices are heard

The subjective decrease in frequency of sounds is a fixed value which leads to jarring distortion of harmonic intervals.

in bass tones. Musical sounds are also distorted. Subjects volunteer such comments as: "Do you have a bad cold?" or, "How strange they would put such a poor recording on the radio." The subjective decrease in the frequency of sounds is a fixed value rather than proportional, which leads to jarring distortions of harmonic intervals. Subjects vary in the degree to which this auditory phenomenon occurs, but there is a consistently complete return to normal perception coincident with the disappearance of the other symptoms described. Subjects report little or no euphoria and are curiously neutral when asked whether the experience was unpleasant or pleasant. A single trial conducted at 80 mg revealed only a greater intensity of the same

activity.

One classical distinction between the "natural" schizophrenic state and that induced by drugs (the so-called "psychotomimetic" state) is that in the former, hallucinations are largely auditory, while in the latter, they are visual. DIPT produces changes *only* at the auditory level. Whether this occurs by affecting the musculature of the ear or the integrity of the auditory association areas remains unclear. What is clear however, is that this unusual indolic drug, DIPT, could be uniquely useful in helping us map out the distinction between endogenous and chemically-induced sensory distortion.

(1) See: "N,N-Diisopropyltryptamine (DIPT) and 5-Methoxy-N,N-diisopropyltryptamine (5-MeO DIPT). Two Orally Active Tryptamine Analogs with CNS Activity." Shulgin, A.T. and Carter, M. F. *Commun. Psychopharmacol.* 4 363-369 (1981)



# Visual Music in the Third World

.....  
By Queen Mu  
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The ayahuasca cult has still not percolated down to recreational drugie circles in California. There are, it is true, a few self-appointed New Age *ayahuasqueros*, but the mere mention of a "barf bowl" in their promo literature suggests something like an ordeal ritual. Few people are prepared to undertake the dietary restrictions for weeks in advance, or the gastro-intestinal rigors of the trip itself. The *purga brava*, while no doubt cleansing, can feel like a boa entering one's mouth and chewing through to the other end with involuntary defecation and emesis. The experience, under the best of circumstances, is *INTENSE*. Still it exerts an abiding fascination which the work of scholars like Gerardo Reichel-Dolmatoff and Michael Harner have fanned.

From an ethnobotanical standpoint, the whole Ayahuasca-caapi-yaje complex is fraught with difficulties. There are over 40 different common names for the ayahuasca brew based on the harmine-containing lianas, *Banisteriopsis caapi* and related species. And there are perhaps as many additives designed to potentiate its effects, derived from botanical or faunal sources (e.g. toad skins). The plethora of local vernacular names for plant species has compounded the confusion. Commonly though, nat-

ural plant sources of tryptamines, such as *Psychotria viridis*, have been added to ayahuasca preparations to heighten, lengthen or mitigate the effects of the beta-carboline alkaloids (harmine, harmaline, etc.). The skillful use of such addi-

tives is the special province of the *vegetalista*. A good *vegetalista* or *ayahuasquero* prepares a brew that imparts "luz." They say when it's good, *se ve clarito*, meaning it will create clear visions. Everything from the phase of the moon to the hour of preparation combines to effect the quality of the brew.

Dennis McKenna, Terence's kid brother, has contributed valuably to this thorny area of ethnopharmacological research with several technical papers. But for the nonspecialist, the most fascinating work to appear on the subject is *Vegatalismo* by Luis Eduardo Luna. (*Acta Universitatis Stockholmiensis* no. 27, 1986). Ayahuasca is usually thought of as primarily a visionary experience, but its effects on the auditory process are also striking.

In 1906, Zerda Bayon described its use in the Caqueta region of Peru: "They also tried repeatedly to give expression to their feelings about the wonderful, loud, intoxicating music which they were hearing and which sounded strange to them, but nevertheless entrancing, so that they could compare it with nothing earthly and by which they were transported."

Michael Harner in 1980 wrote of his first experience with ayahuasca: "I became conscious, too, of the most beautiful singing I have ever heard in my life, high-pitched and ethereal, emanating from myriad voices on board the galley."

The basic notion exists that ayahuasca teaches "magic melodies" known as *icaros*. In fact, being a *vegetalista* is almost synonymous with mastering a vast repertoire of



*icaros* — each of the different psychoactive plant spirits has its own *icaro*. Different types of *icaros* serve a variety of purposes ranging from love magic to divination to the cure of snakebite. *Shirobuehua* or fun songs, for example, animate the patient, inducing joy and hope. *Manchari* are sung to lead an abducted soul back to its owner. With the *icaro de la aranita*, a little spider spins a web around a man and woman uniting them for all eternity.

*Icaros* are taught by the tutelary spirits of plants and animals: the *raya-balsa*, for example, an aquatic plant, can teach one to travel under the water. There are even *icaros* of perfumes, stones and resins. The *sirenas* or mermaids are often invoked in ayahuasca sessions. They appear, singing beautiful *icaros*, accompanied by string instruments. Their *icaros* can give one power over the underwater world, particularly over the *bufeo* or pink river dolphin. These creatures are feared and seen as mighty sorcerers, yet they are also invested with sexual allure. Men are said to feel an intense pleasure during coitus with dolphins, and are sometimes unable to separate themselves.

*Icaros* are used only during ayahuasca sessions. There is a hierarchy among shamans depending on the number and power of the *icaros* they know. The *icaros* sung in Spanish are not as powerful as those in jungle Quechua; mixtures of Quechua with Cocama and Omagua are particularly potent. Yet each shaman has a principal *icaro* which represents the essence of his power.

In the highly sensitized state of ayahuasca intoxication, the *icaros* help structure the vision. They can also modify the hallucinations themselves. Luna reports: "There are *icaros* for increasing or diminishing the intensity of the visions, for changing the color perceived, and for directing the emotional contents of the hallucinations."

*Vegetalistas* are masters of synaesthesia. Through using the most interesting acoustic effects produced by whistling and singing, the geometric designs can be seen acoustically. The *icaros* refer to a medicine as "my painted song," "my words with those designs," or "my ringing pattern."

The *icaros* are the quintessence of shamanic power. A good *vegetalista* is able to "orchestrate" beautiful or transformative visions through his magic melodies. Competitions sometimes arise between maestros to "monopolize" the visions of those present — a kind of competitive "jam session" where they unleash all their tricks.

Luna has included musical transcriptions of eight *icaros* culled from the repertoire of his informant, Maestro Don Emilio, in Appendix III of his book. Luna describes some of the *icaros* as having great unearthly beauty, and urges ethnomusicologists to record them soon, as they are an evanescent feature of shamanic

### The *vegetalista* regurgitates his *yachay*, or supernatural phlegm.

This thick white phlegm lies at the top of the stomach, thought to be the most vital part of the body. It is in this area that the shaman harbors the *virotos*--thorns, razors, magic darts, rock crystals, insects, and even baby piranhas--which are regurgitated with the *yachay* and used for magical purposes.

Original painting by Pablo Amarigo Shuña (from Luna, op. cit. p114)



culture, that is fast disappearing. True *ayahuasqueros*, he claims, are dying out and their roles are being assumed by charlatans. The key to recognizing a true maestro is: *does he know the magic melodies?*



# BLUE ÖYSTER CULT & THE CHORDS OF DOOM

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*Sandy Pearlman  
in conversation with  
Gracie & Zarkov*

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**T**ipper Gore fears that Heavy Metal is stealing the souls of America's children. You can thank the Blue Öyster Cult for that. From the beginning, both critics and fans wondered if the band was more interested in occult phantasmagoria than in selling records. Their multi-layered guitar licks, thunderous innovative riffs, and sinister yet ambiguous lyrics earned the BÖC critical raves and a loyal following. While never a wildly successful venture, they became the premier "cult" band of the Seventies through their unmatched mastery of the Heavy Metal idiom, an idiom they, in no small measure, helped to create.

Their creativity was fueled by a consistent vision. The arcane and dark imagery of the lyrics reflects a fascination with the ambiguous consequences of an accepted worldview that divides thought and action into Good and Evil, pure and impure, often without logical or biological foundation. In the same manner as the French Symbolists, the BÖC realized that the accepted worldview often gave "evil" an unreasonable allure and irresistible attraction. BÖC's lyrics explored the artistic consequences of impurity, evil, alienation and gnostic initiation. Ultimately it created much of the *lingua franca* of Black Metal. Yet the lyrics never sink the music. On the contrary, the music often threatens to overwhelm even the strongest lyrics, for it is in the music that the BÖC's uniqueness is most striking. The BÖC understood that the power of Heavy Metal is unleashed by *combining* guitar-based distortion and strong rhythms with repetitive chordal harmonies and dense texture.

While all natural sounds — voices, ocean waves or acoustic music — reveal the same fractal dimension when mathematically analyzed, electronic distortion does not. The unnatural added tones, to the uninitiated, can sound like painful screeching, particularly in the hands of a guitar masturbator. However, in the hands of the BÖC, who are masters of using noise as music, these "extraneous" notes become the essential timbre and texture of heavy metal, serving the same purpose as the orchestral texture or instrumental timbre of a classical orchestra.

Additionally, the BÖC makes heavy use of classical music techniques, particularly from the Romantic tradition, most particularly from Liszt. From Liszt the BÖC adopted the technique of thematic transformation and repetition as well as the use of modal diatonic harmonies to provide a Gothic atmosphere and rapid shifts in mood so well suited to these lyrics.

The BÖC's rhythm section provides the power source, careening between thunderous blows and ma-

niacal speed, but with enough variation and flexibility to avoid the shoals of stultifying sameness. All this effort is for naught however if what comes out of your speakers is mud. Fortunately, the BÖC albums are carefully produced to provide an almost lushly textured orchestral sound.

Several of the BÖC's albums are absolute musts for collectors. *Tyranny and Mutation* (1973) is a masterpiece of heavy metal sensationalism still charmingly appalling after the passage of fifteen years. *Agents of Fortune* (1976), with its anthems of radical alienation contains the hit *Don't Fear the Reaper*. Reaper's guitar solo is for us the definitive fantasia on the tritone (considered the *diabolus in musica* since the twelfth century). *Spectres* (1977) contains our favorite hymn to the Dark Goddess, *I Love the Night*, and other cheerfully black chansons. During the next ten years, BÖC was unable to equal their earlier work and released a series of moribund albums, with the noteworthy exception of *Revolution by Night* (1984) which contains several delightfully excessive romantic tales.

We were curious, then, when about a year ago we read about an ambitious new BÖC album that would elevate them once more in the Rock Firmament. Sandy Pearlman, the BÖC's longtime producer and contributing lyricist is the single person most responsible for the BÖC's vision. He agreed to meet and talk with us about the musical and moral underpinnings of heavy metal.

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## ON THE ROOTS OF HEAVY METAL

### REALITY HACKERS: Where did Heavy Metal come from?

SANDY PEARLMAN: It's a weird confluence of the Byrds of the *Eight Miles High* and *5D* through the *Notorious Byrd Brothers* period. Totally amplified twelve string (most rock didn't use twelve strings) — the confluence of that with the Vanilla Fudge (*You Keep Me Hanging On*), and the Cream live . . . which is exemplified only on *Wheels of Fire*. It's not really on *Fresh Cream*. *Fresh Cream* is an Apollonian album with a great sense of discipline and structure. But it does not possess chords of doom. It doesn't get into the realm of InterModulation Distortion as a component of the sound.

. . . **which came out of the Byrds because they were using the first generation of transistor amps.**

It came out of that and the inability of the amplifiers to handle twelve string guitar.

Heavy Metal, the music itself, well, it isn't really

Blues-based. There are those who find the roots of Heavy Metal in Led Zeppelin and the Blues. It's not. The Byrds have nothing to do with the Blues. The Vanilla Fudge don't have anything to do with blues either. It's essentially a development of heavily-amplified pop music. With an emphasis upon chords. Upon the power of the chord. The reiterated chord. The *infinitely* reiterated chord. . .

**Heavily amplified, heavily distorted, heavy I.M. (InterModular) distortion; so you have, in effect, random texture.**

Right. Right. Exactly.

**Unlike Blue Cheer, where you have texture coming out of the volume.**

The Blue Cheer is this in its most intentional form . . .

---

Fresh Cream  
is an Apollonian album with  
a great sense of discipline  
and structure. But it does not  
possess the chords of doom.

---

but, you know, you've got to decide whether this, in its most intentional form, is interesting. Anyway, you didn't really hear Blue Cheer first. You first heard it with the Cream. Blue Cheer stole the Cream live. Even Hendrix was already second generation.

---

## COMPARATIVE DEMONOLOGY 101:

### BLACK SABBATH AND BLUE OYSTER CULT:

**Where did the late Romantic classical atmosphere that is now almost common in certain Heavy Metal bands come from?**

That comes from Black Sabbath and the Blue Oyster Cult.

**Where did Sabbath get it from?**

They had a superficial interest in occultism. They really are dealing with some very basic truths. They have developed a formal mechanism to communicate these truths, and a lyrical grammar to communicate these truths. And in the hands of a madman like Ozzy, and a former madman, like Iommi . . . at one time, these people were in the functional equivalent of possession. Whether they were or not doesn't matter. They functioned as if they were possessed. Anyway, that's what they were interested in. And you know the Blue



# IMAGINOS

Blue Öyster Cult

CBS Records

1988 is the biggest year in the history of Heavy Metal. Hence it's only fitting that the Blue Öyster Cult is back with their best album in years. *Imaginos* successfully extends the range of Heavy Metal as *music*. The album is a tone poem written as a song cycle, making imaginative use of Romantic classical musical texture and guitar-based metal timbre.

This is still hook-laden Rock and Roll, folks, but if you are unaware of either the Romantic historical element or the lyrical use of noise as music, you'll miss the resonance of the story. It is a tale of the occult alienation underlying the destruction of the European Old Order by World War I, musically realized through iterative thematic transformations of leitmotives.

The songs are textural variations on these themes. They range from the surface pop gloss of *Del Rio's Song* (which conceals a disturbing core) to the dense Lisztian orchestration of ". . . Frankenstein's Castle . . ." (Faust as transcendental parable). There's an occult boogie for headbangers (*I Am The One You Warned Me Of*); two pieces of fin-de-siecle French musical color interwoven with demonic banshee guitar wails (*Les Invisibles* and *In the Presence . . .*) and an underwater resurrection that's no less than a recruiting anthem for hardcore B.Ö.C. aficionados (*Blue Öyster Cult*). The songs make extraordinarily effective use of an explicit guitar orchestra. In *Imaginos*, a dance melody is richly embroidered with layered guitar textures. In *The Siege and Investiture of Baron von Frankenstein's Castle*, an

acoustic grand piano provides percussive ornamentation to the sombre timbre of multiple metal guitars playing (or produced to sound as if they are playing) in tight Lisztian ensemble. Best of all, *Astronomy* uses the guitar ensemble sound most eloquently, transforming a Doors leitmotif into the "*rhythm of events onrushing*," evoking a star-strewn night sky overlaid with the silvery shadows of those visible Invisibles who determine the "*rush of events*." The album's unique sound combines multiple guitars playing as if in a chamber orchestra, giving listeners the excitement of heavy metal virtuosity while transcending the trite limits of the conventional rock guitar solo. However, if you dislike overt Romanticism or are allergic to Liszt or Ravel, this album is not for you.

*Imaginos'* ambitious and innovative use of rock and classical music technique is well realized in the album's production. The distinctive raw timbre of metal riffs and rhythms and the unusual coloration are combined to expand the band's musical horizons while still sounding unmistakably like the Blue Öyster Cult of *Tyranny and Mutation* or *Agents of Fortune*. The production is particularly polished and precise, with an almost Straussian ear for ensemble, at times using as many tracks of musical material as there are instruments in a symphony orchestra. This results in a density of texture as satisfying as that of classical music but still evoking the esoteric occult/science fiction universe that was the B.Ö.C.'s original contribution to rock and roll and heavy metal.

Öyster Cult has a much more sophisticated interest in history and decadence.

**Was that more than just you; were there other members in the band who were interested in . . .**

Well, I didn't write "The Reaper." But the framework; you know, the grammar . . . the universe of discourse, is mostly mine . . . and (Richard) Meltzer's, 'cuz Meltz also wrote lyrics.

**Was there a point where you sort of had the vision of what BOC would represent?**

I knew exactly what it was going to be and represent from the very beginning.

**Were there any things going on in music that influenced . . . ?**

I think the only things we really admired musically were the Doors and the Byrds . . . the Byrds from the

5D and *Notorious Byrd Brothers* period. And we got some musical grammar from Black Sabbath. By the way, I think that the BOC is more influential than Black Sabbath because the Sabbath's attitude toward evil was less ambivalent than that of the BOC.

**How would you describe that?**

Well, our analysis of the role of evil in a culture is straight out of *Là-Bas* by Huysmans. That's where it came from for me. I thought there was something very profound in that. Purity is a bi-polar situation in this world. One is easier to achieve, and eventually more fascinating, because it's more acceptable than the other. The argument about Gilles de Rais vs. Joan of Arc.\* Why did they diverge in the directions that they went in?

**Black Sabbath has very much an anti-Church of England black magician flavor to it, both in terms of the harmonic structure (S. Fifths) and in their demonology. One of the things that makes the Blue Öyster Cult interesting is that you don't have this continual rehash of the old Biblical Devil vs. God story to express the Manichean dichotomy.**

Well, basically, yes. You know, Black Sabbath is *Paradise Lost*? But with the same sort of ambivalence that you see in *Paradise Lost*.. Whereas the Blue Öyster Cult doesn't really have much to do with those sort of creatures at all.

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**A CLASSICAL ORCHESTRA IN SONIC SPACE**

We had lyrical input from three people: from me, from Patti Smith and from Richard Meltzer. And also, you had the eruption of brilliance every once in a while from Donald "Buck Dharma" Roeser who wrote "The Reaper", and *I Love the Night*.

**Two of our favorite songs.**

Well, *I Love the Night* is remarkable.

**Were you the producer for that song?**

Yeah.

**Well, one of the things that's remarkable about *I Love the Night*, in addition to the poetry which is just unbelievable, is the sense of orchestral space around the music. It sounds like a classical orchestra in sonic space.**

It's amazing. Oh, what it really sounds like is Ravel's orchestra.

**Or the chamber portion of Mahler.**

OK. But you're dealing with very similar sensibilities. What is the difference between Paris, fin de siècle, and Vienna, fin de siècle? There isn't much difference except Paris was a healthier place.

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**THE NEW SCIENTIFIC GRAMMAR**

**In effect, what is important or central to this culture can't be expressed with the musical grammar that's been handed down to us. Whereas, what was important or central to the culture of the nineteenth century could be expressed with the musical grammar.**

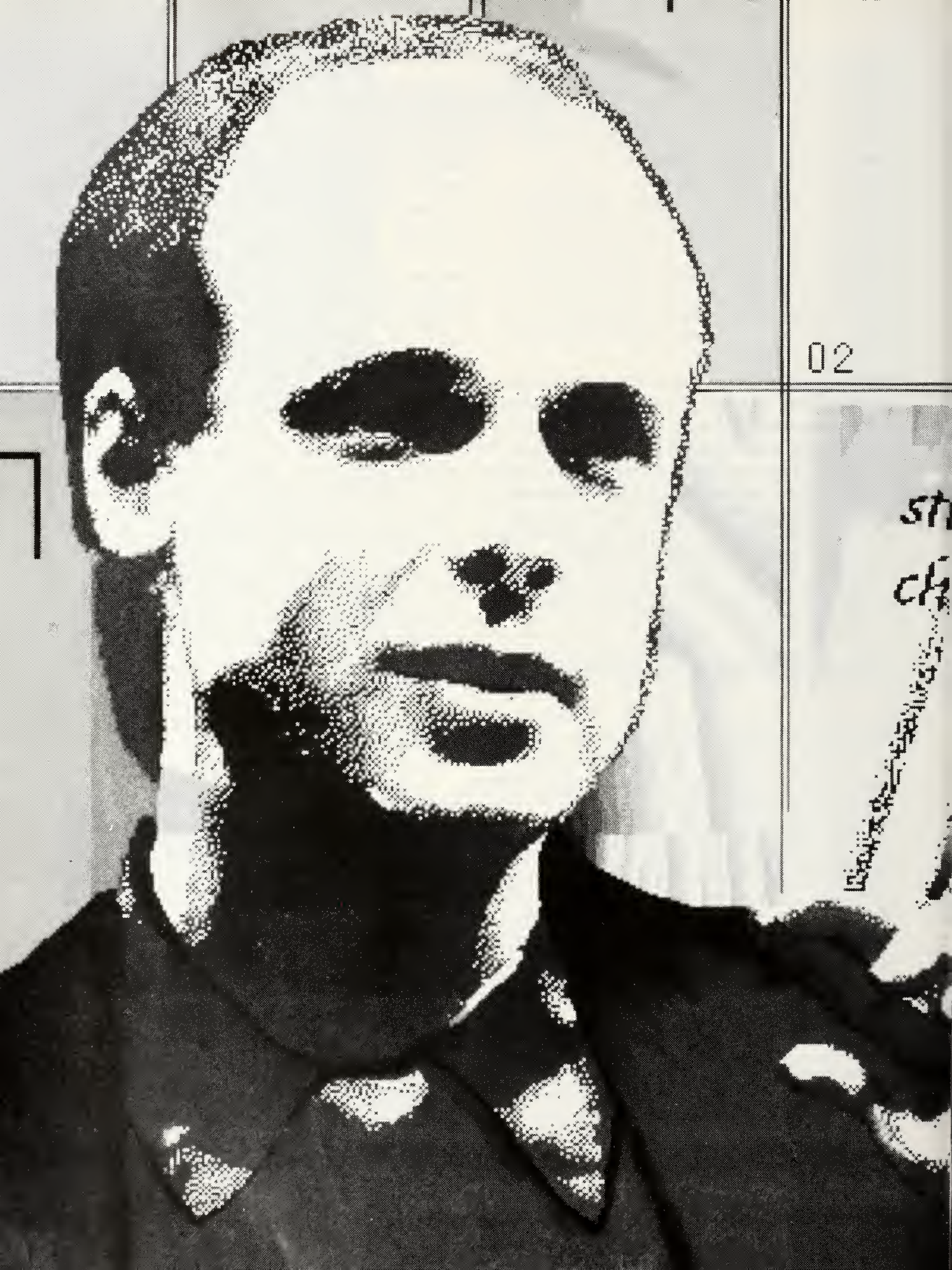
The *whole* Artistic grammar may have well played itself out.

**Do you think that there's a possibility of a new grammar that will open up a new music or a new painting . . . ?**

Yes. The new scientific grammar, obviously.

\* The fascination of Gilles De Rais is as an inversion of Joan of Arc — kust as the Black Mass is an inversion of the true Mass. For those of you unfamiliar with J.K. Huysman's *Là-Bas*; Gilles de Rais was a 15th Century French noble whose life forms a perfect diabolic contrast to Saint Joan of Arc. He was Joan's official military protector and was at her side for the year from her triumph at Orléans until her capture. Over the next 10 years de Rais squandered his estate and turned to alchemy to regain it. "He resorted to necromancy, satanism and finally the torture and ritual murder of kidnapped children . . ." In 1440 he was sentenced to death, where his confession, and demeanor at the gallows were "acclaimed as an example of Christian penitance." (Quotes from 1968 E. B.)

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# Music For Earthquakes

Brian Eno  
at the Exploratorium  
in San Francisco

Interviewed by Charles Amirkhanian

Eno. A legend. Up there in the Pantheon with David Bowie and David Byrne. His designation on Roxy Music albums is simply: Eno. Everyone knows *which* Eno just as she knows which Victoria or which Attila. Having a major proportion of Earthlings recognize you by a three-letter name is a distinction shared only with God. Indeed, many intone Eno's name with the same reverence (and a good deal less embarrassment) as they do God's; it actually has a better ring to it. Try it. E-NO, E-NO, E-NO. A veritable mantra of a name. God spelled backwards is "dog;" Eno spelled backwards is "one." *You* decide.

Now he's in San Francisco where he's created an installation at the Exploratorium and is holding a press conference. Fittingly, it is housed in the Grecian temple-

Photos by Jay Blakesberg

like Palace of Fine Arts. I march at the tail-end of a procession of media acolytes from ABC, NBC, CBS, the wire services, the big dailies--all the annointed. We faithfully file into the entrance of the installation, hidden behind the shapely poured-concrete ankles of a giant naked bored-looking rump-jutting nymph. A colossal caryatid with R. Crumb idealized buttocks gaz-

ing wearily, a hundred feet above our heads, across a reflecting pool. But who is this anonymous-looking chap sitting on a green slat parkbench serenely observing the reporters file past, their eyes busily absorbing the outsized charms of the callipygous nymph and her sister-servants slouching beside the swan-infested waters?

Surely, that is an English hand-sewn cordovan shoe I spy on the casually crossed leg or a fop I'm not. Certainly he's molted many feathers, much

glitter and some hair, but just as certainly that is Eno watching me watch him--a curious feedback loop. Amazingly, none of the professional newshounds take any notice of the man they're here to cover. I turn to my companion, Jude Milhon - arch Enophile, and indicate Eno with a nod of my head.

"My God," she exclaims.

"Yes, exactly. Do you have a copy of *High Frontiers* on you?"

"Yes," she says, fumbling in her bag.

"Good. Give him one."

"I don't want to disturb him--he may be meditating."

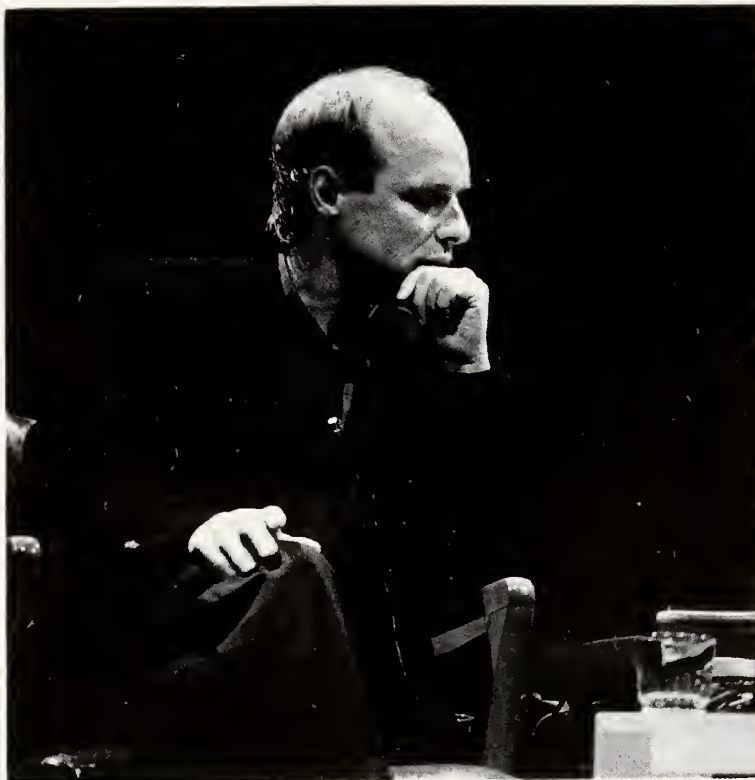
"He's sitting here watching the bloody fucking squirrels in the park, this is a *perfect* opportunity!"

Jude and I walk past him and stop at the respectful distance of eighty feet. Jude looks at him as a conservationist might study an endangered skink.

"Don't disturb him," she says sternly, eyeing me as she might a rabid propagandist, which I am.

Sighing heavily, I file into the womblike dark-

ness of the installation which is contained within a King Kong banana-shaped room, and stand in the recesses as reporters shuffle and jostle one another, staking out their turf. Grunts and expletives cut through the air. "Hey, turn the lights on in here! How the hell am I going to video this?" a philistine moans, defiling the rich templelike atmosphere--an atmosphere being continuously created by subtly



shifting sound from interacting unmatched tape-loops and slowly metamorphosing aquarelle light washing over Eno's foamcore architectural constructions. We are wandering in an ever-changing non-repeating sculptural

environment bathed in jacuzzi chromatics. The video images are simple geometric blocks of color on twenty-five inch monitors which are not viewed directly but, rather, cast their light onto an angular canted and skewed German Expressionist cityscape of expanded polystyrene--a simultaneous sunrise and sunset on another planet endowed with multiple luminaries, seen through shimmering atmospheric haze: another green and red and blue world.

It is a world of nonredundancy and nonperiodicity. It cannot be grasped intellectually --only felt in a transitory way, slipping past one's senses like fine silt. Furnished with upholstered sofas, it might be a waiting room on Sirius. It's like being abducted by aliens and then having to wait for your brain-scan. Some people return day after day and stay for hours. It's a space designed to linger in: a polysensory limbo informed by one of the most interesting minds in music today: Eno.

--MORGAN RUSSELL



## OF CRESCENDOS AND RAINDROPS

### CHARLES AMIRKHANIAN: How did you first get the idea for such a thing as ambient music?

BRIAN ENO: I can trace it to two things. One was — it's the story I told on the cover of *Discreet Music* - I got knocked down by a taxi one time when I was crossing the street. And I always make use of everything, you see. Getting knocked down by a taxi is not the most promising start to a good idea... but I was laid up in bed for awhile, and I couldn't move. A friend who'd visited was leaving and I said, "Do you mind putting a record on for me?" She put on a record of virtuoso harp music and left. Well, one of the speakers was on the blink and had gone out. And she'd put the music on too softly. And it was raining quite heavily outside. So, all I could hear was just the loudest few notes of the harp . . .

### The highest frequencies, probably.

That's right. It was sort of crescendos mixing in with the raindrops. I was listening to that and thought, 'This is really beautiful. This is a use for music.' It was a way I had never heard music before, not as the central focus of attention, but part of the context that you live in. I mean, the idea wasn't unfamiliar because I had been aware of the various experiments that John Cage and others had performed. So I knew about it as a theory, but I'd never *felt it* as a real way of listening. As that record played, I thought about making music that didn't impose its presence. Music that was deliberately made to be useful. Music made to be a part of, what you might call, the acoustic context that you live in. This idea developed into *Music for Airports*. I was sitting in the Cologne Airport which, I think, is a nice building. (It was designed by the father of one of the members of Kraftwerk.) It's sort of a triangular building with very high ceilings. And I like the building and I thought that the sense of space should be celebrated in some way. So I thought about how I could do that with sound. Obviously, it would have to be a music that didn't frighten people since they're already a bit timid about flying. It would have to be a music that could be interrupted, because you have announcements all the time. You'd have to make a music that didn't demand resolution. People won't be around for the resolution. All sorts of interesting conditions started to come to mind.

Then I thought: "What do you most want to feel

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there's  
something about  
the condition of  
ignorance that  
produces charmed  
work

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when you get on a plane?" And I was aware that the music that gets used in airports has exactly the *opposite* effect that it's supposed to. It's supposed to make you think, 'Don't worry. Everything's all right. It's just a normal day.' British Airlines has this horrible, peppy Baroque rubbish. It's terrible. It's really sort of "poke her up the bum" Baroque music. And you can feel these fixed grins on their faces, at this moment when you're taking your very life into your hands. And on top of that, of course, the airlines never have decent cassette players; they're always going "nnnnrrrrrrnnnnrrnr": like that. (He laughs) So, you sit there thinking, "Jesus, if they can't get a cassette player to work, what am I *doing* in this thing?"

So I thought, 'Right. You're never going to convince people that this is *not* a dangerous situation. So

what you have to do is make them not care if they die.' I was thinking that *Music For Airports* should give you the feeling that, 'Well, it doesn't really matter all that much anyway. What's a few humans less?' So that's why the music has a slightly, I'd say, resigned feeling to it.

### You could make us a *Music For Earthquakes*.

(Brian laughs--low roar in Auditorium.)

Oh, yeah, that's right--you need some of that!

## FOUR-LAYERED SOUND SANDWICHES

The music that goes with the installation was intended, at it's inception, to be always different at every point in time and at every point in space. That is, you will never hear it the same, anytime or anyplace. This has been achieved by an interesting inversion of the principal recording. The idea is that with a tape recorder, you can duplicate things perfectly. And the history of tape recording is a history of duplicating things more and more perfectly. We now have very faithful tape recorders. So if you run four tape recorders together, and you don't synchronize them in any way, the combination is always different. So the element on each individual tape recorder will be a repeating loop. But the combination of all four is always a different combination.

This piece of music was made like this. It started out as a twenty-four track piece of music. Now, normally you would mix those down to two tracks and that's the record. What I did with this piece was I mixed one set onto one two-track tape and then an-

other and so on. I ended up with four two track tapes. If these tapes were perfectly synchronized and run together, they would produce an exact copy of the original piece of music. What I do is run these four layers out of sync with one another and, as a result, they constantly create new sandwiches. They're auto-reverse cassette players and each mix fades down. So you do occasionally get the situation that three of them, for instance, are reversing at the same time. You get a very sparse sound for that moment. Each tape runs for a different length of time. So the original cluster of events which, on my original version of the piece, work together — as the tape circulates, they fall apart. And, in fact, they start clustering with other elements at other times. So it's like having a continuous shuffling system.

#### **A MAGICAL CONDITION OF IGNORANCE**

Often it's the music made quickly and innocently that withstands the test of time. You don't remember how you did it. After finishing you think; "Oh, yeah. This is a good idea.

I'll do another twenty." And then you go back and try to do another one and can't remember what the important things about it were. *Discreet Music* was a good example of that. The record, *Discreet Music*, is a terribly simple system. So when I made the record, I thought; "... Piece of cake. I've got a good formula here. I'll do a few of these." But I never made another one I liked as much as that. And I don't know what it was that made that piece work. I think there's something about the condition of ignorance that produces charmed work.

#### **OF LITTLE RICHARD AND MONDRIAN**

**When did you first become interested in the arts?**

I was interested in painting as early as I can remem-

ber. I was fascinated by brightly-colored paintings.

**Where did you see brightly-colored paintings?**

I don't know, but I think my uncle was the formative person in this. I have a very eccentric uncle. He was in the Hasad in India. One day he fell off a horse and became concussed... and he became a mystic (laughing). So if any of you are interested in that, that's how

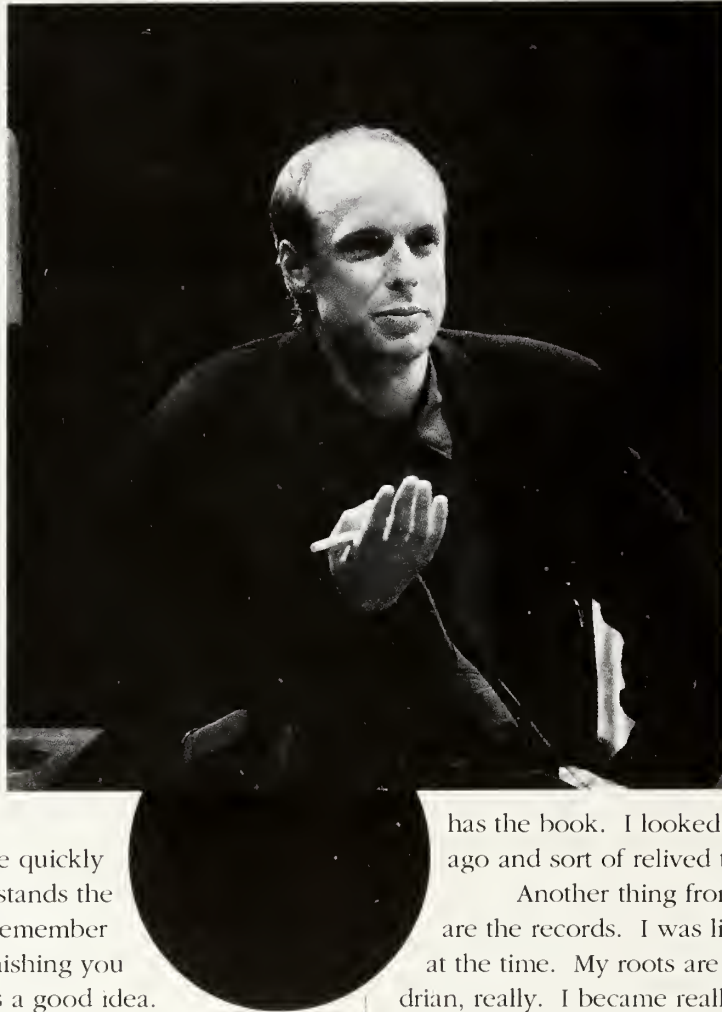
you do it. He stayed in India for six years and then finally came back to this little town where I was born, Woodbridge. He was a gardener, a landscape painter, a porcelain repairer — and the local eccentric, really. He had a lot of art books and one day he showed me a book of Mondrian paintings. Each reproduction was about an inch and a half but I can so clearly remember the effect on me.

They were in the simple, clear colors that Mondrian was using. My uncle still

has the book. I looked at it a couple of months ago and sort of relived that feeling.

Another thing from that period I still have are the records. I was listening to Little Richard at the time. My roots are Little Richard and Mondrian, really. I became really fanatically interested in painting, though I had never seen a real painting except Mondrian's. I was also fanatically listening to rock & roll records. Rock & roll. And then a family friend we called "Uncle Stan" left us his record collection to look after. It was all music that I had never heard before. Big Band music of the late forties, Jack Teegarden and Ray Coniff; big influence . . . formative side of *Music For Airports*.

We had two big American airbases within five miles of my house. So the town I lived in had 5,000 inhabitants. The airbases had 15,000 inhabitants. So every cafe in the town had this sort of pathetic, dreadful English cover version of things like Cliff Richards and Craig Douglas and all these miserable honkeys. But also, because of the huge American contingent,



they had the R & B originals of them. So I knew which ones I preferred. There was no doubt about that at all. We heard all the R & B originals. But the funny thing was I never knew that they were *Black* - any of these people. I never saw pictures of them. It was many years later that I discovered that there was such a thing as Black music in America and that it was everything I liked.

*Duke of Earl* was one of the, I'd say, five records that changed my life. Good ole Gene, I wish he was here tonight. *Send Me Some Loving* inspired me most of all because it's such a tender song as well as being pretty manic. And I'd never really heard insanity and tenderness mixed in quite the way that Little Richard did it. (to the audience) Do you want to hear a little bit of that? (a resounding "Yes!") This is the good bit, right? Where we play all the old records. Forget all this video stuff!

#### **OF AFRICAN MUSIC & THE WHOLE FIELD OF POSSIBILITIES**

**When did you become interested in the traditional music of Africa and other countries. Was that a natural outgrowth of your interest in doo-wop music?**

Well, I was set up for it by Doo-Wop, R & B and so on. It wasn't difficult to go back one step further in the chain of connections. But I think it really started with Fela Ransom, I suppose. He's now called Fela Kuti or Anikulapo Kuti or various other names. In 1972, I first heard a Fela record . . . Fela Ransom and the Africa 70. It's now Fela Ransom and the Egypt 80. It's contemporary Nigerian pop music. I'd heard James Brown and understood what that was about. Then I heard Fela, and he was an African who listened to James Brown. And he'd taken what James was doing, but really extrapolated it in a big way. The early 70's recordings were the best, I think. They had five or six drummers, a big horn section, lots of back-up singers. It was a very big band - maybe 22 people. And the sound was really, really harsh. The sax players worked on getting this kind of brutal, rhinoceros sax sound which didn't sound anything like Western saxophone playing. You remember Boots Randolph who did "Yakity Sax"? Well, it was like *Yackity Sax* cubed, you know?

**Audience Member: I was wondering if you'd related the African concept of cross-rhythm to the**

#### **work you've done with delays and modulation of phase relationships?**

What relates is the characteristic ability of that music to be able to absorb a number of levels at the same time. When I was in Ghana, I went to a festival where the big chiefs are brought in on these ceremonial litters. And behind them followed the corps of drummers, and these guys that play the talking drums, recount the history of the tribe back for many, many generations on the talking drums. So there are three of these very old men following the chief, and they're each beating a different story. It doesn't have any rhythmic relationship. They're not playing music.

Like in England, bell ringers - campanologists - don't consider themselves to be playing music. If you like it musically, it's an accident .as far as they're concerned. What they're doing is working through a process. I got interested in bell ringing. So Anthea, my wife, wrote to the head of the English Bell Ringing Foundation - there's this magazine called *Ringling Weekly* and asked "Could we get any transcriptions of your music?" We got back this quite angry letter saying: "This is not music." They were very concerned that we realize that it was operating on some other level. It was the same thing with the African trip - it was completely novel for me to think that you could have noise in a musical context that was not *musically conceived* noise.

In the record *On Land*, which I released around the time of that Africa visit, I used a lot of non-musical noise. Usually the way we think about music is that we have instruments, and then we have the rest of the aural universe; we have foreground and background. What about, instead of accepting these dichotomies, letting all of those things be a continuum. So, instead of having musical instruments and noise we have: musical instruments, sort-of musical instruments, vaguely musical instruments, kind-of-noisy-things-that-make-musical-sounds, things that are just noisy and are clearly not instruments at all. What about using that whole field of possibilities? And the same with foreground and background. When you sit outside and listen, you hear some things loud 'cause you're close to them. It's just an accident. It's not because they're more important. But if you listen, you hear things that you know are actually loud but they're just on the edge of your earshot. I wanted to make a music that

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We heard  
all the R & B  
originals. But the  
funny thing was  
I never knew that  
they were  
*Black.*

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placed you in a field of sound and implied that the horizon wasn't the end of it, that it continued right around the edge, right around the globe. Music that puts you in context.

## OF WORDS & TALKING HEADS

Who wrote the lyrics to the Talking Heads'

*Born Under Punches (and the Heat Goes On)* ?

On this record, which is not typical of the three records we did together, the lyrics were kind of consulted upon. Normally, David (Byrne) wrote the lyrics and, as far as I know, still writes the lyrics for the songs. But this whole record, in fact, was more of an improvised and group-generated record. It was the first record they did where they went into the studio without a set of songs. They went into the studio with

the assumption that they would work up some material in relation to the possibilities of the studio — which was what *I* represented in the equation.

**That's the way you like to work, isn't it?**

That's the way I always work, really. With a band it's usually more difficult because of the awful threat of democracy creeping in. There's nothing more certain to kill an idea than democracy, as far as I'm concerned. I'm not making a political statement here, but one about how things get done creatively. For me, the only way anything interesting gets done in the studio is by someone saying; "I'm going to do this," not, "Do you think maybe we should do this?" or "Could we just do it a little more...could we?"

There's no point in taking a compromised stand. If you're going to make an experiment, just make it. I would hate to do something where people would think "Oh Christ! that's a bit off," "that's a bit weak," or "just doing that old stuff again!" You make the experiment, and either it fails or it doesn't. And most usually it fails - that's the nature of experiments. But

then you don't release those ones!

**Somebody else does!**

Charles is referring to the fact that he's got a bootleg album which I've never seen before - which I hope he bloody won't play!

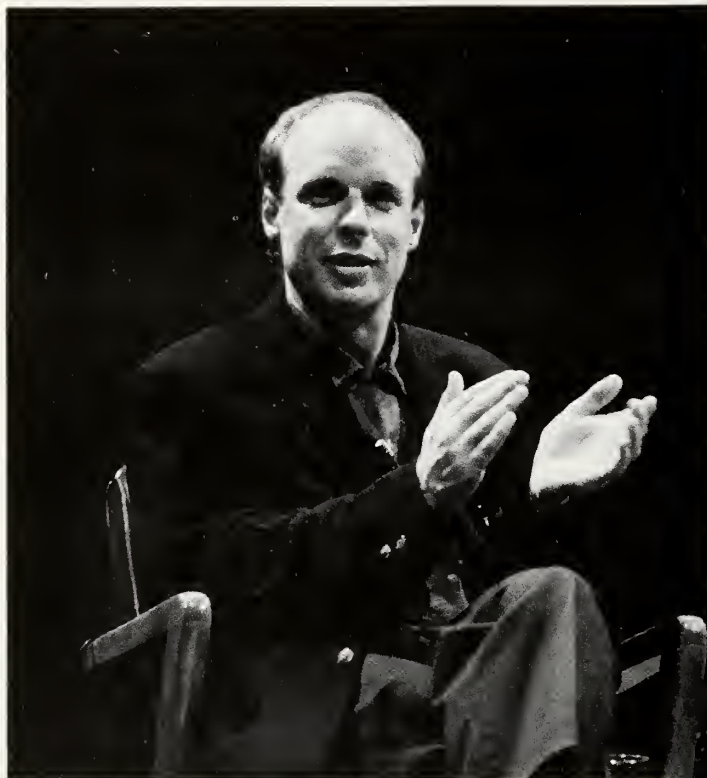
**Why did you choose as a kind of *ostinato* pattern, repeating "And the Heat Goes On," constantly**

**throughout the...**

Oh, that was very simple. That song; we had got into a real fix with it. And I like getting into fixes because I think something interesting happens when you're backed into a corner.

**A new solution of some sort.**

Yeah, a new solution. All the solutions you already know don't work.



That particular song had been very difficult to write. In the past, David had always been writing over chord changes. This song didn't have any. On this record, we didn't have any chord changes because we'd been listening to a lot of funk and African music.

We used riffs, grooves. It's a very different thing. If you're writing over a chord change, you can stay in the same place. The energy of the song is created by what's going on underneath. It drops, and it adds; it gives a piquancy to the same note. I have lots of songs that do that. In fact, that's the only trick I ever learned, really. What you do is sing — stay in place, and let the music change so it drops away like a cliff underneath you. Suddenly there's a real tension.

When you're writing over riffs, that never happens. If you want to create the feeling of chord changes, you have to imply it in the voice. Like you sing sevenths, or ninths, or funny notes, to create those tensions. So, writing the songs on this record

was quite a problem for David. On this particular song, it was really getting critical because we all liked the music, but there was no *song*. So I said; "Give me twenty minutes."

**"Everybody leave the room", you mean?**

Everybody leave the room because I have to do Embarrassing Things. What I did on this and on *The Great Curve* was to build the vocals that were replying to the lead vocal that didn't yet exist. So, it was like I was filling in the answers. Now all David had to do, as a singer, was to ask the right questions.

**EXTENDING YOUR DEFINITION OF WHAT MUSIC IS**

**The Talking Heads are such virtuosos. Now, you've said in some interviews that virtuosity isn't what rock 'n' roll should be about. But when you're working with a group that can do the things they can do, it's pretty fantastic, isn't it?**

Well, actually, the point wasn't to deny virtuosity, but to point out that as many interesting things come from ignorance as skill. For me, rock 'n' roll is contemporary electronic music. And the people making the records are not virtuosos in a musicological sense. Musicology doesn't have a place for rock music because it doesn't extend music in a way that musicologists understand.

**You hate most classical music.**

I despise it with a passion. A friend of mine who hates rock & roll and only cares for the classical pantheon says, "Well, everything that's happening today in rock music had been done by 1820," . . . or 1790, or whatever date he puts on it. See, all he's listening to is the chord sequences which are, of course, totally traditional. Then the rhythms, also, are boring and ordinary. What he isn't listening for are all the innovations of popular electronic music. The extensions of sound and timbre that have never been possible before. The ability of a contemporary composer working in a studio to deal with place as a subject of the music. Then there's the fact that you're making a music that, within a week, touches three million people. Now these are all properties of music. But they're not in the academic area of consideration. So you still get whole books on electronic music that talk about Varese, Stockhausen, and so forth but never mention Jimi Hendrix. Well, surely Jimi Hendrix must be one

of the first performing electronic musicians. Who else performed like that? He knew he was dealing with electronics. Now, the structure he was working within, the blues, was kind of an archaic structure. But, if someone working within an archaic structure does something exciting, that means the structure isn't the important thing. The structure is just a way of supporting what the guy is really doing. So to deal with contemporary popular music, you have to extend your definition of what music is.

Hendrix was a musician who understood the system that he was dealing with. And the system wasn't just six strings. It was six strings, some electronics, an amplifier, some big speakers, an auditorium, a public, and the accumulated resonance of pop music up til that time.

**Is classical music oppressive in England?**

It's pathetic. Classical music in Europe is *pathetic*. It's like yards of wall-to-wall carpeting. But you know, the most interesting musical experience I had in Russia wasn't listening to all these new punk bands that they have now, or scratch or hip hop or anything like that. The experience that stayed with me was switching on the radio in a friend's apartment one evening and hearing a Russian orchestra playing a contemporary Latvian orchestral piece. It was sort of reminiscent of Shostakovich and wouldn't excite a Western musicologist - I mean it wasn't radical. But the way it was played was absolutely galvanizing to me. Because it was played with real muscle, you know. It wasn't this kind of perfection-oriented approach to classical music. Nobody can make a mistake. It's got to be *just so*. God! I hate that! I can't tell you how much that annoys me. I am actually secretary-treasurer of the Society to Melt Down Flutes, if anyone wants to join. (laughter) Classical music in England is about as interesting as watching someone do trigonometry exercises. But when I heard these Russians, I suddenly realized that classical music *lives* for them. It means something *now*. It's not, "Isn't it comforting to hear these nice songs again." It wasn't comforting. It was abrasive. It was tough and powerful.

**THE INFLUENCE OF MTV**

**Audience Member: What is the impact of commercial television on music, including MTV?**

---

I am actually  
secretary-treasurer  
of the Society to  
Melt Down  
Flutes, if anyone  
wants to  
join.

---

MTV has had a funny impact on music because people started constructing records rather visually. I've noticed it when I'm in the studio. They say things like: "Hold on, this bit! We could do a great thing with the video here. Let's have it twice." But I don't find that uninteresting. The nature of pop music is that it's always absorbing other things. Suddenly, it isn't just dealing with music, it's dealing with television, or it's dealing with safety pins . . . the punk thing. The breakdown in interest comes with the videos themselves, where you have absolutely huge budgets and absolutely *minute* intelligence. And the results are clear, you know?

***On the other hand, a lot of the Surrealist and Dada film techniques have been incorporated and included into the everyday language of video.***

Yeah. I absolutely agree with you. If all of the Dada stuff, and Maya Deren, and the futurists, and all the various other people who've made avant-garde film in this century, if that ever becomes part of the vocabulary of film watching, it will be through pop videos. It won't be through obscure art cinema.

#### **THE GUERRILLA ARTIST**

I have never believed that artists work better without limitations. Art freed from limitations isn't necessarily interesting, and art absolutely bound up in limitations can sometimes be *extremely* interesting. So I think that you can take a guerilla approach to being an artist. I was quite fascinated by military strategy for a long while. I gave a talk about the difference between the traditional Western European army and the guerilla army. One of the things that I realized from that study was that, for a traditional army, every emergency was... an emergency. Every lump in the ground, every deviation from the right time of day or season for the battle, was an emergency. For the guerilla army, every emergency is an *opportunity*. Every bump in the ground is a place to hide. Every hole is a place to hide. Every spot of bad weather is a place where the regular army is going to get bogged down.

Applying this to being an artist, you can be a regular army artist where you walk in and say, "I've got to have this and that and that's not good enough, plus I want fifty thousand dollars." Or you can be a guerilla artist and say "Well this situation is sort of complicated and I've never been in one like this before, and somehow I'm going to try to turn all of these things to my advantage. I'll use this in my attack." And that, I think, is what makes artists interesting. Not that they can specify ideal conditions but that they can

deal with rugged field conditions.

#### **CAPITULATIONS AND RECAPITULATIONS**

Recently, I had to give a formal lecture on the evolution of my work, so I tried to push it back beyond Art School to what you might call the first imaginative enterprises I could remember. The first one on the list I call "making special places." That meant designing houses. Thinking of places I would like to live in. These places always have strange corners and labyrinths and secret rooms. They had streams running through them, or trees growing up through the middle of them, or they would be suspended across chasms, things like that. I was designing houses from the age of about seven. The second one was "rethinking systems". These were not the names I gave them at the time, you understand. I had a train set, and instead of making it into a loop and having the thing running around, I used to build these different structures. Like I'd pile a few books up here and there and the idea was to make the rails so the train would take the most gradual possible route to the ground. So it was another way of using a train set. And the third one I call "mud technology." This game involved me digging a hole and collecting a number of sticks that were not long enough to span it, and then weaving a roof which I would cover with mud. And I'd weave a second roof and cover that with mud as well. And then I would ask my Dad to jump up and down on it. And if it could support my father I considered it a success. Now these three games - I've been thinking about this - were my earliest games, and I haven't really played any other games since. That's all I've done since. It's sort of depressing to think that every idea you've ever had, you had by age four and a half. The "mud technology" one is really about enjoying limitations. "Making special places" is installations, environments or making places *special*, as with *Music for Airports* and the concept of ambient music. "Rethinking systems" is using video monitors for lights, or using tape recorders to make non-repeating music, that sort of thing. When this realization dawned, I was sort of jubilant thinking "God, there's a thread connecting everything I've ever done," and on the other hand I thought "Christ! It's time I had a few new ideas!" (laughter)



# This is Not a Watch

*Tesla Technology Inspires Teslar Protection*

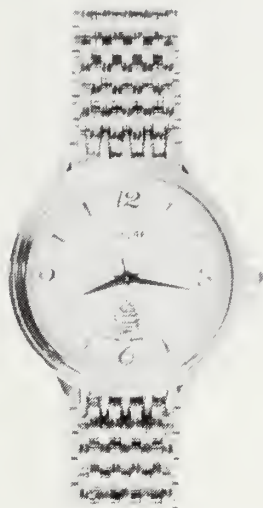
*By George Millett*

Could I believe what I was hearing?

The voice on the phone was telling me I could wear a small device on my left wrist that would protect me from environmental pollution caused by the invisible radiation from microwaves, television sets, computer terminals, remote control switches, cellular phones, power lines, etc. Electromagnetic pollution!

## PERSONAL FORCEFIELD

Randall Witman, Ph.D., of Prometheus Research Technology was speaking. "It's called a TESLAR watch," he said. "It creates a forcefield



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at extremely low frequencies (ELF). He works for the U.S. Navy.

My new adventure in the world of electrical and magnetic phenomenon was underway.

Ilonka, a professional designer and business executrix, said she had studied the works of Tesla and could see the potential dangers and benefits of his ex-

fering in these cases where we cannot pinpoint the real causes of disease. I think we may have opened our eyes to a new era of medicine. This could be the greatest breakthrough in preventative medicine of our time."

According to Dr. Puharich, "The TESLAR makes it possible for the body to resonate at its own natural 8 Hz frequency. The TESLAR selectively amplifies the beneficial 8 Hz signals of the shielded person up to 4 times."

Puharich currently works as an international medical consultant to leaders in government, industry, universities and private foundations.

## ONE EXPLANATION

Byrd's explanation of how the TESLAR works is a bit mind-boggling. "Maybe it works," he says, "on principles of dielectric behavior of biological systems in conjunction with non-linear excitation that can give rise to solitons (waves) in membranes and proteins. Research has shown that ELF pulse modulated microwaves do indeed influence various physiological and behavioral processes in cells, tissues, animals and humans. Cells apparently can act as sensitive detectors (receptors) of ELF signals."

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*Last issue, in the interview with Andrija Puharich, you were introduced to Uri Geller and Extreme Low Frequency (ELF) waves.*

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like a bubble or a cocoon around a person, that interferes with harmful waves of energy coming at us from every direction. Then it amplifies the natural rhythmic cycles of the body that lets it function at its normal condition of health and well-being. It's been tested, proven, patent applied for, and now on the market."

The TESLAR is named in honor of Nikola Tesla, the European born American electrical genius and inventor who lived from 1856 to 1943. Tesla explored the phenomenal world of electrical and magnetic instruments. He claimed the Tesla Magnifying Transmitter (TMT) as his greatest invention. The polarization and conductivity technology used to produce the TESLAR is based on the Tesla discoveries.

## INVESTIGATION BEGINS

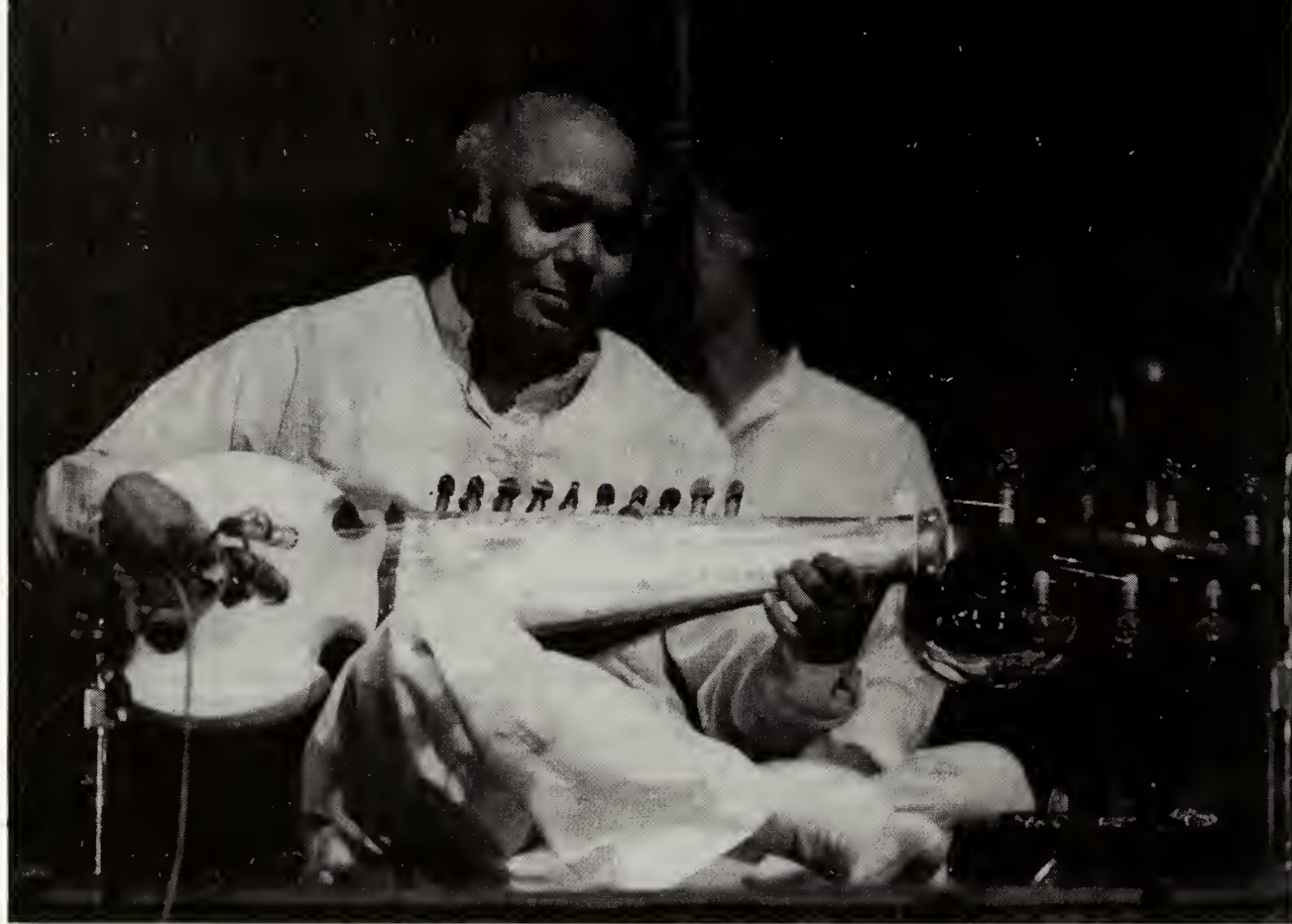
Soon the president of the company that manufactures TESLAR products, Ilonka Harezi, and a vice-president, Courtland Reeves, paid me a visit. A Physical Scientist, Dr. Eldon Byrd, Ph.D., was with them to answer my questions. Byrd conducts research in the field of interactive biological processes

periments with ELF. She worked with Dr. Andrija Puharich, M.D., LL.D., a contemporary authority on Tesla. Puharich had invented a "shielding device" to counteract the harmful effects of ELF. He said the shield would protect one from negative biological and psychological effects of emissions coming from electromagnetic energy systems. Ilonka helped to put the shield into a bracelet and was later responsible for developing the 'chip' which was incorporated into the shielding device—the TESLAR.

## CARDIAC CONNECTION?

Amjad Zureikat, M.D. of Chicago, is studying the TESLAR for continued use in preventive medicine. Zureikat told me, "The TESLAR is apparently helping cardiac patients and it also appears to be an effective adjunct in the treatment of other illnesses like hypertension, arthritis, leukemia, cancer, etc.

In medicine we have many unexplained illnesses. Chances are, one of the reasons for this is that we cannot see or feel the causes which may be ELF. Maybe this is responsible for lots of suf-



# The Master of Melody: Ali Akbar Khan

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By Faustin Bray & Brian Wallace / Sound Photosynthesis

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Ali Akbar Khan is a consummate master of music, without peer in his field. His instrument, the sarod, is a 25-stringed lute. His father, Allauddin Khan, is regarded in India as the musician-saint of the first half of this century. Ali Akbar Khan, known as “Khansahib” to his students and friends, learned vocal and instrumental music under the tireless guidance of his father/guru for more than twenty years. He teaches the whole range of the music, from literature and technique to performance, at his Ali Akbar College of Music in San Rafael, California; Basel, Switzerland; and Calcutta, India. He is a unique phenomenon compounded of tradition, talent and circumstances. His musical skill is the culmination of an ancient civilization's most refined art.

Khansahib's life is what myths are made of: Before he was born, his future was genetically directed toward music. His instrument for a lifetime career was chosen by his father. As a child his companions were other musical students. (Concurrently with Khansahib, Ravi Shankar studied sitar with Khansahib's father.) Khansahib was educated with the princes and princesses in the palace where his father was the esteemed court musician to the Maharaja of Maihar. Early professional concerts for Khansahib meant stern, fatherly, on-stage instruction. Combining constant rigorous practice, Allauddin's teaching, and his own innate ability, he evolved into a musician of unequalled self-mastery. When, at last, the invitation to become the chief court musician for a very rich and



talented Maharaja was offered to Allauddin Khan, he passed what was considered the job of a life-time on to his only son.

At that time, in India, only royalty was permitted to hear classical music. Khansahib became the teacher and court musician to the King and the Royal Family. After many years with the King, the concert room in the Palace was named in Khansahib's honor. The dissolution of the Raj gave both India and Ali Akbar a new sense of freedom. He went out "on the road" where he experienced a great variety of audiences and locations.

When their paths crossed, Yehudi Menuhin recognized Ali Akbar Khan as "the greatest musician in the world," and arranged joint concerts in New York's Museum of Modern Art in 1955. Since those first domestic concerts and recordings, Khansahib has made California his home. The Ali Akbar College of Music was founded in 1968 and traces its ancestry back through the 16th century to Mian Tan Sen, the chief musician of the court of the Mogul Emperor Akbar the Great of Agra. Tan Sen was said to be nad-siddha, one who has the complete mastery over sound.

The study of the magic of sound through scientific, ethnic, mystical, and practical applications drew us to Khansahib's door.

**REALITY HACKERS: Khansahib, what is it about North Indian Classical music that is so important to learn?"**

ALI AKBAR KHAN: This music opens your mind so you can learn any kind of music, any style, more easily. It is a universal language which makes you free . . . like a bird, you can fly. I haven't found any other kind of music which opens so much.

**So after learning this music you can go further in the other styles?"**

The student becomes familiar with the sound, all kinds of melodies, rhythm, the timing of the music, the seasons, moods, and times of the day associated with the different *ragas* — 'til it is like you can turn your switch to "on" and you're ready to compose music on the spot.

**How does a beginning student learn the techniques to open to the music?**

First, they must learn to be in tune, to move their vocal chords and fingers in the right way, and we give all kinds of exercises to help with that. It takes time; a few years. Singing is most important, because, while you play, you are singing through the instrument . . . actually, you are singing inside. You must learn how to sing pure note, pure pitch. Each note must give the

proper effect therefore, full of perfection. You have to think of music touching your brain and heart. I always start with the simple scales and ragas and I always begin with the fixed composition. Like a child who first learns to draw by tracing a picture, slowly, slowly, it helps to learn by following the examples of the teacher.

**Some people say that the school and the study of the music is like a religion. How do you feel about this?**

No, it is not like that. Nothing to do with religion actually. It is just music, and the music is a yoga. A way to reach to God. Through music you can purify your soul and mind, and drive out all the evils. This way you can love your neighbors, love the whole universe, love the children, love yourself, and give more love to this world, not only to humans, but all the creatures as well.

The music is based on an oral tradition reaching back over 4,000 years. There are 22 basic microtones, 12 notes, creating an abundance of opportunities for subtle nuances and ornamentation in the ascending and descending scales allowing the profound effect of calculatedly eliciting emotions. "Lord Shiva composed six male *ragas*. The *rishis*, or wise men, brought the knowledge to humans and composed six *raginis*/wives for each *raga* and all the children and grandchildren, numbering 75,000 *ragas*, comprise the body of music in the system," says Khansahib. A *raga* is a distinct arrangement of notes each different from all other *ragas*, organized in the modal system to have an emotional impact on the listener. There are phases of tempo changes within the performance of the *raga* that are classical. The season, time of day, weather and mood desired, decide the *raga* that is most appropriate to the moment. The "nine juices" or *rasas* are sentiments expressed in the arts. In Indian music, every composition is dominated by one or more humours; i.e. courage, joy, pathos, and devotion. "If the inappropriate *raga* is listened to or played, the effect is not achieved and there is bad luck. Notes can correct effects like a doctor makes medicine. With the proper teacher giving the techniques in the proper way, knowledge is built up in the student's mind and body."

Khansahib closes the conversation by warmly inviting interested people to the College, to watch classes and see how it works. The best way to experience the power of the tradition is to go to an Ali Akbar Khancert, sit as close to the action as possible, tune in, tune up and open yourself for the joy ride.



# Sun Ra's Magical Kingdom

By Ira Steingroot

*I never took opium, but . . . space,  
strange cities, weird landscapes, un-  
known monsters, hideous ceremonies,  
Oriental mysteries of life, death, and  
torment, were daily — or rather nightly  
commonplaces to me before I  
was six years old.  
Today it is the same.  
— H. P. Lovecraft*

Ever since he formed his first Arkestra in Chicago in the early Fifties, Sun Ra has been at the leading edge of experiment in the world of jazz. Over the years, freakish solos and unusual instrumental combinations were succeeded by full band drum choirs, total horn cacophony, Moog synthesizer solos full of noise elements, costumes, light shows, dance and theatre. All this visual splendor was set against an eruption of swing material by Ra's old mentor, Fletcher Henderson, or perhaps against a half-hour chant of an old Irving Berlin novelty tune. If this sounds strange, then you haven't met the Captain of the Spaceship yet, have you?

In case you haven't heard, this Spaceship Earth is set on a course that will connect the past and future in Sun Ra's Cosmic Equation. Ouroboros. The snake that swallows its tail. Black American music has taken a long trip. While seeming to divest itself of African outer garments in favor of European garb, it was actually returning not only to its West African source, but to a concept of performance that ties pre- and post-civilized music together. This is the garden Sun Ra has been tending for the past thirty-five years. Within this simultaneously primitive and futuristic music, all parts of the jazz experience — scat vocals, tap, Harlem stride piano, big band riffs, call and response, the raw emotion of the blues and the quirky melodies of bebop — are summoned up.

In non-Western cultures, the arts aren't separated from one another or from politics, education, science, and religion. One of the strengths of jazz has been its reflection of a whole culture, probably America's first counter-culture. The Arkestra creates a total theatre, a

Photo by Tim Hildebrand

complete world with larger implications than we usually expect from mere music. Duke Ellington's performances at the Cotton Club must have approached this kind of total theatre and Sun Ra seems best equipped to fill the role that Duke played for his generation.

The link between Ellington and Sun Ra is Thelonious Monk, another pianist who mixed humor and mystery, rumor and history. Monk said that wrong is right, two is one, and black is white, statements reminiscent of the Gnostic Oxyrhynchus papyri. Ra declares himself another order of being, an ambassador from outer space and an angel. Much of this may seem downright demented to those whose atomistic universe is stripped of mystery and magic, who have forgotten our relation to the stars and to one star in particular.

Jazz purists tend to dislike extra-musical elements in jazz. They want to push it towards a kind of precious chamber music. Yet Sun Ra's work can be simultaneously popular and avant-garde, entertaining and daring. More than this, it can be apotropaic, even healing.

Working with a remarkable aggregate of musicians that includes brilliant saxophonists John Gilmore and Marshall Allen (both of whom have been with him for over three decades), Sun Ra makes music that leaves you feeling emotionally and spiritually cleansed after a performance. That's the kind of joy you get from Louis Armstrong and it is the essential spark of the music that Sun Ra, among others, is keeping alive.

This mysterious power is certainly one of the forgotten functions of music. Plato knew of it and Agrippa explained, "Musical harmony is a most powerful conceiver. It allures the celestial influences and changes affections, intentions, gestures, notions, actions, and dispositions . . . The elements themselves delight in music." Over the years, many writers have latched onto isolated statements or musical phrases to use against Sun Ra. These attacks are pointless, since his work is holistic, producing its effect not through isolated solos or parts, but through the total experience of a Sun Ra performance. Skeptics search his music for referentials and are deaf to the reverential.

My interview with Sun Ra took place in his dressing room at the Kaiser Convention Center in Oakland just before an Arkestra benefit performance for Concepts Cultural Gallery in Oakland, California. He spoke in a soft, calm voice throughout, full of Mississippi musicality and his own innocence tempered by years of hurt and neglect. Throughout our conversation, he looked at himself in the dressing room mirror.

Afterwards, he went out on stage and generated the kind of transcendent musical experience he alone can create.

**Reality Hackers: Obviously, music itself is very important to you. But there are other considerations in your mythology, elements having to do with outer space, with Africa, Black Culture and jazz traditions, and the spiritual elements of music. What is the spiritual context within which you create your music?**

Sun Ra: I'd prefer to use the word spirit, rather than spiritual. And I'm dealing with spirit, eternal spirit. Things that never had a beginning or an end and never will. It just is. It's been here all along. Total possibilities. I'm dealing with that. The people on this planet have evolved to the point of realizing the im-

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Total possibilities.  
I'm dealing with that.  
God is too small a term

---

possibility of any eternal being. If you're eternal, that means you never had a beginning, never had an end. Still, I'm dealing with that type of being. God is too small a term.

**In the early days of playing this music, you were terribly ignored. Even in the Sixties, when you were as central to the changes that were taking place as Coltrane, Ornette Coleman and Cecil Taylor, you tended to get short shrift from the critics.**

Well, I'm a different kind of being, you see? It's hard for a man to really give proper respect to anyone who says they're an angel or someone who says they're from other dimensions. It's hard for them. In the first place, they could be not believing. If they didn't believe, I wouldn't blame them. It doesn't concern me.

The world is not ready for me. I have something to offer the planet that they never had before. It wouldn't hurt them to spend a billion dollars for me to try something different. They need new music. The Russians say the nation that has the world's music is going to rule the world. And they're right, too. They're right. The Russians got germs and all that. But America's got the world's music — namely jazz.

Animals fight for their territory. I don't have a terri-

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Until Nov. 15, 1988

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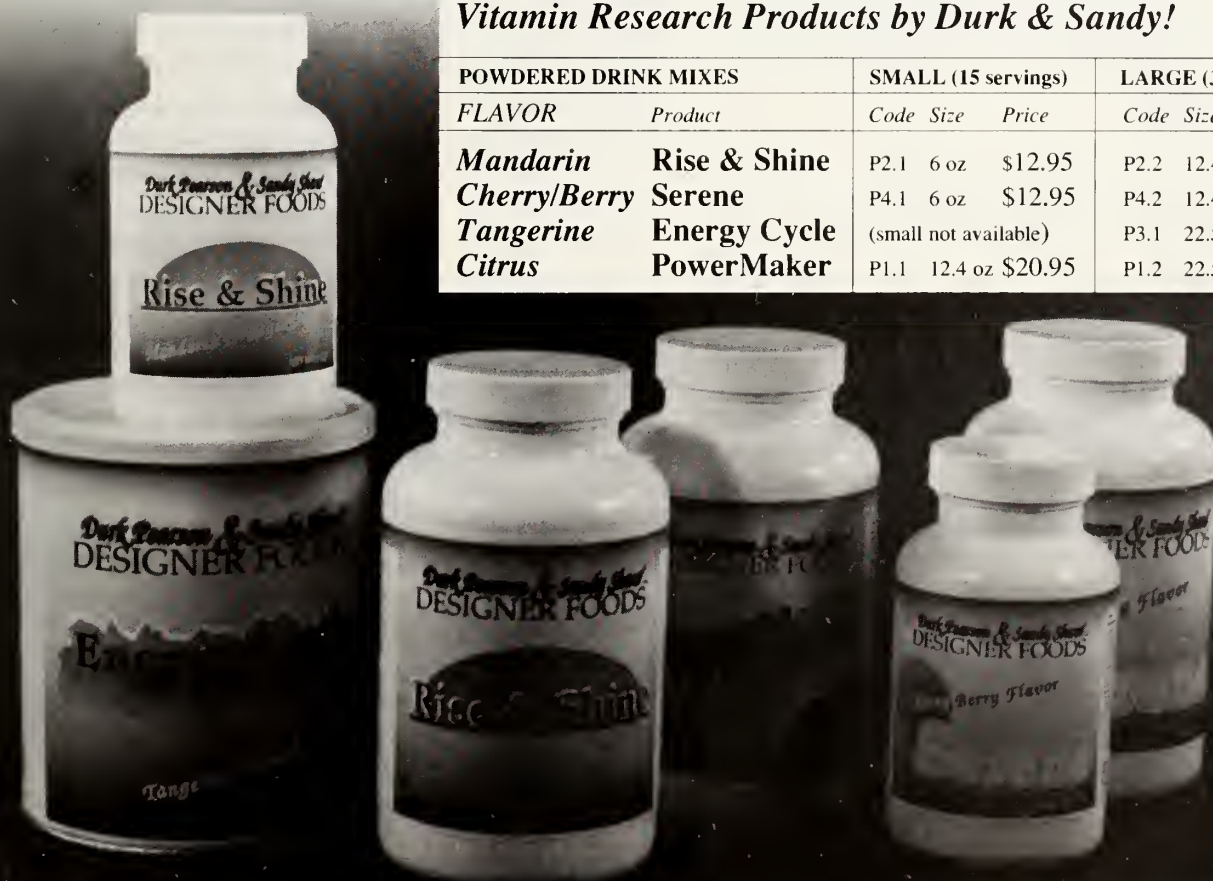
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Vitamin A (from beta carotene) ..... 1,340 iu  
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Vitamin B-2 (riboflavin) ..... 3 mg  
Vitamin B-3 (from niacinamide ascorbate) ..... 143 mg  
Vitamin B-5 (from calcium pantothenate) ..... 18.4 mg  
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Cherry/Berry	Serene	P4.1	6 oz	\$12.95	P4.2	12.4 oz	\$19.95
Tangerine	Energy Cycle	(small not available)			P3.1	22.5 oz	\$18.95
Citrus	PowerMaker	P1.1	12.4 oz	\$20.95	P1.2	22.5 oz	\$34.95



tory here, so I don't need to fight for it. I don't belong here. I don't know what happened but something happened why I am here. I just want to be a musician, play my music, and do beautiful things, see nice trees.

It's a magic kingdom here. People think certain thoughts and they start coming to be. Sickness and death and all that. It's not proper. What they're talking about could become a reality. So if they believe they die and go to hell, undoubtedly they do. But it ain't real. It's all fixed up according to their imagination.

### **When did you feel that other dimensions of reality were impinging on your own?**

From the time that I was three years old. I remember things — images and scenes and feelings. I never felt like I was part of this planet. I felt that all this was a dream, that it wasn't real. And suffering . . . I just couldn't connect.

People just like sheep. When I was in Egypt, one day I was standing on the corner, and here come a man with about three hundred sheep, and every way he turned, they went. These sheep weren't asking where he was going, just following the shepherd. Man ain't got no freedom. He's just like a sheep or something. I know this is a government of the people, for the people and by the people, but I'd be more delighted if they said the government of the leaders, for the leaders, and by the leaders of the people, by the people, for the people, of the creator, for the creator, by the creator.

In my music, I'm trying to tell them things. Ever since I was a subteenager, I've had to fight against a force that is doing its very best to keep people from hearing me, from knowing me. I had this solid battle with this force that was trying to humiliate me, trying to break my spirit.

### **Where does this force come from?**

It comes out of the Bible. It comes out of the Book, the Source Book. That's the Bible. That's what men *say* is God's word. It comes from God's word, what they *say* is God's word. It's used as a scenario to hurt people and kill people and make them sick. It's a trouble book. It's very powerful. It was given to the world, but the people who have it . . . they're using it the wrong way because they don't understand. Nothing happens unless it come out of that book. You have to judge the tree by the fruit. The book is just like a tree. It's made out of tree. It's got leaves just like a tree.

### **Have you read in the occult sciences and mystical literature or is your knowledge learned internally?**

It's from personal experiences with a being who has taught me.

### **Not a human being?**

Yeah, it's non-human. And he taught me all kinds of things about Jewish mysticism, Egyptian, everything. It's a matter of putting it together and using it properly.

### **Have you always been known as Sun-Ra?**

In a sense, yes.

### **When did you become known as Sun Ra publicly?**

It's when the creator spoke to me one day and called me that.

### **Wasn't your given name "Herman?"**

Just out of nowhere, I said that I'd change my name. You've got this name "Herman" right there, but in the French language, it's spelled "Armand." If you just say, if you bring it down to "Arman" and turn it backward, you've got "name Ra." And that's it. That's what "Herman" means. If you turn it back, you got "namreh." Reh is an old name of "Ra." So, it's the same thing, it's just that I use it. My great-grandfather's name is "Alexander," "Zand-Ra." See, you've got this "Ra" right there. That's the "Sun Ra" right there, the "Zun Ra." So, really, if it's my grandfather's name, it's mine too. I go back to him. He played violin. His name was "Wesley Alexander."

### **Why did they name you "Herman?"**

I was named after Black Herman. He was one of the greatest magicians that ever lived. He was living during the time of Houdini but because he was Black, you don't know anything about him. That's what my mother named me, after him. Probably I've got some of his attributes. You name a child after a certain being, it's some kind of vibrational thing right there. I was named after Black Herman so I'm always dealing with black.

I'm a wordologist. Words' what's doing this. You've got to have numerology. You've got to have phonetics. You've got to have all these things and then the world will straighten out. They worship the Son of God but they don't understand. In French, Son's equal to "sound," so, "sound of God." They've got it wrong. They think it's "the son." They say the word was made flesh. It's really about *sound* and it wasn't made flesh, it was made *fresh*. All these things the creator told me in Alabama. I'm dealing with words that can prove themselves — that can prove themselves to be correct.

### **You were born in Alabama?**

That's where I arrived — Birmingham, Alabama. I grew up in the Tabernacle Baptist Church. But I truly was an Alien. And my father — I really believe my father was not a man. The last time I remember him, I was in his arms, and I don't think of him as being a man. He was another kind of spirit, a dark one. I was a baby in his arms.

**You were raised by your mother and your grandmother?**

I was really raised by the creator of the universe who guided me step by step. That's the reason I know what I know, even the music and all about Jewish history, Egyptian, mythology. I was taught that by the creator.

**What are you doing in your music?**

Well, I played for Black people because they needed help. Only for them. But then, they asleep or something and they didn't listen. Then it spilled out to the rest of the world who's really never accepted me moneywise. They look at me as a Black person, a negro, a nigger or something and they haven't connected yet. I want to do things that are relevant to this planet in the music. I'm supposed to see if the music can help 5 billion people.

**How does outer space and its blackness tie up with Black music, Black Africa and Black art?**

My plans are to take some black people to outer space with me, if they're my friends. I have no plans for them here on this planet. I don't belong to it. I didn't come from here. If they're with me, they can prepare to leave and let the rest of the nation have this planet. I don't want it. I came from somewhere else. I came from someplace so splendid that there are no words for it. And I always knew it.

**How does that relate to your ideas about Saturn?**

In ancient days, the Roman Empire had their treasure house in a temple which was the temple of Saturn. Rome in early days was called Saturnian. Saturday is named after the seventh day. The Jews worship on the seventh day, so they were worshipping on the day of Saturn. The six-pointed star represents the sixth planet from the sun. And the six-pointed star represents Saturn.

**In alchemy, black is the color associated with Saturn.**

Black is the color associated with Saturn, associated with the Tower of Babel, which is black. Black and blue represents Saturn, the same way purple and black represents death. My flag is purple and black. I've got my flag. My flag is the flag of death, and I represent His Majesty Death to this planet. I'm the

ambassador of death, and the only way they can live is they got to get permission from death to live. It's quite simple. They cannot make it without permission from the ruler of this planet, which is death.

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I never felt like I was part of this planet. I felt that all this was a dream . . . I just couldn't connect.

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**Do you feel that you have a group of musicians that you're training in your kind of vision or consciousness?**

I'm even ready to love, using men in this band.

**What should you be using?**

Angels! But I'm not a man, I'm an infinite being. My band gets better and better. Every time they take someone out, it gets better 'cause I'm always changing. Now if I was like Jimmy Lunceford — his arranger left and he was through, but not me. I'm always busy creating. Attaching myself to the spirits of people so when I play for them they're completely delighted and happy.

**You worked for the father of all the swing bands, Fletcher Henderson, in the late Forties at the Club de Lisa in Chicago, if I'm not mistaken.**

I learned, basically, from Fletch Henderson, 'cause all of the people in the band were my enemies. They wanted me to play like other piano players. But I said, "No, Fletcher likes me to play like this; he likes what I'm doing, so I'm playing this way." I played with Fletcher 'till he left Chicago. He liked what I was doing.

**There has been a steady growth in the number of people who appreciate your work.**

Well, the music goes two ways. It enlightens the minds of my friends and it darkens the minds of my enemies. It's a two-way thing, then. All my friends can really feel and hear something wonderful, and they can be just so happy. And all my enemies say, "That music isn't anything."

**It's their loss.**

Yes, it's their loss. I'm making them lose things . . . For my friends, I've turned down money, fame, and everything. I don't have a pot to piss in. But basically I can talk to the world. I can talk to the world about some marvelous things that you wouldn't believe 'cause music is a language.

# Harmonic Overtones

## An interview with David Hykes

By Faustin Bray

*David Hykes and the Harmonic Choir are internationally renowned for their music and mastery in a field Hykes has unified, developed, and named Harmonic Chant: contemplative music based on a universal musical sound, the harmonic series. For those who think they don't know David Hykes, it was his music that enriched the film, Meetings With Remarkable Men, based on Gurdjieff's spiritual odyssey.*

*Faustin Bray and Brian Wallace of Sound Photosynthesis invited David Hykes to discuss the Western musical interpretation of harmonic singing.*

**REALITY HACKERS: Interest in harmonic singing is building dramatically. Has the time arrived for this exotic music?**

DAVID HYKES: We've been working since 1975. I'm surprised that it's already 1988, and this is our first tour in California. For most of the group's lifetime, we've been based in New York, perhaps because this kind of music is more needed there.

**Have you had different people involved with you, or has the group stayed together since its inception?**

I'm still in touch with all the people who were with me when I founded the group. The music requires that people work together a fair amount of time. There is an intensity in the music that requires people to persist; it's technically quite demanding.

**Give us some history: where are the roots for this type of sacred music?**

Well, of course there are many histories. Perhaps the terms I've developed are useful to describe the field of

general enquiry that is called harmonic chant or harmonic music. We associate the beginnings of this music with Tibet and Mongolia. While singing a regular fundamental tone, a singer can produce a co-present harmonic or overtone partial, or even several at the same time. This tradition comes chiefly from three Central Asian centers — Tibet, Tuva, and Mongolia. In these places people made very specific choices about how to work with harmonics. Over years of inspired work with Oriental techniques, we made discoveries that have led us to a more complete formulation of the whole field.

In 1972-73, as a film maker, I was listening to sacred music almost

exclusively. I began to, perhaps unconsciously, look for that quality in sound tracks I was making. I wanted what I thought of as a prismatically refracted sound. I sought it electronically, at first, using a device called a harmonizer, it permits you to make a sound, record it, and change its pitch, all at the same time. Starting with one person's voice, I created a choir using multi-track equipment. When I showed the film in New York, accompanied by this electronic "choir," someone likened it to Tibetan sacred chant notes. It was a moment of shock, hearing recordings of the Tibetans and the Mongolians producing those sounds. I completely changed my own activities, my sense of what music was for, and my sense of how a person could serve.

The chant is an evolutionary kind of current in our musical practice and perhaps, in a wider sense, what listening is actually for.

**What places or settings do you enjoy singing in, or does location make a difference?**

We work rather closely with the traditional places where the music was practiced. For example, we've done several projects with two Tibetan monasteries that practice a sub-harmonic chant. I also went to Mongolia to have direct contact with that tradition. The harmonic series we're working with now remains true to its origins; from the beginning it has been an inclusive art — a musical universe, if you will. It's in everybody's voice; it is the genetic material in all musical sounds.

For me, the extraordinary high of the Tibetan and Mongolian traditions was a reminder that this acoustical principle could be worked with, without being distorted. On the other hand, it's very important to follow a growth process with the same kind of



dedication that the traditional singers have.

I hope to have this music be as much help to us as it is for them. I mention all that because as the group gains popularity, I wonder how the wider dissemination of this material will influence its basic quality. If we play large “holes” requiring giant sound systems, instead of playing in churches where we need much less audio support, we could completely change the original intent.

Of our three released recordings, the first, *Hearing Solar Winds*, and the third, *Harmonic Meetings*, were both made in L'Abbaye du Thoronet, in the Provence region of Southern France. In the 12th century the Abbey was a Cistercian monastery where monks kept a vow of silence. Perhaps the acoustical proportion of the architecture is the same as the harmonic series. The space has a living quality, as though the stone listens to any sound that is made.

*Harmonic Meetings* was commissioned by a visual arts project called The Tent of Meeting. The project tried to bring sacred art from Christianity, Judaism and Islam together under one tent. As a focus for this broad goal, I tried to find sacred words common to all three traditions, that none of them would go to war over — some unifying vibration. I found “Hallelujah”. And indeed, it kept reverberating.

It's a question of how to share this discovery openly while also making a real stand for values — a stand for discrimination of different qualities in a given area. It's a puzzle. It's difficult because, in our naive way, we want it in a weekend. The Tibetans have had to study for twenty years in a monastery before they could even apply to the Gyuto to practice. The way I see it, it's helpful to maintain esoteric values while leading people to an authentic tradition. Too often people are not really searching; they're just trying out another technique. It's a thrill to sing the harmonics, so to me it's quite understandable that people would tend to stop there, to settle for technique. But the really interesting part comes after the technique is mastered and one realizes that although one sings harmonics, there isn't necessarily a profound effect. Then, like any good art or craft, you use the practice itself as a lens through which your own effort is being expressed.

**Do you give workshops where participants actually sing? And is there a practical side to all**

**this theory?**

Yes, of course. A problem with the number of workshops around now is that many people have received quasi-harmonic teachings. The hunger for technique is paramount in people's minds; they have very fixed ideas about what they want in life. Many are reluctant to invest the time necessary for the real work of listening. Some other workshops propose that with the technique of harmonic singing, students will automatically open to a higher energy. That's impossible. How can one go towards consciousness unconsciously?

**Any kind of singing really does open up the breathing and makes us aware, through the various other senses, that we're here in a different way. Any singing . . . in the shower or whatever. Let's bring back that feeling of the open heart through the singing which is free for everyone. I think the complete**

**person must have this experience.**

That's quite right. I think the voice is one of the vibrations that speaks for the whole person, the whole body, and I think there is a listening that has the same depth. There should be more choirs everywhere — in the neighborhood, in the school, in the church. And that is the base of the pyramid. By the way, getting to this natural first step is rather difficult. We all have blocks around listening and relating to the voice, because we are very conditioned about how to listen, and our voice is very conditioned to normal speech. It's the silent half of creation that we are not in touch with. This outward stream, that is quite resonant in a group of people singing, is a thrilling thing. There is a lack of schematic or formulative knowledge in this area. This kind of work is extraordinarily relative and subtle, what Gurdjieff called the wish . . . the wish to be . . . it can help the wish spread in the body.

**With the ingestion of psilocybin mushrooms or ayahuasca, celestial sounds from one's internal workings are frequently reported. Perhaps we're included in the cosmic symphony when sensitized to that degree. Have you ever experienced anything resembling these sounds internally?**

You mean as if overhearing something?

**Yes.**

Let me answer this by way of a book I read recently.

---

singing a  
regular fundamental  
tone... can produce  
a co-present harmonic  
or overtone partial...  
even several at the  
same time

---

David Bohm writes of music as a manifestation of the implicit order. He says that when you listen to music, the present moment of listening blends with your recent impressions. It's a sort of timestream. And in another part of his book he talks about his vision of creation as the Big Bang, which I proposed renaming the Big Ring. In his view, before the creation there was an ocean of energies of all wave lengths, all possible frequencies, including frequencies much finer than current sciences can see or predict. We can predict the finest degree of matter being something like ten to the minus thirty-three centimeters, and we can observe distances of ten to the minus seventeen centimeters, but in David Bohm's view these are just grosser frequencies. The universe is not empty. It's quite full. It looks empty because we can't perceive what's there. In this pre-creation state, the ocean of energies was in a state of chaotic vibration, and for some reason it began to come into a kind of order — what I would call harmonic order. Bohm says that when frequencies align or summate in that way, it's along the lines of the harmonic series. All these energies began to harmonize the frequencies and produced a cresting wave of sufficient creative intensity to shape the universe.

**Yes: the language and materialization of objects happened with the vibration of “the word”, essentially?**

Right. It means that not only may there be a music of the spheres, but that, in a certain way, music *made* the spheres. That is, a harmonic movement of energy, which is a good definition of music. Therefore the universe is not a random accident, as we tend to think.

In fact, it is the expression of a harmonious process. So, it's quite reasonable that on a cellular level, there would be these ranges of vibrations that we begin to hear when we are quiet enough or when our state of mind has been transformed. I mean, we *are* that. Of course, that's not the state that we always live in; that's why we need to work.

**You spend a lot of time harmonizing within yourself in sound. How harmonious are you in your everyday life?**

Oh, I'm a mess, just like everybody else. I have two young kids., yelling and screaming day-in and day-out.

Of course, my wife Michelle has been a member of the music group for years, so it's not separated from my regular life. I have very intensive musical work that embodies a real contemplative dimension. But it's not a solution. It's an energy which can deepen the questioning one may already have, or wish to have.

My theory is that in contrast to everyday conditioned listening, we have no habits about listening to the harmonic chant. It's something new being said to us in the language of vibrations and therefore it calls for an energy of listening which is free.

**What you're saying is reminiscent of Rudolf Steiner's ideas. Have you had any connection with that school?**

The Steiner people's achievement is in agriculture and products derived from organic sources. The work of Hans Jenny, who was a pupil of Steiner, meant a tremendous amount to me. He lived in the Steiner Community at Dornach near Basel in Switzerland. He was an M.D., a painter, and a physicist, working in visualizing sound vibrations in physical media, liquid, particles, and all sorts of things. I went to Switzerland and got permission to continue his work using the sounds of the harmonic chant. This work has been a big part of a multi-media opera that I've been working on for several years, called “In Light of Sound”. The piece includes live translation of the harmonic sound into visual energy. We formulated the idea of six levels of harmonic chant to unify the field, bringing together an awareness of traditional approaches and our adaptations and transformations of those approaches.

Level one is where the singer maintains a steady note and a steady harmonic. This I use a lot in compositions with the group; where each singer could sing a different note and share the same harmonic, or sing the same note and sing different harmonics, with all possibilities in between.

Level two is where the singer moves melodically and the harmonic moves along at the same time in parallel.

Level three was inspired by the Mongolian Hoomi, or “throat”, singing. The Mongolian and Tibetan music, largely influenced by China, makes almost exclusively pentatonic choices. The singer maintains the fundamental note and sings melodies from that fundamental note's harmonic series. What interests us is a balanced co-presence between the note, what we would ordinarily call the note, and the other harmonic sound. There is no audible gap in the scale of listening. There is a flow between the fundamental frequency and the harmonics.

Level four has the harmonic staying the same, and the notes changing, as opposed to level three where the notes stay the same and the harmonics change.

Level five allows the harmonic to move in one direction, and the note in another.


Level six is best represented by "Hallelujah" on Harmonic Meetings, which was based on the sub-harmonic chant of the Gyuto Monks who sing fundamental tones and then refract them an octave downward. So the actual tone is done at about sixty cycles, producing harmonics from that sub-harmonic fundamental. "Kyrie," the solo on *Hearing Solar Winds*, part one, provides a good demonstration of all levels, except level six.

The recordings can be found through the Harmonic Arts Society. They are located at the Cathedral of St. John The Divine, 1047 Amsterdam Avenue, N.Y.C., New York, 10025. For information about Harmonic Arts activities, write to the New York address or to Harmonic Arts in Paris : c/o BOA. 7 Rue Roger Verlomme, Paris 75003, France, or call: (212) 222-2138.

This interview was recorded by SOUND PHOTO-SYNTHESIS, P.O. Box 2111, Mill Valley, 94942. Write for a free catalogue of books, magazines, audio and video cassettes.

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Modern opera pioneer discusses *1000 Airplanes on the Roof*.

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Former Bay Area composer inspired by studies of spirituality and healing introduces her most recent works.

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Australian composer/performance artist explores her residency at the Exploratorium

**LAWRENCE D. BUTCH MORRIS**  
**Thursday, December 15, 8pm**  
Composer/arranger/cornetist describes the music scene in New York and his latest piece, *Current Trends in Racism in Modern America*.

**LEO ORNSTEIN**  
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**Thursday, October 20, 8pm**  
Avant-garde composer's works span the century. With pianist Martha Anne Verbit

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Glass appears in the Palace of Fine Arts Theatre. All other events are in the McBean Theater, inside the Exploratorium.  
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# THE SHADOW WORLD OF

# HEAVY

# METAL

By Gracie & Zarkov

In accordance with the PMRC guidelines we wish to warn the gentle reader that this article deals with sex, violence, satanism and music theory. It also discusses war, psychosis, Gnosticism, prostitutes, strippers, headbangers and that pimply-faced adolescent next door. Through the magic of music video let Gracie & Zarkov take you on a guided tour. Welcome to The Shadow World of Heavy Metal.

*Rock and Roll is the folk music of the electronic age.*  
--R. McGuinn

Photo: Rob Halford of Judas Priest

*Any musical innovation is full of danger for the whole society and ought to be prohibited. When the modes of music change, the basic laws of a society always change too*  
--Plato

*. . . placing truly awesome technical capabilities in the hands of the most musically limited . . .*  
--L. Bangs

Heavy Metal surges from its beginnings in the 60's into the 90's as the longest continuous style in rock and roll. Despite repeated (and perhaps wishful) declarations of its demise, 1988 has been the biggest year in the history of metal. New bands are being formed and obtaining record contracts by the score. Old bands, once thought dead, have returned from

beyond the grave with some of their best music ever.

We can thank the PMRC for fanning the embers to start a new conflagration because metal thrives on, and is actually dependent upon, overt disapproval and hostility. But when it comes to providing fuel in the form of millions of new teenage consumers, it's hard to overestimate the contribution made by MTV. Heavy Metal has often been denied airplay. Metal bands have relied on almost continuous touring to get their product in front of their audience, traditionally white, middle or working class teenage males. But touring, even 200 to 300 nights a year (not an uncommon regimen for a struggling HM band) will reach only a fraction of metal's million consumers.

MTV now provides Heavy Metal with an electronic fifth column. While dad subscribes to cable for ESPN and mom for HBO, Junior can record the "Headbangers Ball" — three hours of HM video every Saturday night, even if Junior resides in East Jesus, North Carolina or Frostbite Falls, Minnesota. And he doesn't even have to fork over the money he earned at McDonalds to take his first voyage into the shadow world of Heavy Metal video, a world that resembles a crude and non-interactive prototype of the cyberpunk matrix. Once initiated, if Junior is at all susceptible, it's a one-way ticket to Heavy Metal Hell — posters of demons on his bedroom wall, T-shirts with appalling and frightful images, long hair, leather and studs, the Attitude, and, most of all, the music — loud, obnoxious, ugly, objectionable music at all hours of the day and night until his parents cry out in anguish and rage. Another All-American soul lost to Heavy Metal. As *U.S. News and World Report* said rather melodramatically: "By the time



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## Is Heavy Metal satanic? The envelope please.

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drown out a 747. MTV provides Heavy Metal a Platonic cave wall for the projection of this previously occulted knowledge. The graphic presentation ensures that even the stereotypical HM "drooler" cannot avoid illumination.

*... Germanic bardic tradition which  
turned cattle thieves into heroes...*

—Mircea Eliade

*Heavy Metal is an attitude —  
a bad attitude.*

—Helix

Photo above: Ozzy Osbourne

the Twisted Sister or Motley Crue posters go up on the bedroom wall, it's already too late".

What gives Heavy Metal its power to convert teenagers, frighten parents, enrage the media and probably prevent Senator Gore from ever becoming President?

It is powered by nothing less than the Shadow of Western Civilization. Heavy Metal has become a catch-all label for music about the unconscious, unspeakable underside of Western Civilization: its foundations in and continued reliance on war, its denial of Dionysian intoxication (we don't just mean alcohol) as legitimate experience, its refusal to permit the normal range of human sexuality, and its repression of human free-

dom in the name of social control and "good government."

Through solid state physics, one of the crowning achievements of Western Civilization's bright high technology, Heavy Metal can now shout out these previously unspeakable subjects at a volume that will

The Heavy Metal universe is circumscribed by its audience demographics. The traditional white suburban male is gaining urban and female compatriots. But more importantly, the overwhelming majority of fans are teenagers. While most metalheads come from relatively comfortable socioeconomic strata and their problems are not those of poverty and utter social disenfranchisement, the HM audience generally doesn't include the future university graduate. These are your troubled and delinquent youths. These are not the best and brightest, not future yuppies, but kids whose circumstances, parents and institutions have denied their inalienable rights to intense human feeling, freedom of action and expression, and perceived self-worth. Nor are they provided the social and financial rewards that young achievers get in exchange for giving up their freedoms.

Purchasing a record or concert ticket, or even switching on MTV, provides the key to an electronic shadowland where the participant joins like-minded fans and thrills to unfamiliar feelings of acceptance and power. *"People try to take my soul away / But I don't hear the rap that they all say. / They try to tell us we don't belong / That's all right, we're millions strong . . ."* sings Kiss (*Crazy Nights*).

After all, sociobiologically, adolescence itself is a period of imprint vulnerability as well as a time of crises in individual identity and values. Heavy Metal songs are obsessed with such issues as: sex and violence, loss of faith in authority, institutions and religion; or more recently, political helplessness and nuclear war. In these areas the repressiveness and hypocrisy of conventional mores are glaringly exposed to the hypersensitive gaze of hormonally-intoxicated adolescents.

There are two other key points. First, all the old myths are new to a 14-year-old. Deep archetypal issues of heroic action (and its shadow, senseless violence) or romantic love (and its shadow, fixated sexuality) are painfully, personally relevant. Second, since the 60's, the message has been passed on to each generation of kids — "They're lying to us." Mainstream conventional consumer culture is hiding things from us and themselves. Adolescents face a world where

"good" people and "good" nations condone heinous actions such as repression of individual freedom, poisoning the planet, democratic governments financially supporting torture, murder and genocide. It should not appear strange that so many ordinary teenagers,

struggling with personal powerlessness and social hypocrisy, express their bafflement and rage by playing such loud and offensive musical attacks on parents, church and state.

In the *Republic*, Plato's handbook for all future literate authoritarians, he advocated strict control of both the content and, particularly, the types and styles of music lest impressionable youngsters escape proper state indoctrination. This idea is not without foundation. Nor is it surprising that Dr. Bloom, Plato's unworthy second-rate interpreter, expends his most puerile histrionics on rock music and MTV. For music *does* have an ability, unique among the arts, for arousing strong and even overwhelming passions and emotions.

Heavy Metal musical style has greatly developed and sharpened Rock & Roll's historic ability to express rebellion and rampaging sexuality and, more recently, violence, intoxication, and anti-religiosity. Furthermore, the style is uniquely suited to offend middle class sensibilities. Heavy Metal accomplishes this by incorporating various musical sonorities, some of which date back to the Middle Ages, with sounds not possible before the 60's — controlled electronic noise.

***A symphony should contain the entire world***

—Gustav Mahler

***Heavy Metal is the totality of existence***

—Rob Halford, Judas Priest

The usual complaint is that Heavy Metal isn't music — just noise and distortion. While this is true on the surface, HM uses noise as a musical technique in a manner similar to the use of orchestration, color and timbre in classical music. Without its noise and awesome volumes, a Heavy Metal band would most resemble a string quartet with a drum kit. After all, a classical symphony is formally identical to a string

---

Wagner  
and Strauss  
routinely dealt  
with selling one's  
soul to the devil,  
perverse sexuality,  
violence, black  
magicians --  
stock subjects  
of Heavy Metal  
video.

---

quartet, distinguished primarily by orchestrated color and texture. Deafening, chest-crunching volume makes a live Heavy Metal concert a form of physical assault. Analyzed fractally, the distortion, feedback and noise so characteristic of HM have a dimension different from those of voices, natural sounds or acoustic instruments. Literally thousands of tones all across the sonic spectrum are generated by distortion. These tones don't have the simple harmonic relationships of acoustic musical overtones. In the case of a complex multi-amp, multi-instrument HM performance, they are distributed in a mathematical pattern almost approaching randomness. A random spectrum

is the acoustical definition of noise.

Actually, in Heavy Metal the "noise" is not random, it's carefully controlled by the instrumentalists. The noise *becomes* the music. If one is familiar with the idiom, it's possible to enjoy a musical texture as rich, if not as conventionally beautiful, as that of a symphony orchestra. To the unsympathetic, it is sonic mud or painful noise. However, this was the Viennese musical establishment's opinion of Richard Wagner's music in the last century. Just as Wagner used "objectionable" sound to convey his themes, Heavy Metal uses its uniquely objectionable style for conveying its intensely objectionable content. By

now, Heavy Metal has borrowed such a wealth of musical techniques that it has created a language approaching the minor Romantic composers in expressiveness. Yes, it lacks the formal breadth of classical music and therefore is only about six minutes long. We would rather listen to, and we get more pleasure from, six minutes of the Blue Oyster Cult, Metallica, Megadeth, Iron Maiden, Motorhead or Judas Priest than 30 minutes of Anton Reicha. And while its musical techniques are usually self-taught (stolen) and quite simple, Heavy Metal structures are far more complex than the ancient Greek music Plato feared so much.

Heavy Metal's basic musical method relies on "the power of the chord" — or more precisely the Power Chord. But since power chords rarely contain the third of the triad, they're not chords at all; they're modal intervals. By alternating between adding the major and minor third, this basic technique offers quick modulations not generally possible in Classical music, with its formal theories of harmony. While modal theory, from Gregorian Chant onward, developed into a complex theoretical system, the concept of a mode is quite simple. It is a sequence of notes with a defined



Photo: Angus Young of AC/DC



ending tone. It can be thought of as a melody built from pre-defined intervals. In the language of Rock, this approximates: licks build riffs, riffs build sequences, sequences build songs. A particular twelve-bar blues progression with its endless I-I, IV-I, I-V, V (IV) I sequences can be thought of as a predetermined way to harmonize that mode, giving it its "bluesy" sound.

The chord, as such, dates back to 1600 A.D. In Johann Cruger's *Synopsis Musicae*, he described the emotional and poetic content of various chord progressions, an interpretive content that has remained surprisingly constant over the intervening 400 years. Classical music in the 18th and 19th centuries concentrated on diatonic major and minor harmonic development, along with formal techniques for creating large scale works, and often used melodies so simple that Kiss wouldn't touch them. Romantic fashion often used other modal scales to evoke Gothic or occult atmospheres. Liszt and Paganini were masters of this technique. Through Liszt's technique of thematic transformations (the best example being the B minor *Piano Sonata*), a quick succession of moods is made possible by moving deftly between the diatonic and the modal. This technique, greatly simplified, is beloved of Heavy Metal guitar heroes, who usually borrow from Paganini, since he translates to guitar more easily. It serves Heavy Metal well because the whole song takes less time than the harmonic development of a symphony movement. Combined with the heavy back beat, the fixed chord progression of blues-based early rock & roll was in stark contrast to the simplistic catchy melodies and diatonic hooks of '50's pop harmonies. But strict blues is a very limiting form, as is strict dodeca-phonic composition. As rock & roll grew and matured, new sequences, intervals, and noise colorations were added.

While they used simple chords, much of the Beatles' freshness came from their unexpected and novel sequences inspired by British Music Hall and British folk music (with a small f). Folk music (with a big F) came into rock & roll when the Byrds used vertical sonorities of fourths and sevenths. Harmonically ambiguous modal fourths offer new possibilities for modulation. These fourth intervals, harmonized as the tritone and considered the "devil in music" since the 16th century, give Heavy Metal "instant occultism." Similarly, John Coltrane and Miles Davis made exten-

sive use of modal fourths during the late 50's, freeing jazz from earlier harmonic constraints. The Byrds were the first group to make extensive use of distortion as music. As Psychedelia blossomed, distortion, high volume, country, Middle Eastern, and Indian sequences (ragas are modal compositions) enriched and transformed rock & roll into rock. During this period of fertile experimentation, the Rolling Stones reached back to the 12th century trope from the Mass for the Dead, the *Dies Irae*, and combined it with a sitar drone in *Paint it Black*.

Out of the "smoky wisps of psychedelia" arose Metal, with such stupefying transitional works as *In-A-Gadda-Da-Vida* and the oeuvre of the Vanilla Fudge.

Throughout Metal's heyday in the 70's, innovative groups added now-standard techniques. (For a history of Heavy Metal see *Heavy Metal Thunder* by Philip Bashe.)

Heavy Metal continued to expand its range by gradually stealing sequences and ideas from wherever it could; it's a folk art and, unlike "high" art, you don't go to school to learn it. You listen and imitate. Then you throw in some ideas of your own — a sequence from a horror movie, a chord progression from Paganini, and great bleeding chunks from your favorite band's last album. This is how Metal expanded its repertoire of techniques.

Punk helped extinguish some of metal's dinosaurs who were too drug-sodden to notice the '60's were over. Punk also stripped Rock back down to basics, allowing the "New Wave of British Heavy Metal" — Iron Maiden, Motorhead and Judas Priest (the latter two have both been called the loudest and worst bands in the world by *Creem*) to add new harder-edged sounds. The Punk/Metal bifurcation was always more political and commercial than musical. In the '80's, punk thrash turned into thrash metal right here in the Bay Area, via Metallica and its various offshoots, most notably Megadeth. Punk's speed and raw power returned to Metal with a vengeance. Many new Heavy Metal bands are combing the classical repertoire of the 18th and early 19th century in search of new riffs.

Change in Heavy Metal is now limited by its audience's inherent conservatism. If a band moves too far, too fast, fans desert it. For example, the catcalls and poor sales that greeted Judas Priest's radical shift in

(continued on page 90)

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## The divine spark of humanity is trapped in the undeniably ugly clay of Angus Young.

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# The Magic of Music: Maps & Legends

By Rich Young

## The Liberation of Sound

Despite the superficial appearance of stagnation in pop music, modern music is very much alive. The twentieth century has experienced the liberation of sound. Seemingly every conceivable permutation of sound and music is available to post-modern humans — from the real time noise of daily living to Muzak, Top 40, “classical”, folk, new classical, ethnic, world jazz, blues, gospel, electronic, heavy metal, punk, new age and industrial/noise musics. Much of this explosion is attributable to technological development. Technology, which ensured the dominance of Western culture, ironically contains the seeds of its disintegration through dissemination of thought-forms of non-Western cultures. Current trends (e.g. the ethnobeat invasion) are leading to a new world music as well as a renewed understanding of music’s purpose.

## And the Wind Began to Howl

In the first half of the century, renegade composers and musicians realized that the creative possibilities in the dominant modes of expression — harmony and consonance in the equal-tempered scale — had been exhausted. They began experimenting, much to the dismay of the patrons.

Not coincidentally, there were new developments in popular music. Jazz, folk, blues and rock struck responsive chords among the populace. This music, which gave a voice to oppressed peoples, was labelled degenerate, or “Devil music.” This name-calling reaction is not surprising. The successful propagation of a minority groups’ music does, indeed, signal a shift in social relations.

## In Search of the Lost Chord

Meanwhile, more studied music was coming to grips with the evolution of its roots. In a recent interview in *Music Technology*, Richard Horowitz humorously summarizes what happened:

First of all, they destroyed the Gothic Cathedral, and created equal temperament, and the next thing you know there were skyscrapers. That’s why people in the West have bad tempers. People think that if you have equal temperament, you’re going to



have good temperament. But that's not true, because equal temperament makes people unhappy . . . It's like a reflection of the destruction of that whole cosmology; it's not just equal temperament — it's that whole world of all those subtleties between all those notes and all those pure architectural spaces.

Slowly, modern musicians and composers began integrating heretofore foreign ideas into their music. Historians and ethnomusicologists rediscovered antique musical forms. Dialogue about the origin and purpose of music expanded.

### Do You Believe in Magic?

The earliest evidence of music may be the 20,000-year-old petroglyph at Trois-Freres depicting a masked hunter in animal skins playing a musical bow in an attempt to still nearby animals. In many primitive cultures, the sounds of musical instruments represented the voices of the spirits. In later civilizations, myth, ritual, and music were interwoven into complex expressions of the sacred.

The latest major religion to arise, Islam, is based almost entirely on a tradition of sacred sound. Islam's sacred scripture, the Qu'ran, is literally the "recitation" of the revelation given to Mohammed by the angel Gabriel. To safeguard the recitation, which should itself evoke the moment of revelation, complex rules were developed to constrain individual musical garnishing. One reported excess was that of a "reciter reciting with so little understanding that he evoked a temptingly beautiful image of hell-fire." (Nelson, 1985).

### Backwater at the Edges of Time, or Up on the Sun #19 and #35

The revolution in early twentieth century classical music led to the exploration of atonality and dissonance. Composers like John Cage and Harry Partch, searching for new definitions of music, made up their own rules. Though interesting in theory, many of these experiments were unlistenable. Faced with these "difficult" musics, the listening audience retreated to the safe familiarity of Baroque and Victorian age fantasy. Then, with the advent of the cultural revolution of the 1960's, advanced music began to transform into something far more approachable and pleasing. A generation of young, highly-trained musicians began to open themselves to the other-worldly sounds of the world's vast panharmonium.

Since that time, composers and musicians have been continuously expanded the boundaries and forms of sound. The study of the harmonic overtone series has provided a fundamental node of activity. Its exploration provides more precise analogies to the richness of being than mere words. The multiple realities of alternative tuning systems have opened up extraordinary vistas of seemingly infinite potential: from music therapy to superlearning with Baroque (It's the beat!), from swirling Deadheads to Tibetan bells, from

Shamans' drums to New Age "space music," enquiries into the healing properties of sound are "setting souls free."

A rich and savory blend of "possible musics" is now available to the curious listener. If you're only hearing modern rock, sounds of the sixties, rap, metal or hardcore punk, you're missing most of the parade. Presented below are some suggestions as to where to begin your foray. May the bird of paradise fly up your inner ear!

### Sounds

John Coltrane. The Village Vanguard records are great.

**The Indestructible Beat of Soweto** (Shanachie) The best collection of Zulu jive.

Foday Musa Suso and the Mandingo Griot Society **Mandingo** (Celluloid) Exuberant blend with electric kora.

**WOMAD Talking Book** series — Introduction, Europe, Asia, Africa. Comes with music and text. WOMAD Foundation, 3rd floor, 85 Park St., Bristol BS1 5JN (0272) 29042.

**Heartbeat Soukous** (Earthworks/Virgin) Collection of sparkling guitar music based in Zaire.

**Abdel Aziz El Mubarek** (Globestyle) Sudanese swing.

**!Oye Listen!** (Globestyle) Collection of modern Latin music featuring salsa and cumbia.

**The Master Musicians of Jajouka**

(Adelphi) Moroccans with that old-time religion.

**Village Music of Bulgaria** (Nonesuch) Ireland meets Egypt.

**Le Mystere des Voix Bulgares** (Nonesuch) Incredible womens' choir.

Susan Deihim and Richard Horowitz **Desert Equations: Azax Attra** (Crammed) The flip side of Diamanda Galas.

**The Gyoto Monks** (Windham Hill) Best recording of Tibetan harmonic overtone chanting. Similar techniques are used by Mongolian and Eskimo shamans (e.g., *Mongolia* on Ocora).

Mickey Hart, Henry Wolff, Nancy Hennings **Yamantaka** (Celestial Harmonies) The Tibetan god of death with Himalayan bells and gamelan gently guides a tour of your emotions.

Uakti **Uakti** (Verve) Exotic and experimental instrumentals from Brazil.

**From the Pages of Experimental Musical Instruments, Vol.1** (cassette) EMI, Box 784, Nicasio, CA. 94946.

Michael Brook with Brian Eno and Daniel Lanois **Hybrid** (EG).

Lamonte Young **The Well-Tuned Piano** (Gramavision). "This is it. The big one," by a mentor of the Velvet Underground. The payoff in this 5 hour chore is in the harmonic

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The twentieth century has experienced the liberation of sound. Seemingly every conceivable permutation of music is available to post-modern humans.

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clouds.

**The Sounds of Just Intonation** Two cassettes with 64 pages of documentation available from the Just Intonation Network.

**The Science of Sound** (Folkways). Produced by Bell Labs in 1960.

**Holophonics Live!** Amazing sound effects, pre-Columbian instruments, and a symphony in 3D. Brain/Mind Bulletin, Box 42211 LA, CA 90042.

Negativland **Escape from Noise** (SST).

Man with his tape splicer on fire wants to get you into the hole he's in.

R. Carlos Nakai **Sundance Season** (Celestial Harmonies) Native American flute music with drums, chants, rattles, and eagle bone whistle.

Ravi Shankar **Introduction to Indian Classical Music with Musical Examples** (cassette). Ravi Shankar Music Circle, 7911 Willoughby Ave., LA, CA.

**Music of the Pygmies** (Ocora). Protean yodels and polyphony.

#### Organizations/Publications

**Ear** Magazine, 325 Spring St., Rm 208, NY, NY. 10013. Monthly updates on the East Coast new music scene. See special issue on sonic healing.

**Experimental Musical Instruments**, Box 784, Nicasio, CA. 94956. "For the design, construction and enjoyment of new sound sources." **Factsheet 5**, \$2 from Mike Gunderloy, 6 Arizona Ave., Rensselaer, NY. 12144. Unbeatable guide to offbeat mags, especially fanzines.

**Interval**, Box 8027, San Diego, CA. 92102. Exploring the harmonic series with new instruments and scales. Just Intonation Network, 535 Stevenson St., SF, CA. 94103. Publishes *I/I*, holds monthly meetings, and sells educational materials.

New Music Distribution Service, 500 Broadway, NY, NY. 10012. Distributes avant-garde recordings of every conceivable type.

**Options** Magazine, Sonic Options Network, 2345 Westwood Blvd. #2, LA, CA. 90064. Great all-around coverage of alternative music.

Visual Music Alliance, 8435 Geyser Ave., Northridge, CA. 91324. Promotes the new art-form through screenings and seminars with film and music professionals. The Creative Film Society, which sells and rents avant-garde and visual-music classics is also at this address. A cultural treasure!

#### Talking about Music is the Most Boring Thing in the World

Joachim-Ernst Berendt, **Nada Brahma: Music and the Landscape of Consciousness**, 1987.

Manfred Clynes, ed., **Music, Mind and Brain: The Neuropsychology of Music**, 1982.

Ronnie Graham, **The De Capo Guide to Current African Music**, 1988.

Peter M. Hamel, **Through Music to the Self**, 1976.

Hans Jenny, Cymatics: **The Structure and Dynamics of Waves and Vibrations**, 1967 and 1974, Basil: Basilius Press (Out of print. Get the videos from Macromedia, P.O. Box 1223, Brookline, Mass. 02146)

Elizabeth May, (ed.) **Music of Many Cultures: An Introduction**, 1980. Handy collection of ethnomusicology pieces.

Ernest McClain, **Meditations Through the Qu'ran**, 1985. Explores sacred architecture through number and tone. See also his earlier, more difficult books on the Hindus and Greeks.

Thomas Rossing, **The Science of Sound**, 1983. Introductory textbook of acoustics covering physics, psychology, speech, hearing, music, architecture and technology.

Gilbert Rouget, **Music and Trance: A Theory of the Relations Between Music and Possession**, 1985. Illuminating because it asks the right questions but materialist bias results in rigid, predictable conclusions. Very French.

Dane Rudhyar, **The Magic of Tone and the Art of Music**, 1982.

John Schaefer, **New Sounds: A Listener's Guide to New Music**, 1987. Excellent review guide of current trends in electronic, new classical, world music, unusual folk, and more. Lists labels and distributors.

David Seay and Mary Neely, **Stairway to Heaven: The Spiritual Roots of Rock 'n' Roll**, 1986. Waiting for a messiah with a guitar.

Paul Williams, **The Map: Rediscovering Rock and Roll** (A Journey) Founder of *Crawdaddy* on the energy of the moment.

John Whitney, **Digital Harmony: On the Complementarity of Music and Visual Art**, 1980. (Byte Books).

Joachim-Ernst Berendt, Nada Brahma: **Music and the Landscape of Consciousness**, 1987

Yehudi Menuhin and Curtis Davis, **The Music of Man**, 1979. Good introductory survey with great pictures.

Rogan Taylor, **The Death and Resurrection Show: From Shaman to Superstar**, 1985.



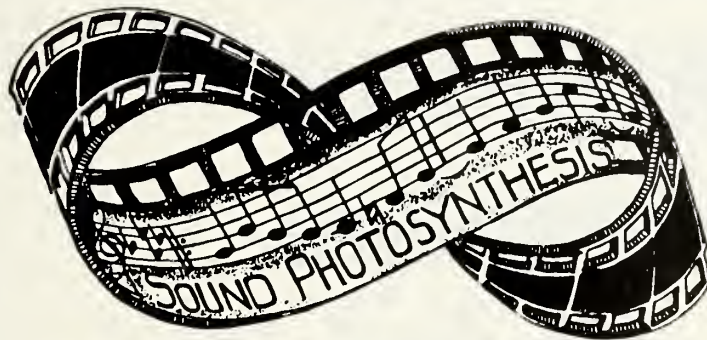
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# Load & Run High-tech Paganism- Digital Polytheism

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By Timothy Leary & Eric Gullichsen

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*We place no reliance  
On virgin or pigeon;  
Our Method is Science,  
Our Aim is Religion*

— Aleister Crowley,  
mot from the journal "Equinox"

*People jacked in so they  
could hustle. Put the trodes  
on and they were out there,  
all the data in the world  
stacked up like one big  
neon city, so you could  
cruise around and have a  
grip on it, visually anyway,  
because if you didn't, it  
was too complicated, trying  
to find your way to a par-  
ticular piece of data you  
needed. Iconics, Gentry  
called that.*

— William Gibson,  
Mona Lisa Overdrive

*Information is more basic  
than matter and energy.*

*Atoms, electrons, quarks  
consists of bits —*

*Binary units of  
information*

*Like those processed in  
computer software*

*And in the brain.*

*The behavior of these bits,  
and thus of the universe,*

*Is governed by a single  
programming rule.*

— Edward Fredkin



## A UNIVERSE OF BITS AND BYTES

Major historical accomplishments of the 20th century included the personalization and popularization of Quantum Physics, an acceptance of self-reference and circular causality in systems of mathematics and psychology, and the resulting development of cybernetic society.

This philosophic achievement, which has dominated the culture of the 20th century was based on a discovery by nuclear and quantum physicists around 1900, that visible-tangible realities are written in a digital assembly language we could accurately call "basic".

It turns out that we inhabit a universe made up of a small number of elements-particles-bits which cluster together in geometrically-logical, temporary configurations.

The solid Newtonian Universe rested upon such immutable General-Motors concepts as mass, force, momentum, and inertia, cast into a Manichaeic drama involving equal reactions of good vs. evil, gravity vs. levity, entropy vs. evolution and coerced by such pious Bank-of-England notions as conservation of energy. This dependable, static, predictable, universe suddenly, in the minds of Planck/Heisenberg became digitized, transformed into shimmering quantum screens of electronic probabilities.

Up here in 1988, we are learning to experience what Neils Bohr and Werner Heisenberg could only dream of. The universe, according to their cyberdelic equations, is best described as a digital information process with sub-programs and temporary ROM states, megas called galaxies, maxis called stars, minis called planets, micros called organisms, and nanos known as molecules, atoms, particles. All of these programs are perpetually in states of evolution, i.e. continually "running".

It seems to follow that the great intellectual challenge of the 20th century was to make this universe "user friendly," to prepare individual human beings to decode, digitize, store, process & reflect the sub-programs which make up his/her own personal realities.

## NOBODY KNEW WHAT THESE GUYS WERE TALKING ABOUT

The chain of events that elevated us to this new genetic status, HOMO SAPIENS CYBERNETICUS, began around the turn of the century.

Physicists, we recall, are traditionally assigned the task of sorting out the nature of reality. So it was the quantum philosophers who figured out that units of en-

ergy/matter were sub-atomic bits of programmed information that zoom around in clouds of ever-changing, if/then, start/stop, off/on, 0/1, yin/yang probabilities in clusters of pixels, up-and-down recursive stairways of paradox.

When they started out, no one understood what these guys were talking about. They expressed their unsettling theories in complex equations written on blackboards with chalk. Believe it or not, these great physicists thought and communicated with a neolithic tool — chalk-marks on the wall of the cave. The irony was this: Einstein and his brilliant colleagues could not experience or operate or communicate at a quantum-electronic level.

Imagine if Max Planck pottering around in his mathematical chalk-board had access to a video-arcade game! He'd see right away that the blips on *Centipede* and the zaps of *Space Invaders* could represent the movement of the very particles that he tried to describe in dusty symbols on his blackboard.

## A WILD AND SCARY HALLUCINOGENIQUE

Now let us reflect on the head-bursting adjustment required here. The relativistic universe described by Einstein and the nuclear physicists *is* alien and terrifying. Quantum physics is quite literally a wild, confusing psyberdelic trip. It postulates an Alice-in-Wonderland, Sartrean universe in which everything is changing. As Heisenberg implied: nothing is certain except uncertainty. Matter is energy. Energy and matter are temporary states of info-bits, frozen at various forms of acceleration.

This digital universe is not user-friendly when approached with a Newtonian mind. We are just now beginning to write a manual of operations for the brain and the universe, both of which, it turns out, are digital galaxies with amazing similarities.

People living in the solid, mechanical world of 1901 simply could not understand or experience a quantum universe. Dear sweet old Einstein, who couldn't accept his own unsettling equations, was denounced as evil and immoral by Catholic bishops and sober theologians who sensed how unsettling and revolutionary these new ideas could be. Ethical relativity is still the mortal sin of religious fundamentalists.

## THE CYBERPUNK AS MODERN ALCHEMIST

The baby boom generation has grown up in an electronic world of TV and personal computing screens. The cyberpunks offer metaphors, rituals, life styles for dealing with the universe of information.

*(continued on page 82)*

# CYBER TERRORISTS VIRAL HITMEN

By Michael Synergy

“Anyone caught having anything to do with viruses should be roasted on a spit for sixty hours, their flesh torn off in strips with pliers, their families taxed into non-existence, and *then* they should be taken out and shot”

--attributed to Bill Atkinson

Why would a well-fed software sultan even take note of an infidel hacker's existence, let alone want to extinguish it with such fury? *Computer viruses*. Computer viruses are the number one health alert. The industry is quaking in its boots. All my high-tech sources are guarded when my questions turn to viruses. They don't want to talk on their cellular phones. They don't want to be quoted. Their eyes travel nervously back and forth like caged animals. They have other appointments. They're out to lunch.

There's only one person I know with anything approaching full knowledge *and* full candor--Doktor Mabuse. I wait for his call; he always calls *me*. I don't even have a number for him. The damnable man is so slippery and theatrical...I shake my head as I stroll down Telegraph Avenue trolling, today as always, the used bookshops for overlooked lunkers lurking on unweeded lower shelves. There's a commotion in front of the "Med" - dogs growling...or *is* that a dog?

A yard-tall quadruped covered with tufts of orange fur in leopard-spot pattern set against bare black hide is mounting a red-bandannaed generic Grateful Dead dog with a multicoloured macrame bracelet around its left forepaw. Standing nonchalantly by, one foot resting on a skateboard, is a tall man sporting paisley silk boxer shorts, kneepads, and long Pernod-tinted hair twisted into a tricom fool's cap array. He is talking to a well-known zealot-eyed leather-vested denizen of Telegraph who ekes out a living selling crystal-powered time machines driven with three-and-a-half inch floppies.

"The tesseract, you see, er, excuse me...," the over-aged thrasher turns as the amatory growling begins to drown out his voice. "Hitler, I'm going to have to get you an *inflatable* dog..."

There is no mistaking him.

"Grüss Gott, Herr Doktor!"

"Ah, Morgan! We were just going into the Med; won't you join us?" We sit at a round marble-topped table beneath the 'NO DEALING' sign. "You look different today, Doktor."

"It would be more surprising if I *didn't* look different. All part of my head-hunting. I've been recruiting talent among the 'skate trash,' as they dub themselves. Amazing reflexes they possess--it doesn't matter whether they're on a skateboard or a keyboard. Several rising stars."

I broach the subject of viruses as Mabuse stirs two packets of bright green powder into his glass of Calistoga mineral water and dumps a handful of pills from a hammered-silver pillbox. I peer intently at the de-



sign--a pyramid with a shining eye.

"Well, the West German hacker cabal known as Chaos distributed a 'how-to-make-a-virus' routine for those too deficient to design their own, but that's a crude, easily-thwarted stab for anarchy. Viruses, like suits and shoes, are best custom-made. A much more interesting and elegant virus than the mass-market Chaos model, is one which a protégé of mine released recently. Manipulation of behavior is the best hack. The virus is *subliminal*. It displays text for a bare fraction of a second."

"What's the message?"

"Oh, it alternates between 'DO WHAT THOU WILT' and 'QUESTION AUTHORITY'"

He tosses the handful of pills into his mouth and downs it with the emerald elixir.

"Mind if I ask what kind of pills those were?"

"Ach, sicher!...Prozac, chlorella, Hydergine..." He glances up and catches my blank expression. "Prozac potentiates neurotransmitter production and has protein-binding characteristics which are used to full advantage by taking it concomitantly with chorella which provides nineteen of the twenty-two amino acids. Hydergine allows dendrites to become branchier...which reminds me, I know whom you should talk to--Michael Synergy, one of my most able apprentices. He begged me, when he was a mere computer whelping, to, uh, 'modify' him if it would enhance his hacking."

"Modify him?"

"Well, I gave Synergy the full treatment: wrote him prescriptions for *all* the smart pills; gave him *all* the cybernetic initiations; I even backed him up on a mainframe in case the NSA should get to him and reformat him. Synergy has an augmented nervous system, so, while he's chronologically young, there's a density to his experience which belies his years. He has, shall we say, a higher baud-rate than most and a much fatter interface."

"What's his story?"

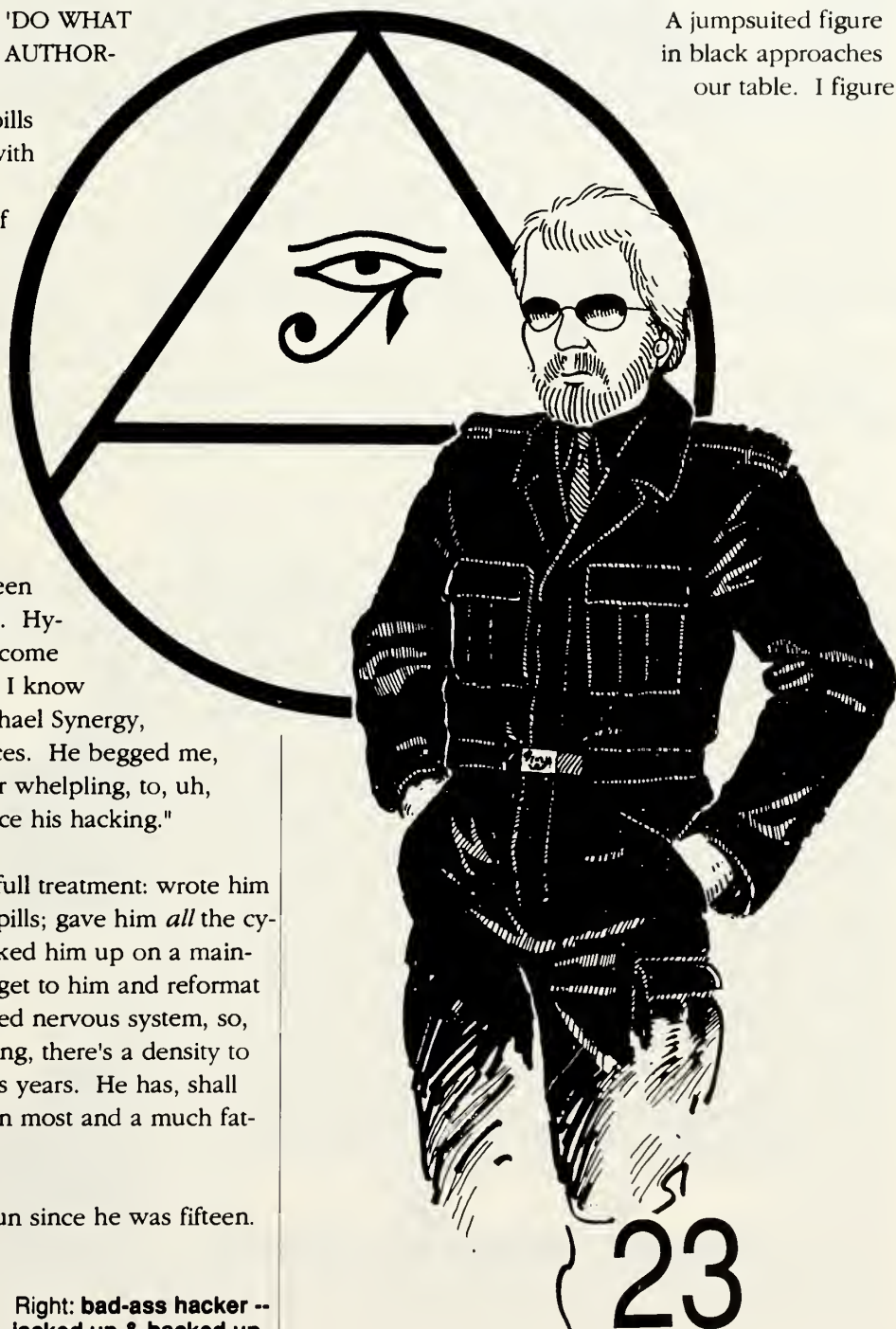
"He's worked as a hired gun since he was fifteen.

He's even worked for the government sporadically, but in his heart of hearts, he's an anarchist dedicated to the reevaluation of all values... "

"Sounds *terribly* earnest."

"Oh, no--he's a terrific prankster--keeps us all amused. At the age of sixteen, while under Crowley's spell, he shaved his head, filed his teeth, and created the 'DO WHAT THOU WILT' virus. He released it at the University of Chicago, allowing time for it to disable hard disks, and then went round offices and labs offering to exorcise the computers with a 'love ritual'...but here he comes now..."

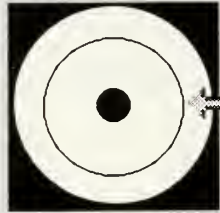
A jumpsuited figure in black approaches our table. I figure



Right: bad-ass hacker --  
jacked up & backed up.

**Figure 1**

The directory is the roadmap to the files  
—file name, type, size, creation date, disk location



directory track - centrally located

Table layout of disk directory



used storage areas  
available free space

the café, he's written the complete text of the following article. In stunned admiration, I give you the Over-man!

—MORGAN RUSSELL

If the computer virus epidemic continues at the present rate, the prognosis for our computer reality is, as they say, guarded. Get on all your usual networks and e-mail your last words.

What is afflicting us? Something uncannily anal-

I need another shot of espresso. I get up from my seat and, after the formalities, say, "I'm going back for another doppio cappuccino. Anyone for a coffee or dessert?"

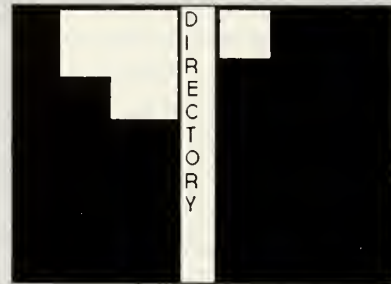
"I don't allow myself to ingest caffeine or sugar; it disrupts my delicate neuropeptides," Synergy says with Spocklike restraint. Practices which are not wholly life-enhancing he simply jettisons. *I'm* impressed.

By the time I return to the table, Synergy has made several diagrams of viruses. And before I leave

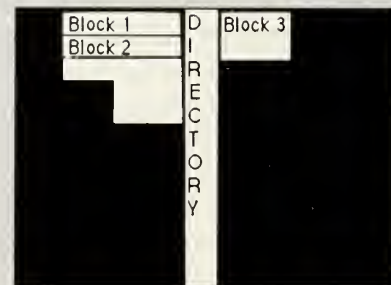
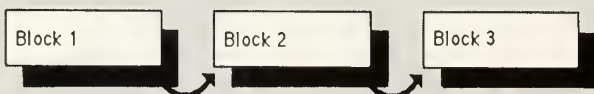
ogous to AIDS: rebel programs that infiltrate via the security systems themselves. Simply put, computer viruses are highly optimized, highly specialized operating systems. They monitor traffic through storage and interface, analyzing the signals, looking for the specific patterns that will trigger them into action. What's it going to be then? Bloody chaos? Or just a bit of the old self-replication, all lying snug in the host until the chance comes to forward a few over the lines, or to pack some off on the floppy. They don't mind a delay

**Figure 2**

Sector allocation interleaving allows dynamic resource management.



Since DOS functions are 'black boxes' (transparent to the user and potentially to the programmer), disk storage need not be contiguous.



until activation, and their maker can be far away when they do superhero out. This is the ideal weapon for electronic terrorism and espionage, the equivalent of a suitcase-sized fusion device.

### VIRUS TAXONOMY

Computer viruses can be only loosely classified by their 'host' computer system. Microcomputer viruses, for example, can vary across extremes--from 'messenger viruses' which display text or graphics (from subliminal to annoyingly persistent), through 'hunter/killer' viruses which seek and destroy targeted files or data, to 'maximum damage' viruses which destroy all stored data and then try to ace the hardware.

Hardware damage is possible with an insider's knowledge. The video scan rate of a VDT can be accelerated to produce overheating and potentially (in some machines, inevitably) a fire. Using recalibration routines, a virus can ram the disk drive head into the end of the alignment bar, concussing it, and maybe add some bonus points via the computer's resonant vibration.

Damage-oriented viruses need not delete files or reformat disks--they can be more subtle and insidious. Lotus data files could be shaved, the data skewed; any computer-stored data could be systematically changed. Code changes could ruin the usefulness of a software package: publishing software and word processors could lose the ability to format quality printing. Other programs are susceptible to implanted 'bugs' intended to make a customer dissatisfied, uncomfortable or downright furious with a product.

All the microcomputer viruses can live happily in minicomputers (workstations) and mainframes, but the larger machines can additionally incubate varieties suited only to their spacious environment: the 'tapeworms'. Tapeworms are designed to penetrate and suborn the computer's security systems and absorb data. Proper tapeworm viruses can pyramid themselves, expanding and replicating across user accounts and networks.

**Figure 3**

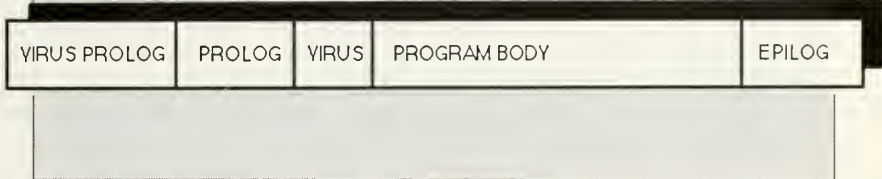
- a program is encapsulated to define start and finish
- the prolog and epilog contain important information such as where to load the file to in memory, file length, where to begin program execution, checksum
- data storage has not evolved much beyond papertape



**Figure 4**

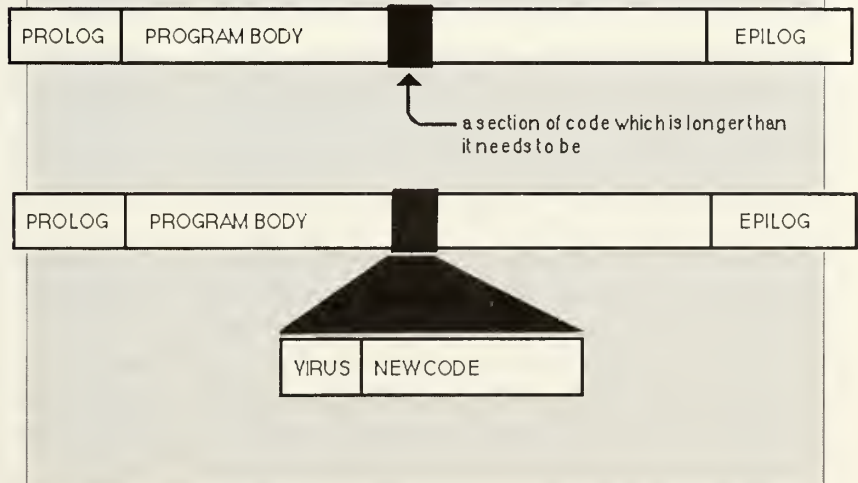
a 'salami' attack inserts the virus into the file and changes the prolog data to mask its presence.

(relative sizes shown here are not meant to be significant)



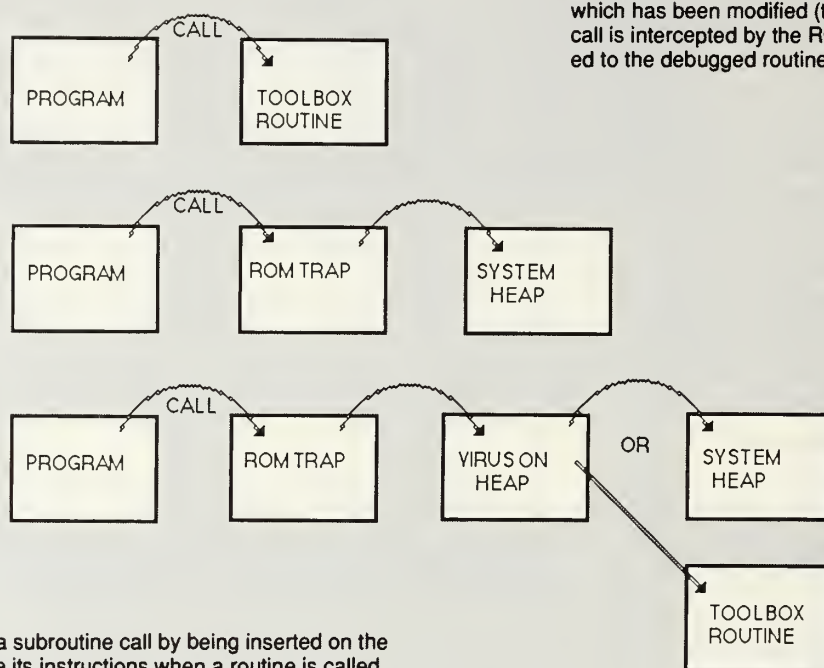
**Figure 5**

an optimization attack, in which the virus replaces non-optimized code with the virus and a shorter routine, thus not changing the overall file length or functionality



### SYSTEMS ANATOMY

To understand viruses, you must understand how disk operating systems work. When a computer is started up by turning the power on ('coldbooted'), the

**Figure 6**

a program calls a Macintosh tool box routine which has been modified (to repair a bug), the call is intercepted by the ROM trap, and redirected to the debugged routine in the system heap.

a virus can intercept a subroutine call by being inserted on the system heap, execute its instructions when a routine is called, then pass the call off to the debugged code on the system heap or the original tool box routine

disk drive controller (ROM) 'bootstraps' (loads a large program into memory by loading successively larger sections of code which then load others) the operating system into RAM and begins execution at the designated starting point. It is important to note that an operating system is a program just like all others stored on disk. Disk organization is a set of concentric circles ('tracks'), subdivided into pie-like sections ('sectors'), on which the data is stored. To keep track of important information about stored data (type, name, size, creation date, disk location of first sector--see figure 1), a directory track is needed, usually located in the middle of the disk. When a file/program is loaded from disk, it is again bootstrapped. This is due to sector allocation interleaving ('soft partitioning'--see figure 2) which allows dynamic management of non-contiguous disk storage space. A program is stored on disk much like a glorified paper tape. There is a prolog, which identifies the start of the file, the length, and the point in memory it is to be loaded to. The body of the program follows, and it is immediately followed by the epilog, signalling the end of the program and a checksum to insure an accurate load (see figure 3). Structured in such a way, the DOS and files stored under it are open to a viral attack.

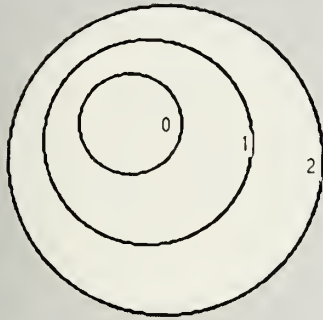
### ICING THE BODY ELECTRIC

A virus which finds an uninfected program can use a variety of ways to insert itself. A 'salami' model is the most common: the virus splits the program and inserts itself at a convenient point, usually at the very beginning of the code (see figure 4). A more subtle approach is possible, where the virus inhabits only certain programs (such as operating systems) by replacing a section of seldom-used code, or replacing a section of sloppy code with a tighter version coupled with the virus code (see figure 5). Buffer areas are also easy targets for a virus to inhabit.

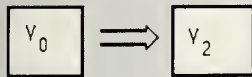
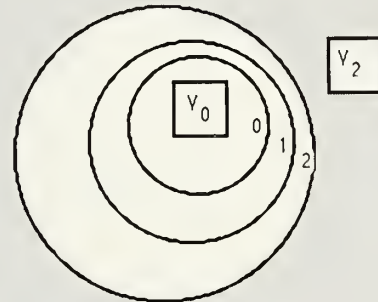
Viruses can do their damage only if they have control of the processor. As DOS is automatically executed at boot, viruses with hooks in the OS are best able to do damage. Programs with viruses injected spread the infection, since they can be exchanged via disk or modem. The initial 'vector' by which a virus invades a computer is usually some attractive program such as a utility (an anti-virus program for instance), a game or some irresistible computerized pornography. In IBM-DOS, the system utilities are standard programs--always present, and identical across DOS versions; an easy vector. On the Macintosh, the ROM trap reroutes toolbox calls and redirects them to the

**Figure 7**

The Multics model of security – the closer to the core (depth 0), the greater the abilities of the user and programs, and the more 'sensitive' the information. Security rings stop the flow of data from secure rings to unsecure rings.



A virus replicates when used by a user with access to inner, more secure, rings.



transmission pathways could be the protection bits on a file (such as a mailbox) which both viruses can access, acting as a data channel.  $V_0$  can transmit data it now has access to (such as password files or confidential data) for use by  $V_2$ .

system heap, wherein viruses may lurk (see figure 6).

Mac viruses can be whipped up from the system BIOS (IBM Reference Manuals) and the Macintosh toolkit, released as a limited concession to the 'open' architecture philosophy. The 'closed' system architecture, also present in both machines, complicates matters. Systems calls are 'black boxes' and great sections of both machines are undocumented, allowing technically savvy programmers to create undetectable viruses that exploit this obfuscation for their own protection. 80286 and 80386 architecture will also allow viruses to remain undetected through the virtual-machine capabilities of the chips. If software were to run in the 'protected' mode, viruses would be much more difficult to implement on the IBM-PC line, but DOS cannot be run in the 'protected' mode. Operating systems are open enough to allow virus designers to create viruses, but closed enough to cause a 'security through obfuscation' for the viral code and prevent easy detection of infection.

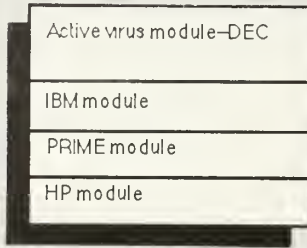
Viruses can commit acts of vandalism, or engage in industrial espionage or military incursions. The battle between corporations for market share has led to the use of viruses as an espionage tool. Large computer software manufacturers may target the software

of public domain or 'shareware' authors to eliminate the competition. Hunter/killer viruses are being used to seek Microsoft product and Lotus data files and erase them. Microsoft and Lotus are targets due to their unpopular pursuit of near-monopoly power, which greatly hinders innovation within the computer industry.

### SEARCH AND DESTROY

Hunter/killer viruses are used as a guerrilla weapon to express the displeasure of their creators with a 'closed shop'. A disgruntled employee of Electronic Data Systems (EDS) wrote a virus intended to wipe out the in-house software. This 'scores' virus, intended to damage EDS, in fact did little or no damage, if EDS reports are to be believed. Many other sites have been hurt, however--Apple, IBM, defense contractors--even Stephen Wolfram's *Mathematica* was used as a vector, causing damage at the product's beta-test sites. Security consultants representing companies are contractually obligated to talk a hard line--to deny that any damage has occurred: corporate image and stock values are at stake. Manipulation of stocks for profit through the release of viruses and the information they are doing damage is entirely possible and would

**Figure 8**

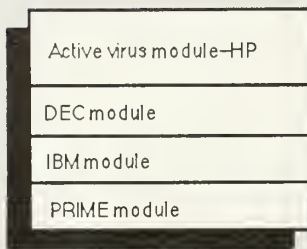


This code is executing on the host computer.

These sections of code are stored as data, encapsulated from the module which is executing.

When the virus infects another computer, it undergoes a topological transformation, spooling the proper module first and insulating the remaining modules as data.

For instance, the polymorphous configuration shown above (executing on a DEC system) would spool the HP module into the active position and then port the rest of the modules using the active module as a gateway.



This ability allows sophisticated viruses to cross barriers assumed able to stop them, whether between micro's, minis or mainframes.

be extremely difficult for SEC to pursue. Blackmail of corporations or governments enters a new dimension with the use of viruses. Clearly, the next wave of profitable computer crime will involve the use of viruses or tapeworms.

### **MILITARY AND COUNTER-MILITARY**

Although military viruses might seem to be in the realm of science fiction, they have already been implemented. Israeli computer systems governing the Gaza strip occupation have been successfully attacked by viruses which destroyed birth records, population control data, operations plans--the information necessary to maintain the suppression of the inhabitants of the region.

The infiltration of civilian computers with viruses designed to be activated on a future occasion has obvious usefulness to military organizations. The Swift Telex International Funds Transfer computers, Missile Control computers (both U.S. and Soviet), cryptography computers, telecommunications computers (Electronic Switching Systems) all provide vulnerable targets of opportunity. In the event of a first strike or invasion, a virus to 'soften up' the enemy must be viewed as the first logical step in the electronic war-

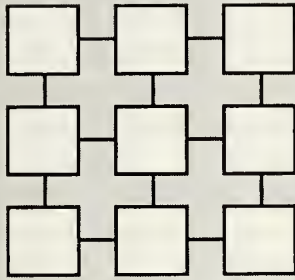
fare arena. The Pentagon's decontamination drill commands the destruction of disks presumed infected, and the literal bulldozing of hard drives. No nation's missile computers (or SDI systems) are safe when a virus could turn the swords into plowshares.

Chaos would follow targetting the IRS computers to destroy records selectively or wholesale. The likelihood of such a penetration is almost a certainty.

### **HERE THERE BE TAPEWORMS**

Viruses are not necessarily designed only for damage. A tapeworm is the next level of computer penetration, taking advantage of computer virus theory and programming techniques generated by artificial intelligence research. A tapeworm is a program structure with a head, a body, and a tail. The head contains penetration programming and a pattern matcher, the body is an expandable encapsulated area designated to contain the data used by the head and the data acquired using the pattern matcher, and the tail is the success qualifier which directs a change in action for the tapeworm. A tapeworm is highly useful for a 'covert channel' attack. It can be introduced into a target computer and linked lamprey-style to a commonly used program (mail or spool demon) through an ac-

**Figure 9**



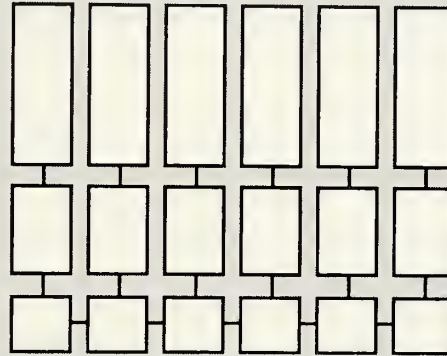
A 3 by 3 matrix of processors have a difficult problem acting in parallel – global communication (between non-adjacent processors) ties up processors which should be working on their sections of programming. This problem gets much worse as the matrix increases.

Viruses could inhabit each processor, growing and dying off as needed on a local level, in neural network fashion. Locality is defined by connectivity.

Autonomous processors with locality for a neural network defined by connectivity (symbolic through processor addresses used by communication processors). Viruses replicate to form nodes (inhabit processors) as necessary. Topological connectivity is not needed.

Communication processors – inhabited by tapeworms sent to the local processor.

Optical pathway – messages (tapeworms) are transmitted in both directions.



(could be arrayed as a compressed spiral to optimize to the advantages of lightspeed communication pathways)

count without privileges. The tapeworm will eventually cross a security level, most likely through its execution by a super-user. The tapeworm can, at this point, transmit data back to the public-access tapeworm, which will store it. The semaphore between them would be a file (such as a mail record), with the protection bits used as a single-byte data channel by the transmitting virus.

Thus, computer security mechanisms (such as those in the Multics model) can actually be used to further the ends of the virus (see figure 7).

**THE POLYMORPHS**

Computer networks that are collections of various manufacturers' systems are accessible to attack by polymorphous viruses. Viruses of this type take advantage of a transparent fact of data storage: all data is stored alike, whether it's programming, text, graphics, or anything else storeable. A polymorphous virus has a perverse adaptability. Its active module runs code

that recognizes the computer it is infecting; it adjusts itself to conform to the specs of the system it rides, transforming its once unexecutable data into the active

module on the new host. Such a virus can spread to computers made by different manufacturers or with different processors (see figure 8).

**A tapeworm is highly useful for a 'covert channel' attack**

**GROWING YOUR OWN VIRUSES**

For non-technical vandals who want to cause chaos, a viral toolkit has been written by a group of West Germans (distance means nothing to a computer hacker). The creator of a virus has only a few major choices to make--how and where will it merge with files and the operating system, which trigger will cause activation, and what kind of havoc will be wrought--will it ignite monitors, spontaneously abort laserprinting, or mutate graphics? Detection must be considered: the more elaborate a virus' mission, the larger it must be, and the easier it will be to detect.

A small virus is a less detectable virus--a needle in

GIVE ME A COOKIE... OR ELSE! The PLATO network contained a novel and 'friendly' virus, called Cookie. Whenever a user engaged in text-entry (the programs targeted by this virus), at random intervals the message, "Give me a cookie!" would appear. Immediately typing "cookie" would banish the virus for a while, but failing to appease its appetite would cause lock-out from the work, or deletion of random text. Cookie later migrated to printer drivers where it would put "Give me a cookie!" into the formatted output from the system. This minor annoyance has also been implemented on DEC systems.

a hay stack of uninterpretable code. Larger viruses are harder to hide in code, their 'salami' techniques are easier to spot, patterns of code are more likely to be matchable, checksums are harder to fool or pad out. The maxim goes: small viruses are stoppable, larger viruses are detectable. Of course, size is relative--'small' undetectable viruses on microcomputers need to be shorter than a few hundred bytes, while on mini's and mainframes the viruses can be thousands of bytes long, a needle in a much larger haystack. Tape-worms, for instance, have little utility for microcomputers, but gain immense power with the resources available on larger systems.

### LITTLE TRIGGERS

Time-triggered viruses such as the "Friday the 13th" virus are easily detected by scanning for clock chip access or for the pattern matcher's comparison string. In fact, a properly designed virus will carry no text string, since text and graphics can be identified with a variety of utilities; classical messenger viruses are mercilessly spotlighted. De-worming cycle checks can get you; they just advance the time setting at software speeds and wait for the viruses to pop out. Simply bypassing the activation date (April 1st, for sure) will make these viral triggers worthless.

Viral triggers can be smarter. A virus can be subtle. A virus can always wait: for a certain number of accesses to a file or disk; for specific characters or commands from the interface devices; for a target software house product or data file to be loaded; for a single random byte on a disk to change value; for a certain amount of disk space to be used.

### THE ELEGANT PARASITE

Subtle viruses can be programmed to be self-limiting, to strike only certain targets in certain ways

and not betray their presence by an unlimited growth pattern. All function calls made by a virus can use a depth of indirect reference, making a scan for common calls useless. Its size and code should never change, preventing checksums and file length checks from finding it. It is entirely possible to write a virus that will use bootstrap hooks to load itself in from 'unformatted' disk areas. The game of cat and mouse between viral and anti-viral programs will usually be won by viruses, since they are custom written and can avoid the common traps.

### ARE YOU HAVING AN OUT-OF-ANTIBODY EXPERIENCE?

Anti-viral agents which simply execute a one-to-one comparison on a system are simply useless. They need a 'clean' system as a control, which cannot be assumed to be available. A system 'snapshot' used to compare for changes is worthless--it is negated by any change in the system, is as large as the system itself (megabytes in most cases), and must become memory-resident and thereby itself vulnerable to tampering. In fact, all commercial anti-viral programs are useless, in time. As viruses are customized and can be written to evade searches by antibodies, so anti-viral programming must be custom written. Concerned users should create their own code; such decentralized and varied techniques can outmaneuver viruses designed to slip through the usual cracks, to evade 'standard' search patterns. Consider the hybrid cloned wheat crop. Homogeneity makes for a standardized product, but a single (biological) virus could blast the entire crop. *Genetic diversity*: more than just a good idea...

### PURGING YOUR SYSTEM

The key to stopping viruses is two-fold. A virus can't do any harm unless it has control of the processor. Also, it can't damage a disk if it's blocked, either by a write protect (hard partitioning for hard drives) or by the absence of important system subroutines such as formatting or deleting utilities.

The first step you can take to stop viruses is to remove file management calls from the operating system and isolate them on a disk for use only on an external drive. Write-protect this disk so a virus can't infect it. Always coldboot the computer--turn the power off and back on before and after use. This prevents memory-resident viruses from accessing the routines. Since this one disk is now your main maintenance disk, thoroughly examine it for viruses. Viruses must either target this disk specifically, or carry their own disk access routines, thus increasing their size and vulnerability to



a search for such routines.

To keep a virus from gaining control of your processor, use a simple level of encryption. Read/write functions of the operating system can be rewritten to encompass a decrypt/encrypt function using a one-time pad or fast knapsack trapdoor-type cipher. This prompts for the key, or takes the key from a file whose name is changed at each load with the filename prompted for, rendering lamprey-type 'salami' viruses useless. If a stored and encrypted file is modified by a virus, it will be obvious at load time. The decryption function would make the program executable again while encrypting the virus, making it an unexecutable section of programming which will crash on entry. A sophisticated virus could attempt to simulate a decryption prompt, but, once again, this elaboration will open the virus to detection. Virus-breeders can be placed between this rock and that hard place: small undetectable viruses can't counter-manuever, and larger wilier viruses become detectable.

#### THE KINDLY ONES

There are beneficial uses for computer viruses as well. Viruses can be written to 'tail chase' known viruses and deactivate them, thus removing the necessity for constant checking with customized anti-viral programs. Viruses are utilizable for computer security (and copy protection, a direction I hope they do *not* take) with telecommunications. A user calling a computer could be sent a virus with a time coded one-time pad cipher which will handle all communications traffic between the computer and the remote site. After the session is completed, the virus erases itself and any storage utilized. The security of such a technique lies in the encrypted communications channel, and the unwillingness of an unauthorized user to abdicate control to a potentially hostile program which has the ability to disallow certain functions from the remote site itself.

Most importantly, viruses and viral theory (with overlaps into cellular automata) have direct application to the field of artificial intelligence, especially since they could be used as the control mechanism and computational engine for massively parallel computers such as the Connection Machine. As viruses are object-oriented autonomously-operating systems

with computational power, and could be self-organizing in a neural network fashion (the viruses replicate and die in accord with the need for processor control), they should be exploited as simply another tool of computational theory. Communication between viruses/processors would be achieved by tapeworms, which are inherently packet-switched and goal/destination-oriented. These techniques will work

with modern Von Neumann bus architecture, but are more directly applicable towards optical communication pathways (see figure 9). While a great deal of the focus on viruses has been negative due to the damage they can do, I see them as the next generation of programming, designed for parallel decentralized processing.

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Viral triggers  
can be smarter.  
A virus can  
be subtle. A  
virus can always  
wait...

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#### LIKE HAVING BEES IN YOUR HEAD...BUT THERE THEY ARE!

The desire to create viruses has been caused largely by an environmental change in the software/hardware industry. While the software industry has moved away from 'copy protection', a corresponding opening of hardware and the operating systems has not followed. The computer industry is now being forced to choose between implementing entirely 'closed' systems with ROM DOS's and little usefulness (and hence marketability), or allowing diverse, non-standardized, well-documented operating systems with 'open' architecture.

A final word: computer viruses do exist and are active. It will take a great deal of luck to find them and stop them, as they have already infected compilers, in-house software tools, and archived files. The potential effects of military viruses are staggering. International funds transfers are in jeopardy, missile and code-breaking computers won't function when they receive their orders, and projects like SDI will never work (millions of lines of code are impossible to search for a bug, let alone a virus). The industry and other potential targets are at the stage of 'damage control': attempting to minimize the effects when the viruses are triggered.

Ignoring the problem won't make it go away. In essence, the creators of viruses can declare the game over, with themselves as the winners. Either the computer industry will suffer enormous losses, or computers and software will open back up, a major benefit to all.

## letters

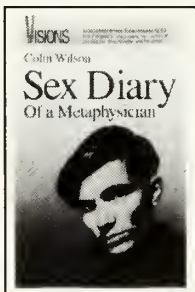
(continued from page 8)

nu-wave media: Power to the People and Freedom of Conscientiousness! We would be very happy to give you any coverage and PR we can to promote the intrusion of more such uplifting media into the local reality.

Hail Eris!  
Warm Regards,  
Paul White for *Maggie's Farm*  
Bellingen, NSW, Australia

I just saw a copy of *Reality Hackers*. It arrived in an unusual way, which might amuse you. None of my friends in the Bay Area sent it, or even told me that such a magazine existed. A friend from Berlin, visiting the U.S., picked it up in San Francisco and showed it to me . . . One more proof we're living in the Global Village, I guess.

## Visionary Books-by-Phone

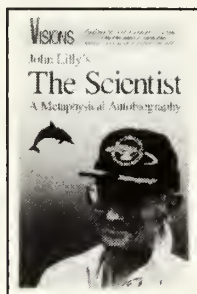


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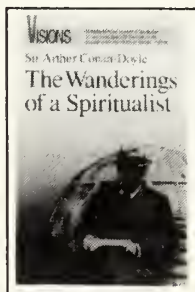
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Give my regards to the esteemed R. U. Sirius and keep the lasagna flying over Berkeley!

Robert Anton Wilson  
Los Angeles

Hackers,

About Durk and Sandy . . . Are they superheroes or what? I mean, they look like mutineer Starship Enterprise crewmembers beamed, as a tag team, into the ring of an All-Star Wrestling match. Do you really expect us to believe that beings like this truly walk the earth, even if they *do* live in LA? And can I look like Durk Pearson (or Sandy, for that matter) if I stoke my brain with sufficient shovel-loads of Psychoactive Softdrink powder (even accompanied by goo-gols of squat-thrusts)? Truly, Durk and Sandy appear to be the end result of a selective-breeding program, or UFO abductees whose nervous systems have been massively rewired. Are they wearing prostheses? Are the photos retouched? Were they grown *in vitro*? Well, *someone* has to ask. I know I'm not the *only* one thinking it. I ask this only as a social scientist. Really.

Amazed and Confounded,  
Elmer Zingle  
Lake Geneva, Wisconsin

Dear R.U. Sirius, et al:

I enjoyed this issue of your magazine. Unfortunately I feel that you don't properly understand the dangers of unrestrained philoxixtiesism, a major social disorder of the late twentieth century.

Had the appropriately named Leary and his epigoni not run slaving across the landscape, like a pack of rabid hounds, many useful chemical tools would not now be unnecessarily illegal.

Writing as a survivor of the unfortunate decade, the politics of which form a massive malefic miasma of megalomaniac intensity, I urge you: please adopt a more critical attitude toward the sixties nostalgia frenzy currently being



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promulgated throughout the mass media by a scurrilous coterie of sixtiesists.

Yours, with no "peas" or love, but rather with a clear-headed recognition of the importance of intoxicants, of a certain nature, in the inner life of mankind.

Count Screwloose  
San Francisco, CA

Dear Sirius or Madamu,

I only recently encountered your magazine. Needless to say, I was floored by RH #5's content and quality — so much so, that occupational thought viruses compel me to enroll in your neuro-network.

Questions: 1) Are your publications descended from *Crawdaddy*? 2) How are you oriented to the "New Age" movement? 3) Are you, in fact, a post-modern Fabian Society? 4) Does your philo-policy exclude the establishment of global institutions as a possible solution?

R.H. is a welcomed alternative to XXX, boasting ads that are as enjoyable to read as its articles, but I would like

to see more articles by Timothy Leary, William Burroughs, and Robert Anton Wilson. Also, an article relating all of this to the 3rd, 4th, and 5th worlds, rather than mall-culture would be highly appreciated.

All's Quiet On the Western Front,  
William Dozier  
Richmond, Kentucky

*Thanks, Wm. In answer to your intelligent questions; 1) The closest we get to being a descendant of Crawdaddy is Peter Stafford, who co-authors our Psychedelic Scenarios column. Peter was editor of Crawdaddy for a couple of years in the mid-70's. 2) "New Age", like "Drugs", is one of those generic words that has a lot of associations but has lost precise meaning. The bottom-line is that the "New Age" is now definable as a consumer market. We happen to reach a substantial portion of that market. Transformation of the species? We're still interested. 3) I always preferred Frankie Avalon. 4) Establishment? Institutions? How about non-coercive global organisms?*

*Also, you'll be happy to know that we'll soon be establishing a regular column featuring political commentary by the esteemed R. A. Wilson.—R.U. Sirius*

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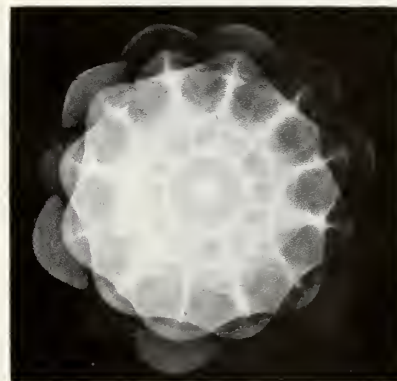
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## hacker profiles

(continued from page 7)

**Ira Steingroot:** A jazz critic since 1973, Ira claims that jazz is Voodoo in its highest form. He has written articles for *Downbeat* and numerous album liner notes, and is currently a contributor to *Calendar* and *The Daily Californian*. Ira is also a student of the Western occult tradition and occasionally shares the fruit of his research into Kaballah. No, he is not a member of any known cult. He is currently working on a history of jazz tapdance.

**Michael Szesny aka Michael Synergy** states: "Bucky Fuller claimed to be a verb, well I'm an *action* verb." Not a Rabble Rouser but a Rebel Rouser, Mike has written extensively for journals and media that you've never heard of, as well as writing software you wish could be removed from your computer. Living up to his motto "There are no fixed rules," Mike is truly a chaotic system. Presently he is working on an autobiography *Cyberpunk: High Tech Lowlife* and acts as a consultant in the San Francisco Bay Area.

**Rich Young:** is a veritable walking affirmation. He is currently working on a book, *Beyond the Electronic Panopticon: Synaesthesia and the Return of the Festival*. Long time student of Shamanism and the effects of music on consciousness, Rich is

presently looking at Complexity and the politics of free spirits adjusting. An unrepentant Deadhead, his musical tastes run from Pauline Oliveiros to Ali Akbar Khan.

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# Load & Run

## High-tech Paganism - Digital Polytheism

(continued from page 67)

More and more of us are becoming electro-shamans, modern alchemists.

Alchemists of the Middle Ages described the construction of magical appliances for viewing future events, or speaking to friends distant or dead. Writings of Paracelsus describe a mirror of *electrum magicum* with telegenic properties, and crystal scrying was in its heyday.

Personal transmutation (the ecstasy of the "ultimate hack") is the veiled goal of both systems.

Today, digital alchemists have at their command tools of a precision and power unimagined by their predecessors. Computer screens *are* magical mirrors, presenting alternate realities at varying degrees of abstraction on command (invocation). Aleister Crowley defined magick as "the art and science of causing change to occur in conformity with will,"

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and to this end the computer is the universal lever of Archimedes.

The parallels between the culture of the alchemists and that of cyberpunk computer adepts are inescapable. Both employ knowledge of an occult arcanum unknown to the population at large, with secret symbols and words of power. The "secret symbols" comprise the languages of computers and mathematics, and the "words of power" instruct computer operating systems to complete Herculean tasks. Knowing the precise code name of a digital program permits it to be conjured into existence, transcending the labor of muscular or mechanical search or manufacture.

Rites of initiation or apprenticeship are common to both. "Psychic feats" of telepathy and action-at-a-distance are achieved by selection of the menu option.

### CLASSICAL MAGICKAL CORRESPONDENCES

Alchemists of the Middle Ages believed quite correctly that their cosmos was composed of four elements: earth, air, fire, and water. Although today our periodic table sports more than 100 chemical elements, the four universal metaphors still can be identified as the constituents of some processes in the external reality, and within the inner psychological world of humankind.

Each of the four elements is an archetype and a metaphor, a convenient and appropriate name for a universally-identified quality. The four are echoed in the organization of both the four suits and the four "court cards" of each suit of the Tarot, inherited from the Egyptians and its symbolism preserved in ordinary Western playing cards. The four also correspond to the four principal tools of the classical practitioner of ceremonial magick.

The wand of the magician represents the phallic male creative force, fire. The cup stands for the female receptive force, and, obviously enough, is associated with water. The sword is the incisive intellect, moving and severing the air, the abstraction in which it moves. Finally, the pentacle (disk) is the grounding in earth (magnetic material), the stored algorithms. (We use Crowley's spelling of pentacle, which communicates the sense of "all and everything", advisedly.)

These classical instruments of magick exist in modern cyber technology: The mouse or pen of the digitizing tablet is the wand, controlling the fire of the CRT display and harnessing the creative force of the programmer. It is used in all invocations and ritual as a tool of command. Spinning disk drives are the pentacles, inscribed with complex symbols, earthen tablets to receive the input of "air," the crackling dynamic ethereal intellectual electricity of the processor chip circuitry programming results. The RAM chips are, literally, the buffers ("buffer pools"), the water, the passive element capable only of receiving impressions and re-transmitting, reflecting.

Iconic visual programming languages are a Tarot, the pictorial summation of all possibilities, activated for the purpose of divination by juxtaposition and mutual influence. A

periodic table of possibilities, the Western form of the Eastern *I Ching*. Traditional word-oriented programming languages, FORTRAN, COBOL, and the rest, are a degenerate form of these universal systems, grimoires of profit-oriented corporations.

Detailed database logs of the activity of operating systems form the Akashic records on a microscale. At a macroscopic level, this is the "world net" knowledge base, the "knoosphere", the world-wide online hypertext network of information soon to be realized by the storage capacity of CD ROM and the data transmission capability of optical fiber. William Gibson's cyberspace matrix.

Banishing rituals debug programs, and friendly djinn are invoked for compiling, searching, and other mundane tasks. When the magic circle is broken (segmentation violation), the system collapses. Personal transmutation (the ecstasy of the "ultimate hack") is a veiled goal of both systems. The satori of harmonious human-computer communication resulting from the infinite regress into meta-levels of reflection of self is the reward for immaculate conceptualization and execution of ideas.

The universality of 0 and 1 throughout magic and religion: yin and yang, yoni and lingam, cup and wand, are manifested today in digital signals, the two bits underlying the implementation of all digital programs in the world, in our brains and in our operating systems. Stretching it a bit, even the monad, symbol of change and the Tao, visually resembles a superimposed 0 and 1 when its curving central line is stretched through the action of centrifugal force from the ever-increasing speed of the monad's rotation.

#### CYBER RELIGION OF THE BABY BOOMERS

By the year 2000, Aleister Crowley, William Gibson, and Edward Fredkin could well replace Benjamin Spock as a Baby Boom navigator. Why? Because, by then the concerns of the baby boom generation will be digital. (Or, to use the old paradigms, philosophic-spiritual.)

During their childhood they were Mouseketeers. In their teens the Cybers went on an adolescent spiritual binge unequalled since the Children's Crusade. In their revolt against the factory culture they re-invented and updated their tribal-pagan roots and experimented with Hinduism, Haight-Ashbury Buddhism, American Indianism, Magic, Witchcraft, Ann Arbor Voo Doo, Esalen Yoga, Computerized I Ching Taoism, 3-D Reincarnation. Fluid Druidism. St. Stephen Jobs to the Ashram!

Born-again Paganism! Pan-Dionysius on audio-visual cassettes. Mick Jagger had them sympathizing with the devil. The Beatles had them floating upstream on the Ganges. Jimi Hendrix taught them how to be a voodoo child. Is there one pre-Christian or third world metaphor for divinity that some rock group has not yet celebrated on an album cover?

#### ONTOLOGY RECAPITULATES THEOLOGY

The Boomers in their evolving life-cycle seem to have recapitulated the theological history of our species. Just as

monotheism emerged to unify pagan tribes into nations, so did the Boomers re-discover fundamentalist Judaism and Christianity in their young adulthood.

Even far-away Islam attracted gourmet Blacks and ex-hippies such as Cat Stevens. Bob Dylan nicely exemplifies

---

You write your very  
own newest testament recalling  
that voluntary martyrdom  
is tacky.

---

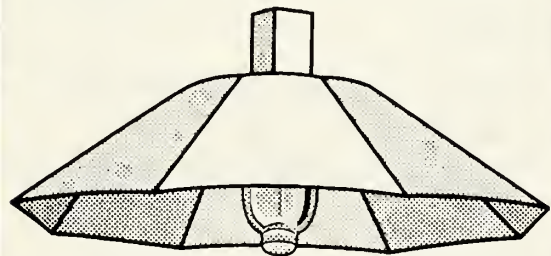
the consumer approach to religion. For 25 years Bob (ne Zimmerman) has continued to browse through the spiritual boutiques dabbling on a dash of Baptist "born-again," nibbling at Hassidism before returning to his ole-time faith of sardonic reformed humanism.

We can laugh at this trendy shopping around for the custom-tailored designer god, but behind the faddism we find a powerful clue.

Notice how Dylan, for example, preserves his options and tries to avoid shoddy or off-the-rack soul-ware. No "plastic christs that glow in the dark" for Bob! The religion

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2. You can change and mutate and keep improving. The idea is to keep "trading up" to a "better" philosophy-theology.
3. The aim of your life, following Buddha, Krishna, Gurdjieff, Werner Erhart, Shirley is this:  
Take care of your self so you can take care of others. If any.

#### WITH A LITTLE HELP FROM YOUR FRIENDS

This generation, we recall, had been disillusioned by the religions, politics, & economics of their parents. Growing up with the threat of nuclear war, the assassination of beloved leaders, immune deficiencies, a collapsing industrial system, an impossible national debt, religious fundamentalisms (Christian-Jewish-Islamic) that fanatically scream hatred

and intolerance, and uncomprehending neglect of the ecology, they have developed a healthy skepticism about collective solutions.

They can't retreat back home because Mom and Dad are divorced.

No wonder they have created a psychology of individual navigation. Singularity. The basic idea is self-responsibility. You just can't depend upon anyone else to solve your problems. You gotta do it all by yourself — With a little help from your friends.

#### A DO-IT-YOURSELF RELIGION

Since God#1 appears to be held hostage back there by the blood-thirsty Persian Ayatollah, by the telegenic Polish Pope and the Moral Majority, there's only one logical alternative. You "steer" your own course. You start your own religion. The Temple is your body. Your mind writes the theology. And the Holy Spirit emanates from that infinitely mysterious intersection between your brain and your DNA.

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## IRREVERENCE IS A PASSWORD FOR THE 21ST CENTURY

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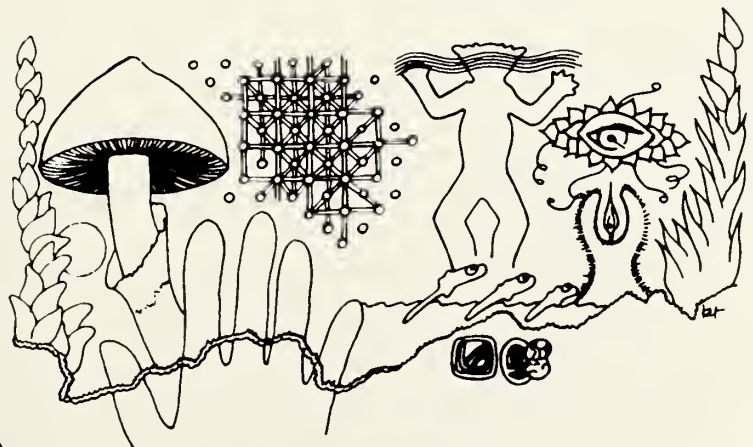
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lar Steering.

Relativity means that everyone "sees" or reacts to things differently, depending upon location, velocity and attitude (angle of approach).

The relativistic insight is in essence irreverent or humorous, i.e. laughable, comical, delightful. With the law of gravity repealed, levity is the order of the day. We rise through our levity, instead of being held down by our gravity.

The word "humor" comes from the Latin word for liquid or fluid, referring to such qualities as flowing, pliable, smooth, effortless, easily changed, non-frictional, transparent, shining, musical, graceful in motion and readily converted into cash.

### THE LAST GENERATION IN FLESH?

*Through science and technology we will meet the aliens, and they will be us.*

— Norman Spinrad, from *The Neuroromantics*

Information-beings of the future may well be fluid. Human society has now reached a turning point in the operation of the digital programs of evolution, a point at which the next evolutionary steps of the species become apparent to us, to surf as we will. Or, more correctly, as the evolutionary programs run and run, the next stages pop up in parallel, resulting in continuing explosions of unexpected diversity. Our concepts of what is known as "human" continually change. For example, we are no longer as dependent on physical fitness for survival. Our quantum appliances and improved mechanical devices can generally provide the requisite means or defenses. In the near future, the methods of information technology, molecular engineering, biotechnology, nanotechnology (atom stacking) and quantum-digital programming could make the human form a matter totally determined by individual whim, style and seasonal choice.

Humans already come in some variety of races and sizes. In comparison to what "human" might mean within the next century, we humans are at present as indistinguishable from one another as are hydrogen molecules. Along with the irrational taboo about death, the sanctity of our body image seems to be one of the most persistent anachronisms of Industrial Age thought.

We see evolutions of the human form in the future; one more biological-like: a bio/computer hybrid of any desired form — and one not biological at all: an "electronic entity" in the digital info-universe.

Human-*as*-programs, and human-*in*-programs.

Of these two post-humanist views, human-*as*-programs is more easily conceived. Today, we have crude prosthetic implants, artificial limbs, valves, and entire organs. The continuing improvements in the old-style mechanical technology

slowly increase the thoroughness of brain/external-world integration. A profound change can come with the developments of biotechnology, genetic engineering, and the slightly more remote success of nanotechnology.

The electronic form of human-in-programs is more alien to our current conceptions of humanity. Through storage of one's belief systems as data structures online, driven by desired programs one's neuronal apparatus should operate in silicon basically as it did on the meatware of the brain,

though faster, more accurately, more self-mutably, and, if desired, immortally.

Clever cyberpunks will of course not only store themselves electronically, but do so in the form of a "computer virus", capable of traversing computer networks and of self-replication as a guard against accidental or malicious erasure by others, or other programs. (Imagine the somewhat droll scenario: "What's on this CD?" "Ah, that's just boring adolescent Leary. Let's go ahead and reformat it.")

One speculation is that such viral human forms might *already* inhabit our computer systems. Cleverly designed, they would be very difficult, if not theoretically impossible to detect.<sup>1</sup>

Current programs do not permit matching the real-time operation speed and parallel complexity of conventional brains. But time scale of operation is subjective and irrelevant, except for the purposes of interface.

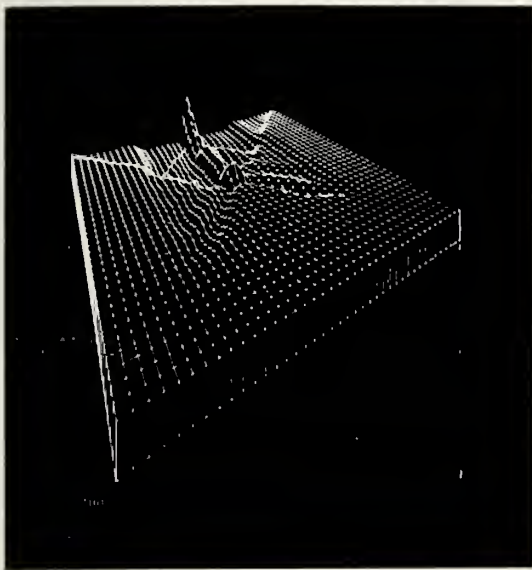
Of course, there is no reason one needs to restrict one's manifestation to a particular form. One will basically (within ever-loosening physical constraints, though perhaps inescapable economic constraints) be able to assume any desired form.

Authors of current science fiction of the cyberpunk or "neuromantic" school have approached this idea from many angles. Bruce Sterling's novel *Schismatrix* recognizes the fact that human evolution moves in clades, radiating omnidirectionally, not moving in a line along a single path. His "Mechs" and "Shapers" correspond closely with our notions of electronic and biogenetic paths to evolutionary diversity.

Given the ease of copying computer-stored information, it should be possible to exist simultaneously in many forms. Where the "I's" are in this situation is a matter for digital philosophers. Our belief is that consciousness would persist in each form, running independently, cloned at each branch point.

1. Detection of a virus seems to imply the necessity of rebuilding the entirety of the computer's software, from scratch, by hand, in machine code to obviate the possibility of utilization of virally-contaminated editors or compilers! For systems of even today's complexity, this is infeasible on economic grounds.





# Mathematica: The Revelation

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Reviewed by Gully Jimson

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**Santa Clara. June 23, 1988.** I'm at The Techmart, a marble and glass monument to New Technology, where champagne and dainty hors d'oeuvres herald the unveiling of the latest oeuvres of heroic outlaws operating at the frontiers of computer-assisted cognition.

Today at the center is the cherubic genius Steve Wolfram. Cosmologist, Caltech physicist, mathematician, theoretician of the chaos of cellular automata systems, and garrulous biz wiz, he's here to unleash *Mathematica*, his astonishing computer system.

The era of doing mathematics by hand and brain has now ended. From arithmetic to calculus, Eigen analysis to symbolic matrix inversion, Airy functions (The Airy function is a solution to the differential equation  $d^2 y/dx^2 - xy = 0$ ) to Weierstrass ellipticals — *Mathematica* can do it all.

Accepting mathematics in its conventional form, *Mathematica* crunches symbols as well as numbers, displaying its results as formulae or glorious, shaded, 3-dimensional color plots. An interactive symbolic super-calculator, it's also a programming language, supporting sequential, recursive, and logic programming styles.

Imagine the capabilities of FORTRAN, APL, LISP, Prolog, Macsyma, Reduce, and a postscript graphics interpreter elegantly commingling, nestled in the CPU of the machine of your choice. 150,000 perky lines of C code, bothering with the detail of your bidding, freeing your brain of the tedium of mathematical calculation, unfettering your creativity through a flexible tool to explore intuitive avenues. Or, as in the *Mathematica* interface on the Mac, a dynamic book of words that conjoins living breathing mathematical objects, & dynamic illustrations.

Yes, almost too good to be true, *Mathematica* is all these and more. Unlike many promises of Silicon Babylon, vapourous proclamations from even the finest, *Mathematica* sprang from Wolfram's cerebral womb fully grown. Forsaking parched academe for bubbling business, Wolfram has decided to make a buck and have fun too.

With deft conjuring motions, he yanked the assembled dignitaries from their seats one-by-one to have them outdo one another in impassioned testimonials to the wonders of *Mathematica*. Steve Jobs (who mentioned he sold a few computers in the 70's, slight underemphasis of the \$611 million Apple's bank account now sports) declared that *Mathematica* would be bundled with his new computer, NeXT's mythical black cube. Bill Joy, founder of Sun Microsystems, and Larry Tessler of Apple both enthusiastically applauded the next step in humankind's intellectual evolution heralded by *Mathematica*. High school math teachers and quantum gravity physicists paraded to the podium and vouched their support. Yes, even IBM was in attendance. In uncharacteristically True Blue fashion, they were the swiftest of all companies to make a business deal with Wolfram.

It's not enough that the *Mathematica* system magically automates literally all of mathematics. Far be it from the last word that the program is both blazingly fast and intuitively obvious in its syntax. What's perhaps best of all is that this wonder is available today on a gamut of machines. From the crisp velocity of a Sun workstation to the dizzying perspectives rendered by a Silicon Graphics IRIS engine, to the ubiquity of a Macintosh (\$495) you can buy it now. An IBM AT OS/2 version will soon be available from the computer-aided-design wizards at Autodesk.



# PEAK EXPERIENCE

Hakim Bey,  
New York City



Way back last winter, in Issue 4, we announced a peak experience contest. The flood of entries kept us wallowing vicariously in other peoples' trips for many months. The judges decision was unanimous, however. For sheer coruscating, unabashedly rococo special effects, no entrant matched Hakim Bey's description of the netherworld of the Troggs. Dr. Lightning's entries, in each of his three lovingly crafted versions ("Hold the Presses!" the last one cried), were equally luminous in their way, and deserve honorable mention.

Suddenly the fungal realms yawned before me, subterranean regions of the continent excavated in cyclopean caverns, cathedral-space fractal networks, labyrinthine gargantuan tunnels, slow black underground rivers unmoving stygian lakes, pure & slightly luminiferous, slim waterfalls plunging down watersmooth rock, cataracting round petrified forests of stalactites & stalagmites in spelunker-bewildering blind-fish complexity & unfathomable vastness. Who dug this hollow earth beneath the ice foreseen by Poe, by certain paranoid German occultists, Shaverian UFO freaks? Was Earth once colonized in the time of Gondwana by Mu by some Elder Race? their reptilian skeletons still mouldering in the farthest secret mazes of the cavern-system? Sluggish backwaters, dead-end canals, stagnant pools far from the centers of civilization like Little America, Transport City or Nan Chi Han, down in the dark recesses & boondocks of the Antarctic caves, fungus & albino fern. We suspect them of mutations, amphibian webbed fingers & toes, degenerate habits--Kallikaks of the Hollow Earth, lovecraftian renegades, hermits, skulking incestuous smugglers, runaway criminals, anarchists forced into hiding after the Entropy Wars, fugitives from Genetic Puritanism, dissident Chinese Tongs & Yellow Turban fanatics, lascar cave-pirates, pale shiftless whitetrash from the prolewarrens of the industrial domes along Thwait's Tongue & the Walgreen Coast & Edsel-Ford-Land--the Troggs have kept alive for over 200 years the folk-memory of the Autonomous Zone, the myth that someday it will appear again. . . Taoism, libertine philosophy, Indonesian sorcery, cult of the Cave Mother (or Mothers), identified by some scholars with the Javanese sea/moon goddess Loro Kidul, by others with a minor deity of the South Pole Star Sect, the "Jade Goddess". . . manuscripts (written in Bahasa Inggris the pidgin dialect of the deep caves) contain mangled quotations from Nietzsche & Chuang Tzu. . . Trade consists of occasional precious gems & cultivation of white poppy, fungus, over a dozen different species of "magic"

mushrooms. . . Shallow Lake Erebus, 5 miles across, dotted with stalagmitic islets choked with fern & kudzu & black dwarf pine, held in a cave so vast it sometimes creates its own weather. . . The town belongs officially to Little America but most of the Inhabitants are Trogs living off the Shiftless Dole--& the deep-cave tribal country lies just across the Lake. Riffraff, artists, drug-addicts, sorcerers, smugglers, remittance-men & perverts live in crumbling basalt-&synthplast hotels half-encrusted with pale green vines, along the lakefront, an avenue of squalid cafes, gem emporia guarded by armed ninjas, Chinese krill-noodle shops, the crystal-tinselled hall for slow fusion-gamelan dancers, boys practising their mudras on sleepy electronic dark blue afternoons to the rippling of synthgongs & metallophones. . . & below the pier perhaps a few desultory bathers along the black beach, genuine low-budget tourists gawking at the shrine behind the bazaar where pallid old Trog pamongs tranced out on fungus drool & roll up their eyes, breathe in the fumes of heavy incense, everything seems suddenly menacingly bright, flickering with significance. . . a few cases of webbed fingers but the rumours of ritual promiscuity are true

**pallid old Trog pamongs  
tranced out on fungus drool &  
roll up their eyes**

enough. I was living in a Trog fishing village across the lake from Erebus in a rented room above the bait-shop. . . rural sloth & degenerate superstitious rites of sensual abandon, the larval & unhealthy mysteries of the chthonic mutant down-trodden Trogs, lazy shiftless no-count hicks. . . Little America, so christian & free of mutation, eugenic & orderly, where everyone lives jacked into the fleshless realm of ancient software & holography, so euclidian, newtonian, clean & patriotic--L.A. will never understand this innocent filth-sorcery, this "spiritual materialism," this slavery to the volcanic desires of secret cave-boy gangs like laughing flowers jetting with dynamo erections pulsing up pure life curved as taut bows, & the smell of water, pond scum, nightblooming white flowers, jasmine & datura, urine, children's wet hair, sperm & mud. . . white toadstools springing up on the spots where Trog boys have masturbated alone in the dark. . . possessed by cave-spirits, perhaps ghosts of ancient aliens now wandering as demons seeking to re-new long-lost pleasures of flesh & substance . . . or else the Zone has already been re-born, already a nexus of autonomy, a spreading virus of chaos in its most exuberant clandestine form.

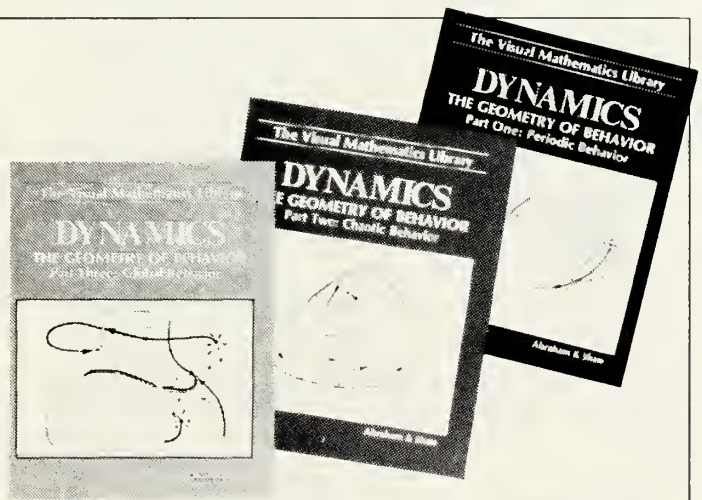


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# THE SHADOW WORLD OF HEAVY METAL

(continued from page 61)

style on the *Turbo* album, forced them back to a heavier-than-shit, demons and death follow up — *Ram it Down*.

Within the circumscribed world of the alienated adolescent, Heavy Metal has achieved Mahler's goal. Its musical expression serves as a powerful vehicle for delivery of its obnoxious subject matter.

The music is so powerful and dense that most people can't even hear the words. The lyrics have a "purloined letter" protection — until Tipper Gore ferrets them out, demanding they be printed on the album cover. As Ozzie Osborne said, "You've got to listen to my words." However, Heavy Metal video gives us a new source of information to help penetrate the shadow world of Heavy Metal content.

*The complete artwork of the future will contain the perfect mix of music, poetry, stage craft and dance.*

— Richard Wagner

*I can imagine a lot.*

—Han Solo

Heavy metal video has a long way to go before it can be called a *Gesamtkunstwerke*, but it is certainly following, however ineptly, in the paths of Carl Maria von Weber, Richard Wagner and Richard Strauss. Their operas routinely dealt with selling one's soul to the devil, fixated on sexuality, illicit sexuality, perverse sexuality, Pagan gods, violence, heroic confrontation, and black magicians — the everyday stock subjects of Heavy Metal video.

It is also important to understand that Metal's lack of originality is its major strength, not its weakness. Just as Aeschylus, Sophocles and Euripides retold the same stories to new generations of Athenians, so do the heavy metal bands recycle the same societal myths and fixations to each succeeding wave of adolescents. For Heavy Metal does have content, mythic content in the sense that Joseph Campbell describes in his book *Creative Mythology*. Heavy Metal in general, and its videos in particular, is creating an information world that never was and never will be. Just as its music is syncretic; its mythic world is syncretic — built out of pieces of modern technology, science fiction, horror movies, comic books, Western mythology, religion and adolescent experience. Just because it is considered simplistic, crude, or "bad art" by adults doesn't mean that its millions of fanatic followers are not receiving good mythological value, for Heavy Metal creates a shadow world where the normally powerless adolescent can party all night, walk with heroes or fly with demons. It's precisely due to their content that HM videos stand out from the otherwise bland wasteland of commercial music video.

We'll begin at the light, frivolous exterior of metal — the boogie. Heavy Metal boogies are paeans to, and accompaniments for, mindless partying — usually under severe intoxication and always to excess. Certain bands, such as Van Halen, AC/DC, Quiet Riot (Slade for Americans), and the sub-moronic Helix, tend to specialize in this genre. While even the rather extreme gore group WASP can occasionally turn out an immortal boogie parody like *Blind in Texas*, recent trends in Metal point toward paths leading away from pure boogie to darker, more obsessive realms.

Boogie Metal has reentered the mainstream of hard rock in the persona of ZZ Top, Loverboy and the extraordinarily popular Bon (Metal Lite) Jovi. Aerosmith could easily be considered a boogie band, along with its hosts of "wanna be" clones such as L.A. Guns, Faster Pussycat and, most notably, Poison.

However, these glam rockers' unrelenting emphasis on the undeniable joys of tacky sex, and the carefully calculated offense of their schtick, places these sleaze metal bands well within the Heavy Metal universe right next to the current incarnation of Kiss with (*Let's*) *Lick It Up* a video so egregiously sexist that it's currently exiled from MTV to the Siberia of video rental, even though it enjoys regular exposure up North on Canada's Much Music program.



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Certainly, in the realm of the melodramatic and obsessive lies the ubiquitous Heavy Metal Ballad. These tear jerking songs of loss are wildly popular with the crowds and seemingly irresistible to bands. They include the straightforwardly romantic, such as Judas Priest's *Out in the Cold*, and the traditionally romantic, such as Scorpions' *Still Loving You*. The Ballad moves into self-pity and sentimentality with Whitesnake's *Here I Go Again* and Heart's *Alone* (Yes, they are H.M. "Joni Mitchell meets Led Zeppelin"). Aerosmith's video *Angel* is extreme enough to be a parody of the genre, while Motley Crue's *Home Sweet Home* cannot fail to remind anyone of Dr. Frankenfurter's exit performance. Firmly mired in the treacle of utter bathos is Yngwie Malmsteen's *You Don't Remember, I'll Never Forget*". Interestingly enough, the Crue's *Home Sweet Home* was one of MTV's most requested videos for almost two months.

It might seem incongruous for a musical style notorious for obnoxious aggression and rebellion to produce so many ballads until one recalls Achilles' initial reaction to the death of his friend Patroclus. Adolescent males feel intensely, even obsessively, over love lost. Yet our society discourages open displays of such emotions by a male. Furthermore, parents almost invariably dismiss adolescent attachments as only "puppy love" and somehow trivial. Recall that Romeo and Juliet were entering the prime age for Heavy Metal fandom, and that seeking solace in sentiment is preferable to seeking solace in suicide. This brings us to the black heart of Metal: suicide, psychosis and satanism. Is Heavy Metal satanic? The envelope please.

*God is Dead but his shadow shall linger for a thousand years.*

—Nietzsche

*Satanism has been around for thousands of years.*

—Tipper Gore

*My image is of agony,  
my servants rape the land,  
Obsequious and arrogant,  
clandestine and vain,  
Two thousand years of misery,  
and torture in my name,  
—Motorhead, Orgasmatron*

Certainly in at least the Jungian sense, the shadow of the Christian "God" is the Devil, a.k.a. Satan a.k.a. Evil Incarnate. The so called "Problem of Evil" is a uniquely Christian phantasm created by conceptualizing "God" as both all-powerful and all-good.

The Gnostic heresy dispensed with this problem by denying that the god that created the world is all good. The creator god is actually evil, evil ruling the world disguised as

good. *Who made who/ who made you/ if you made them/ and they made you/ who picked up the devil?* AC/DC (one of Tipper's favorite bands) asks the basic Gnostic questions in a stunning video allegory (the title track to a Stephen King movie) of the Gnostic creation of the world by the evil archons. The divine spark of humanity is trapped in the undeniably ugly clay of Angus Young. AC/DC also states the basic Gnostic epistemological tenet "ain't nobody told you." Orthodox religion won't tell you the truth; the truth is found only by direct personal illumination. This theme is recurrent in Heavy Metal from the Blue Oyster Cult's *E.T.I.* (1976) to the recent Voivod video *Tribal Convictions*.

It's not suprising that the Gnostic heresy is so appealing, particularly to kids forced to swallow the fundamentalist and Catholic notion of sin. If you really believe this antiquated twaddle, it's easy to see how listening to Heavy Metal marks the entry to "illicit" sex, and then you're on the slippery slope to eternal damnation moving on to harder sins such as S/M, satanism and ritual murder (see *Spin* Magazine, August, 1988). Of course the Church holds out grace for those who repent, just as it did for Gilles de Rais, but the damage in the here and now is already done. The Manichaean heresy dispenses with the notion that "God" is all powerful and theorizes that "Evil" is as powerful and (gasp) maybe even more powerful. This ever-popular heresy among the theologically naive but otherwise seemingly orthodox lends credence to "satanism".

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For this obsession with Satan is a natural outgrowth of Christian Soteriology; let the Devil successfully tempt you just once and your soul is lost. In this particular sense Christianity is Satanic and fuels the demonic legions of of B-minus horror movies such as *Prince of Darkness* and *Hell Raiser*. These beliefs also fuel multitudes of third-rate, semi-underground and totally forgettable "Black Metal" bands. Just as Motley Crue were whitening out their pentagrams, MTV shifted to overt fundamentalist baiters such as Kind Diamond, Marillion, Heloween and numerous others of this ilk, rising from well-deserved obscurity to display their occult jewelry collection on the little screen.

But despite fundamentalist overreaction or horror movie trivialization, it's impossible to deny that unspeakably evil acts occur every day. Just to speak the unspeakable, such as Slayer (*Foetus Sandwich*) and their less successful Black Metal pals do, does not address the fundamental question "Who picked up the devil?".

When the natural pleasures of the flesh were twisted into the "sins of the flesh" Christianity created a new pleasure — the pleasure of the forbidden. Just look at the mise-en-scene of Alice Cooper's resurrected 70's performance video of *18*. Decadents and libertines throughout the Christian era since at least the Hell Fire Club have realized that all the best people must be in Hell. And as any book on the Decadent movement will tell you, this can lead to evil as an artistic statement of freedom from the Judeo-Christian world view. But this can trap you in a hell of your own making, as Metallica alludes to in their neo-expressionistic chiller, *Master of Puppets* (no video — buy the record!).

The orthodox Christian doctrine, made painfully obvious during the witch burnings, has never been recanted, only downplayed. What is not orthodox, and therefore of God, is the work of the Devil. By this doctrine, the various New Age spiritual paths, as well as Heavy Metal, are satanic. The fundamental problem in the Problem of Evil is really a problem with God. For as Herbert Guenther writes in his study of Tibetan Buddhist Tantrism, "although libertinism often appears as a revolt against asceticism, both are of the same root." That root is the Judeo-Christian world view.

The easiest way out of the Problem of Evil is to drop GOD as the Buddhists and Pagans do and go beyond good and evil to an ethic of individual responsibility and self-worth. For by reifying Good and Evil as God and the Devil, personal responsibility in the here and now is diminished, as can be witnessed in the doctrine of predestination expressed in the popular excuse, "the devil made me do it." The surprise hit of the summer 1987 video season was Ozzie Osbourne's *Crazy Train*, a tribute to his lead guitarist the late Randy

Rhodes. Ever since the earliest Black Sabbath days (whose performance videos *Iron Man* and *Paranoid* are MTV staples) old Bat Breath has been dogged by fundamentalists with charges of satanism. But watching the Ultimate Sin tour video one can see that the Oz has become a psychopomp for not very sophisticated adolescents unduly frightened by the world in which they live. His comic demon act ridicules the concept of Evil while the words to his songs clearly portray "evil" as nothing but the acts of screwed up human beings. The "Ultimate Sin" is defined as betrayal of human relationships and a hunger



for power over others. In *Crazy Train*, through the magic of technology, Randy Rhodes comes back from the grave in living color to play the guitar, while Ozzie delivers, in stark black and white, the standard 60's message *Crazy, but that's how it goes/ Millions of people living as foes/ Maybe its not too late/ to learn how to love and forget how to hate*. However, within the visual context and the Oz's facial expressions, the lines *The media sells it/and you live the role*, cause us to offer the follow interpretation: this society is so insane that sometimes it seems better off to be crazy or dead, and I know because I'm crazy and he's dead. Significantly, the video spent most of a summer on the number one slot of PMRC's most dangerous and offensive list.

**PART TWO will discuss sex, violence, rebellion and Heavy Metal's challenge to parents. As an exercise for the student: Twelve Headbangers Balls will be shown on MTV (Saturdays, 9 pm Pacific) before you read Part Two. By taping some and using fast forward (since Sturgeon's Law applies), you will be able to see many videos discussed in this upcoming segment.**



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## BELEW

(continued from page 21)

It's pretty hard for me, personally, to watch much MTV for very long, or any of those shows. Oh, I mean, it's just not my cup of tea. I'm not putting it down — it just sucks, that's all.

### **I want to throw out some names for you to react to. I'll start with Zappa.**

Frank Zappa. I have great fond memories of Frank. He helped me enormously. He's a musical genius and one of the hardest-working people I've ever known. He showed me an awful lot about the music business and about arranging music. I used to watch Frank take a song ten different ways over the course of two weeks. It was just remarkable, his gift for putting voices and instruments together. The thing that impressed me most about Frank was his total dedication. That was a good lesson for me. Frank has spawned a whole generation of musicians.

**C***ought by the Tail* was, sort of, a guitar symphony. Particularly the first side. I wrote the music on an acoustic instrument with a special tuning. So, I'd write and record a song that way. Then I'd go back and start orchestrating each section, using my library of synthesizer sounds, and the guitar effects and studio effects that I've developed over the years. So I've built up this little orchestra.

### **David Byrne?**

He's pretty much like you think he is. He's kind of shy and kind of a geek and kind of goofy at times. He has a very charming, light laugh. I really like the way he laughs. He laughs at the strangest moments. He made me rethink my approach to songwriting, at the time. It helped open me up. Being a part of the Talking Heads was a very thrilling period, musically, because they weren't a big band yet, but there was obviously something very strong going on, and I liked being on that level.

I started playing in bands when I was 15, and struggled and struggled and struggled — until I was 27, when Frank Zappa came along. At the time, Margaret was three months pregnant with our first child. We were three months behind on our rent. We had nowhere to go, and no plan of action. It was at that point that I went to North Carolina with a disco band called 102 In The Shade. And I remember it very well because the keyboard player - his name was Stormy - somewhere in the second set, every night, he would fall asleep on the keyboard. I went to North Carolina for a week long gig. One whole week at this hotel. Stormy didn't even show up. I guess he fell asleep at the wheel or something. So I called Margaret up and said, "I can't take

this anymore. Our keyboard player didn't show up. I'm just going to quit after this." And she said, "Well, Frank Zappa just called." It's the truth! That's exactly what happened.

### **Brian Eno?**

I think he is very intelligent, has very unusual ways of working. I always liked what he brought out of me as a guitarist.

He produced me, in two cases, the *Lodger* album with David Bowie and *Remain In Light* with Talking Heads; in both instances he got me to do a lot of very unorthodox guitar things that resulted in some of my best playing.

### **Laurie Anderson?**

She still amazes me. The thing that stands out in my mind is when she told me that she stays up for three or four days at a time. She says that after the second and third day, you start getting into a whole other consciousness. She uses dreams and symbols in a way that is just phenomenal. She's one of my favorite artists and one of my favorite people to work with. I could talk with her for hours. She has an amazing urgency for information in her life.

**D***o you have any miraculous ways of learning difficult pieces of music quickly?*

Sure. Join Frank Zappa's band.

### **David Bowie?**

David Bowie was astounding to be around. It was a social stratum that was dizzying, to be around a true superstar. It was very difficult to get to know him as a person. He's buffered by all the people around him. The few fleeting moments when I could actually get to talk to David Bowie, the person, I found him very charming, funny, very worldly-wise.

### **But, musically?**

David gave me the opportunity to be a lead guitarist. That was my role in his band. "Just go wild on the guitar, Adrian." That was a lot of fun. It was sort of freeing. Musically, it was rather . . . Oh, how should I put this? — I didn't think it was organized very well, musically. We used a seven or eight piece band. I think we could have had a better sounding band with five people, or four even, if the music had been arranged and organized properly. But it was what David wanted and I was certainly in no position to say, "Hey, wait a minute. Let's try this." Carlos Alomar was the musical director of the band. So the music would be put together by Carlos and the band would play it. David would just come in and sing.

**W***hat is Robert Fripp doing?* I don't know what Robert's doing. The last postcard he sent me, every word started with a different letter of the alphabet. In order. . It's quite a piece of literature.

**You haven't let the business tangle you. Bowie has been so tangled by his success; repressed by his success . . .**

Well he has had an enormous amount of success. My success has been doled out on a much smaller level, so I've been able to counterbalance it with my family, my friends, things that bring you back down to earth. I remember being on the road with David Bowie. I'd call my wife and say, "I just met Dustin Hoffman and Andy Warhol and there are eighteen thousand people here in Madison Square garden." And she'd say, "Oh, that's nice. A raccoon knocked over the garbage last night. The kids are getting into the cereal boxes." I mean it just brings you right back down to earth.

**What is a zerna?**

**A zerna is actually a turkish reed instrument. And with my GR-700 synthesizer, I tried for a long time to get a similar sound to it. Finally, I got something hideous that I liked, so I called it zerna. The strange thing is that the touch sensitivity of the guitar with this "zerna" sound is totally different than regular guitar. For instance, if you just lift your finger off the note a little bit, it goes into a microtonal note. So if you were to play an Edward Van Halen song on it, it would sound like it was from outer space. I like it. It's bound to be used a lot in the Bears right now.**

**Is there a direct connection between your instrumental work and your time with King Crimson?**

I guess there is. I never really connected the two. King Crimson stands as one whole segment of my life — three years, from 1981 through 1984. It was a lot of work — it seemed more like ten years. There was such an involvement, such commitment. It was an intense kind of experience. I'm sure it has a direct influence on a lot of things I do.

**What is the tuning to Laughing Man?**

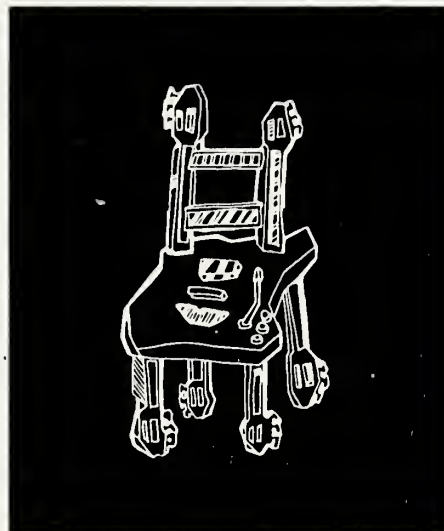
That's a good question. Either way you look at it, it's E's and B's. It's kind of like a manual chorus. The last two strings are the same. So, it reads E, B, E, E, E, E. And it's a very nice feeling. It leaves you absolutely stumped. For quite a while, you have to figure out new shapes and new things to do with it. And that's the reason I like fooling with those kinds of tunes; it's free.

**Did Robert Fripp allow for a lot of creative input?**

Robert was very supportive of my ideas, particularly as a singer and lyricist. He would often say, "Whatever you need for the song, Adrian." He was also very frustrating to work with because he had very specific ideas of what King Crimson was supposed to sound like, holistically, which didn't always jive with what someone else's version might be. He had four very headstrong musicians, any of whom could have taken the band in any number of directions. So there were points of friction.

I look back on the whole scene fondly. I feel that some

times we succeeded in synthesizing the minds and talents of four people. Some of the music seems regrettably incomplete to me. Some of it doesn't work and some of it works extremely well. I think that's just a product of being so adventurous and eclectic. It costs a lot of money, making records, so you pretty much just get one shot at it.



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I use a Roland GR700 for most of those strange sounds. It's a digital guitar synthesizer that allows you to design your own sounds and store them on cartridges. So I can build my own library of sounds I'll probably never use.

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**It seems like you've come to a realization that music will be your discipline.**

Yes. It is. I even look at it as almost religious. Music is the one thing that makes me feel able to transcend into something that is almost spiritual. If, for instance, a song just appears in your mind, it's there — well, where did it come from? It's like John Lennon said. The musician is the receiver, the antenna. All the ideas are out there in the air and sometimes they filter through you, if you're open to it.

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**R**ight now, we combine Analog and Digital machines. You get some things from the Analog machines that you don't get from the Digital machines. But the Digital machines have much better sound and frequency response, and they're also better at restoring changes no matter how many times you replay the tape. So currently, we work in a studio that has both.

---

**I think you've managed to use the new technology without letting it take over and make the sound synthetic.**

Well, I work real hard on that part of it. Because most synthesizer stuff, I just detest the sound of it. It's too synthetic and I strive to make natural things. That's what I like about the animal sounds. They're natural. They're a part of our environment. It's a big challenge to get a guitar synthesizer to sound like that. It's a real rewarding feeling. It's fun. I tell you, it's a great time to be a musician.

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## psychopharmacognosticon

(continued from page 13)

and license. Suddenly the idea of a tattoo seems weirdly appealing. A tattoo, by a Thai master, perhaps in the open air, me squatting stoically to receive his attentions . . . ? I awake early the next morning thinking about the tattoo. A stingray perhaps, or octopus? Or maybe something more floral and Buddhistic? It would be, I decide, a mystic rite and a way of keeping Thailand with me. Anyhow, days are long here; I go into town and explore the matter. If nothing comes of it I will still have long hours at Chaweng matching bodies seen one day with faces seen another.

The Chaweng market is filled with food of all sorts. Durians and mangosteens, huge cabbages, snails, baby corn, and a vast array of the unfamiliar. It all seems too good to be true; a third world country, culturally intact, free of strife and xenophobia. Is citizenship available?

Just when you fall in love with Asia, it throws you a curve. With courage screwed to the stick ing point, I set out to Na Thon for my tattoo. The entire town is without electricity, so the electric tattoo machine is not working. That the whole process pivots on an electric machine brings me down. Two hours later, power is still not restored. By now I discover that my return flight to Bangkok has been rescheduled and will arrive a half hour after my planned departure for Bombay. Result? No tattoo and no choice but to leave Koh Samui one day early.

Frustrated, I take the minibus to Chaweng for a last swim in the surf. Waves are high as a black storm moves off the Gulf of Thailand and over the palm-fringed shore.

Koh Samui is not without ambiguity. The tourists are weird, and everything has a slightly Fassbinderish glaze that is unnerving. And in all the nudity there is zero exuberance. No one touches anyone else on the beach. No distant entwined couples — ever. Very cool, these Europeans. Weed is unmentioned and invisible. No one smokes on the beaches. No one approaches me to sell at anytime. Strange and a little sad. Yet, perhaps that is the key to the survival of the scene. To have it cool.

The best people-memories are anomalies: the two radiantly zany Tokyo girls with perfect British accents and the utterly boffo style of the Japanese ultra-cosmopolite. I consider bringing them home with me but suspect I could not keep them.

Then there was the old Thai gentleman, covered in tattoos from head to foot and grinning toothily, who gives massages in an open air pavilion in Na Thon. And the Italian *ragazza* with the tattoo.

An only-in-Thailand moment occurs at Surathani airport. I leave the island with uncertain prospects for getting on the Bombay flight. "Call me in Koh Samui if you have or have not a problem," the Thai Airlines girl had said. So I phone back to tell her it was confirmed. What to make of an airline employee who says, "I miss you already." I must be nuts to leave. Thailand is designed to work. And does. It is a miracle of middle-tech culture and third world decency. Koh Samui is the pearl of Southeast Asia. Pass it on.



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