

The Last Whole Earth Catalog

access to tools



\$5

*Evening.
Thanks again.*

FUNCTION

The WHOLE EARTH CATALOG functions as an evaluation and access device. With it, the user should know better what is worth getting and where and how to do the getting.

An item is listed in the CATALOG if it is deemed:

- 1) *Useful as a tool,*
- 2) *Relevant to independent education,*
- 3) *High quality or low cost,*
- 4) *Easily available by mail.*

CATALOG listings are continually revised according to the experience and suggestions of CATALOG users and staff.

PURPOSE

We are as gods and might as well get good at it. So far remotely done power and glory—as via government, big business, formal education, church—has succeeded to point where gross defects obscure actual gains. In response to this dilemma and to these gains a realm of intimate, personal power is developing—power of the individual to conduct his own education, find his own inspiration, shape his own environment, and share his adventure with whoever is interested. Tools that aid this process are sought and promoted by the WHOLE EARTH CATALOG.

Index on p. 442

FRONT COVER

INSIDE FRONT COVER

INSIDE BACK COVER

BACK COVER

Taken November 9, 1967, from NASA's Apollo 4 at 100 miles or 398,000 vertical miles. This is probably the first American photograph of the whole Earth. You're looking west over the Atlantic Ocean, with the Antarctic Continent just visible at the bottom right. The photo was taken in 1967, but no one seemed to care about noticing it or publishing it. I think it was the shadow, which frightened people. There are no shadows on our maps.

The famous Apollo 8 picture of Earthrise over the Moon that established our planetary facthood and became the symbol of the new space age and began to bend human consciousness. This quote is from Energy Flow in Biology, by Harald Morowitz, \$9.50 from Academic Press, 111 Fifth Avenue, New York, N.Y. 10003.

The photograph, courtesy Lick Observatory, shows the M-31 Andromeda Galaxy, which is considered similar to our own in structure and size. Where the thought-by-day originated in the mind. The quote is from Energy Flow in Biology, by Harald Morowitz, \$9.50 from Academic Press, 111 Fifth Avenue, New York, N.Y. 10003.

This is the back cover that was on our first CATALOG, the Fall 1968 issue, which was 64 pages and cost \$5. As most of our color covers, it was designed with Peter Bailey. The photo, the first full-disk photograph of the Earth, was a day-long high resolution color TV film shot from an ATS satellite in November 1962. To NASA our thanks.

CATALOG Procedure



Index on p. 442

Ordering from the CATALOG

- Address orders to the supplier given with the item. (Or shop locally.)
- If the price listed is not postage consult post office or express agency for cost of shipping from supplier's location to yours. Or have the item sent postage C.O.D.
- Add state sales tax if transaction is within your state. (California sales tax is 5%). You don't have to do this for periodicals.
- Send check or money order.

If the item says "or WHOLE EARTH CATALOG," you can get it by mail from us:

WHOLE EARTH CATALOG
558 Santa Cruz Ave.
Menlo Park, CA 94025

There is usually no price difference; the CATALOG gets the markup (10-40%) instead of the other guy, is all. Our service is fairly fast, especially for west coast. Generally, the closer a supplier is to you, the quicker and cheaper the shipping will be. If you're ordering from overseas, surface mail takes about two months, airmail just a couple days.

Sense and Patience

Be gentle. Sometimes we carry very small companies. They often have a hard time coping with the volume of inquiries they receive as a result of their unrequested listing in the CATALOG. Especially when most of the requests for literature seem to be just curiosity. That kind of thing can break a small company. So don't write just to keep your mail box full.

—Fred Richardson

Current Information

Bear in mind there's an inflation on. Prices are subject to rise without notice. Prices, addresses, suppliers — what we call access information — are as current as the most recent printing date (see bottom of this page).

2

The evaluations in this CATALOG were made in April-May 1971, after three years of sifting. They are not updated with subsequent printings.

Also, where there are excerpted items from catalogs we're reviewing, those items and prices are not updated from the 1971 originals.

Note. This really is the LAST CATALOG. Please don't send us your suggestions for new items and comments on old ones (except for revisions of access information). Let us R.I.P. Write to one of our kind publications (see pp. 239-244). Or start your own catalog.

Format

We used to two publications, the CATALOG, and the Supplement. The CATALOG was formal and responsible; the Supplement wasn't. In this LAST CATALOG they are mixed. Usually material from the Supplements has a Light heading, whereas formal CATALOG items have a Bold heading. Both are indexed in the back. About 1/3 of the material in this LAST CATALOG is new.

Each page number has a heading indicating the section it's in, such as Whole Systems, and a heading indicating the general contents of that page, such as Funky Future.



Divine Right's Trip

Our Story thus far

by Gurney Norman

This original folk-tale will be found preceding episodically along the numbered pages (lower-right corner) in this type face, making the CATALOG what it has longed to be, a work of drama. The Perils of D.R. Tunc in next page.

Starts on p. 8.

Blackwell's Books

Many books carried in the CATALOG are substantially cheaper in the British edition. You can order them from Blackwell's.

Blackwell's Bookstore in Oxford, England, is a service which the Catalog should list. Their collection is probably the world's most comprehensive and they run a global service, providing lengthy, free, separate catalogs on about 25 subject areas, including children's books, books in other languages, books on art, biography, geography, religion, mathematics, etc. Their prices are significantly lower and they will not send a book which can be obtained more cheaply in America unless you so request. They will open an account for you, accept your personal check, and bill you semi-annually. They also buy up old libraries (occasionally famous ones, recently John Masefield's) and issue catalogs on second-hand books and first editions. They have a cable code BOOKS OXFORD and a code system for some catalog which enables you to place an order with a minimum of cost in a hurry. The books arrive slowly but the catalogs keep coming in all year long and are a great delight themselves.

[Suggested and Reviewed by Larry Schwartz]

Catalog free from:

BLACKWELL'S
Broad Street, Oxford, England

METHODS OF PAYMENT

Orders and correspondence should, in every case, be sent direct to Oxford. The following addresses are for remittances only.

U.S.A. and American Account Area: by personal check in dollars (\$1-\$2.40) sent to Blackwell's in Oxford; or to B.H. Blackwell Ltd., P.O. Box 1452, Church Street Station, New York, New York 10008 (for their account with the Bankers Trust Co.).

Canada: by personal cheque in Canadian dollars (£-\$2.61) sent to Blackwell's, or to The Canadian Imperial Bank of Commerce, P.O. Box 6003, Montreal 3, P.C., or by Bank Draft in sterling, or by Canadian Postal Money Order.

Prices given for Blackwell's in the Whole Earth Catalog do not include shipping.

The review is a bit out of date. Blackwell's now bills monthly, and they get upset if you don't pay them reasonably promptly; gone are the days when you could have their books for six months or before you had to think about paying for them. One of the most useful Blackwell's catalogs is in memory of this. It's *New and Forthcoming Books* in all subjects, and it comes twice a year. It's a good way to keep up with what's happening.

Another central point about Blackwell's is that they will order for you books published anywhere in the world. This includes printed music, and a substantial savings can be the result, since most of the European publishers are not represented in America. Some foreign book publishers have sole American distributors; the European houses will not accept direct orders from Americans — but they will accept orders from Blackwell's. Recorder music which would cost \$10 at any music store in New York City costs about \$3 when ordered from England, if the stuff is foreign-published.

T B Belanger
New York

Suggesting and Reviewing

We are a bunch of amateurs. Our reviewers — seldom experts, never critics — get \$10 and credit for their review. Suggestors get only credit until Fall 1970, then \$10. Our policy with suppliers has been:

Suppliers (manufacturers, creators, etc.) may not buy their way into the CATALOG. Free samples, etc., are cheerfully accepted by CATALOG readers, but not by suppliers. We owe no payment for listing is asked or accepted. We owe accurate information exchange to suppliers, but not favors.

Our obligation is to CATALOG users and to ourselves to be good to one another.

The judgments in the reviews are wholly sincere. They are only partially informed, often biased, very often wishful, occasionally a temporary enthusiasm. Many are simply hasty. I wouldn't rely on them too far. Try to see through them.

On Getting Stuff

As Dan Schiller suggested in Popular Photography, the CATALOG will bankrupt you if you can't distinguish between what you need and what you wish needed.

Start extravagantly, and you'll never finish. Get the cheap tool first, see if it feeds your life. If it does, then get a better one. Once you use it all the time, get the better. You can only grow into quality. You can't buy it.

Most of the stuff in the CATALOG can be borrowed free from a library.

This issue

of the CATALOG is the last. We encourage others to initiate similar services to the vastness of the economy we stumbled into and are stepping out of. We don't see how using our name or copy can aid originality, so they're not available, for love or money. Ideas we've had and evaluations we've made are free for recycling.

Preparation of the CATALOG was done on an IBM Selectric Composer and Polaroid MP-3 Camera.

Printing and binding by:
Novels Publications, Menlo Park, California
Deven Lithographers, Inc., Long Island City, New York
Craftsman Press, Inc., Bladensburg, Maryland.

For credits, and How to Make a WHOLE EARTH CATALOG AND TRUCK STORE, see p. 434.

1st Printing June 1971—200,000—Novels
2nd Printing July 1971—100,000—Deven
3rd Printing August 1971—100,000—Deven
4th Printing September 1971—100,000—Craftsman
5th Printing October 1971—120,000—Craftsman

Understanding Whole Systems



Buckminster Fuller

The insights of Buckminster Fuller initiated this catalog.

Among his books listed here, *Utopia or Oblivion* is now probably the most direct introduction. It's a collection of his talks given at MIT in 1964 and 1965 at a bargain price. An Operating Manual for Spaceship Earth is his most recent, succinct, statement. Nine Chains to the Moon is early, and openly metaphysical. The Untitled Epic of Industrialization is lyrical and strong. Ideas and Integrities is his most autobiographical, and perhaps the most self-contained of his books. No More Secondhand God is the most generalized, leading into the geometry of thought.

People who beef about Fuller mainly complain about his repetition—the same ideas again and again; it's embarrassing, also illuminating, because the same notions take on different contexts. Fuller's lectures have a rare quality of rich nonlinear endless improvisation full of convergent surprises.

Some are put off by his language, which makes demands on your head like suddenly discovering an extra engine in your car—if you don't let it drive you'll never get there—it'll drag you. Fuller won't wait. He spent two years silent after illusory language got him in trouble, and he returned to human communication with a redesigned instrument.

—SB

Utopia or Oblivion

R. Buckminster Fuller

1968; \$6.95pp.

\$1.25 postpaid

from:
Bantam Books
666 Fifth Avenue
New York, New York 10019
or WHOLE EARTH CATALOG



My recommendation for a curriculum of design science:

- | | |
|-----------------------------------|----------------------------|
| 1. Synergetics | 7. Communications |
| 2. General systems theory | 8. Meteorology |
| 3. History of games (Von Neumann) | 9. Geology |
| 4. Chemistry and physics | 10. Biology |
| 5. Topology, projective geometry | 11. Sciences of energy |
| 6. Cybernetics | 12. Political geography |
| | 13. Ergonomics |
| | 14. Production engineering |

Here on Southern Illinois' campus we are going to set up a great computer program. We are going to introduce the many variables involved in economics. We will have all the basic data in the memory bank. We will have and know much of each class of the physical resources; where are the people, what are the trends—all kinds of trends of world men?

Next we are going to play a computer feeding game, called "What Do You Mean By Civilization?" We will start playing relatively soon. We will bring people from all over the world to play it. There will be competitive teams from all around earth to compete on theories on how to make the world work. If a team reports to us that they have found a way to end world hunger and is not able to wait for the going gestation rates to validate their theory then we will be in trouble. When you get into politics you are very liable to get into war. War is the ultimate tool of politics. You develop the idea inducing to lose the game.

I was born cross-eyed. Not until I was four years old was it discovered that this was caused by my abnormally farsighted. My vision was thereafter fully corrected with lenses. Until four I could see only large patterns, trees, trees, oceans, people with whom all else was too small. We could, of course, hypothetically assume that I was born cross-eyed. A human being can't see but through his eyes. I was a teardrop of a human being. I did not see a human eye or a teardrop of a human hair until I was four. Despite my new ability to apprehend details, my childhood's visual dependence is only upon big pattern clues has persisted.

I am convinced that neither I nor any other human, past or present, was or is a genius. I am convinced that what I have every physically normal child also is at birth. We could, of course, hypothetically assume that all else are geniuses and get swiftly de-geniused. Unfavorable circumstances, frustration, frustration, systems, and ignorantly articulated love and fear of elders tend to shut off many of the child's brain capability valves. I was lucky in avoiding

There is luck in everything. My luck is that I was born cross-eyed, was ejected so frequently from the establishment that I was finally forced either to perish or to employ some of those faculties with which we are born endowments, the use of which circumstances had been so frustrating as to have to put them in the deep freezer, whence only hellishly hot situations could provide enough heat to melt them back into usability.

Utopia or Oblivion

Operating Manual for Spaceship Earth
Buckminster Fuller
1969; 103pp.

\$1.25 postpaid

from:
Pocket Books, Inc.
1 W. 39th St.
New York, N.Y. 10018

or WHOLE EARTH CATALOG

To comprehend this road before us we note that long ago man went through the woods, which you may have done, and a century hence trying to find the shortest way through the woods, a given direction. He found trees fallen across his path. He climbed over those cross-creased trees and suddenly found himself poised on a tree that was sloping down. He had to learn to lie down on a great tree, and the other end of the tree on which he found himself teetering lay under a third great fallen tree. As he teetered he saw the thinning trees lifting. It seemed impossible to him. He went over and tried using his hands to lift the tree. He couldn't budge it. Then he climbed back atop the first smaller tree, purposefully teetering it, and surely enough it again elevated the other tree. "Yours is a mind that can't conceive," said a tree thought that it was a magic tree, and may have created it; home and erected it as man's first totem. It was probably a long time before he learned that any stout tree would do, and thus extracted the principle of leverage out of all his earlier successive special-case experiences with such accidental discoveries.

To begin our position-fixing aboard our Spaceship Earth we must first acknowledge that the abundance of immediately consumable, obtainable, and utilizable foodstuffs we have been provided are sufficient until now to allow us to cast off dependence on ignorance. Being eventually exhaustible and spoilable, they have been adequate only up to this critical moment. That's the reason for error—humanity's lack of growth is due to now wanting more. What is provided just as a bird inside of the egg is provided with liquid nutrient to develop it to a certain point. But when by design the nutrient is exhausted, the time when the chick is large enough to be able to locomote on its own behalf, the shell begins to calcify. The calcified shell seeking more nutrition it inadvertently breaks open the shell.

A new, physically uncomplicated, metaphysical initiative of unbiased integrity could unify the world. It could and probably will be provided by the utterly impersonal problem solutions of the computers.

Heisenberg's principle of "indeterminism" which recognized the experimental discovery that the act of measuring always alters that which was being measured turns experience into a continuous and never-repeatable evolutionary scenario.

The gold supply is so negligible as to make it pure voodoo to attempt to make the world's economic evolution traffic through the gold-sized needle's eye.

Brain deals exclusively with the physical, and mind exclusively with the metaphysical. Wealth is the progressive mastery of matter by mind . . .

Stepping forth from its initial sanctuary, the young bird must now forage on its own legs and wings to discover the next phase of its regenerative sustenance.

Nine Chains to the Moon

Buckminster Fuller

1938; 1965; 375 pp.

Unavailable until 1972



Untitled Epic Poem on the
History of Industrialization

1962; 227pp.

\$1.95 postpaid

from:
Simon & Schuster, Inc.
630 Fifth Avenue
New York, New York 10020
or WHOLE EARTH CATALOG

However, man unconcernedly sorting mail on an express train, with unuttered faith that the engine is competent, the switchmen are asleep, that the track workers are doing their job, that the technologists will not damage train and the rails knew their stuff, that the thousands of others who may never know by face or name are collecting drifts, and are paying for repairs, and so handing assets that may be lost a week from today and again the week after, that all the time his personal well-being without his personal protection constitutes a whole new era of evolution—reminiscently "new" since the beginning of the spoken word. In fact, out of the understanding innate in the spoken word was industrialization wrought of millenniums, of seemingly whitherless spade work.

Ideas and Integrities

Buckminster Fuller

1963; 318pp.

\$1.95 postpaid

from:
Collier Books
The MacMillan Company
One Park Avenue
Front and Brown Streets
Riverside, N.J. 07075

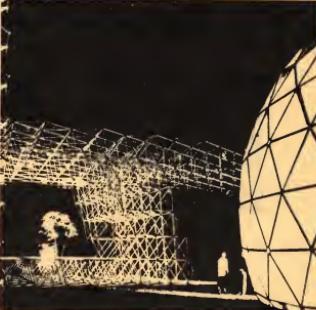
or WHOLE EARTH CATALOG



Standing by the lake on a jump-up-think basis, the very first spontaneous question coming to mind was: "If you will be standing here, you've ever been asked to believe and have sworn only to your own experiences do you have any conviction arising from those experiences which either discards or must assume an *a priori* greater installed knowledge?" We were asked to believe in the laws of gravity and positive. Experience had clearly demonstrated an *a priori* anticipatory and only intellectually apprehendable orderliness of interacting principles existing in the universe into which we are born. These principles are divine but are not mentioned by name. I said to myself, "I have faith in the integrity of the anticipatory installed wisdom which we may call God." My next question was: "Do I know the source of this integrity?" The answer was "No." "You don't know and no man knows, but the faith you have just established is of infinite import and recognition of the *a priori* wisdom of the fact of your being." Anticipatory addressed myself, I said, "You do not have the right to eliminate yourself, you do not have the right to eliminate me. You belong to the universe. The significance of you is forever and forever significant to you, but you may assume that you are fulfilling your significance if you apply yourself to converting all your experience to highest advantage of others. You and all men are here for the sake of other men."

I define "synergy" as follows: Synergy is the unique behavior of whole systems, unproduced by behavior of their respective subsystems' events.

(Fuller cont'd.)



Buckminster
Whole Systems 3

Fuller cont'd.

No More Secondhand God
Buckminster Fuller
1963, 163 pp.

\$2.45 postpaid

from:
Southern Illinois University Press
600 West Grand
Carbondale, Illinois 62901
or WHOLE EARTH CATALOG

Thinking is a putting-aside, rather than a putting-in discipline, e.g.,
thinking about the problem rather to isolate the trail into informative research. Thinking is FM—frequency modulation—for its results in tuning-out of irrelevancies as a result of definitive resolution of the exclusively tuned-in or accepted feed-back messages' pattern differentiability.

I see God in
the instruments and the mechanisms that
work
reinforcing,
more reliably than the limited sensory departments of
the human mechanism.

And God says
observe me, the stock
of man's creative potentials
and his destructive tactics
He could have his new world
through my efficient love
for "all" fall
in love as well as in war
which means you can
just as much rubbish,
skip as many stupid agreements
by love,
spontaneous unselfishness radiant.

The revolution will come—
an or from the top.
The burn swiftly.
Neither the branches, trunk, nor roots will be endangered.
Only last year's leaves and
the past year's dead buds and orchids
will not be there
when the next spring brings fresh growth
and flowering stars.
Here is God's purpose—
for God, to me, it seems,
is a verb,
not a noun;
properly improper;
it is the articulation
not the art, objective or subjective;
it is working;
not the abstraction "love" commanded or entreated;
is knowledge dynamic,
not legislative code,
not proclamation law,
not academic dogma, not ecclesiastic canon.



Buckminster Fuller on Hippie Hill, San Francisco, 1968.

Yes, God is a verb,
the most active,
continuously vast harmonic
reordering of the universe
from unleashed energy of energy.
And there is born unheralded
a great new peace,
not out of exacting
pseudo-static security
but out of including, refining, dynamic balancing.
Nuggets of gold
Only the false and nonexistent are dispelled.

And I've thought through to tomorrow
which is also today.
The tension rings
and you say to me:
Hello Buckling this is Christopher; or
Daddy it's Allegro; or
Mr. _____ this is the Telephone Company Business Office;
and I say you are inaccurate.
Because I knew you were going to call
and furthermore I recognize
that it is you who is "speaking."

And you say
aren't you being fantastic?
And knowing you I say no.
All organized religions of the past
were inherently disengaged
as both an artifact
in "second hand" information.
Therefore it will be an entirely new era
when man finds himself confronted
with the need to experiment
with an obviously a priori
intellectually anticipatory competence
that has interordered
all that he is discovering.

[No More Secondhand God]

The Dymaxion World of Buckminster Fuller

The most graphic of Fuller's books is 'it's about his work, by Robert Marks'. Consequently it is the most directly useful if you are picking up on specific projects of his such as domes, geometry, cars, demographic maps and charts, etc.

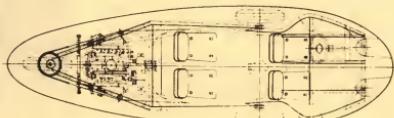
-SB

The Dymaxion World of Buckminster Fuller

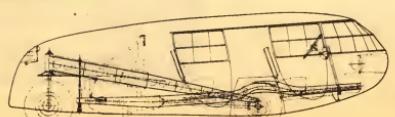
Robert W. Marks
1960; 222 pp.

\$12.50 postpaid

from:
Southern Ill. Univ. Press
6000 West Grand
Carbondale, Illinois 62901
or WHOLE EARTH CATALOG



Dymaxion car 1933



World Design Science Decade Documents 1-4

Fuller publishing Fuller (and some John McHale). Good raw material.

-SB

World Design Science Decade Documents, Vol. 1-4

R. B. Fuller, John McHale

\$16.00 postpaid

from:
World Resources Inventory
P.O. Box 909
Carbondale, Illinois 62901

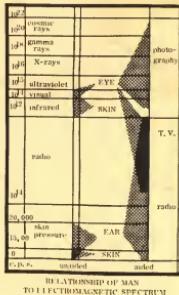
In the 1920's with but little open country highway mileage in operation, automobile accidents were concentrated and frequently occurring within our urban and suburban presence. Witnessing a number of accidents, I observed that warning signs later grew up along the roads leading to drivers' points and instances where the police and patrols were put on duty. The authorities tried to cure the malady by reforming their motorists. A relatively few select individual drivers with good driving records, good driving habits, and natural tendency to anticipate and understand the psychology of others emerged as "good" and approximately accident-free drivers. Many others were prone.

In line of the after-war curative reforms, tending to highly specialized individual offender case histories, my philosophy urged the anticipatory avoidance of the accident potentials through invention of generalized highway dividers, grade separators, clover leafing and adequately banked curves and auxiliary traffic control stop-lighting systems. I suggested that the problem couldn't be solved by preventative design rather than attempted reformation. My resolve: Reshape environment; don't try to reshape man.

[WDSD Document 1]

Tension and Compression are complementary functions of structure. Therefore, in order that they may coexist, one must dominate the other's birth contract to compression. When we load a column in compression its girth tends to expand in tension. When we invest gage tension and compression, we find that compression members, as you know, act as arches. They have very limited length in relation to their cross section. Thus, when you pull them, they tend to readily break. Tension members, when you pull them, tend to pull, conversely, (almost the opposite) straight instead of trying to curve. This is why so do thin-walled structures loaded columns. The contraction of the tension members in them, which makes it more rigid. There is a certain ratio of cross section to length in tensional members of structural systems. This is a fundamental limit ratio to compression. Therefore when nature has very large tasks to do, such as cohering the solar system or in universe, she uses tension. She uses tension to cohere the atom and macrocosm in the following manner. Nature has compression operating in little remotely positioned islands, as high energy concentrations, as in the sun, the stars, the galaxies, the planets, or as islanded electrons, protons or other atomic nuclear components in the microcosm while cohering the whole universal system, both macro and micro, of mutually remote, compressional, and of nonremote islands in the islands by comprehensive tension,—compression islands is a tenebrism.

[WDSD Document 2]



To start off with it is demonstrated in the array of events which we have touched upon, we don't have to have a living "anatomy". The "man" has all been demonstrated as formerly. Buckminster's wealth is cumulative in contradistinction to the inherently terminal, discontinuous, temporary wealth of the craft eras of civilization such as the Phoenician Age, the Roman Age, etc. We could imagine that cumulative industrial wealth has come about, we could stop playing obsolete games, but that is a task that cannot be accomplished by political and social reforms. Man is so deeply conditioned in his political and social life that he is unable to do it. He has too many inferiority complexes to yield to political reformation. The obsolete games will be abandoned only when realistic, happier and more interesting games come along to replace the obsolete games.

[WDSD Document 3]

World society has throughout its millions of years on earth made its judgments and decisions on the basis of what was visible to the eye. We may safely say that the world is keeping its eye on the unimportant 1 percent of the historical transformation while missing the significance of the 99 percent of overall, unseen changes. Form is infinitely visible and forms no longer can "follow functions" because the significant functions are invisible.

[WDSD Document 4]

be aware of whole system it is.
is the loneliness awareness.
imagine you are a near sighted, bucktoothed, kid, doing
sunflower seeds, and somebody comes along and puts eyeglasses on you,
holds up a mirror, then takes you out on a hilltop at night,
points up at the little winks out there,
and tells you they aren't really little winks at all,
but great big flashes,
a long way away,
then asks you if you want some more sunflower seeds.

you want to throw away the eyeglasses, but it is too late,

you suck,
you've seen it,
you are little,
alone,
puny,
except . . .

except for a few soft flannel thoughts,
and a belief that there are others like you,
brothers like you,
and that a sunflower seed
is a whole system too.

-jd

Andromeda Galaxy

Superb black and white photo-graph poster of the nearest galaxy to ours. Peerless meditation target.

-SB

[Suggested by
Doug Engelbart]

Andromeda Galaxy
26" x 38"
\$6.00 postpaid

from:
Editorial Scientific
100 Edsor Building
Barrington, N. J. 08001



Star Maker

A man's consciousness unwillingly departs his body and his planet. Once in space he accomplishes with infinite grace of Star Maker. His journey takes him into the minds of other planetary beings; a company of these travel together and witness countless civilizations; eventually they participate in a combined consciousness of time as it embraces the stars as well; this leads to galactic and cosmic consciousness and the culminating encounter with Star Maker.

Jordan Belson, who I trust in these matters, asserts that it is a true vision, that Stapledon's whole life pointed at attaining it, and that the book will be used and discussed for centuries. This Dover edition includes an earlier Stapledon story, "Last and First Men".

-SB



Star Maker
Olaf Stapledon
1937; 180 pp.
\$2.50 postpaid

from:
Dover Publications, Inc.
180 Varick Street
New York, N. Y. 10014

or WHOLE EARTH CATALOG

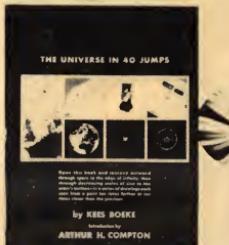
Cosmic View

"The Universe in 40 Jumps" is the subtitle of the book. It delivers.

The man who conceived and rendered it, a Dutch schoolmaster named Kees Boeke, gave years of work to perfecting the information in his pictures. The result is one of the

simpliest, most thorough, inescapable mind blows ever printed. Your mind and you advance in and out through the universe, changing scale by a factor of ten. It very quickly becomes hard to breathe, and you realize how magnitude-bound we've been.

-SB



Cosmic View
Kees Boeke
1957; 48 pp.
\$4.50 postpaid

from:
The John Day Company
257 Park Avenue South
New York, N. Y. 10010

or WHOLE EARTH CATALOG

The Hubble Atlas of Galaxies

This book is a series of superb photographs which is the definition of Edwin Hubble's classification of galaxies. Galaxies come in a variety of shapes from round blurry ones through the familiar spiral in Andromeda to fantastic blazing pinwheels like M101.

Hubble has lined them up in a sequence according to shape. The members of this sequence have not yet been determined. It may indicate a series of steps in the life of one galaxy which progresses from blurred youngster to more definite spiral or vice versa. More likely vice versa, since the spirals contain hot young blue stars which we know will burn out in a few million years or so, while the blurry ones contain many ancient red giants. It is also possible that the sequence is not an age sequence at all, but merely reflects conditions at that place in the universe when that galaxy was formed.

But besides being a tool for scientists, this book is like a guided tour through our own miraculous universe. When this planet gets you down, leaf through the Atlas and forget about your galaxy after a day, as beautiful and varied as snow flakes. Some galaxies are far away that the graininess of the photographs shows in the blow up. Some photographs show small blurred objects in the background which one suddenly realizes are more galaxies.

[Reviewed by Jenny Deupree,
Suggested by Jordan Belson]

The sheer beauty of our planet surprised me. It was a huge pearl, set in shadow. It was wondrous. It was an opal. No, it was far more lovely than any jewel. Its pastel colouring was more subtle, more intricate. It displayed such delicacy and brilliance, the intricacy and harmony of a flower. Stronger, more robust, more remonstrant I seemed to feel, as never before, the vital presence of Earth as of a creature alive but tranced and obscurely yearning to wake.

The sport of disembodied flight among the stars must surely be the best exhilarating of all earthly exercises. It was not without danger; but, as I imagined, we soon discovered, was probably not physical. In our bodies, however, with certain physical reactions, there was little. Sometimes, in the early stages of our adventure, we plunged by accident heading into a star. Its interior would, of course, be inconceivably hot, but we experienced merely brilliance.

The psychological dangers of the sport were grave. We soon discovered the disheartenment, mental fatigue, fear, all tended to reduce our powers of concentration. However, the sense of power in the void of space, like a derelict ship on the ocean; and such was the fear roused by this thought that there was no possibility of moving till, having experienced the whole gamut of despair, we passed through indifference and on into philosophical calm.

Though the pronoun "I" now applied to us all collectively, the pronoun "we" also applied to us. In one respect, namely unity of consciousness, we were indeed a single experiencing individual; yet at the same time we were in a very important and delightful manner distinct from one another.

With unceasing passion we strove constantly to peer behind each minute particular event in the census to see what lay beyond that infinity which, for lack of a true name, we had called the Star Maker. But, peer as we might, we found nothing. Though in the whole and in each particular thing the dread presence indubitably confronted us, its very infinity prevented us from assigning to it any features whatever.

The Hubble Atlas of Galaxies
Allen Sandage
1961; 50 plates

\$10.00 postpaid from:
Carnegie Institution of Washington
1530 P Street, N.W.
Washington, D.C. 20005

or WHOLE EARTH CATALOG



"When the cosmos wakes, if ever she does, she will find herself not the single beloved of her maker, but merely a little bubble adrift on the boundless and bottomless ocean of being."

Again certainly, the star's whole physical behaviour is normally experienced as a life, an ecstasy, an ever surging, ever formal beauty. Thus the whole world was able to discover through their own most formalistic aesthetic experience. In fact it was through this experience that they first made contact with stellar mind.

We, or rather I, now experienced the slow drift of the galaxies much as a man feels the swing of his own limbs. From my score of viewpoints, the galaxies moved in slow motion of many millions of galaxies, streaming and circling, and yet without any friction or contact from one another with the relentless "expansion" of space. But though the vastness of space was increasing in relation to the size of galaxies and stars and worlds, to me, with my composite, scattered body, space seemed no bigger than a great vaulted hall.

From all the coincident and punctual centres of power, light leapt and blazed. The cosmos exploded, actualizing its potentiality of space and time. The centres of power, like fragments of a bursting bomb, were hurled apart. But each one retained in itself, as a memory and a longing, the other galaxies, and each mirrored in itself aspects of all others throughout all the cosmic space and time.

and, "If I enough, and far more than enough, to be the creature of so great and lovely a universe, my power is to have been born, to have the consciousness, even of a minute cosmos. It is enough to have been created, to have embodied for a moment the infinite and sumptuously creative spirit. It is infinitely more than enough to have been used, to have been the rough sketch for some perfected creation."

The Atlas of The Universe

Sumptuous book. Accurate, well edited, well illustrated, well written. Does the job as no other book has, and a lot have tried.

Contents include exploration of space, atlas of the Earth, of the moon, of the solar system, and of the stars, along with a catalog of stellar objects, glossary of astronomical terms, and beginner's guide to the heavens.

-SB

The Atlas of The Universe

Patrick Moore
1970; 272 pp.

\$35.00 postpaid

from:
Rand McNally & Company
P.O. Box 7800
Chicago, Illinois 60680

405 Park Ave.
New York, N.Y. 10022

423 Market St.
San Francisco, CA. 94105

or WHOLE EARTH CATALOG

Below is a
contour map of the centi-
metric emission of the Sun.



THE ATLAS OF THE UNIVERSE

Edited by Sir Bernard Lovell
Colloquy by Sir Bernard Lovell
Introduction by Sir Bernard Lovell



The Unexpected Universe

Loren Eiseley celebrates our grandest ignorances, the places in human experience where you stare into them, the void sets back. City perhaps, the center of evolution; the unexplored continent of your mind; sun, death's dead gesture; edges of oceans. Strong useful prose from an old guy who knows something clear and bleak about regeneration.

-SB

The Unexpected Universe

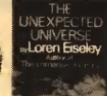
Loren Eiseley

1969; 239 pp.

\$5.75 postpaid

from:
Harcourt, Brace & Jovanovich, Inc.
757 Third Avenue
New York, N.Y. 10017

or WHOLE EARTH CATALOG



In the end the sea rejects its offspring. They cannot fight their way through the surf which casts them repeatedly back upon the shore. The tiny breathing pores of starfish are stuffed with sand. The rising sun shrivels the mucilaginous bodies of the unprotected. The beach search and its endless war are soundless. Nothing screams but the gulls.

The sun behind me was pressing upward at the horizon like a giant's thumb pushing against the tumbling blackness of the clouds. Ahead of me, over the distant horizon point, a gigantic rainbow incredulous performance had sprung suddenly into existence. Somewhere toward its foot I discerned a human figure standing, as it seemed to me, within the rainbow, though unconscious of his position. He was gazing fixedly at something in the sand.

The Character of Physical Law

If you look larger or smaller than the skinny realm of life, all you see is physics. It is our substratum and superstratum. These famous Feynman lectures introduce the subject as no other book has.

-SB (Suggested by Lyle Burkhead)



Landing of Apollo 12 (above)

The lunar module Intrepid is seen descending toward the Oceanus Procellarum (19 November 1969). This photograph was taken from the command module. After Intrepid had returned to orbit, and had been abandoned, it was deliberately crashed on to the Moon setting up crustal vibrations which lasted for almost one hour.

The Galaxy below

The Galaxy, seen edge-on. The Sun is 30,000 light-years from the center of the system. The direction of the center is toward the rich star-clouds in the constellation of Sagittarius, but it cannot be seen through the obscuring intervening matter.



The Lagoon Nebula, M8 (Sagittarius), is a typical emission nebula, 4800 light-years away. The "lagoon" is produced by the foreground dust-clouds. It is thought that the star at the center of the nebula is of type O, and is so deeply embedded in the nebula that it cannot be observed. Gases have been detected, indicating that star formation is occurring. The density in the dense nebula; there are 10^3 to 10^4 atoms per cubic centimeter in the central region—evidently this density still corresponds to what we would normally term a laboratory vacuum.



Eventually he stooped and flung the object beyond the breaking surf. I labored toward him over a half mile of uncertain footing. By the time I reached him the Intrepid had receded ahead of us, but still the roar of the surf was louder, and the changing lights across his horizon. He was starting to crawl again.

In a pool of sand and silt a starfish had thrust its arms stiffly and was holding its body away from the stinging mud.

"It's alive," I ventured.

"Yes," he said, and with a quick yet gentle movement he picked up the star and spun it over my head and far out into the sea. It sank with a splash. The water roared once more.

"It may live," he said, "if the starfish pull is strong enough." He spoke gently, and across his bronzed worn face the light still came and went in subtly altering colors.

"There are not many come this far," I said, groping in a sudden embarrassment for words. "Do you collect?"

"Only like this," he said softly, gesturing amid the wreckage of the ship. "And only for the living." He stopped again, oblivious of my curiosity, and another star still neared across the water.

"The stars," he said, "three of them. One . . .

... is it all at our backs, masked and demonic, moved the trickster as I have seen his role performed among the remnant of a savage people long ago. It was that of the jester presented at the most deadly of ceremonies. This creature never laughed; he never made a sound. Palms were bended, and he stood behind the officiating priest, mimicking, with the added flourish of a little wine, the gestures of the devout ones. His timed and stylized postures evinced a dersion infinitely more formidable than actual laughter.

We had been safe in the enchanted forest only because of our weakness. When the powers of that gloomy region were given to us, immediately, in a witch's house, these began to fly about underfoot. The power of the inner man, who was integrally to the subconscious potter-god of man's nature. The closer man and the natural world drew together, the more erratic became the being within. Huge shadows leaped triumphantly after every blinding illumination. The trickster had but to be.

The stars were cast out into the ocean. There was one difference. The stars did not fall out into the ocean; no societal ritual safely contained their posturings, as in the wavy dance

of the trickster. Instead, unseen by many because it was so gigantically real, the multiplied darkness threatened to submerge the carriers of the light.

... Out of the depths of a seemingly empty universe had grown eye, like the eye in my room, but an eye on a vastly larger scale. It looked out upon what I can only call itself. It searched the skies and the earth, and it found that in this shape of matter it had ascended like a vaporous emanation from the depths of the void. The nothing had miraculously germed upon the nothing and was not nothing. It was an intrusion into, or a projection out of, nature for which no analogy can be found. The nothing in due course of evolution of value arisen from the domain of absolute zero. A little whirlwind of commanding molecules had succeeded in confronting its own nothingness.

Here, at last, was the rift that lay beyond Darwin's tangled bank. I picked up a star whose tube feet ventured timidly, like a man's fingers while, like a true star, it cast soundlessly for life. I saw it with an unaccustomed clarity and cast forth for it. With it, I flung myself as forfeit, for the first time, into some unknown dimension of existence.

Around me in the gloom dark shapes worked ceaselessly at the dampered fire. My eyes were growing accustomed to the light. "We get it all," the dumpling philosopher repeated. "Just give it to travel; we get it all."

Man, unknowingly, and whether for good or ill, appear to be making their last decisions about human destiny. To pursue the biological instinct is as though, instead of many adaptive organisms, a single gigantic animal embodied the only organic future of the world.

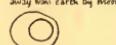
Every time we walk along a beach some ancient urge disturbs us so that we find ourselves shedding shoes and garments, or scavenging among seaweed and whitened timbers like the homoskinned refugees of a long war.

It was the failures who had always won, but by the time they won they had come to be called successes. This is the final paradox, which men call evolution.



Water bulged bulging

sideways, earth by moon



water by moon

The water at y is closer to the moon and the water at x is farther from the moon than the rigid earth. The water is pulled more towards the moon at y, and it is pulled towards the rigid earth at x. Thus there is a combination of those two pictures that makes a double tide.

The Character of Physical Law

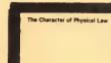
Richard Feynman

1965; 173 pp.

\$2.45 postpaid

from:
M.I.T. Press
50 Ames Street, Room 765
Cambridge, Mass. 02142

or WHOLE EARTH CATALOG



The Character of Physical Law

Richard Feynman

1965; 173 pp.

\$2.45 postpaid



or WHOLE EARTH CATALOG

We do not realize what we have on Earth until we leave it.—JAMES M. LOVELL



Figure 16 An infrared photo of the Gulf coast showing two plumes of smoke from forest fires December 7, 1965

from Ecological Survey From Space



From an astronaut's vantage point, one can gaze down into the tremendously deep chasms of the Hindu Kush range in the Himalayas. The sky above the white crowns of snow on the peaks was clear when this photo was taken, but clouds filled the valleys. The sun was high in the sky, illuminating the peaks and the world. When the morning Sun warms the highlands, fierce cold winds rush down the mountain sides to increase the rigors that men must endure to climb them.

from This Island Earth

NASA Earth Photo Books

You're too close. Back off and survey the big picture and old mysteries will clear up for you, and other mysteries will arrive (what is that enormous gyre in the Salton Sea?).

The earliest of the NASA color photo books, Earth Photographs from Gemini III, IV, and V, and Earth Photographs from Gemini VI through XII, are the purest, best edited and evaluated. Hundreds of full page color photos of North Africa, the Himalayas, New Mexico, ocean cold fronts, if they were Sierra Club books, and they could be, they would cost \$25 each. They cost \$7 and \$8.

Exploring Space With a Camera takes you up through Apollo 7, with some minor text. Ecological Surveys From Space, still plenty beautiful, has a good picture grit of how and where our systems affect each other. Invaluable information, which we're still learning how to interpret. This Island Earth. The most recent NASA book photographically places Earth in the Solar System.

Among the discoveries in these books is that this lovely place is scarcely inhabited, and scarcely inhabitable.

Full Earth

Mandela Earth, the high noon color image shot from a synchronous satellite over South America in November 1967, is available as a poster from WHOLE EARTH CATALOG for \$2 postpaid. It's 22" x 27". An order of five or more gets 50% discount.

—SB



—SB

Earth Photographs from Gemini III, IV, and V
NASA
1967; 266 pp.

\$7.00 postpaid

Earth Photographs from Gemini VI through XII
NASA
1968; 327 pp.

\$8.00 postpaid

(Suggested by Steve Woodcock)

Exploring Space With a Camera
NASA SP-168 (1968 O-292-583)
1968; 214 pp.

\$4.25 postpaid

Ecological Surveys From Space
NASA
1970; 75 pp.

\$1.75 postpaid

(Suggested by Frank Rowsome, Jr.)

This Island Earth
NASA SP-260
1970; 182 pp.

\$6.00 postpaid

Whole Earth Rising

Bigger and Better color Earth Posters than ours. Good ones are: Giant Earth (shown below) and Earth Over Moon.

—SB



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Celestial Arts
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or WHOLE EARTH CATALOG

Space Law

An international "Treaty for Outer Space" was prepared at Geneva in 1966 with the following principles written in. The treaty is in the process of ratification by various nations. In April 1967 the U.S. Senate approved it 88 to 0.

No nation can claim sovereignty to outer space, to the Moon or to other celestial bodies.

All nations have the right to conduct space activities.

No one may use outer space or celestial bodies to begin a war. The rules of the United Nations charter apply to space activities.

No country may station in space or orbit around the Earth nuclear or other weapons of mass destruction.

No nation may establish military bases, installations or fortifications on a celestial body. Nor may any weapon be tested or military maneuvers be conducted there. The right to visit another country's installations and space vehicles on a celestial body is guaranteed.

Astronauts are envoys of mankind. If an astronaut lands on another country's soil he must be returned safely, promptly and unconditionally.

Space activities and their results are to be reported for the benefit of all.

Discovery, Invention, Research
Fritz Zwicky
1969, 276
\$6.95

from:
The Macmillan Company
Front and Brown Streets
Riverside, New Jersey 08075



Full Earth

In November 1967 an ATS satellite whose funds phenomenally had not been made a home movie. It was a time lapse film of the Earth as it was shot from 23,000 miles above South America. (This is synchronous orbit.) The satellite orbits at the same speed the Earth turns, so it remains apparently stationary over one point of the equator.) Color photographs of the Earth were transmitted by TV every ½ hour to make up a 24 hour sequence. The shots were lay dissolved together to make the movie. You see darkness, then a crescent of dawn, then advancing daylight and immense weather patterns whirling and creeping on the spherical surface, then the full round mandala of Earth of noon, then gibbous afternoon, crescent twilight, and darkness again.

A 16mm 400-foot silent color print of the film includes several forms of the 24-hour cycle and close-up cropping of specific sectors as their weather develops through the day;

The film (NR 68-713) costs \$48.94 plus shipping

from:
Byron Motion Pictures
65 K Street NE
Washington, D.C. 20002

The Biosphere

Our yard, the turning processes that keep it refreshed, and where balance is most fragile to our mistakes. This book was a single theme edition of Scientific American in 1970; it's well up-to-date.

-SB

The Biosphere

1970; 142 pp.

\$3.25 postpaid

from:
W.H. Freeman and Company
660 Market Street
San Francisco, CA, 94104

or WHOLE EARTH CATALOG

Evolution fitted the new species together in ways that not only conserves energy but also maximized life processes but also conserves the nutrients by recycling them, releasing more oxygen and making possible the fixation of more energy and the support of still more life. Gradually each landscape developed a more and more complex organization at that place. These new arrays of plants and animals used solar energy, mineral nutrients, water and the resources of other living things to stabilize the environment, building the biosphere we know today.

The available evidence suggests that, in spite of the much larger area of the world's land, greater energy availability is limited on land. The oceans, even if their productivity can be measured, do not represent a vast unexploited source of energy for support of large human populations. They are currently being exploited at close to the maximum sustainable rate, and their continued use as a dump for wastes of all kinds makes it questionable whether that rate will be sustained.

Malnutrition, particularly protein deficiency, exacts an enormous toll from the world's population, especially in the poorer countries. This was dramatically illustrated when India held trials in 1968 to select a team to represent it in the Olympic games that year. Not a single Indian athlete, male or female, met the minimum standards for qualifying to compete in any of the 36 track and field events in Mexico City. No doubt this is partly due to the lack of support for athletics in India, but poor nutrition was certainly also a large factor. The young people of Japan today are as healthy as we are, while change can be brought about by improvement in nutrition. Well-nourished from infancy, Japanese teenagers are on the average some two inches taller than their elders.

This year the U.S. will consume some 685,000 million million B.T.U. of energy, most of it derived from fossil fuels. (One short ton of coal has a thermal value of 25.8 million B.T.U.) The thermal value of crude oil is 18 million B.T.U./barrel. Industry takes more than 35 percent of the total energy consumed. About half of industry's share is in the form of electricity, which, as of 1960, was generated roughly 50 percent from coal, 20 percent from water power, 20 percent from natural gas and 10 percent from oil.

Environment, Power, and Society

Beautiful work. Energy language is the simplifier we've lacked to see our systems whole. When the cosmic yum comes by, you get the ONE! all right, but that may not particularly help you work with connectedness. The terms and understandings in this book can.

Odum's point is that the macro-view of our energy systems must be clear to all—accrue grand images, adapted mores and laws, and responsive religions responsible to biospherical ethics—or however right in detail we shall be wrong big.

-SB

Environment, Power, and Society

Howard T. Odum
1971; 331 pp.

\$5.95 postpaid

from:
John Wiley & Sons, Inc.,
605 Third Ave., New York, N.Y. 10016

or WHOLE EARTH CATALOG



The earth's thin film of living matter is sustained by grand-scale cycles of energy and chemical elements. All of these cycles are presently affected by the activities of man

CARNIVORE 2

□ ▲ ○ ●

HERBIVORE

▼ ▲ □ ○ ●



INTACT NATURAL ECOSYSTEM is exemplified by a mature oak-hickory forest that supports several classes of consumers in the grazing food chain, with from 10 to 20 percent of the energy in each trophic level being passed along to the next level. The symbols represent different herbivore and carnivore species. Complexity of structure regulates population sizes, maintaining the same pattern of energy distribution in the system from year to year.

The nation's homes use almost as much energy as industry does. A major consumer is space heating, which in 1969 required as much energy as the average family of four about 70 million B.T.U. per year, or the equivalent of 900 gallons of oil. The other domestic uses are for cooking, heating water, lighting and air conditioning.

All together, in order to support one individual in our society, something like 20 tons of materials of all kinds must be extracted from the earth and processed each year. This quantity seems certain to increase considerably in the years ahead.



DEGRADED ECOSYSTEM has a truncated grazing chain. The annual production of the sparse grasses, herbs and shrubs fluctuates (shaded areas). So do populations of herbivores and carnivores, which are characterized by large numbers of individuals but few different species. Under extreme conditions most of the net production may be consumed, leading to the starvation of herbivores and accentuating the characteristic fluctuation in populations.

In this book energy language is used to consider the pressing problem of survival in our time—the partnership of man in nature. An effort is made to show that energy analysis can help answer many of the questions of environmental law, and religion, already stated in other languages. Models for the analysis of systems are made by recognizing major divisions whose causal relationships are indicated by the pathways of interchange of energy and work.

One self-stimulating principle of the primitive group was to accumulate concentrations of energy to be used to advantage in proportion to the work they did to increase energy from work. Such energy rewards seek various forms, such as control of property, political power, and status influence. The economic system was simple, and economic reward often reflected the energy control gained.

How many persons know that the prosperity of some modern cultures stems from the great flux of oil fuel energies pouring through machinery and not from some necessary and virtuous properties of human dedication and political designs?

Bit by bit the machinery of man increases, is evolving in various scientific and in the philanthropic attitudes of man. The daily maps of worldwide weather, the information received from the orbiting satellites, the macroeconomic statistical summaries of nations and the world, the coordinated efforts of international geological and biological studies, the studies of organic chemicals in the great oceans all stimulate the new view. When man used to search among the parts to find mechanistic explanations, the parts were, in effect, dead. Man, always seeking a clear view of the parts in their fantastically complex detail, can somehow get away, rise above, step back, group parts, simplify concepts, interpose frosted glass, and thus somehow see the big patterns.

With the turning of the earth, the sun comes up on fields, forests, and fields of the grasses, herbs and shrubs which are green. There is a great breath as tens upon tons of oxygen are released from the living photosynthetic surfaces of green plants which are becoming charged with food storage by the onrush of solar photons.

The system of man has consumption in excess of production. The production of oxygen, carbon dioxide, water, and mineralized inorganic water—is exceeded in rates of excess of their incorporation into organic matter by photosynthesis. If the industrialized urban system were enclosed in a chamber with no air exchange with the outside, it would quickly die of oxygen, be stifled with waste, and die itself. But man does not have the recycling pattern of the agrarian system. The problems with life support in 1970 on the space flight of Apollo 13 dramatized this principle to the world.

The system of man is a heterotrophic system, an aquatic aquarium into which large animals are introduced. As production temporally exceeds production, the balance is upset, the products of respiration accumulate, and the fuels for consumption become scarce. When production until production is sufficiently accelerated and respiration is balanced, in some experimental systems balance is achieved only after the large consumers which originally started the imbalance are dead.

DARWIN-LOTKA ENERGY LAW

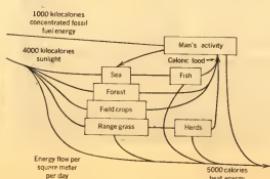
Thus, whenever it is necessary to transform and restore the greatest amount of energy in the fastest possible rate, 50 percent of it must go into the draw, taxes, and bond issues. The energy which is part of these operations and when power storage is important, it is maximized by adjusting loads... In the last century Darwin popularized the concept of natural selection, and early in this century Lotka indicated that the criterion of power for useful purposes was the criterion for natural selection. Darwin's evolution theory thus developed into a general energy law.

Money flows in the opposite direction to the flow of energy and the opposite direction to the flow of power. The energy exchange adjusts one flow to be in proportion to the other. Thus a man purchasing groceries at a store receives groceries in one direction while paying money in the opposite direction. The heat losses of these transactions are small since the work involved is small.

LOOP SELECTION PRINCIPLE

In ecological studies there is the positive feedback loop through which a downstream recipient of potential energy rewards its source by passing necessary materials back to it. For example, the animal activity which breaks down dead plant material, which loops the phosphates, nitrates, and other compounds required for their growth. A plant that has a food chain which regenerates nutrients to the soil, and which is therefore reinforced, and both plant and animal continue to survive. Special reinforcement efforts are not reinforced are shortly eliminated, for they run out of either raw materials or energy. They must be connected to input and output through feedback loops.

Stability allows complex diversity and uniqueness of individuals. As in Augustinian Rome, there may be golden eras—if men can be satisfied with small causes, for energies big enough for new causes would have to be diverted from older endeavors. This turn requires a willingness to discard activities.



Man's Domain

I scarcely believe it. An inexpensive, paperback, lightweight but complete World Atlas that skips all the political planerly periphs and goes straight to the guts: climate, minerals, agriculture, population, languages, land forms, ocean forms—all the remorseless factors that have been invisible to most of humanity until recently. Nice work, McGraw-Hill, you whipped Rand-McNally and Hammond at their own game.

from:
McGraw-Hill Book Co.
Princeton Road
Hightstown, N. J. 08520

\$3.50 postpaid

Mencher Road
Mencher, Mo. 63062
8171 Redwood Highway
Novato, CA 94947
or WHOLE EARTH CATALOG



The Times Atlas of the World

*'A world sample must be world renowned.' That intelligent dictum was issued at the end of *World War I* by Lord Northcliffe, then editor of *The Times* of London. He didn't want his company slow to do the job; *The Times Survey Atlas of the World*, with cartography by John Bartholomew of Edinburgh, was issued in 1921, and was immediately acclaimed as the best world atlas ever printed. The tradition has been continued, and the latest *Times' Atlas of the Comprehensive Edition*—is the best place for an English-speaking person to find where in the world something is located. The book also has maps to show the major rivers of the world. It measures 18" x 12½" x 2", weighs 11 pounds, and contains 468 pages, of which 248 are double-page maps of superb accuracy and beauty.*

The Comprehensive Edition includes 200 photographs, incorporating more than any other atlas of the world, and the places are keyed not only by individual map coordinates, but by latitude and longitude as well as features marked by no other atlas. Despite the huge amount of planning and the expense of the original maps, and they are mercifully free of the pink-purple-yellow political smugness favored by other cartographers. Some of the place names may look strange to Americans, but the atlas follows the rules of the Permanent Committee of Geographical Names. This supra-political body sensibly believes that places should be called what their occupants call them. In cases where the generic name also has a local name, the traditional anglicized name is also given, in parentheses.

*The Comprehensive Edition of *The Times Atlas of the World* is published in the U.S. by Houghton Mifflin Company, Boston, Massachusetts. It is delivered, by gracious permission, to Her Majesty Queen Elizabeth II, and to the Queen Mother, in royal bright red liner, gold-stamped. It costs \$57.50, and it will make anything else on your coffee table seem puny, as the whole world should.*

[Suggested and reviewed by
Dr. Morton Grosser]

Human Use of the Earth

To get a handle on your future you've got to get outside yourself and your outside can see you set your space-time environment whole. One way is to learn about another culture, Indian or whatever (this is Jim Niven's favorite). Another way is to take Philip Wagner's trip into fascinately objectivity about Earthly doings. In this book he merges some of the best of geographical and anthropological perspective into a detailed treatise on the Earth as tool, how it is used and how to understand it better to use it better.

—SB

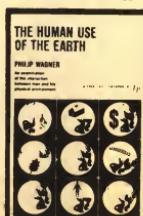


The Human Use of the Earth
Philip Wagner
1966, 270 pp.

\$2.45 postpaid

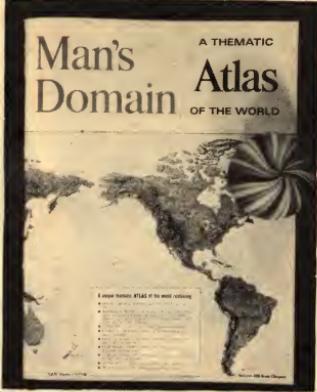
front
Fire Press
Macmillan Company
Front and Brown Streets
Brooklyn, N. Y. 08075

or WHOLE EARTH CATALOG



Men's Domain
General Drafting Co.
1968; 75 pp.
\$3.50 postpaid

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Times Atlas of the World
Comprehensive 1 Vol. Edition
1968; 568 pp.

\$57.50 postpaid

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Burlington, Mass. 01803

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Note: Keri Jonetz reminds us that Times' Atlas of the World can be bought for just over \$30 (delivered) from Blackwell's, [See p. 2.]

As we shall see, one of the strategies by which supplies of goods and services become available for actual use is the movement of the would-be consumers themselves to the sources of goods or services. There are even times when these consumers are men himself, which move over land, across water or through the air, directing the individual to the places at which he can obtain goods he desires, or where he will be saved as he wishes.

The modern inhabitant of a complex country does not make his world; he buys it. The material circumstances of his life are not his outcome of his individual encounter with the natural order, but arise out of his relations with the social order.

Those semi features of the most complex human communities which indicate their ecological advantages also suggest an unusual degree of inherent ecological risk. Such communities are often fragile and delicate, able to withstand only minor fluctuations of environment, and the individuals in them are threatened by many social biological penalties that attend very highly specialized system or species. Their very technical perfection may destroy them in time as other high specializations have destroyed many former species of animals and plants.

The individual organism must, on the one hand, be specialized enough in function to exploit some particular conditions in the habitat, so as to occupy a niche that no other organism can contest with; and it must, on the other hand, possess enough versatility to adapt to other conditions of environment that might impinge upon its life activities. These two requirements are often at odds in either extremes of a continuous scale, and every species may be placed somewhere along this scale between specialization and versatility. Some species are able to cope with a wide range of environments or versatility are overcome by aggregation of organisms into larger groups within the community.

Divine Right's Trip

Our story thus far

by Gurney Norman

PART ONE



DIVINE RIGHT'S BUS, URGE

I was a fairly straight '63 VW microbus till Divine Right got me a good deal and while driving passenger job with five new recruits to him and myself apologetically. "The only bad thing that ever happened to me was the Muncys," he said and I puke on my seats all the time. The Muncys bought me new in Germany when the old man was stationed over there in the army. He was a Master Sergeant in an infantry outfit, a little old for the kind of outfit, but he was a good soldier and volunteer for Vietnam when they first heated up. They brought me to the States when the sergeant went to Vietnam, and he got blown up by a land mine, his wife Marie treated me in on a Falcon.

A landmine on a car is long a time when you're not used to it. It was hot and humid, and we were so tired this guy Divine Right looked pretty weak. I was so glad he had come and I felt grateful to him for buying me, although it did piss me off when the dealer let me go for only five hundred and fifty dollars. Divine Right paid the man with cash he'd gotten from a big grass seed company, and if I could whilst I had been whistled when we drove away together.

Which goes to show you how much I knew about freaks in those days. I hadn't gone five hundred miles with that son of a bitch before I'd given my first pump to him to knock on the parking lot door. I'd never seen a woman like Gertie, from St. Louis to Cincinnati without once checking my oil. I found out later he didn't even know where my damn oilstick was. Drove nonstop, too, all day, all night, the only time I got even a little rest was when I'd slow down long enough to refuel or buy a restroom. If the son-in-law in Cincinnati hadn't noticed I was a queer and a half hour I'd probably have thrown a rod as soon as we hit the next freeway.

D.R. doesn't seem to like them much, but his brother—brother-in-law are nice people. Doyle understands about cars. He's a mechanic, but he's not a real car man, he's more of a hobbyist to tell D.R. about primitive machinery, but D.R. was too stoned to pay attention. He was on speed trip, out of his skull on rattan and benzadrine. He told Doyle he had to split in order to make the Ultimate Rendezvous. Doyle said what's an Ultimate Rendezvous? But D.R. just grinned and started my motor and drove away.

You get some idea of where D.R.'s head was. He was the kind of guy who never had the faintest idea how he affected things. He could fuck over nice '63 VW microbus he'd just paid five hundred and fifty dollars for and not even notice. I don't know what was the most hurtful, having my woman lay on him, or all that stupid pump stayed over all my body. Inside out outside, I suffered both places. It's one thing to go around feeling bad because you're low on oil; but when you have to look like a mudhole and it gets to be a bit much. However, the Go-Glo, financial police, the name of the girl I got involved with. Sometimes he'd pull off into the emergency lane of some big interstate and stare painting on the road. Said God was sending him directions. He'd stop, get out, and paint, and then he'd pick up hitch-hikers and tell them to lean out the windows and look at the stars while he drove. By the time him and his weird friends got through I looked like a watercolor that got rained on. It was awful.

But I survived. I don't know how but I did. Well, yes I do know it was Estelle. There's no doubt about it, that little lady saved my life. She was a junkyard girl, she was a junkie, she was a thief. There was something kind of sick about her, it seemed like a crip. But she sure knew how to be nice to an old broken-down bus. She'd wash me and empty my ash trays. Sometimes D.R. would be too stoned to drive and Estelle would take over, and it would be her friend and me and our cruising around the country through the night. That was the thing about Estelle. She understood cruising, she understood roads, and traffic, she knew how to flow with things in motion. I never did understand what she saw in D.R., but I do know she had a right to have opinions about him. I job was to carry them around to the places where they acted out their story, and although I resented most of the time I did my best. It was painful, but I do have to say that it was interesting, and instructive. On some level I'm still I'm a better kind of writer now, and I can write a narrative to tell my own story, but I still have a ways to go. Gertie's too many points of view already to clutter it up even more with a talking car. So this is the only chance I'll have to speak my mind. It ain't much, but when you've been down as long as I have, you gotta get grateful for small favors. So goodness. If you're ever rambling around down in the Kentucky mountains, come by and see me sometime.

Bless you all.
Urge

Geography
Whole Systems 9

Geology Illustrated

An artist of aerial photography, Shelton uses some 400 of his finest photos to illuminate a discussion of the whole-earth system. Not a traditional textbook, but a fascinating exploration of the problems posed by asking "How did that come about?" Without giving away the photos and book design alone, but you'll probably find yourself becoming interested in geology regardless of your original intentions.

[Reviewed by Larry McCombs]

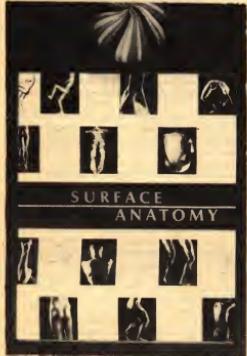


Surface Anatomy

This book is included as a companion piece to the Earth picture books. The whole lovely system of the human creature, seen from without, surface by surface, is here. One of its main revelations is how cliché ridden our usual views of ourselves are—we are still not good with mirrors (satellites were up 10 years before we got a full view of the Earth). Posing friends and neighbors, with a simple light set-up and a 35mm camera, Joseph Royce has shot the most beautiful human album I know.

It also teaches anatomy.

—SB



Surface Anatomy
Joseph Royce
1966; 44 photographs
and some diagrams

\$12.50 postpaid

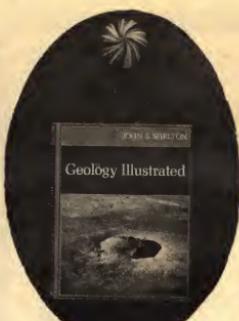
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As a means of communicating geological concepts, the pictures are fully as important as the words themselves. On most pages the photo itself represents the facts, the words serve as interpretation. Many of the illustrations will, therefore, repay a little of the kind of attention that would be accorded the real feature in the field. In keeping with this, almost no identifying marks

have been placed on the photographs and very few on the drawings. The text (which almost invariably concerns an illustration on the same or a facing page) serves as an expanded legend for the picture if, when reading it, it is necessary to look more than once to identify some feature with certainty; this is no more than Nature asks of those who contemplate her unlabelled cliffs and hills.



Geology Illustrated

John S. Shelton

1966; 434 pp.

\$10.50 postpaid

from:
W. F. Freeman & Co.
560 Market Street
San Francisco, CA 94104

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The World from Above

Close-up glamor shots of the Earth. Mystery shots (What is that? What's our altitude above it, 10,000 feet?) (Fold out captions tell all.) Good traffic flow pattern shots: surface anatomy of civilization. Not a bad compendium; it'll do until they reprint E. A. Gutkind's Our World From the Air.

-SB

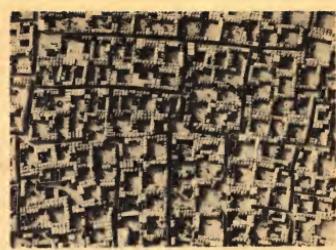


The World from Above
Hans Reich
1966; 88 pictures

\$8.50 postpaid

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141 Fifth Avenue
New York, N. Y. 10010

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ST. GEORGE AND THE DRAGON

Hare comes D.R. Devanport, Divine Right he calls himself after the incredible stoned-out afternoon when the words *Divine Right* formed in the clouds above the meadow where he was sitting on his backpack. Divine Right is a very simple idea: how really simple everything is when you come right down to it; Divine Right has itself, D.R. for short, driving along the highway now through a dark and rainy night in his VW microbus. Urge.

When all of a sudden Urge's headlights pick up a hitch-hiking freak on the road ahead.

I sure don't want to pick that guy up, D.R. told himself, with I didn't have to. He was into a radio talk show out of Los Angeles. This strange woman had been talking about the American westward movement. D.R. was listening to her rap, even talking back from time to time, shaking his finger, agreeing and disagreeing, (but not too loudly). Estella was asleep in the back of the bus, someone else was sleeping in the front of the bus. (Estella, another reason not to pick that freak up, but there was poor fucker was, sitting on his backpack holding out his thumb, with a little black dog huddled against his feet. So, D.R. dimmed the headlights and turned the radio down and pulled off the road just past where the guy was sitting.

"Come inside, Divine Right," she said. "We're just you, know, rolling along, digging it, the windshield wipers, rain on the roof, this weird westward movement lady's on the radio, how far you going, how long you been sitting out there?"

The hitch-hiker had his gear in and sniffl'd it on the floor. He was a little old fella, just barely strong enough to lift his pack inside. But finally he managed it, and his dog Salvador leaped in behind him. Salvador didn't even bother to sniff out his new space. He just curled up on the floor next to the emergency hatch and lay completely still.

D.R. said, "Divanport's my name, Divine Right Devanport. Like, this radio guy says KCBR, sort of sings it you know, says KCBR, Wayne Dixon here I may have your name please? And I say Divine Right is my name and weirdness is my game, what's yours?"

Meantime, of course, his passenger, who was plining D.R. off just sitting there. D.R. was a word man, you see, he liked to talk and to be talked to, and thirty seconds into their ride together his passenger hadn't said a thing. All he did was nod and grin and look at the wet highway stretching out in the long beams of light up ahead. After a mile or two D.R. was wishing he'd minded his own business and left the silent bastard sitting by the roadside, rain or no rain.

He turned the radio back up.

"...the moment is that genocide against the Indians was the official policy of every American President after George Washington."

The announcer was agast. "Are you saying our government had a policy . . . ?"

"Absolutely. It's a well known, I mean you're in radio, it's common knowledge among informed people."

"Run him off," D.R. said. "The lady's right. Every word she says is true."

He turned the radio down then and leaned across to stare at his passenger. "And I'll bet if you'd say something, it'd turn out to be true too, I know it would."

While the radio chattered away, D.R. started moving down, "What I want to know, fukked, is when you gonna sleep dry when I dump your ass out in the rain about half a mile from now."

And when there was still no reply, D.R. brought Urge to a full stop, and leaned across again to look his passenger full in the face. He was surprised to see how young the freak was. Fifteen, sixteen at most. D.R. had seen one like him before, but the kid made him feel like an old man. He had a gation of scraggly whiskers; twenty three long blonde hairs sticking out of various little blisters on his skin. His eyes were pale blue, streaked with red, while his blue hair...

No longer smiling, the kid opened the door and got out in the rain. He left his pup on the floor while he got his pack on, and settled his floppy, widebrim hat back on his head. Finally he was ready. As he was about to get in to get his dog he looked up at D.R. and said, "Did you ever hear about St. George and the Dragon?"

D.R. said he hadn't.

"It's far out shit," said the kid. And he closed the door and started walking down the highway toward where ever they'd just come from.



Cloud Studies in Colour

If you really don't know clouds at all, there's another simple and revealing book on them. It's going on in your part of the atmosphere. This lovely book of color photos and detailed descriptions can help.

-SB

Cloud Studies in Colour
Richard Scorer and Harry Wexler
1967. \$10 pp.

\$7.00 postpaid

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Pergamon Press Inc.
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Long Island City, N. Y. 11101

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Kalliroscope

Nine square inches of divine turmoil. Rotating it on its spinner or cooking on its stand, the Kalliroscope models the action on the surface of the Earth and in all the waves and fires and (probably) in your head.

-SB

[Suggested by

Sandra Tcherepnin]

Kalliroscope

Viewer \$15; stand \$10 postpaid

Available in white, red,
yellow, green, blue from:

Paul Matiss
Kalliroscope Corporation
145 Main Street
Cambridge, Mass. 02142

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Laws of Form

The laws of form have finally been written! With a "Spencer Brown" transistorized power razor (a Twentieth Century model of Occam's razor), G. Spencer Brown cuts smoothly through two millennia of growth of the most prolific and meaningful weeds, presenting with us his superbly written Laws of Form. This is a difficult task which now, in retrospect, is of profound significance. The discovery of the form of laws, laws are not descriptions, they are commands, injunctions: "Do!" Thus, the first constructive proposition in this book (page 3) is the injunction "Draw a distinction!" an exhortation to perform the primordial creative act.

After this, practically everything else follows smoothly: a rigorous foundation of arithmetic, of algebra, of logic, of a calculus of indications, intentions and desires; a rigorous development of laws of form, may they be of logical relations, of descriptions of the universe by physicists and cosmologists, or of functions of the nervous system which generates descriptions of the universe of which it is part.

The ancient and primary mystery which still puzzled Ludwig Wittgenstein (*Treatise Logico-Philosophicus*, A. J. Ayer, ed.), Humanistic Press, New York, 1963, 1965 pp.), namely that the world we know is constructed in such a way that we are able to see it, G. Spencer Brown resolves by a most surprising turn of perception. He shows, once and for all, that the appearance of this mystery is unavoidable. But what is unavoidable is, in one sense, no mystery. The fate of all descriptions is "... what is revealed will be concealed, but what is concealed will again be revealed."

At this point, even the most faithful reader may turn suspicious: how can the conception of such a simple injunction as "Draw a distinction!" produce this wealth of insights? It is indeed amazing—but, in fact, it does.

The clue to all this is Spencer Brown's ingenious choice for the notation of an operator \sqcap which does several things at one time. This mark is a token for drawing a distinction, say, by drawing a circle on a sheet of paper which creates a division between the inside and outside of this circle; by its asymmetry (the corner being inside), it stands for an instruction to cross the boundary of the first distinction by crossing from the state indicated on the inside of the token to the state indicated by the token (A space with no token indicates the unmarked state). Moreover, these operations may operate on each other, generating a primary arithmetic, an opportunity which is denied us by a faulty notation in conventional arithmetic as pointed out by Karl Menger in "Gulliver in the Land where One, Two, Three" (*The Mathematical Gazette*, 33, 24-26, 1959).

These operations are defined in the two axioms (no other ones are needed) given on pages 1 and 2. They are:

Axiom 1. The law of calling

The value of a call made equals the value of the call.

That is to say, if a name is called and then is called again, the value indicated by the two calls taken together is the value indicated by one of them.

That is to say, for any name, to recall is to call.

(In notation: $\square \sqcap \square = \square$)

the "form of condensation".

Axiom 2. The law of crossing

The value of a crossing made again is not the value of the crossing. That is to say, if it is intended to cross a boundary and then it is intended to cross it again, the value indicated by the two intentions taken together is the value indicated by none of them.

That is to say, for any boundary, to recross is not to cross.

(In notation: $\overline{\square} = \square$)

=

the "form of cancellation".

For instance, take a complex expression

$$E = \overline{\square} \sqcap \square \sqcap \overline{\square}$$

Then, by the two axioms

E =

In the beginning this calculus is developed for finite expressions only (involving a finite number of \sqcap), simply because otherwise there would be an infinite number of steps, hence would never be accomplished. In Chapter 11, Spencer Brown tackles the problem of infinite expressions by allowing an expression to re-enter its own scope. This calls for trouble, and one anticipates now the emergence of antinomies. Not so! In his notation the classical clash between a simultaneous *Nay* and *Yea* never occurs, the system becomes "bi-stable", flipping from one to the other of the two values as a consequence of previous values, and thus generates time! Amongst the many gems in this book, this may turn out to be the shiniest.

Sometimes the reading gets rough because of Spencer Brown's remarkable gift for punctuation and expression. But the 30 pages of "Notes" following the 12 chapters of presentation come to the reader's rescue precisely at that moment when he lost his orientation in the lattice of a complex crystal. Consequently, it is advisable to read them almost in parallel with the text, if one can suppress the urge to keep on reading Notes.

In an introductory note Spencer Brown justifies the mathematical approach he has taken in this book: "Unlike more superficial forms of expertise, mathematics is a way of saying less and less about more and more." If this strategy is pushed to its limit, we shall be able to say nothing about all. This is, of course, the state of ultimate wisdom and purest innocence. In this state, where distinctions are suspended and all is one, Spencer Brown has made a major step in this direction, and his book should be in the hands of all young people—no lower age limit required.

[Reviewed by Heinz Von Foerster.
Suggested by Steve Baer]

LAWS OF FORM

G. SPENCER BROWN

Laws of Form
G. Spencer Brown
1969, 141 pp.

\$5.40 postpaid

from:
Blackwell's
Broad Street
Oxford, ENGLAND

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無名天地之始

CONSTRUCTION

Draw a distinction.

CONTENT

Call it the first distinction.

Call the space in which it is drawn the space severed or cloven by the distinction.

Call the parts of the space shaped by the severance or cleft the sides of the distinction or, alternatively, the spaces, states, or conditions distinguished by the distinction.

INTENT

Let any mark, token, or sign be taken in any way with or without regard to the distinction as a signal.

Call the use of any signal its intent.

In all mathematics it becomes apparent, at some stage, that we have for some time been following a rule without being conscious of it. This rule is what we might call the use of a *covert convention*. A recognition of the prevalence of mathematics consists in the advancement of the consciousness of what we are doing, whereby the covert becomes overt. Mathematics is in this respect paradigmatic.

One of the most beautiful facts emerging from mathematical studies is this very potent relationship between the mathematical process and ordinary language. There seems to be no mathematical idea which cannot be expressed in words, and vice versa. But there is most uncanny accuracy, in the common use of words, and this appears especially true when we consider words in their original, and sometimes long forgotten, senses.

The main difficulty in translating from the written to the verbal form comes from the fact that in mathematical writing we are free to make the two dimensions of the plane, whereas in speech we do mark only the one dimension of time.

Much that is unnecessary and obstructive in mathematics today appears to be vestigial of this limitation of the spoken word.

Any evenly subdivided equation of the second degree might be called, alternatively, evenly informed. We can see it over a sub-area (writing under) of the surface upon which it is written, or alternatively, as an *in-formation* (written upon) of what it expresses.

Such an expression is thus informed in the sense of having its origin within it, and at the same time informed in the sense of revealing what it has to do with the past.

We need not suppose that this is exactly how memory happens in an animal, but there are certainly memories, so-called, constructed this way in electronic computers, and engineers have constructed such in-animal memories with magnetic relays for the greater part of the present century.

We may perhaps look upon such memory, in this simplified information, as a precursor of the more complicated and varied forms of memory and information in man and the higher animals. We can also regard other manifestations of the classical forms of physical or biological science in the same spirit.

There is a tendency, especially today, to regard existence as the source of reality, and thus as a central concept. But as soon as it is so regarded (cf Appendix 2), existence ($rx = 0$, $rx = 1$, etc.) is seen to be highly peripheral and, as outside, especially compact (in the formal sense) and vulnerable. The *rx*'s are thus in mind as objects although still recognizably peripheral. If the weakness of present-day science is that it centres round existence, the weakness of present-day truth is that it centres round truth.

Throughout this essay, we find no need to the concept of *truth* as a central concept. The concept of *truth* is not open to proof in the descriptive context. At no point, to the least, is it a necessary inhabitant of the calculating forms. These forms are thus not only precursors of existence, they are also precursors of truth.

I am afraid, the intellectual block which most of us come up against at the points where, to experience the world clearly, we must abandon existence to truth, truth to indication, indication to form, and form to void, has so held up the development of logic and its mathematics.

Tao Te King

Reviewing the Tao is like reviewing the Bible. As soon as you presume, it just giggles and rains on you. Nevermind.

The Tao Te King is a very old book (500 B.C. is one date) written by a legend named Lao Tzu. It describes how the universe is and makes an excellent case for harmony as the only survival technique that works. This translation by Archie Bahm is straightforward.

[Suggested by Jack Loeffler]

Tao Te King
Lao Tzu; Archie Bahm
7 B.C., 1968; 126 pp.

\$1.25 postpaid



from:
Frederick Ungar Publishing Co
250 Park Avenue South
New York, N.Y. 10010

OR WHOLE EARTH CATALOG

Everyone says: "Nature is great, yet Natura is simple." It is great because it is simple.

If it were not simple, long ago it would have come to little. Nature sustains itself through three precious principles, which one does well to embrace and follow.

These are gentleness, frugality and humility.

When one is gentle, he has no fear of retaliation.

When one is frugal, he can afford to be generous.

When one is humble, no one challenges his leadership.

But when rudeness replaces gentleness,

And extravagance replaces frugality,

And pride replaces humility,

Then one is doomed.

Since a gentle attack arouses little antagonism,
And a gentle defense provokes little anger,
Nature predisposes to gentleness those most suited for survival.

Intelligent control appears as uncontrol or freedom.

And for that reason it is genuinely intelligent control.

Unintelligent control appears as external domination.

And for that reason it is really unintelligent control.

Intelligent control exerts influence without appearing to do so.

Unintelligent control tries to influence by making a show of force.

It is because we single out something and treat it as distinct from other things that we get the idea of its opposite. Beauty, for example, once distinguished, suggests its opposite, ugliness. And Goodness, when we think of it, is naturally opposed to badness.

In fact, all distinctions naturally appear as opposites. And opposites gain their meaning from each other and find their completion only through each other. The meanings of "is" and "is not" arise from our distinguishing between them.

Likewise, "difficult and easy," "long and short," "high and low," "loud and soft," "before and after"—all derive their meaning from our distinguishing between them.

Therefore the intelligent man accepts what is as it is. In seeking to grasp what is, he does not devote himself to the making of distinctions which are then mistaken to be separate existences. In teaching, he teaches, not by describing and pointing out differences, but by example.

What is easy, he sees that nothing is gained by representing what is difficult. He sees that nothing is gained by diluting what is difficult.

If something exists which cannot be wholly revealed to him with his viewpoint, he does not demand of it that it be nothing but what it seems to him.

One who only interprets him, he does not trust that interpretation as being equal to his own.

If some part of him stands out as if a superior representative of his nature, he will not surrender the rest of his nature to it.

And in not surrendering the whole of his nature to any part of it, he keeps himself intact.

This is how the intelligent man preserves his nature.

We cannot escape the fact that the world we know is constructed in order (and thus in such a way as to be able to see it). This is indeed amazing.

Not so much in view of what it sees, although this may appear reasonable. Even in respect of the fact that it can see at all.

But in order to do so, evidently, it must first cut itself up into at least one state which sees, and at least one other state which is seen. In this severed and mutilated condition, whatever it sees is *not part of itself*. We may take it that the world undoubtedly is *itself*, it is *itself*, it is *itself*. It is not *itself* as a whole, nor is it *itself* as an object, it must, equally undoubtedly, act so as to make itself distinct from, and therefore fail, to itself. In this condition it will always partially elude itself.

To explain, lay out in a plane where particulars can be easily seen. Thus to place *or plan* in flat land, sacrificing other dimensions for the sake of convenience, is to *expand* or *put out* at the cost of losing the *real* or *natural* what it is. It is to put out. Thus to take a view away from its *present reality* or *royalty*, or to gain knowledge and lose the kingdom,

Part Two: Reward

From the outset I was determined to avoid relating to the garden abstractly, in terms of "poetry," or "ideas." My usual tendency is to reduce my experience to metonyms, then render the metaphors as puns, and end up with some kind of pun. Food, chewed and swallowed, was what the garden was all about, and nothing less than that was going to satisfy. I wanted the experience to come through, to live in the concrete world, and achieving that course was the prime reward.

But the thing I'm pleased to discover, now that the garden is a fact, is that I'm not as nervous as I was about abstracting. Abstraction built out of other abstractions can lead to actual sickness, I believe. But here, the garden is the garden, and there is no need to turn the coin, yin and yang. It feels good to talk about gardening, now that this work is done. Feels the best in a long time, in fact. Like dentists, after a procedure.

So stuff has been occurring to me: talk, for instance. The difference in the quality of talk that grows out of true experience, against that that grows only out of other talk. Talk among people who never grow anything, for instance, between people who have other things to do with themselves. Ideas, thoughts, conversation dependent on other drawing rooms, against conversation among people who've just come in from the world. Political opinions handed down from parents and grandparents, against conversation from the life you've personally lived. It's all like the difference between a wax apple, and one just dropped off a tree.

And this: rules. How we're all gone around crazy the past few years in revolution against nature because they are dead, according to us. And we are so dead. We are so dead to the body, to what the world needs is anarchy. Head filled with such cheap crap, then coming up against something like a garden, entering into the garden, then you realize that you're not dead to the body of this garden because I'm a free man and I'm going to do my thing. So you thing is to spray water around. "Express" yourself in water. It's a little bit like the sense of the spray, and the sense of power. It's a virtuous art form, not a vicious art form of agriculture. Jackson Pollock with a green thumbs. Spray here, spray there, spray all over God's whole creation cause I'm going to do my thing.

Well, do tell. Because what's happening, the reason all these beans and tomatoes and carrots are, like dropping a little is that you've damned near drowned the things. And so you learn: the gardener doesn't make up the terms of his relationship to the garden. He doesn't make up the terms of his relationship to the plants he planted according to his petty whim. The terms exist before he gets there and they'll still exist long after he goes home. It's like the plants are saying, "We are not here to be manipulated according to the whims of what is planted in our bodies." You want water, and we want it, and we will provide it to the extent that we can for each of plant. We want fertilizers, and if you don't know how much, find out. Find out about nitrogen, about phosphorus, about potassium. Find out about lime, whatever you want. You must know what the garden expects of you. There's a reality among these rows, stuff is going on bigger than all of us, so dig it. You are only a part of what is happening here. Fit yourself safely into your place, made by the law, and maybe you'll be pleased that you did."

Then thus: pick up a radical newspaper, see a picture of the entrance to an Army base, Fort Dix, probably. And above the picture, M.P.'s holding rifles, reading the paper. Observe to the law is freedom! It's one of the philosophical qualities of the gardening season to read those words in political terms, and shudder; then read them again in terms of the natural world and think: how true, how true.

From *The Free You* Volume 1 3 September 1989

Sand County Almanac

"Classic" it's called now, because it was published in 1949 and still has bite. Wherever the ecologist looks the world weaves a wild story. This one looked at Sand County, among other places, and was led to propose a Land Ethic.

[suggested by everybody]

-SB

A Sand County Almanac
Aldo Leopold
1949; 295 pp.

\$0.95 postpaid

from: Ballantine Books, Inc.
101 Fifth Ave.
New York, N.Y. 10003

or WHOLE EARTH CATALOG



American conservation is, I fear, still concerned for the most part with show pieces.

Perhaps the most serious obstacle impeding the evolution of a land ethic is the fact that our educational and economic system is headed away from, rather than toward, an intense consciousness of land. True modernism is separated from the land by many middlemen, and by innumerable physical gadgets.

A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.

Solar Journal

It's sure hard to put a handle on this book. A strange overview, maybe, or fluid bingo. richard grossinger brings a goat's ass and a cannibal together, makes them fit, shows how they are connected, then takes a long skinny ecological finger and gently tweaks the reader's nose. . . . learn from him.

-jd

Solar Journal: Ecological Sections

Richard Grossinger
1970; 130 pp.

\$4.50 postpaid

from:
Black Sparrow Press
Box 25603
Los Angeles, California 90025

or WHOLE EARTH CATALOG



In the beginning there was only the unity of the Ice Sheet. Then followed the unity of the March thaw, and the northward hege of the international geese. Every March since the Pleistocene, the geese have honked unity from China Sea to Siberian Steppe, from Euphrates to Volga, from Ningbo to Tomsk, from Lincolnshire to Lake Michigan. March since the Pleistocene, the geese have honked unity from Currituck to Labrador, Matamuskut to Ungava, Horseshoe Lake to Hudson's Bay, Avery Island to Baffin Land, Panhandle to Manchuria.

By an international commerce of geese, the waste corn of Illinois is carried through the clouds of the Arctic tundra, there to combine with the waste sunlight of a nightless June to grow goslings for all the lands between. And in this annual batter of food for light, and winter warmth for summer solstice, the whole continent receives not even a wild poem dropped from the murky skies upon the mists of March.

I was young then, and full of trigger-rich; I thought that because fewer wolves meant more deer, that no wolves would mean hunters' paradise.

We all strive for safety, prosperity, comfort, long life, and dullness.



So in his article on sanctity and adoption, Rappaport cites two essential tautologies: that every living being is connected to every other living being, and that the environment is so complex that we cannot fathom the total consequences of any action. So the superstitious world, in which the gods and immortals are connected by the great spiritual thread, in which the consequences are never seen yet always critical, is not just similar but identical to the natural world. It is the science which operates in an important environment, an environment which it can control, in which it believes its own predictions, setting limits so tight that it will trace a piston or follow a river. Who controls insecticide in Iowa politics? Who controls the Great Lakes? Who controls the fish from the potato factory in Maine pour into New Brunswick, as long as the crud passes political boundaries? Who cares if the immigrants are poison? the algae and snails choke, these are not even on their radar. Who cares if the world is overpopulated, the world we cannot see? Who cares what happens to the skeletons of the fish after they are eaten, when every house has a garbage disposal? Who cares about a gathering of gulls on the shore? Who cares if people forget that there is waste and the waste goes somewhere? motorboats killing off everything in a lake during successive Memorial Days and July 4's and Labor Days? And every living organism is part of the ecosystem, and when these organisms are collective, only civil wars say the astronauts looking down at Earth, only civil wars even as the hounds beat the bear, the bear are caught in the Bear Coal trap. And the world is not the world we live in, it is the world we live in all victimized by what we are made out of, by, in fact, what we are made out of anything. The consequences never cease but pass and rebound, and this is the steady drift in the universe, a sort whose powers flood across beyond stars, beyond planets, an Earth which receives the decay of other stars.



NOTE ON SPELLING: Oncology is the etymological spelling of Ecology. The logo of okots is the law of the house in the deepest sense: merging the speech by which the house is known to itself, means that the house is the subject of its own speech. It's house rules I'm talking about, just and unjust, or finally JUST. I want to recall to you the house, of which planet is one aspect, language is another, body is another—hours in the sense that economy is the management of the house and Okumune is the known, inhabitant, LIVED in world.



LOOKING FOR DOPE

Urgo's wipers wiped and wiped. He could barely see through the windshield. It hadn't been raining for a few hours, but as the rain kept falling and the night wore on and his eyes got sore and tired, the world outside the windshield gradually turned into such a visual mush D.R. had trouble keeping Urgo on the road. Well, Urgo deserved was a mess of windshield wipers, and he'd been promised a break and a good night's sleep. But short of that the next best thing of course was a good bit of grass to kind of bring things into focus.

Sorry old boy, but I said to Urgo as he felt his shirt pocket for tor. And he meant that too. One of Divine Right's convictions was that it was possible to turn a whole car onto dope if only the right means could be found. One time just before crossing the Canadian border he'd snatched a source of prime Afghan hash in Urgo's crack case and Urgo had obviously had to. Within an hour Urgo had to have his car searched. Hash, he'd said, was the best medicine in the world. Hash, he'd said, was the best way to feel. D.R. was pretty stoned of himself at the time and it may have been that those were only things he wanted Urgo to do. At any rate, the bus had to stop, and the bus had to wait for the breath after which he'd had to take a deep, long, slow, easy, calm one. That's okay. Urgo old buddy, D.R. said, feeling his shirt for a J. That's all right. I'm working on it. One of these days I'll come up with a formula to stone you with so firm, so right you'll think: divine.

The joint D.R. had put in his shirt pocket was gone. All he found was a tattered book of matches. He looked in the glove compartment and felt in his leather belt-pouch, but it was the same. So at a wide place at the end of a bridge D.R. pulled off the road and started to rummage around the bus in search of some.

"What is it?"

"Shhh... Go back to sleep." "What is it?" Estelle sat up and rubbed her eyes. She was in a spasm of living and dying—on the bed, on the floor, on the back of the bus. The bus wasn't exactly rough for her to stretch out, fully, but there was so much junk scattered around there wasn't any other place to lie. In spite of having to twist herself into an S to lie down, she'd slept so deeply for seven straight hours that now she was having trouble getting her eyes to stay open.

"Go back to sleep."

"No, I'm awake. Where are we?"

"Fuck, I don't know. Somewhere out west."

(continued)

On Growth and Form

A paradigm classic. Everyone dealing with growth or form in any manner can use the book. We've seen worn copies on the shelves of artists, inventors, engineers, computer systems designers; biologists.

-SB

On Growth and Form

D'Arcy Wentworth Thompson
Two volume edition
1917, 1952

\$27.50 postpaid

Abridged paper edition
1917, 1961; 348 pp.

\$2.75 postpaid

from
Cambridge University Press
510 North Avenue
New Rochelle, N.Y. 10801

or WHOLE EARTH CATALOG

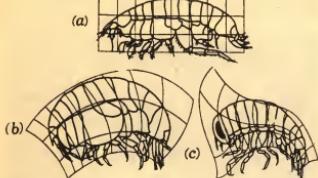


Fig. 143. (a) *Haploblepharus phanerurus* Kr.;
(b) *Stegocephalus inflatus* Kr.;
(c) *Hyperisus galba*.

When Plateau made the wire framework of a regular tetrahedron he dispensed with its resolution, he obtained in this way a perfectly symmetrical system of six films meeting three by three in four edges and three angles running from the corners of the figure to its centre of symmetry, where they meet, two by two, at the same angle, and where they meet at three by three, to form the re-enterant solid angle which we have called a "Maraldi pyramid" in our account of the tetrahedron and the hexahedron. The very same configuration is easily recognized in the minute siliceous skeleton of *Callimira*. There are no difficulties neither of construction nor raise any difficulty. The figure is not rectangular but a spherical tetrahedron, such as might be formed by the intersection of edges of a tetrahedral cluster of four co-axial bubbles, such as Plateau himself made in his experiment by blowing a small bubble in the centre of his tetrahedral system, so we have a central bubble here too.

This bubble may be of any size; but its situation [if it be present at all] is always the same, and its shape is always such as to give the Maraldi angles at its own four vertices, and to give its own form, and those of the films by which it is surrounded or surrounded all balance one another. Hence the bubble appears in plane projection as a quadrilateral-tetrahedral triangle; and we have only to convert this into a diagram into the corresponding solid to obtain the spherical tetrahedron we have been seeking to explain.

Purposive Systems

You're a purposive system. So am I. We're very good at it, and not as good as we'd like to be. Humanity, as a whole, is lousy at it, and worried. This collection of recent cybernetic thoughts can cheer you up and give you better concepts to worry with.

Purposive Systems

Ed.: Heinrich von Foerster, J. D. White,
L. J. Peterson, K. Russell
1968; 179 pp.; \$10.00
Spartan Books
432 Park Avenue South
New York, N.Y. 10016
or
WHOLE EARTH CATALOG

-SB

Aspects of Form

This is a well-used collection of insights by venerable initiates of form study.

-SB

Aspects of Form

Lancelot Law Whyte, ed.
1951; 249 pp.

\$1.95 postpaid from
Indiana University Press
10th and Morton Streets
Bloomington, Ind. 47401
or
WHOLE EARTH CATALOG

14 Form
Whole Systems



The geometry of the little inner tetrahedron is not less simple and elegant. Its six edges and four faces are all equal. The films attaching it to the outer skeleton are all planes. Its faces are spherical,

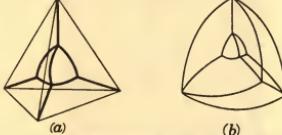


Fig. 145. Diagrammatic construction of *Callimira*. (a) A bubble suspended within a tetrahedral cage; (b) another bubble within a skeleton of the former bubble.

and each has its centre in the opposite corner. The edges are circular arcs, with cosine $\frac{1}{2}$; each is in a plane perpendicular to the chord of the arc opposite, and each has its centre in the middle of that chord. Along each edge the two intersecting spheres meet each other at an angle of 120° .



We have not yet built into our educational system any recognition of the points where precision is essential, and yet we are living in a society where one mistake can dislocate the lives of thousands of people, waste great distribution systems, and distort life-history date, and subsequent career lines.

There is no basic reason why one cannot design a control memory with a different technology, a technology which would allow the computer itself to alter the information stored in the control memory. Thus we would have a computer that could edit its own character as required. To do this knowledge will be little use unless it is done through thinking through the implications of this extremely powerful possibility. The possibilities are so staggering and deep, the poor hinder souls responsible for trying to understand the classical computer as we now know it with this idea would do well to stay away.

The act of choosing a representation for a problem involves the specification of a space within which the solution can take place. Such a specification involves the choice of a language—and its use—for expressing problem conditions, properties of solutions, and knowledge of regularities in the space search.

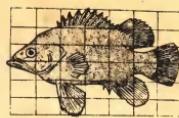


Fig. 150. *Polypterus*.

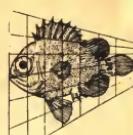
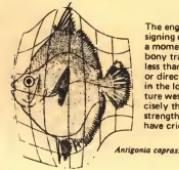


Fig. 151. *Pseudopercichthys albus*.

The engineer, who had been busy designing a new bridge and was about to lay the last stone, saw in a moment that the arrangement of the bony truss there was nothing more nor less than a diabolical tetrahedron. He had to change the lines and directions of tension and compression, in the loaded structure; in short, that Neptune was strengthening the bones in precisely the wrong areas and that the strength which strength was required; and he is said to have cried out, "That's my crane!"



Anagia capra.

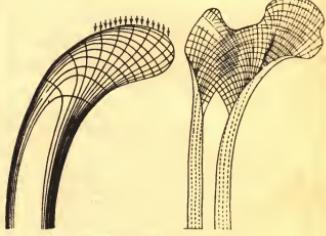


Fig. 152. Crane head and femur. After Culmann and J. Wulff



If we detach the concern of survival from computers, as is generally the case, they can learn abilities more useful to man than the struggle for existence.

A friend of mine once gave what I regard as a nice shorthand formula. When in a dilemma, introduce novelty.

Exaggerated politeness is a powerful source of misunderstanding.

Requiring seeking activities that seem to be generally useful include the detection of symmetries, the identification of "critical points" (key points through which the search must go to get a solution), and the recognition of redundant information in problem descriptions.



Fig. 154. Copperhead Snake—illustrating the effectiveness of disrupture contrast in relation to background configuration

A man may learn by experience to associate two series of events between which any connection seemed at first wildly improbable. For such associations to be possible, probably must be made to every association entering the memory system to be recorded in the brain, not merely to the specialized receiving tissue. Thus from the knot of an event is generated a web of speculation; when two series of events are placed together, they form the warp and woof of a shimmering fabric into which is woven the pattern of the probability that the two events are significantly related.

An "inroad" in this biological sense, then, is not an imitation of an object's external form, but imitation of the way it is used and viewed in real aspects. It is here that a wide field of investigation would seem to open. We know that there are certain privileged positions in our world to which we respond almost too easily. The human face may be outstanding among them. Whether by instinct or very early training, we can all be easily disposed to single out the expressive features of a face from the chaos of sensations that surrounds it and to respond to its slightest variations with fear or joy.

Synthesis of Form

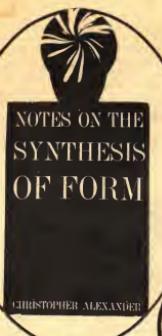
Christopher Alexander is a design person that other design people refer to a lot. This book deals with the nature of current design problems that are expanding clear beyond any individual's ability to know and correlate all the factors. The methodology presented here is one of analysis of a problem for misfits and synthesis of form (via computer-translatable nets and hierarchies) for minimum misfits.

-SB

[from the table of contents]

2. Goodness of Fit 15
3. The Source of Good Fit 28
4. The Unconscious Process 46
5. The Selfconscious Process 55

But if we think of the requirements from a negative point of view, as potential misfits, there is a simple way of picking a final set. This is because it is those misfits which fit the problem originally brings itself to our attention. We can see the interactions between form and context which obscure most strongly, which demand attention more clearly, and which are most important. We can do better than this. If there were some intrinsic way of reducing the list of requirements to a few, this would mean in essence that we were in possession of a field diagram of the problem. In such a case, the problem of creating fit would become trivial, and no longer a problem of design. We cannot have a unitary or field description of a context and still have a design problem worth attention.



Notes on the Synthesis of Form
Christopher Alexander
1964, 216 pp.

\$2.25 postpaid

From:
Harvard University Press
79 Garden Street
Cambridge, Mass. 02138

or WHOLE EARTH CATALOG

Indeed, not only is the man who lives in the form the one who made it, but also he is the source of contact between man and form which leads to constant rearrangement of unsatisfactory detail, constant improvement. The man is directly responsible for the changes in the shape of the system, to the extent that he is able to do so. And anything which needs to be changed is changed at once.

A subsystem, roughly speaking, is one of the obvious components of the system, like the parts shown within a circle round them. If we try to adjust a set of variables which does not constitute a subsystem, the person will experience an unexpected effect on others outside the set, because the set is not sufficiently independent. The procedure of the unconscious system is so



organized that adjustment can take place in each one of these subsystems independently. This is the reason for its success.

In the selfconscious situation, on the other hand, the designer is faced with all the variables simultaneously.

The greatest clue to the inner structure of any dynamic process lies in its reaction to change.

The Mougmoum cannot afford, as we do, to regard misfit as a nuisance which is best forgotten until it is time to call the local plumber. It is in the service of building operation itself, and its exigencies are as likely to shape the form as those of the initial construction.

The selfconscious individual's grasp of problems is over-enveloped, and his reactions are self-centered, sides being arbitrary and undesirable, are self-purifying. Under the influence of concepts, he not only does things from a biased point of view, but sees things in a biased way. He is continually changing his point of fit and misfit—until in the end he sees nothing but deviations from his conceptual dogmas, and loses not only the urge but the mortal opportunity to frame his problems more appropriately.

The solution of a design problem is really only one effort to find a unified description. The search for this is made through constructive diagrams in an effort to understand the problem form so fully that there is no longer a rift between its functional specification and the shape it takes.

Two misfits are seen to interact only because, in some sense at least, they deal with the same kind of physical consideration.

It is such a central center of importance, if I may say so, that when we find it, we find it easy. Because it refers to a distinguishable physical property or entity, it can be expressed diagrammatically, and provides a possible non-verbal point of entry into the problem.

The Sciences of the Artificial

Simon says: "we have generalized methods of obtaining elegant information from nature. We don't have generalized methods of making elegant things to add to nature; we lack a science of design. He's right and he doesn't waste much time being right, but proceeds to make useful suggestions—lots of them probably wrong and useful anyway. His notion of sub-system stability in evolution is beautiful."

-SB

The Science of the Artificial
Herbert A. Simon
1969; 123 pp.
\$1.95 postpaid

From:
The M.I.T. Press
557 Massachusetts Avenue
50 Ames Street
Cambridge, Mass. 02142

or WHOLE EARTH CATALOG



If a complex structure is completely unredudant—if no aspect of its structure can be inferred from any other—then it is its own simplest description.

The Evolution of Complex Systems

Let me introduce the topic of evolution with a parable. There once were two watchmakers, named Hora and Tempus, who manufactured very fine watches. Both of them were highly regarded, and the phones in their workshops rang frequently—new customers were constantly calling them. However, Hora prospered, while Tempus became poorer and poorer and finally lost his shop. What was the reason?

The watches the men made consisted of about 1,000 parts each. Tempus had so constructed his that if he had one partery assembled and tried to put it down—to answer the phone, say—it immediately fell to pieces. But Hora had designed them so that the parts could put together subsystems, even if only two or three of them. Each of these subsystems, again, could be put together into a larger assembly; and a system of ten or twelve of these subsystems constituted the whole watch. Hence, when Hora had to put together a newly assembled watch in order to answer the phone, he lost only a small part of his work, and he assembled his watches in only a fraction of the man-hours it took Tempus.

The watches that Hora made were no longer complex than those of Tempus. But Hora had designed them so that the parts could put together subsystems, even if only two or three of them. Each of these subsystems, again, could be put together into a larger assembly; and a system of ten or twelve of these subsystems constituted the whole watch. Hence, when Hora had to put together a newly assembled watch in order to answer the phone, he lost only a small part of his work, and he assembled his watches in only a fraction of the man-hours it took Tempus.

Most of the complex structures found in the world are enormously redundant, and we can use this redundancy to simplify their description, but to use it, to achieve the simplification, we must find the right representation.

*

The Artifact as "Interface"

We can view the matter quite symmetrically. An artifact can be thought of as a meeting point—in "interface" in Simon's words—on "inner" and "outer" environments. The inner environment of the artifact itself, and its "outer" environment, the surroundings in which it operates. If the inner environment is appropriate to the outer environment, the artifact will serve its intended purpose. Thus, if the clock is intended to tell time, it will serve as a ship's chronometer. (And conversely, if it isn't, we may shelve it by mounting it on the mental at home.)

I should like to point to evidence that there are only a few "intrinsic" characteristics of the inner environment of thinking man that limit his capacity to think. These are thought to the shape of the problem environment. All else in his life is problem-solving behavior which is artifact-related and subject to improvement through the invention of improved designs.



D.R. was on his knees now. Estelle, digging in a duffel bag. A light would have helped but Urgo's overhead light was out, and D.R. didn't know where the flashlight was.

"Here, honey, light this candle," said Estelle, and she handed him a candle.

Bare somehow climbing through the general debris to get to the back, D.R. had lost the matches. He yelled goddamn it! as loud as he could yell.

"Shhh, honey, it's all right. What are you looking for?"

"I'm looking for the goddamn dope that I had in my goddamn hand when I got hit. I'm looking for the goddamn dope. And he lifted the duffel bag by its bottom and dumped it contents on top of the other stuff already scattered over the mattress.

Estelle found a match and lit it. The whole wild interior of the bus was alive for a moment, but quickly began to fade.

"Goddamn the goddamn," said Estelle.

"Where is it?"

"I headed it to you."

D.R. felt around his knees and legs, and in the pile of stuff he'd just dumped out. But all he could find was a broken bottle. He picked it up, looked at it, then realized how it hard as he could throw it down. "Fuck it," he yelled, and strangled himself on the yurt. It was as if something had seized his throat and choked him. Falling onto his side D.R. grabbed the handle of the side doors and threw them open, then stumbled in the darkness to the rear. Estelle was out of her sleeping bag by the time he hit the ground.

"Honey, what's wrong?"

"I can't breath!" he gasped. "That's in that bus . . . " "Honey, it's fine in here. Come on back, you're getting wet."

D.R. did not seem persuaded, but he obeyed. Estelle closed the door behind him, then guided him toward the far end of the mattress.

"Where's my sleeping bag?" D.R. asked.

"Get in, baby, lie down. I'll drive awhile, and you can get some sleep."

D.R. did not seem persuaded, but he obeyed. Estelle closed the door behind him, then guided him toward the far end of the mattress.

"Where's my sleeping bag?" D.R. asked.

"Get in, come on, now."

"I've got to urinate."

"It's on the floor. It's full of puk and beans, that's where. Now come on back, honey."

General Systems Yearbook

Good thinking, rotten publishing. The usual graphic output in this yearbook is three pallid diagrams. And you know that the mothers who wrote the articles are forever whacking away at their blackboards, but because typewriters don't draw, all that vivid stuff gets left in the author's private experience. Many, there's something suspect about General Systems Theory if the practitioners are this far out of intelligent communication. Here's part of the contents of a recent volume, which may help to vindicate matters.

-SB

General Systems

Ludwig von Bertalanffy, Anatol Rapoport,
Richard L. Meier, eds.

\$10.00 postpaid per volume

from
Society for General Systems Research
Joseph Henry Building, Room 818
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20008

PART I. METHODOLOGY

Science and System: On the Unity and Diversity of Scientific Theory
by Peter Cew

An Approach to General Systems Theory
by George W. Trank

Concerning the Analysis of Initial Principles and Conceptions of Formal Logic
by G. P. Schrodovitsky

PART II. CONTROL THEORY

Technosphere, Biosphere, and Sociosphere: An Approach to Their Systems and Optimization
by J. H. G. van der Pol

Representation and Analysis of Signals: Statistical Estimation of Intrinsic Dimensionality and Parameter Identification
by Gerard V. Trunk

Notes for a Generalized Theory of Interfaces
by E. Tschapkin

Toward a Theory of Teleogenetic Control Systems
by N. A. Coutler, Jr.

The Relevance of Arms Race Theory to Arms Control
by P. E. Chase

Uncoupling Statistic Systems
by Roslyn Lindheim

Understanding whole systems is knowing how to fly. You can rise above local circumstances, travel at blurring speed, and set down in a place wholly distant, strange, and wonderful. Or maybe not so wonderful, in which case you best know how to take off in a tight situation, and remember where home is.

The price you pay for the understanding is the grim knowledge of trade-offs in design. That you can have an airplane that goes fast or one that lands in 200 ft, but not both. That to save these people you may have to starve those people.

By and by you dwell in a wilderness of conflicting considerations... If you survive your wishful solutions—and there's usually margin—you may become a wily and sky-hooked metaphysician. The solutions are always meta. The means always funky field expedient.

-SB

Dynamo and Virgin Reconsidered

Here in one sharp little book are noted many of the large-scale turns of history and culture that we are visibly and invitingly making in one evolutionary blink of time. Unlike most overviews, *White* does not concern himself with so much pace of change as he does with origins and directions. His 1967 essay "The Historical Roots of Our Ecological Crisis" (chapter 5 in this book) is already a much-reprinted classic. I suspect that Chapter 11, "The Necessity of Witches," will become one.

-SB

Dynamo and Virgin Reconsidered

Lynn White, Jr.

1968; 186pp.

\$1.95 postpaid

from:
The MIT Press
50 Ames Street
Cambridge, Massachusetts 02139
or WHOLE EARTH CATALOG



From the kaleidoscopic and independent record of mankind, we can learn chiefly this: the possible range of human thought, emotion, organization, and action is almost infinite. In facing today's problems, we must therefore liberate ourselves from presuppositions as to what may or may not be possible. Knowledge of history frees us to be contemporary.

The Human Use of Human Beings

A proper sequel to his *Cybernetics*, this book is social, untechnical, ultimate in most of its considerations. Its domain is the whole earth of the mind.

Norbert Wiener is one of the founders of an n-dimensional inhabited world whose nature we've yet to learn.

-SB

The Human Use of Human Beings

Norbert Wiener

1960; 1954; 288 pp.

\$1.45 postpaid

from:
Avon Books
250 West 55th Street
New York, N.Y. 10019
or WHOLE EARTH CATALOG

It is the thesis of this book that society can only be understood through a study of the messages and the communication facilities which belong to it; and that in the future development of these message and communication facilities, messages between man and machine and between machine and machine, are destined to play an ever-increasing part.

Messages are themselves a form of pattern and organization. Indeed, it is possible to view sets of messages as having an entropy like sets of data in the real world. Just as entropy is a measure of disorganization, the information carried in a set of messages is a measure of organization. In fact, it is possible to interpret the information carried by a message as essentially the negative of its entropy, and the more negative the message, the more likely it is to be true. That is, the more probable the message, the less information it gives. Cliffs, for example, are less illuminating than great poems.

I believe that Ashby's brilliant idea of the unpurposeful random mechanism which selects the way in which a system learns is the key to learning is not only one of the most interesting philosophical contributions of the present day, but will lead to highly useful technical developments in the task of automation. Not only can we provide input into machines, but in an overwhelming majority of cases a machine designed to learn can prevent its own breakdown will look for purposes which it can fulfill.

We are not stuff that abides, but patterns that perpetuate themselves. A pattern is a message, and may be transmitted as a message.

Perception and Change

John Platt is an astute scientist (physics, chemistry, biology) in the process of becoming an astute social inventor. He's got some novel understandings and some promising routes out of the old god over-specialized, under-diversified hole we're in... and into the green forest of what a "we" is, or an "it".

Perception and Change

John R. Platt

1970; 178 pp.

\$7.95 postpaid

from:
University of Michigan Press
615 E. University
Ann Arbor, Michigan 48106

or WHOLE EARTH CATALOG

One reason why some fields are overstudied these days is our present system of government grants.

Enrico Fermi once said that a scientist should change fields every 10 years, that is, in his place, his ideas would be exhausted by then, and he ought to go to another place, his ideas might still be of great value in bringing a fresh viewpoint to a different field.

Why should someone not make us a single suit that would shed rain and that we could ruffle up for comfort in any weather, as a bird ruffles its feathers? A bird needs no suitcase.

Many who have made the jump to the subjective have ended by treating the objective as small and unimportant. Solipsist tyrants, believing that their will, like their eyeballs, could move mountains, have come to believe that it should trample over these small annoying figures in their visual field.

Prophecy is rare. But it may well be that the publication of D.T. Suzuki's first *Ezayi in Zen Budism* in 1927 will seem to future generations as great an intellectual event as William of Ockham's Latin translations of Aristotle in the thirteenth century or Marsilio Ficino's of Plato in the fifteenth. But in Suzuki's case, the shell of the Occident has been broken through. More than we dream, we are now governed by the new carbon of the globe.

Francis tried to depose man from his monarchy over creation and set up a democracy of all God's creatures. With him the art is no longer simply a hobby for the lazy, fluxes a sign of the thrust of the soul toward union with God; then there is Brother Francis and Sister Fina, praising the Creator in their own ways as Brother Man does in his... I propose Francis as a patron saint for ecologists.



It is the great public which is demanding the utmost of secrecy for modern science in all things which touch its military uses. This demand for secrecy is scarcely more than the wish of a sick civilization not to learn the progress of its own disease.

It is illuminating to know that the sort of phenomenon which is recorded subjectively as emotion may not be merely a useless epiphenomenon of nervous action, but may control some essential stage in learning, and in other similar processes.

-SB

Good living is with tribe. At the Marine Biological Laboratories at Woods Hole, Massachusetts, within the sprawling complex of the boundaries between the generations seems to disappear, as well as the boundaries between work and play and between indoors and outdoors. Students and teachers walk together in and out of the buildings, arguing science and studying the odd creature brought up from the sea. All night they watch the fish embryos developing in the dishes, and they go out before dawn together to catch the big striped bass. The students are not just students; they are 10-year-olds who bring their catch of dogfish to the labs, the 15-year-olds listen to the DNA arguments on the beach or play savage tennis with the senior scientists.

As perception theory now suggests, each of us stands at the creative crossroads of our life, well aware of the spiritual and future consequences that branch off from our present choices of actions, propagating and amplifying themselves indefinitely. We interpret the universe; it responds to our every breath.

It seems to me that the new rights for which a demand is arising in our time, I think in an irresistible way, revolve primarily around the right not to be treated as an object. We are co-subjects in our society.

It is said that after the ceremonies dedicating the great telescope on Mount Palomar, someone remarked to an astronomer, "Modern astronomy certainly makes man look insignificant, doesn't it?" To which the astronomer replied, "But man is the astronomer!"

There was a period in our own society when we needed witches and heretics in order to keep us in line. It began about the year 1300, ended somewhere after 1650, and is usually called the Inquisition. This was a time of torrential flux, of feverish doubt, marking the transition from the relative certainties of the Middle Ages to the new certainties which dominated the eighteenth and nineteenth centuries.

The Next Development in Man

Books. Lancelet Law Whyte, *The Next Development in Man*. Mentor paperback, 60¢ (may be more now). Written in 1948, but still relevant. Whyte wants to change the processes of thinking from static concepts to fluid developments. In order to do this he first has to redefine the whole language to replace our usual noun-name centered ideas with verb-action reinterpretations. The rest of the book is a long, head-wrenching reinterpretation of Western history as well as the working out of what Whyte calls the universal formula. The point is, where we are now represents a blocked, one-sided aspect of this principle, hence the requirement of the development of process thinking and unitary man. The failure we are living with now Whyte recognized in 1948, the value of the book is its display of a vast and essentially complete metaphysical system that is in fact a philosophic program for the future.

Cary James
Mill Valley, Calif.

"Form is the recognizable continuity of any process." p. 15

"Anything which facilitates the development of characteristic organic form is called proper to the organism." p. 23

"The poverty of language in process concepts compels unitary thought to use "process" as both noun and adjective. Form, growth, growth, development, destruction, decay, are static concepts; growth, number, matter, energy, are static concepts lacking the asymmetry of the time sequence and implying permanence." p. 27

"...the one God was a jealous God. With the ideal of universality appeared intolerance." p. 76

"More comprehensive processes than those of the conscious mind control human destiny." p. 118

"The final elimination of the dualistic error only comes about through the realization that the need to formulate ideals, and in so doing split spirit and asunder, is itself an expression of the very human but futile desire to escape the uncertainty of process. The split spirit is a state of mind which at least of a permanent harmony. Unitary man can achieve this realization, and see himself as a whole, if he can only accept his personal life for what it is, a transient development through changes which cannot be foreseen." p. 210-11.



Man's Role in Changing the Face of the Earth

This book of almost 1200 pages is the result of a major conference held in 1955, sponsored by the Werner Goran Foundation for Anthropological Research. More than 50 scholars submitted papers, covering almost every imaginable point of view related to man's capacity to transform his physical environment. Though first presented nearly 15 years ago, the facts and insights are richly rewarding today. In my opinion in fact, it is an unsurpassed achievement in assembling pertinent, insightful information of interest not only to serious students of the planet Earth, but to non-trained readers as well.

The three sections of the book are: I. "Retrospect," an historical survey of man's past; II. "Present Trends and Agencies involved in man's interactions with the land"; and III. "Project," the effects and future implications of man's habitation of the Earth. Some typical subjects covered within these sections include: fire as the great force employed by man; origins and decline of woodlands; man and grass (sic); ecology of peasant life; harvests of the seas; ports channels and coastlines; and sewerage (don't belittle sewerage—society is structured around it).

This book rewards a reader like me because of its minimum of moralizing and its abundant substance. Edgar Anderson, director of the Missouri Botanical Garden in St. Louis and without whom such a book as this would be certainly incomplete, has written that "the average thoughtful person has little inkling of how man has transformed the world. Even professional biologists have been tardy in recognizing that a significant portion of the plants and animals surrounding us are of our own making. For example, neither Kentucky bluegrass nor Canada bluegrass is native to those places, but came from Europe. The corn belt is a very obviously man-dominated landscape, but the casual observer might never realize that even the grass covered and oak-dotted stretches of what looks like indigenous California vegetation came uninvited from the Old World along with the Spaniards."

(Reviewed by Richard Raymond)

So Human an Animal

Dubos has a combined medical and evolutionary perspective that prepares him perfectly to diagnose and prescribe for the new ills of mankind, the macro-maladies of cities and pollution and panic. Unlike other General System Practitioners, he supports his thoughts with a wealth of fascinating facts and anecdotes presented with a good cheer that makes health look quite attractive.

-SB

So Human an Animal
René Dubos
1968, 267 pp.

\$2.45 postpaid

from:
Charles Scribner's Sons
597 Fifth Avenue
New York, N. Y. 10017

or WHOLE EARTH CATALOG



As the year 2000 approaches, an epidemic of sinister predictions is spreading all over the world, as happened among Christians during the period preceding the year 1000.

We behave often as if we were the last generation to inhabit the earth.

If the rebellious young succeed in discovering a formula of life as attractive as that of the troubadours, we may witness in the twenty-first century a new departure in civilization, occurring in Europe after a reawakening of the forces of the ancient world. If man, though humanly successful, the new ages will have to overcome the present intoxication with the use of power for the conquest of the cosmos, and the rise above the simple-minded and degrading concept of man as a machine. The first move toward a richer and more human philosophy of life should be to renew man's partnership with nature.

The Human Condition

At the end of a *peyote meeting*, in the morning, food and water are brought by a woman designated to be *Peyote Woman*. Indian women are not supposed to speak up much on general subjects, and during a meeting the women are silent participants. But at dawn *Peyote Woman* has the floor and the power. She speaks of fundamental things like water and birth and nourishment with all the authority of the Earth and with awesome perception.

Hannah Arendt does the same in this book. Her subject is the elements of the human condition. Her perspective, the threshold of travel away from the Earth.

-SB

The Human Condition
Hannah Arendt
1968, 385 pp.

\$2.95 postpaid

from:
University of Chicago Press
1020 South Langley Ave.
Chicago, Ill. 60628

or WHOLE
EARTH
CATALOG



The task and potential greatness of mortals lie in their ability to produce things—works and deeds and words—which would deserve to be, and, at least to a degree, are in home in everlastingness, so that through them mortals could find their place in a cosmos where everything is immortal except themselves.

It is true that one-man, monarchical rule, which the ancients stated to be the best guarantee of the welfare of the household, is treated here as something to be avoided. It is true that the rule of the social order is no longer formed by the royal household of an absolute ruler—indeed a kind of no-man rule. But this nobody, the ruler of the household of society, who rules in economics as well as the assumed one-man rule of politics, the ruler of the saloon, does not cease to rule for having lost its personality. As we know from the most material form of government, that is, from bureaucracy (the state), the ruler in the household of the state is just as one-man rule in benevolent despotism and absolutism was its first, the rule by nobody is not necessarily no-rule; it may indeed, under certain circumstances, even turn out to be one of its cruellest and tyrannical versions.

Love, in distinction from friendship, is killed, or rather extinguished, the moment it is displayed in public. ("Never seek to tell thy love, Love that never told can be.") Because of its inherent worldlessness, love can only become fatal and perverted when it is used for political purposes such as the change or salvation of the world.

Without actually standing where Archimedes wished to stand (*des moys suis*), still bound to the earth through the human condition, we have found a way to act on the earth and within terrestrial nature as though we dispose of it from outside, from the point of view of the gods. At every risk of endangering the natural life process we expose the earth to universal, cosmic forces alien to nature's household.

Man's Role in Changing the Face of the Earth

William L. Anderson, Jr., ed.
with Carl Sauer, Marston Bates, Lewis Mumford
1956, 1193 pp.

Vol. 1 \$4.75 postpaid

Vol. 2 \$5.95 postpaid

from:
University of Chicago Press
5801 Ellis Ave.
Chicago, Illinois 60637
or WHOLE EARTH CATALOG



As the year 2000 approaches, an epidemic of sinister predictions is spreading all over the world, as happened among Christians during the period preceding the year 1000.

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THE SOCIAL REVOLUTION



Almost every change in environmental conditions which man can make results in some change in the water economy or water budget at the earth's surface.

The pressure for beef supply from the grasslands is very rapidly decreasing the pressure for protein. As the protein went ahead of the meat, we have been able to measure the reduction in soil capabilities. The protein content of the wheat has grown on the eastern edge of the grassland area has been dropping steadily. Where once it ranged from 19 to 11 per cent, it is now 14-9 per cent.

These are all very good ideas, but I've got something else that is very much more important. Every time you get where there is one of these populations of plants, find a large, flat rock, in the shade if possible, and sit down on it and look at the sky. You'll see a few wispy clouds; end do not try to think about your clemencies. Just think what a nice day it is, how pretty the flowers are, and the blue sky. Think how nice it is to be doing this kind of work when the rest of the world is doing all the awful things they do. And then you can think of your mind alone. Now, I am not joking. Please do this, by the clock if necessary.

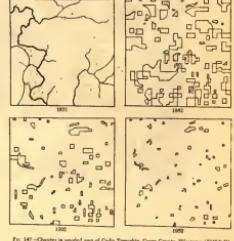


Fig. 147.—Changes in the size of Oulu Township, Green County, Wisconsin, 1840-1870. The figures in the maps indicate the number of inhabitants reported by the U. S. Census. The studied areas represent the old territory or, in earlier years, the new territory.

Considered broadly, evolution always involves learning from experience. The learning may take place by storage of genetic information in the chromosomes, by accumulation of knowledge and skills in the individual organism, or by transmission of practices and wisdom in institutions or in society as a whole.

History shows that cultures of a sort can emerge from the most improbable ways of life, provided these last long enough to become imbedded in an organism. The emergence of a new culture is rarely if ever the result of a conscious choice with a definite goal in mind.

The Cartesian removal of the Aristotelian point into the mind of man, while it enabled man to carry it, as it were, within himself wherever he went, thus freed him from given reality altogether. He was then free to imagine the possibility of being an inhabitant of the earth—but perhaps never based on any real evidence as the universal doubt from which it sprang and which it was supposed to dispel. Today, at any rate, we find in the perplexities of our modern society the same sort of doubt about the greatest triumphs the same nightmares which have haunted the philosophers from the beginning of the modern age.



QUESTIONS

Did he dream about dragons? Did he dream about deer? Did he whisper the names of friends who were never there? What songs did they play, and how far away? Why did he whisper, why did she scream? What does the sound of a screen door mean? Who walks in the park? Who talks on the hill? Who goes to the castle on the hill? Who is the child? Who goes to the castle when will the wind? How far are the mountains? Whom do they see? Why would the church? Did the service begin? Tell me who? Why did he cry? Help me to hide in the skin of a deer, my zippered-up bag in the mouth of a stag so swift! I go through rows of dogs, it flows, it flows, it flows, it flows all over the hill where the green grass grows.

Man and His Symbols

Carl Jung did a nice thing just before he died. He helped with a British effort to bring all of his work together in one richly illustrated introduction to the breadth of his realm. This book covers his concepts of the unconscious, myths, individuation, the visual arts, dreams, and analysis. Why aren't all psychology books illustrated?

-SB

Man and His Symbols

Carl G. Jung

1964, \$20. pp.

\$6.95 postpaid

from:

Doubleday & Co.

501 Franklin

Garden City, N.Y. 11531

or WHOLE EARTH CATALOG



A still more subtle manifestation of a negative anima appears in some fairy tales in the form of a princess who asks her suitors to answer a series of riddles or, perhaps, to hide themselves under her dress. If they cannot give an answer to all of the first three, they must die and the invariably wins. The anima in this guise involves men in a destructive intellectual game. We can notice the effect of this anima in the man who is afraid to go into the world because it inhibits a man from getting into direct touch with life and its real decisions. He reflects about life so much that he cannot live it and loses all his spontaneity and outgoing feeling.



Oh, come, lonely hunter, in the darkness of dusk.
Come, come! I miss you, I miss you!

Now I will embrace you, embrace you!

Come, come! My nest is near, my nest is near.

Come, come, lonely hunter, now in the darkness of dusk.

He throws off his clothes and swims across the river, but suddenly she flies away in the form of an owl, laughing mockingly at him. When he tries to swim back to find his clothes, he drowns in the cold river.



A car is another kind of possession that is usually feminized—i.e., that can become the focus of many men's anima projections. Like ships, cars are called "she," and their owners caress and pamper them like favorite mistresses.

When an individual makes an attempt to see his shadow, he becomes aware of (and often ashamed of) those qualities and impulses he denies in himself but can plainly see in other people . . .

If you are an overwhelming rage coming up in you when a friend reproaches you about a fault, you can be fairly sure that at this point you will find a part of your shadow, of which you are unconscious.



The archetypal sacred marriage (the union of opposites, of the male and female principles) represented here by a 19th-century Indian sculpture of the deities Siva and Parvati.

Psychological Reflections

The selection and editing of paragraphs from Jung's writings by Jacobi is done with an informed sense of continuity, so that the book is readable in sequence or by bits.

-SB

Psychological Reflections

C. G. Jung [ed. Jacobi]

1945, 1953, 1961; 340 pp.

\$2.95 postpaid

from:
Harper & Row
49 East 33rd Street
New York, N.Y. 10016

or WHOLE EARTH CATALOG

The man who would learn the human mind will gain almost nothing from experimental psychology. Far better for him to put away his academic gown, to say good-bye to the study, and to wander with human heart and head through the world. Through the doors of the library, museum, and the hospital, in the make-up-room, brotherhoods, gemini-hells, in the salons of the elegant, in the exchanges, socialistic meetings, churches, religious revivals, and sectarian ecstasies, through love and hate, through the frenzied passion in every form in his own body, he would reap richer stores of knowledge than text-books a foot thick could give him. Then would he know to doctor the sick real knowledge of the human soul.

A neurosis has really come to an and when it has overcome the wrongs of the past, it has to overcome the present. It is not that the person is ill, but the illness is an attempt of nature to heal us from the illness itself, and that which appears to the neurotic person as absolutely to be rejected is just the part which contains the true gold which we should otherwise never have found.

The secret of the earth is not a joka and not a peraciox. We need only now in America the skull and hip-measurements of all European immigrants to determine the racial type of the population of the American soil. And every soil has its secret, of which we carry an unconscious image in our souls: a relationship of spirit to body and of body to earth.

The greater the contrast, the greater is the potential. Great energy only comes from a correspondingly great tension between opposites.

18 *Whole Systems*



A revised and retranslated edition of *Psychological Reflections* is available in hardcover for \$2.50 from Princeton University Press, Princeton, N.J. 08540.

No one develops his personality because someone told him it would be useful or advisable for him to do so. Nature has never allowed herself to be called upon to do such a thing. Only constant working through actual contact creates more nature and human personality least of all. It is immensely conservative, not to say inert. Only the sharpest, most intense, and most concentrated personal experience can move, can command, and no insight, but only need; it wants the motivating coercion of inner or outer necessities. Any other development would be individualism. This is why the accusation of individualism is a cheap insult when it is raised against the natural development of personality.

It is naturally a fundamental error to believe that if we were an anti-value in a value, or an untruth in a truth, the value or the truth would then be invalid. They have only become relative. Everything human is relative, because everything depends upon an inner polarity, for everything is a synthesis of elements and energy. Every value depends on a previous pole without which there can be no energy. There must always be high and low, hot and cold, etc., so that the process of adjustment which is energy, can occur. The tendency to defend all previous values in favour of their opposites is therefore just as excessive as the former tendency to ignore them. Once established and undoubted values are suddenly thrown away, there is a chaotic loss. Whoever acts in this way ends by throwing himself overboard with the discarded values.

The gigantic catastrophe that threatens us is not elemental happenings of the physical kind, but are psychic events. We are threatened in a fearful way by wars and revolutions that are far more dangerous than psychic epidemics. At any moment a few million people may be seized by a mass-mania, and then was how another world war or devastating revolution threatened. Increasingly, the human race is faced with inundating waters, man is exposed today to the elemental forces of his own psyche. Psycho-life is a power-over that exceeds by many times all the powers of the earth. The Enlightenment, which freed nature and human institutions of gods, has followed the trend of fear that dwells in the psyche. Fear of God is in place, if anywhere, before the dominion power of psychic life.

No doubt it is a great nuisance that mankind is not uniform but compounded of individuals whose psychic structure spreads them over a span of at least ten thousand years. Hence there is absolutely no truth that does not spell salvation to one person and damnation to another. All universalisms get stuck in this terrible dilemma.

Anthropology Today

If revising human affairs is your concern, or adapting to harsh social/environmental changes, the anthropological perspective can be enormously useful. Much of the value of Gary Snyder, Kurt Vonnegut, Carlos Castaneda is attributed by them to their study of anthropology. When understanding spans remote cultures, it's powerful understanding, seldom chauvinistic.

This book from the Psychology Today folks will do for introduction.



-SB

Anthropology Today

1971; \$58 pp.

\$12.95 postpaid

from:
CRM Books
1104 Camino Del Mar
Del Mar, CA 92014

or WHOLE EARTH CATALOG



"A laughing outsider once said that anthropology is only an excuse for not specializing; a humanist remarked that a good anthropologist was the last Renaissance man. . . ."

These Amharic nomads of Ethiopia prefer the freedom of mobility to the accumulation of wealth practiced by the Danakil, with whom they trade in the village of Bati. Proud of their heritage, the Amharic invoke Owen Lattimore's words, "the pure nomad is a poor nomad."

Among the modern Cree, there is conflict between the traditional expectation associated with the "good men" who may counsel but never coerce and the Canadian government's expectations of a chief that he must gain compliance with their orders.

Tristes Tropiques

Unlike many a French thinker, Claude Lévi-Strauss has done field work. His account of tribes in Brazil galvanized budding anthropologists all over the world. Find here the inelegant roots of elegant structuralism.

-SB

[suggested by Michael Harner]



Tristes Tropiques

Claude Lévi-Strauss

1955, 1970; 403 pp.

\$3.25 postpaid

from:
Atheneum Publishers
122 E. 42nd St.
New York, N.Y. 10017

or WHOLE EARTH CATALOG

And then there was that strange element. In the evolution of Asuncion towns: the drive to the westward to open up the eastern part of the town in poverty and dereliction. It may be merely the expression of that constant rhythm which has possessed mankind from the earliest times. It is a rhythm that causes us to have the realization that to move with the sun is positive, and to move against it negative; the one stands for order, the other for disorder.

The ensemble of a people's customs has always its particular style; they form into systems. I am convinced that the number of these systems is proportional to the number of individuals. Like individual human beings play in their dreams, or in moments of reverie, never create *absolutely*: all they can do is to choose certain combinations from a repertory of ideas which it should be possible to reconstitute.

What we call "natural" sentiments were held in great disfavour in their society: for instance, the idea of procreation filled them with disgust. Abortion and infanticide were so common as to be almost normal. This extreme, in fact, that it was by adoption, rather than by procreation, that the population increased. One of the main objects of the warriors' expeditions was to bring back children. At the beginning of the nineteenth century it was estimated that not more than one in ten of Galicurui group were Galicurui by birth.

No society is perfect. Each has within itself, by nature, an impurity inherent in its being. To which they pay attention, this impurity finds outlet in elements of injustice, cruelty and inequality. How are we to evaluate those elements? Anthropological enquiry can provide no answer. For with the comparison of one culture with another, these differences will seem smaller and smaller at the field of investigation. Yet it will eventually become plain that no human society is fundamentally good, but neither is any of them fundamentally bad; all offer their members certain advantages, though we must bear in mind a residue of iniquity, which may correspond to a specific inertia which offers resistance, on the level of social life, to all attempts at organization.

When we make an effort to understand, we destroy the object of our attachment, substituting another whose nature is quite different. That other object requires an effort, which in its turn destroys the original object and substitutes a third, and so on until we reach the only enduring Presence, which is that in which all distinction between meaning and the absence of meaning disappears. That is the meaning we find in the first place. It is now two thousand five hundred years since men discovered and formulated these truths. Since then we have discovered nothing new—unless it be that whenever we investigated what seemed to be very out, we met with a further proof of the conclusions from which we had tried to escape.



EAGLE ROCK

Sometime between first light and actual sunrise Estelle turned onto a dirt road and followed this miles to Eagle Rock State Park, where she stopped to take a break. She was really didn't have time to stop and camp. They were almost out of money and the only chance they had of getting any time soon was in St. Louis if they could get there by Tuesday. D.R.'s buddy Eddie had over him every dollar. Eddie had promised to pay D.R., but Tuesday night he split. Eddie had to leave his turd and scora a big bunch of grass. If they were going to get to St. Louis by Tuesday they certainly couldn't afford to lose a whole day camping, but as Estelle figured it, they couldn't afford not to stop and get breakfast. She was getting pretty tired and Estelle thought she felt a coming on. Her turd had wiped out and Urge was an impossible mess. Maybe if she lay down and rested for a day, straightened up her gear and got some sun they'd both feel strong enough to make St. Louis in one more nonstop trip.

There was a chain across the drive-way at this park entrance but it was easy enough to drive around it. If the ranger didn't come around later in the day to collect the camping fee, Estelle had just saved two whole dollars. It was a good omen. Stopping was the thing to do all right. As she cruised the gravelled drive-way looking around for someplace to pull over, she was incredibly beat, but at least she found an empty spot in the corner farthest from the river, a narrow slot between a GMC pickup with a giant hulking camper rig on top, and a green Pontiac. In front of the pup tent there were two turds care all over the place, and someone had left a turd there. There were crossing lines w/e on the metal grill above the fireplaces. But Estelle was so glad to be somewhere in particular she didn't let it bother her. She picked the shit up on a piece of cardboard and buried it under a rock. She had to use the last of her energy to move the trash picked up, which included a plastic bag with some old apples in it good enough to wash and eat. I could even cook 'em, she told herself. Cooked apples. Goddamn, her buds went to work on an apple of apples steaming in a pot as she walked off in search of a restroom.

The Bible of the World

A collection of the essential writings of the eight major religions—Hindu, Buddhist, Confucianist, Taoist, Zoroastrian, Judeo-Christian, and Mohammedan. Super for dipping into as literature & poetry; more than adequate at conveying the essential sameness, rather than the differences between religious philosophies. Softly mind-expanding.

[Reviewed by Diana Shugart]

The Bible of the World

Robert O. Ballou, editor

1939; 1415 pp.

\$12.00 postpaid

from:

Viking Press
61 Madison Avenue
New York, New York 10022

(Death concludes his discourse)

There is that ancient tree, whose roots grow upward and whose branches grow downward—that indeed is called the Bright, that is called Brahman, that alone is called the Immortal. All worlds are contained in it, and no one goes beyond.

Whatever there is, the whole world, which goes forth from the Brahma, that is the Bright. The Bright is a great terror, like a drawn sword. Those who know it become immortal. From terror of Brahman fire burns, from terror the sun burns, from terror Vayu, and Death, and fifth, run away.

Man can only understand it before the falling asunder of his body, then he has to let go.

As in a mirror, so Brahman may be seen clearly here in this body; as in a dream, in the world of the fathers; as in the water, he is seen about in the world of the Gandharvas; as in light and shade, in the

Having understood that the senses are distinct from the Atman, and that their rising and setting, their waking and sleeping, belong to them in their distinct existence and not to the Atman, a wise man

goes no more.

The Upanishads

In hewing the wood for an axe-handle, how do you proceed?

Without another axe it cannot be done.

Confucianist Scriptures

The BIBLE OF THE WORLD

edited by ROBERT O. BALLOU
in collaboration with numerous translators,
Prof. Dr. K. E. STORER (Gebhard Bechert) and
with an extensive index of subjects
a preface, and a (Gebhard Bechert)

New York - THE VIKING PRESS - HARDBOUND

We sacrifice unto the undying, shining, swift-horsed Sun.

When the light of the sun waxes warmer, when the brightness of the sun waxes warmer, then up stand the heavenly Yatzatas, by hundreds and thousands, they gather together all their glory, they make its glory pass down, they pour it down, they scatter it, they scatter it, for the increase of the world of holiness, for the increase of the creatures of holiness, for the increase of the undying, shining, swift-horsed Sun.

And when the sun rises up, then the earth, made by Ahura, becomes clean, then the waters become clean, the waters of the wells become clean, the waters of the sea become clean, the standing waters become clean; all the holy creatures, the creatures of the Good Spirit, become clean.

Zoroastrian Scriptures

Then the Lord answered Job out of the whirlwind, and said, Who is that denthoudest counseled by words without knowledge?

Gird up thy loins like a man; for I will demand of thee, and answer thou me.

Where wast thou when I laid the foundations of the earth? declare, if thou knowest? or who hath laid the measures thereof? if thou knowest? or who hath stretched the line upon it? Whereupon art the foundations thereof fastened? or who laid the cornerstone thereof, when the morning stars sang together, and all the sons of God shouted for joy?

Job

Parable of the Beast

If you are into molecular memory, chemical communication, slime mold colonies, time pulse perception, third eyes, acid, serotonin, intramural aggression, and other types of metamysticism, then *bleibtreu* probably has something for you, too.

he's trying to put instincts back into science and take a little of the speculation out of the name "Homo sapiens", through an introduction to the study of ethology.

readable, maybe reliable.

[Reviewed by J.D. Smith. Suggested by David Schwartz]

The Parable of the Beast

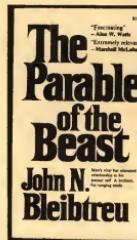
John N. Bleibtreu

1968; 304 pp.

\$1.50 postpaid

from:
Collier Books
686 Third Avenue
New York, New York 10022

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-SB

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How To Win Games and Influence Destiny I & II

Youthful elderly wisdom. Nicely put together.

-SB

How To Win Games and Influence Destiny, Vols. I & II

Rick Strauss
1969; 69 pp.

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from:
Open Horizons
P.O. Box 1071
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No man enters a relationship except on purpose. The question is always, "How do I best stay alive and happy?"

This question is really the same: "No matter how hard you work to better yourself, how can you be happy while the people around you are down. It's plain common sense when to start out with making others happy." Now you can retell.

HOW TO TELL UP FROM DOWN

There are 3 characteristic signs which appear when you're headed in the right direction:

1. There's an immediately noticeable improvement in the style of your daily existence.
2. You gradually assume conscious control over what happens to you.
3. It feels good.

20 Thought
Whole Systems

There is no longer any doubt whatever that among existing vertebrates anatomical structures are homologous, and that those two bones—the radius and the ulna—are homologous in the wing of a bird, the foreleg of a dog, and the arm of a human. The whole scheme of life is organized so that the association of sufficient behavioral data from all animal phyla so that these theoretical models of the evolution of behavior may be constructed.

Our technological control of our environment puts us into an ambiguous relationship with that environment, similar to that odd and destructive relationship that arises between a jailor and his prisoner. It seems as though the more control the jailer exercises, the more a strange kind of perversion occurs, a love that turns into ingratitude, greater dependence on his chosen master. As the relationship develops, the prisoner often becomes the stronger of the two, inflicting by his passivity the greater hurt.

So, yes, we are in the environment, have gradually become the victim of our own control. The role of man in this living being natural, should be a joyous exercise of strength. However, we do not acknowledge their existence at all, and when we do, we see these vicious cycles in ourselves as impediments to our efficiency.

The act of sharing food with one another seems to be one of the principal bases for creating societies, whether they be of the insect or human kind. It was over this ancient issue of sharing food that human beings, like apes, eventually found themselves behaving more like insects and like apes in God's image and endowed (at least by Linnaeus) with sapience.

White Americans did not want to include Negroes within their society, and they understood at some infinitely deep intuitive level that if they went so far as to share food with the Negro, they could no longer effectively exclude him from the societal organism.

THE HUMAN FIGURE IN MOTION, Sadwick Maybridge. "Unparalleled dictionary of action for artists" (American Artist) contains 4300 illustrations, mostly photographs, in series showing undraped men, women, children jumping, lying down, running, sitting, walking, swimming, wrestling, carrying objects, and similar actions. By the great 19th-century photographer, Maybridge, these are among the finest action shots ever taken. 4789 photographs. xvii + 290pp. 7½" x 10½". 20204-X Paperbd. \$15.40

THE UPANISHADS, translated by Max Muller. Twelve classical upanishads: Chandogya, Kena, Alatarey, Kaushitaki, Isa, Katha, Mundaka, Taittiriyaka, Brihadaranyaka, Svetasvara, Pippala, Maitrayani. 160-page introduction, analysis by Prof. Muller. Total of 20992-2 19993-2 Two volumes, Paperbd. \$6.00

THE INDIANS' BOOK, recorded and edited by Natalie Curtis. Lore, music, narratives, dozens of drawings by Indians themselves from an authoritative and important survey of native culture among Plains, Southwest, Lake, and Hudson Bay Indians. Includes work in popular ethnoscienology. 149 songs in full notation. 23 drawings, 23 photos. xx + 584pp. 6½" x 9¾". 21933-9 Paperbd. \$4.00

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VISUAL ILLUSIONS: THEIR CAUSES, CHARACTERISTICS, AND APPLICATIONS, Matthew Luckiesh. Thorough introduction for psychologists, artists, laymen to geometric and perspective illusions, size and shape distortion, illusions of color, motion, natural illusions; psychology involved. Also uses of illusions in arts, magic, science. Introduction by William H. Ittelson. 100 illustrations. xi + 252pp. 21530-X Paperbd. \$1.75



In ordinary human affairs, a break-down in communication is generally considered catastrophic. But from the point of view of the taxonomist something new and different can only begin to occur just at that moment when communication finally do break down. When, when the portion of the population finds itself so alienated from the parent group that it turns away and in upon itself, and in the process develops some new and special characters.

That traces of territorial marking instincts still persist among humans can be established by a wealth of detail. For example the "Kiryo Was Dene" drawings of World War II are undoubtedly territorial in nature. They were made by Japanese fliers who had to battle against the crawled, snarled, screeched legends that visited their base. But perhaps the most directly territorial marking by humans is the urinal graffiti. As with animals, it is the male of the human species that is the territorial marker. In the competition to mark insulting legends on the walls of urinals seemingly takes all economic classes and educational levels.

It is as one ascends the ladder of psychological complexity, as one moves up through the lower class of mammals, up through the order of primates, up through man, that one finds what seems to be a progressive blurring of that which is innate, or given by the genetic heritage, and what is the individual, or given by individual experience.

But "blurring" is a poor metonym; it seems more like a dissolution, or cancellation, of the lines between the learned and emulated within the very flesh and bone, and the perceived existential present. At each moment of our becoming (becoming older, wiser, other, than we were in the previous moment) we are being acted upon alternately by a pulse of archetypal forces existing in the world, consciously perceiving and intellectually evaluated existence; each consciously pulse modifying the next, so that, as with the sound of a flute, we are conscious, finally, only of the continuum, the thin, beautiful, and resonant sound of the self—the self, alive.

FROM MAGIC TO SCIENCE: ESSAYS ON THE SCIENTIFIC TWILIGHT, Dr. Charles Singer. Foremost medical historian on topics in history of medicine, related areas. Medicine as we know it in the present moment is the result of the magic of the Middle Ages, School of Salerno, early English magic and medicine, herbs, St. Hildegard and her visions, etc. 122 illustrations. xxii + 252pp. 20390-5 Paperbd. \$2.75

20390-5 Paperbd. \$2.75

ABSOLUTELY MAD INVENTIONS, A. E. Brown and H. A. Jeffcoat, Jr. Inventiveness, crazy, absurd, hilarious, useless or merely fanciful—all of which have been granted patents by the United States Patent Office. An edition of 100, a book filled with drawings by eagles and vultures, and a locket to hold used chewing gum, are but three of the三百 of oddities, all illustrated with the inventors' drawings and descriptions. 27 full-page illustrations. Formerly *Beware of Imitations*. 125pp. 22596-8 Paperbd. \$1.50

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Ecology and Revolutionary Thought

To sum up the critical message of ecology: If we diminish variety in the natural world, we debase its unity and wholeness. We destroy the forces making for natural harmony and stability, for a lastingly equilibrium, and what is even more significant, we introduce about us a rearranged and the development of the natural world, eventually rendering the environment fit for alienated forms of life. To sum up the reconstructive message of ecology: If we wish to advance the unity and stability of the natural world, if we wish to harmonize it on ever higher levels of development, we must conserve and promote variety. To be sure, mere variety for its own sake is a vacuous goal. In nature, variety emerges spontaneously. The capacities of a new species are tested by the rigours of climate, by its ability to deal with predators, by its capacity to establish and enlarge its niche. Yet the species that succeeds in enlarging its niche in the environment also enlarges the ecological situation as a whole. To borrow E. A. Gunkin's phrase, it "expands the environment", both for itself and for the species with which it interacts within a balanced relationship.

"Ecology and Revolutionary Thought" PO Box 466
Lewis Herber
Peter Stuyvesant Station
New York, N.Y. 10009

The Rise of the West

One humanity, one history, one fat little book. Some familiarity with world history will not help you to avoid mistakes, but it may help you recognize them and thus move on to more original ones.

-SB

[Suggested by Jib Fowles]



The Rise of the West

W. H. McNeil

1963 \$9.96 pp.

\$4.25 postpaid

from: University of Chicago Press
5801 Ellis Avenue
Chicago, Illinois 60637

or WHOLE EARTH CATALOG



A Year From Monday

John Cage is bright, original, and cheerful. Reading him makes me feel the same. His subject these days is "How to Improve the World (You Will Only Make Matters Worse)". Practical hints, slipped past like a puck behind the goalie's back.

-SB

Everything we come across is to the point. Living underground because there was no money. Arizona land and air permitted making mounds, covering them with cement, excavating to produce rooms, providing these with skylights. For anyone approaching, the community was invisible. Cacti, desert plants: the land seemed undisturbed. Quantity (abundance) changes what's nice, what's virtue. Selfishness is out; carelessness is in. (Waste's

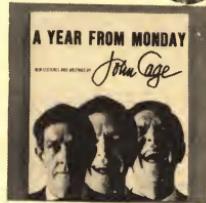
A Year From Monday

A Year From Monday
John Cage
1963; 167 pp.

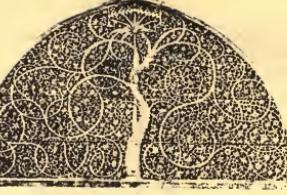
\$1.95 postpaid

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Westesleyan University
Press
Middletown, Conn.
06457

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CATALOG



to wait. XXXVI. Weather feels good. Isn't. More rain is needed. Water. He played two games, winning one, losing the other. He was continually himself, totally involved in each game, unmoved by the outcome of either. What's the nature of his teaching? For one thing: devotion (practice gives evidence of it). For another: not just playing half the game but playing all of it (having a view that includes that of the opponent). Suddenly a clam rose to



In the New World, the so-called "classic" period of the Amerindian civilizations extended from the first several centuries after 600 A.D. In Guatemala and adjacent parts of Mexico, the Mayan cult centers increased in number and complexity. Then, about the middle of the ninth century, Mayan temples began to be abandoned, one after another, and people moved back over the vast courtyards, roadways, and steps pyramids. Most of these were destroyed, and the Mayan populations abandoned the region. Perhaps raids from the north destroyed the prestige of gods who failed to protect their people from the incursions. Or perhaps the Maya may have captured and sacrificed the corps of ritual experts, thus preventing the continuance of the old elaborate cults, even if the common people still revered them. In the view of the absence of any signs of violence at the deserted sites, it appears that the priestly specialists simply failed to prevent the spread of a simpler, more primitive religion that allowed individual farmers to assure the fertility of their fields through simple charms and cantrips, rather than through the priests' costly ritual services. In the sixteenth century, European intruders found just such a private cult among the Mayan peoples, which (when it was introduced) obviously made the elaborate temple centers of an earlier age permanently unnecessary.

The fact that even the best laid plans for directing human affairs still often fail may turn out to be humanity's saving grace.

Liberations

Visiting Fellows at Wesleyan in 1969-70 searching Humanities in Revolution. More John Cage, Fuller, Ihab Hassan, Daniel Stern, Harold Rosenberg, etc. Substantial green interleaving.

-SB

Liberations

Ihab Hassan, ed.

1971; 215 pp.

\$10.00 postpaid

from:
Wesleyan University Press
100 Riverview Center
Middletown, Connecticut 06457

or WHOLE EARTH CATALOG

Most men of fifty or so are more intimate with another revolution, with the peculiar tumultuous apocalypse (for do we not call it the Thirties). There was almost pathetic testimony to this at a conference on The Future held at Rutgers University in 1965, where the most distinguished by well-known writers from New York, got stuck in the Thirties, as though an entire generation was pinned in that period. I was never myself subjected to any experience comparable to the cauldron of New York left politics, but I could understand the feelings of those who had been. The Depression and the Spanish Civil War and the Moscow trials and the Ribbentrop Pact. It is difficult, and probably useless, to go into it with young people. The Marxism of the time was crude, the economic predictions were wrong, and we all made, without thinking, certain reservations about our own roles in a transformed society. We were not idealists or revolutionaries. But there are, for all that, resemblances between then and now. It seemed quite certain that after the crisis there would be a wholly new state of affairs, not a modification of the old one.



Zipf

Zipf, George Kingley,
Human Behavior and the Principle of Least Effort,
New York 1965, LC 65-20086
Indefatigably interdisciplinary
irreverent infuriating
but where else can you find a book which contains:
a table of "voiceless aspirated fortis
and voiceless unaspirated lenes stops
In present-day Peiping" (p. 101)
a chart of "economics as a
biological necessity" (p. 236)
and the application of logarithmic
functions to anything and
everything that can be quantified
from Joycean vocabulary to
obituary notices in the N Y Times
not to everybody's taste
perhaps not to anybody's taste
but in his own way Zipf is as
maverick as C. Fuller.

Alan Ritch
Laguna Beach, CA

Once their intellectual curiosity had been aroused, Westerners discovered that the Moors possessed a sophistication of mind and richness of learning far surpassing that available in Europe. Regular schools of translators were therefore set eagerly to work to bring the treasures of Arabic learning to the Latin world. Toledo became the principal seat of this activity; but parallel work was done also in Seville, Granada, Cordoba, at Salamanca, and Venice. The translators sought useful knowledge in all fields, but were concerned with belles-lettres. Hence they concentrated on works of medicine, mathematics, astronomy, optics, philosophy, and especially collections of information about the natural and supernatural world.



Men some centuries from now will surely look back upon our time as a golden age of unparalleled technical, intellectual, institutional, and creative achievement, even as creativity. Life in Demosthenes' Athens, in Confucius' China, and in Medieval or Arabia was violent, risky, and uncertain. Life in Demosthenes' Athens, in Confucius' China, and in Medieval or Arabia was violent, risky, and uncertain. Life in Demosthenes' Athens, in Confucius' China, and in Medieval or Arabia was violent, risky, and uncertain. Life in Demosthenes' Athens, in Confucius' China, and in Medieval or Arabia was violent, risky, and uncertain. We lived in an age of opportunity and should count ourselves fortunate to live in one of the great ages of the world.

People speak of literacy. But I, for one, can't read or write any computer language. Only numbers I know are those based on ten. I'm uneducated.

Home in Wayzata, Minnesota's very much like a home near Sitges (just south of Barcelona). Now we're itinerant there's no reason to go on, for instance, picking fruit. Since we live longer, Margaret Mead says, we can change what we do. We can stop whatever it was we promised we'd always do and do something else.

CXXXII. He is one of my closest friends.

He asked me

How many times have you been to the beach?
Using your imagination, how many times have you been to the beach?
Using your imagination, how many times have you been to the beach?
Using your imagination, how many times have you been to the beach?
Using your imagination, how many times have you been to the beach?



ESTELLE'S SHOWER

It was at the Eagle Rock State Park campground that Estelle took the most delicious hot shower she'd ever had in her entire life. It was like a dream. The water pounded her neck and shoulders and folded her up in great pools of steam. I'm a tao, she thought, a hot mate cooking in a pan. The water sprayed her hair, her skin, steam filled her ears and nose and seeped in her nostrils, her mouth, steam filled her nose and mouth. After a nice long cold rain on the open road, here she was in hot rain in a shower, a steam room at five fifteen in the morning belonged to her alone. She ran out of the shower for a minute to turn on all the other showers. In the corral stall, she found a brand new bar of Dial soap, and as she stepped into the shower, Estelle washed herself all over, then shampooed her hair. She stepped out under the sun. Her fingers began to wrinkle. Finally she managed to draw away from the shower stall into the cloud outside, where she used her shirt for a towel. When she was dry she went to the door and looked out, holding a cloth in front of her face so she could see sound again. Not even the birds were stirring yet. Looking westward, Estelle skipped naked down the gravel street to dear old Ure, stopping off along the way to steal some firewood from a shed that was letting it on the honor system for seventy-five cents a bundle.

The Year 2000

Is Herman Kahn the bad guy (as liberal opinion would have it) or a good guy (as some informed opinion)? Kahn will hang you on that question and while he's hanging you information and scaling notions into your ambivalence. He does this best with a live audience, but this book is a fine collection of the information he uses.

Here is most of the now-basic methodology of future study—multi-fold trends, surprise-free projections, scenarios, etc. And here are their results. It's the best future-book of the several that are out.

In my opinion, it is not particularly an accurate picture of the future but the most thorough picture we have of the present—the present statistics, present fantasies, present expectations that we're planning with. We are what we think our future is.

—SB

The Year 2000

A Framework for Evaluating the Population on the Next Thirty-Three Years

by HERMAN KAHN and ANTHONY J. WIENER

Introduction by RALPH NELL

\$9.95 postpaid

from: The Futurist Company
Front and Brown Streets
Riverside, Burlington County
New Jersey 08075

or WHOLE EARTH CATALOG



The Year 2000
Herman Kahn and Anthony J. Wiener
1967; 431 pp.

from:
The Futurist Company
Front and Brown Streets
Riverside, Burlington County
New Jersey 08075

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TABLE IX

The Postindustrial (or Post-Mass Consumption) Society

1. Per capita income about fifty times the preindustrial
2. Most "economic" activities are tertiary and quaternary (service-oriented), rather than primary or secondary (production-oriented)
3. Business firms no longer the major source of innovation
4. There may be more "conservatives" vs. "marketeers"
5. Effective floor on income and welfare
6. Efficiency no longer primary
7. Market plays diminished role compared to public sector and "non-markets"
8. Widespread "cybernation"
9. "Small world"
10. Typical "doubling time" between three and thirty years
11. Learning society
12. Rapid improvement in educational institutions and techniques
13. Erosion (in middle class) of work-oriented, achievement-oriented, advancement-oriented values
14. Erosion of "national interest" values
15. Sensate, secular, humanist, perhaps self-indulgent criteria become central

The Futurist

In part because the Future is a new field of methodic study this is a lively newsletter. It reports bi-monthly on new books and programs having anything to do with social forecasting. Future study is like education: everybody thinks they're good at it. The newsletter has some of that diluted flavor, but it doesn't matter. Useful pointing at useful activities done here.

—SB

Maslow's Hierarchy of Needs

Abraham Maslow, a Brandeis University psychologist, has posited that all men share certain basic needs which can be arranged in a hierarchy of five levels, from the most fundamental physiological needs to the needs of intellect and spiritual fulfillment. The five levels are:

1. **Physiological needs:** To survive, man needs food, clothing, shelter, rest. As the imperative requirements for staying alive, these represent the most elemental needs.
2. **Safety or security needs:** When physiological needs are satisfied, man wants to keep and protect what he has. He starts to try to stabilize his environment for the future.
3. **Social needs:** These needs are more complex; once basic needs are met, man begins to want to belong, to share and associate, for giving and receiving friendship and love.
4. **Ego needs:** These are the needs that relate to one's self-esteem (need for self-fulfillment, independence, achievement, competence, knowledge) and one's reputation (needs for status, recognition, appreciation, deserved respect of one's peers).
5. **Self-fulfillment needs:** Finally comes the need for growth, self-development, self-actualization. As the captor of all his other needs, man wants to realize the full range of his individual potential as a human being.

At each level, needs determine values and patterns of behavior. At the survival level, for instance, we value food, clothing and shelter most highly. It is important to note that a satisfied need is not a motivator of behavior. (Once hunger has been satisfied, it no longer has much motivating force.) Furthermore, higher level needs operate only when lower level needs continue to be met.

Mankind 2000

Politicians seldom invent things. They respond to pressures by reaching into the current social invention bag and finding whatever looks like the most promising program for this day's daily conflict.

So who makes the inventions? A motley crew is who. Politicians, ads, academics, business entrepreneurs, artists, liberal scientists, and occasionally a grass root and friends. Some of their thoughts get published; some purely happen.

Whether you're an inventor or a piece of the pressure, you may know what's in the bag so far for the rest of this century. This book has a good range of the published ideas and expectable pressures, some lovely, some harrowing, all impinging on your very own personal world to come.

—SB

Mankind 2000
Robert Jungk, Johan Galtung, Ed.
1969; 368 pp.

\$14.90 postpaid

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Universitetsforlaget
P. O. Box 142
Boston, Mass. 02113

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The Futurist

\$7.50 for one year (bi-monthly)

from:
World Future Society
P. O. Box 12625
20th Street Station
Washington, D.C. 20036

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A Generation Looking for "Munich" May Be Followed by a Generation Looking for "Vietnam"

There was, once upon a time, a generation whose consciousness was born from Munich, and that generation has been well-trained and looking for Munich ever since. Among them were the guys who got us into this crazy disaster in Vietnam, because they were looking for Munich and they thought they had found another one.

Try to think what it is going to mean to have millions of Americans looking for Vietnam, the rest of them live. That is the first thing that comes to mind. An American President: "This is probably going to be us." Not the last thing. Not the thing you come to through great suffering. But the first thing you say is: "That son-of-a-bitch is probably going to be us." Every American President I can ever remember has been lying to us."

That is going to cut very deep, because if you are living in a society in which a big chunk just doesn't believe the government is legitimate, or thinks it probably isn't, and you've got to prove to them with great labor that it is, that is a very strange event in American history.

—Arthur I. Waskow

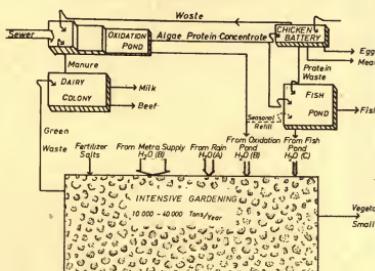


Fig. 3. Production of perishable foods in urban village
(Population to 35,000 persons)

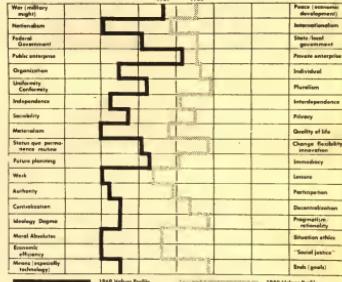
The neatest case is the sit-in, where the civil rights movement said, "Our desirable-achievable future is that we want to be able to eat in integrated restaurants." So they sat in until the restaurant owners integrate, we will not position the owners of the restaurants to integrate, we will simply create the future. This is, we will integrate the restaurants, and it will be up to those who have the power of law and the power of money to then hand down decrees to respond to that creation. So we will build now what it is we want to exist in the future, and society will have to react to that. It will have to react to that, and if it punishes us for building it, if it punishes us for building it, we believe we can build support around that vision of the future, and society will have to react to that action to achieve that future."

Arthur I. Waskow

Changes in value systems will be the major determinant of social, political and economic developments on the domestic scene.

It may well be that identifying value changes will become the single most important element of environmental forecasting. For, if these changes can be identified and analyzed, then it will be that much more feasible to predict the course of the major currents in our society.

Profile of Significant Value-System Changes, 1969-1980
as seen by General Electric's Business Environment Monitor



One way of anticipating probable changes in values, attitudes and behavior is to view them as the consequences of a progression, on a staircase-like, up Maslow's hierarchy of needs. Since man is a creature of reason and needs, we can predict the values in which one need is satisfied, another will appear in its place. Furthermore, when one level of needs has been satisfied, he will proceed to the next. Higher level needs are progressively less essential in terms of sheer survival, and more important in terms of living at one's fullest human potential (which seems to be the ultimate level of aspiration).

We might be able to create "future gaming" centers which could offer experience in "living" alternative futures to people who are fed up with the present but have no feel for a workable or desirable society.

Arthur I. Waskow

Engage-produced algae would be fed to chickens and fish (cattle do not need the protein) according to minor modifications of existing art in these forms of husbandry (Fig. 3).

Altogether, about two thirds or more of the energy intake of the human diet can very likely be produced economically inside the city itself using present knowledge.

Richard L. Meier

Even in advanced countries, futurology is not necessarily identical and, moreover, can be roughly divided into three groups:

European type
US-Soviet type
Japanese type

Yujiro Hayashi

In the times of Antiquero the Macedonian, the first water-driven mills made people exclaim, "The Golden Age is returning!"

Silvio Cecato



All through the riots of '72 we watched, itching to leave the city but somehow still attached... I mean, we knew. We knew as early as '67, but it was so science-fictiony that we just kind of dreamt happily over it, making incredibly detailed lists, playing with the Ouija Board, studying astrology and making predictions in an off-handedly superior way. We got disillusioned in '68, and went on a lot of sidetrips, falling in love, losing it, moving, practicing all kinds of odd crafts, having babies. We knew what was happening by '69. We had our Whole Earth catalogs, and our stash of Acapulco and Panamanian pot seeds, and we were relentlessly baking bread, working, trying to get it together.

We worked hard at first, and gradually it got thinner, down to the family, and the family seemed to be a lot smaller than we'd thought. Government pamphlets, nightsoil, organic gardening, Diesel engines, music, meditation and chauvinism mounted. We decided to leave in secret.

All the mediums, most of the astrologers, some of the psychics, and even some political economists agreed that we were eating the earth into Armageddon. So we still waited, planning, collecting. In '73 we got into our bus and split for Oregon. We drove all night and the better part of the day, slept just in time to hear on the car radio that Red China had started bombing somebody, but not us yet, thank God. We woke and drove again, through the night, and finally we got there, and fell out, exhausted. In the morning the baby started to cry.

We got up. Outside the curtained windows of our bus, through the trees and the virgin country, we saw seven tepees, three Volkswagen busses, two school buses, one Renault Dauphine with a pup tent on top of it, a half-hewn cabin, two chemical toilets, several dogs, more cats, a fire somewhere off in the distance, and standing around us were ninety-seven people. They looked hungry. They all had long hair. Nobody was smiling.

We ate the ones over thirty first.

Later, the soldiers came.

What's wrong with this story?

from *Tuesday's Child*—Vol. 1, No. 1

1616 North Argyle Ave.
Hollywood, CA 90028
\$6/yr.

It is impossible to appeal to a neutral principle to determine the rationality of competing systems, as it is to invoke a neutral vocabulary to characterize a language. It is in the name of one kind of logic that one rejects the logic of another. Arnold Nesh illustrated this point in his method of reasoning very well in the study of a doctoral examination. The student, who submitted a thesis on Mormon history, was asked whether he was a Mormon. He replied, "Yes, if you, not a Mormon, consider yourself unprejudiced enough to examine it."

An important difference exists between "knowingness," knowledge and no-knowledge. The former is merely a state of ignorance; the latter is one of ultimate enlightenment and universal sensibilities. To the scientist, no-knowledge may appear to be the ultimate mugger of the mystique. Nevertheless, it is precisely this ineffability that lends force to its reality. The mysteries of nature appear to be mystically only to those who refuse to participate in the search for them.

With rational knowledge, the scientist is a spectator of nature. With no-knowledge, he becomes a participant in nature. There is a communion of understandings. He no longer shares the tragic suffering of the mystic, who is forever of longing oneself alone"; as André Gide describes it, "and so they don't find themselves at all."

The Emerging Japanese Superstate

After some uncomfortable years with the old cliché—California Is The Future—I welcome the new cliché—Japan Is The Future. After a visit there last year, I do believe that all futurists should do some time in industrial Japan. Not just awesome statistics, as Kahn cogently points out, but a whole national psyche is cooking there. A sense of Mission Destiny that dwarfs Israel's. Generational conflict like ours can't make our own. Ecological practice far worse and far better than anyone else's. The damned loyalties. Insatiable resource hunger. Desire for nuclear weapons. Planetary impact, and maybe leadership. It'll be nice to have California merely quaint again.

The Emerging Japanese Superstate

Herman Kahn

1970; 274 pp.

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October 1971

\$2.95 paper edition

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Prentice-Hall, Inc.
Englewood Cliffs, NJ. 07632

or WHOLE EARTH CATALOG



MATSUSHITA WORKERS' SONG

*For the building of a new Japan,
Let's put our strength and mind together,
Doing our best to promote production,
Sending our goods to the people of the world,
Endlessly and continuously,
Like water gushing from a fountain.
Grow, industry, grow, grow, grow!
Harmony and sincerity!
Matsushita Electric!*



The Tao of Science

No high-minded bridging of East and West, this. But a successful director of TV advertising how valuable an informed and experienced Taoist scientist can be to the conduct of science. It can help balance the scientist, and it offers an avenue to balancing the application of what the scientist learns. Good medicine for over-specialization.

—SB



The Tao of Science

R. G. H. Siu

1957; 180 pp.

\$2.45 posted

from:
The M. I. T. Press
50 Ames Street, Room 765
Cambridge, Mass. 02142

or WHOLE EARTH CATALOG

... This all-embracing applicability of no-knowledge makes it a useful tool for the executive. It provides him with a common ground of all situations. It is his means of transcendence over specific experience of which he has not yet tested. Versed in the Tao, he is at home under otherwise strange conditions; he always finds familiar strains in his management of assorted enterprises.

The scientific West expects the creative method and the Taoist East the negative. In the positive method the item under consideration is intentionally pointed out and described. In the negative method, it is specifically not discussed. By not dissecting the ineffable it is not denied but merely restricting objects to discuss that it is not. The features of the x are revealed in our own consciousness.

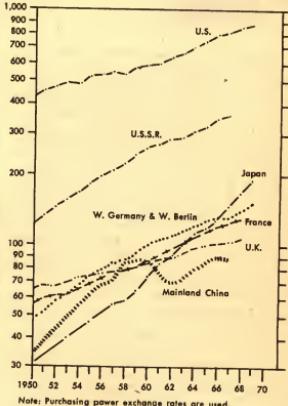
Communal. In nearly all activities and issues the Japanese traditionally think of themselves as members of a group, and their satisfactions are largely expected to come through group fulfillment of group objectives. In traditional Japanese culture, and to an amazing extent today, individualism and personal achievement are贬低ed, and other erosions of traditional patterns and ties, one of the worst of all sins is to display an egoistic disregard of, disinter- est in, or resistance to group mores, attitudes, taboos, traditions, or objectives—or often just to display any individualism at all.

Traditionally every Japanese is part of a hierarchical structure. The Emperor and the shogun, and especially for the younger daimyo of a member of the otoko-za, were the last to walk out of the door to describe the situation. It was interesting to note that one time in Vietnam, when the Viet Cong took over a village they often made the people sing songs for an hour or two. And when the Seigon government took over villages, they too would make the people sing songs for a half hour or so. However, when the villagers were queried, "What do you want?" the answer was almost invariably, "Please bring something to eat so we can go to sleep."

The point I wish to make is the contrast between the high morale of present-day Japanese culture/mores at least this matter of production—and the very low morale in the West on almost all issues.

GNP, Billions 1967

U.S. Dollars



Note: Purchasing power exchange rates are used.



THE LONE OUTDOORSMAN

About eight o'clock a man in a red hunting cap came out of the camper parked next to Urge and began dismantling the yellow trillibike from the front end of his GMC. He was short and overweight but he could tell by the way he wore his cap and held his pipe that he was a man of means. He was looking pretty seriously. His face was absurdly handsome. His fine coat could have been in a TV ad for pipe tobacco, or a man's cologne. Probably in some previous incarnation the Lone Outdoorsman had been the best five-foot, five-inch school halfback in the conference. He had on black and green wool socks, army boots and fatigue pants faded to a pale grey. Dangling from his belt was a canteen around his waist were a compass, a knife, a long sheath-knife, a first aid kit, survival kit, snake bite kit, sewing kit, and a kit to stop a first time with. He bunged and rattled like a mobile hardware store, and yet he smoked his pipe and worked on his bike like any neighborhood man out westing his car on a Sunday afternoon.

From time to time the Outdoorsman would glance over his shoulder past the campsite. Right now he was through the overhanging trees. They were sitting on the ground in front of the fireplace, eating hot apples and talking quietly. He noticed they were all crimping going on over there among the hippies. He noted that they were sitting out on the sand dish, out of a steplow, as a matter of fact. These things were, to be sure, not quite an infraction, nothing to call the Lone Outdoorsman into action yet. He glanced at the two young people every few minutes until he got the bike dismantled. Then he got on, started 'er up, and rode off to the bathroom a hundred yards away.

Think Little

by Wendell Berry



First there was Civil Rights, and then there was The War, and now it is The Environment. The first two of this sequence of causes have already risen to the top of the nation's consciousness and declined somewhat in a remarkably short time. I mean to decline in order to begin with what I believe to be a negligible exception. For it seems to me that the Civil Rights Movement and the Peace Movement, as popular causes in the electronic age, have taken far too much of the nature of fads. Not for all, certainly, but for too many they have been the fashionable politics of the moment. As causes they have been undertaken too much in ignorance; they have been too much simplified; they have been powered too much by impatience and guilt of conscience and short-term enthusiasm, and too little by an understanding of the long-term responsibilities of deliverance. For most people those causes have remained almost entirely abstract; there has been too little personal involvement, and too much involvement in organizations which were insisting that *other* organizations should do what was right.

There is considerable danger that the Environment Movement will have the same nature, that it will be a public cause, served by organizations that will self-righteously criticize and condemn other organizations, inflamed for a while by a lot of public talk in the media, only to be replaced in its turn by another fashionable crisis. I hope that will not happen, but I believe that if this effort is carried on solely as a public cause, if millions of people cannot or will not undertake it as a private cause, then it is sure to happen. In five years the energy of our present concern will have petered out in a series of public gestures—and no doubt in a series of empty laws—and a great, and perhaps the last, human opportunity will have been lost.

It need not be that way. A better possibility is that the movement to preserve the environment will be seen, as I think it has been, not as a distraction from the civil rights and peace movements, but the logical culmination of those movements. For I believe that the separation of these three problems is artificial. They have the same cause, and they are the same kind of social disease. The mentality that exploits and destroys the natural environment is the same that abuses racial and economic minorities, that imposes on young men the tyranny of the military draft, that makes war against peasants and women and children with the indifference of technology. The mentality that destroys a watershed and then panics at the prospect of record flooding is the same that wages a secret and deliberate warfare against a civilian population and then express moral shock at the logical consequence of such warfare at My Lai. We would be fools to believe that we could solve any one of these problems without solving the others.

To me, one of the most important aspects of the environmental movement is that it brings us not just to another public crisis, but to a crisis of the protest movement itself. For the environmental crisis should make it dramatically clear, as perhaps it has not always been, that there is no public crisis that is not also private. To most advocates of civil rights racism has seemed mostly the fault of someone else. For most advocates of peace the war has been a remote reality, and the burden of the blame has seemed to rest mostly on the government. I am certain that

these crises have been more private, and that we have each suffered more from them and been more responsible for them, than has been readily apparent to us. Racism and militarism have been institutionalized among us for too long for our personal involvement in those evils to be easily apparent to us. Think, for example, of all the Northerners who assumed—until suddenly—when they saw *their* neighborhoods—that racism was a Southern phenomenon. And think how quickly—one might almost say how naturally—among some of its members the peace movement has spawned policies of deliberate provocation and violence.

But the environmental crisis rises closer to home. Every time we drive a car, every time we drink water, every time we eat a bite of food we are suffering from it. And more important, every time we indulge in, or depend on, the wastefulness of our economy—and our economy's first principle is waste—we are causing the crisis. Nearly every one of us, nearly every day of his life, is contributing directly to the ruin of this planet. A protest meeting on the issue of environmental abuse is not a convocation of accusers, it is a convocation of the guilty. That realization ought to clear the smog of self-righteousness that has almost conventionally hovered over these occasions, and let us see the work that is to be done.

In my view it is certain that every one of us has a public responsibility to the environment to be part of the government and the other institutions, to see that they never become comfortable with easy promises. For myself, I want to say that I hope never again to go to Frankfort to present a petition to the governor on an issue so vital as that of strip mining, only to be dealt with by some ignorant functionary—as several of us were not so long ago, the governor himself being “too busy” to receive us. Next time I will go prepared to wait as long as necessary to see that the petitioners' complaints and their arguments are heard fully. I will be prepared to stay until the time comes to find ways to keep those complaints and arguments from being forgotten until something is done to relieve them. The time is past when it was enough merely to alert our officials. We will have to elect them and then go and *watch* them and keep our hands on them, the way the coal companies do. We have made a tradition in Kentucky of putting self-servers, and worse, in charge of our vital interests. I am sick of it. And I think that one way to change it is to make Frankfort less comfortable with easy promises. I want to see political principles, as I will not sit idly by and see those principles destroyed by sorry practice. I am ashamed and deeply distressed that American government should have become the chief cause of disillusionment with American principles.

And so when the government in Frankfort again proves too stupid or too blind or too corrupt to see the plain truth and to act with simple decency, I intend to be there, and I trust that I won't be alone. I hope, moreover, to be there, and with a sign or a slogan or a button, but with the facts and the arguments. A crowd whose discontent has risen no higher than the level of slogans is only a crowd. But a crowd that understands the reasons for its discontent and whose principles are clear and simple, and it will have to be reckoned with. It will demand before the government with two men who have a competent understanding of an issue, and who therefore deserve a hearing, than to go with two thousand who are vaguely dissatisfied.

But even the most articulate public protest is not enough. We don't live in the government or in institutions or in our public utterances and acts, and the environmental crisis has its roots in our lives. By the same token, environmental health will also be rooted in our lives. That is, I take it, simply a fact, and in the light of it we can see how superficial and foolish we would be to think that we could correct what is wrong merely by tinkering with the institutional machinery. The changes that are required are fundamental changes in the way we live.

What we are up against in this country, in any attempt to preserve the natural environment, is that we have now destroyed our way of life. Our way of life is based on their independence in return mostly for the cheap seductions and the shoddy merchandise of so-called “affluence.” We have delegated all our vital functions and responsibilities to salesmen and agents and bureaus and experts of all sorts. We cannot feed or clothe ourselves, or entertain ourselves, or communicate with each other, or be charitable or neighborly or loving, or even respect ourselves, without recourse to a merchant or a corporation or a public service organization. Our way of life is not a way of life for a writer or an expert. Most of us cannot think of dissenting from the opinions or the actions of one organization without first forming a new organization. Individualism is going around these days in uniform, handing out the party line on individualism. Dissenters want to publish their personal opinions over a thousand signatures.

The Confucian Great Sage says that “the chief way for the production of wealth” (and he is talking about real goods, not money) is “that the producers are many and that the mere consumers are few.” But even in the much publicized rebellion of the young against the materialism of the affluent society, the consumer mentality is too often still intact: the standard of behavior are still those of kind and quantity, the security sought is still the security of numbers, and the chief motive is still the consumer's anxiety that one is missing out on what is “in.” In this state of total consumerism—which is to say a state of helpless dependence

on things and services and ideas and motives that we have forgotten how to provide ourselves—all meaningful contact between ourselves and the earth is broken. We do not understand the earth either in terms of what it offers us or what it requires of us, and I think it is the rule that people inevitably destroy what they do not understand. Most of us are not directly responsible for strip mining and environmental abuse, but we are guilty of it. We are guilty nevertheless, for we contribute in them by our ignorance. We are ignorantly dependent on them. We do not know enough about them; we do not have a particular enough sense of their damage. Most of us, for example, not only do not know how to produce the best food in the best way—we don't know how to produce any kind in any way. And for this condition we have elaborate rationalizations, instructing us in our dependence for everything on the market, as if it were a scientific miracle. It is a scientific miracle. I say, instead, that it is madness, mass produced. A man who understands the weather only in terms of golf is participating in a chronic public insanity that either he or his descendants will be bound to realize as suffering. I believe that the death of the world is breeding in such minds much more certainty and much faster than in any political capital or atomic arsenal.

For an index of our loss of contact with the earth we need only to look at the condition of the American farmer—who must in our society, as in every society, enact man's dependence on the land, and his responsibility to it. An age of unparalleled affluence and leisure, the American farmer is in decline. He is working harder and earlier before; his margin of profit is small. His hours, longer than outlays for land and equipment and the expenses of maintenance and operation are growing rapidly greater; he cannot compete with industry for labor; he is being forced more and more to depend on the use of destructive chemicals and on the wasteful methods of haste and anxiety. As a class, farmers are one of the despised minorities. So far as I can see farming is considered marginal or incidental to the economy of the country, and farmers, when they are thought of, are thought of as hide and yokes, as people whose lives do not enter into the main scheme. The average American farmer is now an old man, whose sons have moved away to the cities. His knowledge, and his intimate connection with the land are about to be lost. The small independent farmer is going the way of the small independent craftsmen and storekeepers. He is being forced off the land into the cities, his place taken by absentee owners, corporations, and machines. Some would justify all this in the name of efficiency. As I see it, it is an economic-social and ecological blight. Small farmers, who live on and care for their farms, cared about their land. And given their established connection to their land—which was often hereditary and traditional as well as economic—they could have been encouraged to care for it more competently than they have so far. The corporations and machines that replace them will never be bound to the land by the sense of birthright and continuity, or by the love which enforces care. They will be bound by the rule of efficiency which takes thought only of the cost of production. They will have no thought of the slow increments of the live of the land, not measurable in pounds or dollars, which will assure the livelihood and the health of the coming generations.

If we are to hope to correct our abuses of each other and of other races and of our land, and if our effort to correct these abuses is to be more than a political fatid that will in the long run be only another form of abuse, then we are going to have to go far beyond public protest and political action. We are going to have to rebuild the substance and the integrity of private life in this country. We are going to have to gather up the fragments of knowledge and responsibility that we have parcelled out to the bureaus and the corporations and the specialists, and we are going to have to put those fragments back together in our own minds and in our families and households and neighborhoods. We need better government, no doubt about it. But we also need better minds, better friendships, better marriages, better communities. We need persons and households that do not need to wait upon organizations but who can make



necessary changes in themselves, on their own.

For most of the history of this country our motto, implied or spoken, has been Think Big. I have come to believe that a better motto, and an essential one now, is Think Little. That implies the necessary change of thinking and feeling, and thus the necessary work. Thinking Big has led us to the two big errors of political doldrums of our time: plan-making and law-making. The leaders of this era are in Washington D.C., Thinking Big. Somebody comes up with a problem, and somebody in the government comes up with a plan or a law. The result, mostly, has been the persistence of the problem, and the enlargement and enrichment of the government.

But the discipline of thought is not generalization; it is detail, and it is personal behavior. While the government is "studying" and funding and organizing its Big Thought, nothing is being done. But the citizen who is willing to think, and accept the discipline of that, to go ahead on his own, is actually solving the problem. A man who is trying to live as a neighbor to his neighbors, who have a lively and practical understanding of the work of peace and brotherhood, and let there be no mistake about it—he is *doing* that work. A couple who make a good marriage, and raise healthy, morally-competent children are serving the world's future more directly and surely than any political leader, though they never utter a public word. A good farmer who is dealing with the problem of soil erosion on an acre of ground has a sounder grasp of that problem and its solution than is probably doing more to solve it than any bureaucrat who is talking about it in general. A man who is willing to understand the discipline and the difficulty of mending his own ways is worth more to the conservation movement than a hundred who are insisting merely that the government and the industries mend *their* ways.

If you are concerned about the proliferation of trash, then by all means start an organization in your community to do something about it. But before—and while—you organize, pick up some cans and bottles yourself. That way, at least, you will assure yourself and others that you mean what you say. If you are concerned about air pollution, help push the government controls, but drive your car less, use fuel for your power tools, and don't worry about the damming of wilderness rivers, join the campaign to write to the government, but turn off the lights you're not using, don't install an air conditioner, don't be a sucker for electrical gadgets, don't waste water. In other words, if you are fearful of the destruction of the environment, then learn to quit being an environmental parasite. We all are, in one way or another, and the remedies are not always obvious, though they certainly will always be difficult. They require a new kind of life—harder, more laborious, poorer, more restricted, but also, I am certain, richer in meaning and more abundant in real pleasure. To have a healthy environment we will all have to give up things we like; we may even have to give up things we have come to think of as necessities. But to be fearful of the disease and yet unwilling to pay for the cure is not just to be hypocritical; it is to be doomed. If you talk a good line without being changed by what you say, then you are not just hypocritical and doomed; you have become an agent of the disease. Consider, for example, the President, who advertises his grave concern about the destruction of the environment, and who turns up the air conditioners to make it cool enough to build a fire.

Odd as it may seem it will appear to some, I can think of no better form of personal involvement in the cure of the environmental disease, getting. A person who is growing a garden, if he is growing it on his own land, is making a piece of the world. He is producing something to eat, which makes him somewhat independent of the grocery business, but he is also enlarging, for himself, the meaning of food and the pleasure of eating. The food he grows will be fresher, more nutritious, less contaminated by poisons and preservatives and dyes, than what he can buy at a store. He is reducing his own problem; a garden is not a disposable container, but a home—a home of his own wastes. If he enjoys working in his garden, then he is less dependent on an automobile or a merchant for his leisure. He is involving himself directly in the work of saving people.

If you think I'm wandering off the subject, let me remind you that most of the vegetables necessary for a family of four can be grown on a plot of forty by sixty feet. I think we might see in this an economic potential of considerable importance, since we now appear to be facing the possibility of widespread famine. How much food could be grown in the doorways of cities and suburbs? How much could be grown along the extravagant rights-of-way of the Interstate system? Or how much could be grown, by the intensive practices and methods of the small farm, or so-called marginal lands? Louis Bromfield used to point out that the people of France survived crisis after crisis because they were a nation of gardeners, who in times of want turned with great skill to their own small plots of ground. And F. H. King, an agriculture professor who traveled extensively in the Orient in 1907, talked to a Chinese farmer who supported a family of twelve, "one dairy cow, two pigs, and two pugs on 2.5 acres of cultivated land"—and said that he did this by agricultural methods that were sound enough empirically to have maintained his land in prime fertility through several thousand years of such use. These are possibilities that are very readily apparent and attractive to minds that are prepared



said: "I saw that the sacred hoop of my people was one of many hoops that made one circle, wide as daylight and as starlight, and in the center grew one mighty flowering tree to shelter all the children of one mother and father. And I saw that it was holy."

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Wendell Berry's newest book of poems, *Farming: A Hand Book*, has just been published by Harcourt, Brace and Jovanovich. *The Hidden Wound*, a book-length essay about racism, will be published by Houghton-Mifflin late this fall.

Think Little was originally presented as an Earth-Day speech last April. It was previously published in blue-tail fly, a Kentucky underground newspaper.

blue-tail fly
210 W. Third St.
Lexington, Ky. 40507

Published monthly, 25 cents a copy

Photos accompanying Think Little by James Baker Hall.



MANIFESTO: THE MAD FARMER LIBERATION FRONT

For Jack and Mary Jo

Love the quick profit, the annual raise,
vacation with pay. Want more
of everything ready made. Be afraid
to know your neighbors and to die.

And you will have a window in your head,
Not even your future will be a mystery
any more. Your mind will be punched in a card
and shut away in a little drawer.

When they want you to buy something
they will call you. When they want you
to die for profit they will let you know.

So, friends, every day do something
that won't compute. Love the Lord,
Love the world. Work for nothing.

Take all that you have and be poor.
Love someone who does not deserve it.

Denounce the government and embrace the flag.
Hope to live in that free

republic for which it stands.

Give your approval to all you cannot
understand. Praise ignorance, for what man
has not encountered he has not destroyed.

Ask the questions that have no answers.
Invest in the millennium. Plant sequoias.

Say that your main crop is the forest
that you did not plant

and that you will not live to harvest.

Say that the leaves are harvested
when they have rotted into the mold.

Call that profit. Prophecy such returns.
Put your faith in the two inches of humus
that will build under the trees every thousand years.

Listen to crows—put your ear
close, and hear the faint chattering
of the songs that are to come.

Expect the end of the world. Laugh.
Laughter is immeasurable. Be joyful
though you have considered all the facts.

So long as women do not possess
great beauty, plain women more than men.

Ask yourself: Will this satisfy
a woman satisfied to bear a child?

Will this distract the sleep
of a woman near giving birth?

Go with your love to the fields.
Lie easy in the shade. Rest
in her lap. Swear allegiance

to what is highest your thoughts.

As soon as the generals and the politicians
can predict the motions of your mind,
lose it. Leave it as a sign
to mark the false trail, the way

you didn't go. Be like the fox
who makes more tracks than necessary,
some in the wrong direction.

Practice resurrection.

—Wendell Berry
Think Little
Whole Systems

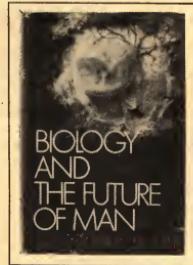
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Biology and the Future of Man

Where we are today technologically (and thus politically) is largely the product of several specific scientific revolutions that gathered steam early in the century—most notably mass medicine, nuclear physics, and investigation of materials. Since World War II the Information Sciences (computers, cybernetics, organization theory) have wrought considerable havoc and promise. Now we're in for biology, says Albert Rosenthal. Molecular biology, already mature, has only begun to hit the scene. Ecology, long in great demand, has short supply so far. The gleaming light, long in molecular biology, may now be migrating into brain science, the very heart of darkness. Still waiting for systematic study is the big version of brain science. The participation of consciousness in evolution.

This book probably supports few of my assertions above. It is an authoritative up-to-the-year report on the state of biology by the leading biologists, with emphasis on unanswered questions and promising leads and possible impact of all this on society in the near future. It's a heavy book, implying no lighthearted future. Technology marches on, over you or through you, take your choice.

—SB



Biology and the Future of Man
Philip Handler, ed.
1970, 936 pp.

\$4.95 postpaid

from:
Oxford University Press, Inc.
1600 Palisade Drive
Fair Lawn, N.J. 07410

or WHOLE EARTH CATALOG

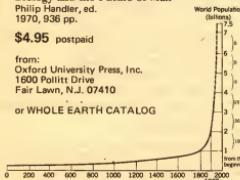


Figure 20-2. World Population Growth (Projected with assumption of constant fertility levels and declining mortality).

... any desired number of genetic twins could be produced. It would require the collection of unfertilized eggs from the oviducts of many women, the removal of the egg nuclei, and replacement of the nuclei with those of the twin desired. This would be followed by return of the eggs to the uterus of women who would undergo normal pregnancies. In this way one could produce multiple identical copies of any person judged admirable.

At the present moment of extreme, dangerous population growth, social pressures are best directed to lower reproduction, in general, without qualitative considerations. But one day, when pressures are stable, world peace is the norm, and man's social and political institutions are sufficiently mature to assure that biological understanding will be used to serve the common welfare, or strengthen dictatorship but, rather, to expand human potential, man will be free to guide his own evolutionary destiny. ... Man's view of himself has undergone many changes. From a unique position in the animal kingdom, the Copernican revolution made him an inhabitant of one of many planets. From a unique position among the millions of other species which have evolved from one another, Yet, still, upon his shoulders rests the responsibility of his origin. He controls the vast energies of the atomic nucleus, moves across his planet at speeds barely below escape velocity, and can escape when he wishes. He communicates with his fellow men at the speed of light, exchanges power of his brain with that of the digital computer, and influences the numbers and genetic constitution of virtually all other living things. Now he can guide his own evolution. His future is in his hands. He has learned regularities of physical phenomena. *Homo sapiens*, the creation of Nature, has transcended her. From a product of circumstances, he has risen to responsibility. At last, he is Man. May he behave so!

The Second Genesis

What I like about the threat of total human control in the near future is that it obliges us to figure out fast what we are about. We got the power; here comes the responsibility. Whether you prefer to embrace it, or flee it (some should, for safeguard), or stay trembling where you are, you might as well have some detailed idea of what's looming.

This book, by the Science Editor at LIFE, does good journalism on three spooky areas: Refabrication of the Individual; Exploration of Prenativity; Control of the Brain and Behavior.

Hypothesis: changes this radical outlast the laws but not the economy. Control diminishes for governments and increases for consumers. The outlaw area of rapid change. Witness doope.

—SB

Coming: The control of life. All of life, including human life. With man himself at the controls.

Also coming: a new Genesis—The Second Genesis. The creator this time around—Man. The creation—again, man. But a new man, in a new image. A whole series of new images. What will the new images be?

They will have to be quite different from the images we have known—the image that we had to Vietnam, to turbulent racial conflict, to nuclear confrontation, to the threat of a polluted and overpopulated planet.

But all these things have come about—have they not?—with man at the controls, more or less. If he is acquiring awesome new powers—and he is—with immeasurably greater controls, does this not accelerate us all, at unacceptable G's, toward the inevitable Dead End—a hundred bangs, followed by three billion whimper?

If we believe so, yes.

But man's new images may offer us surprising alternatives. Their creation will require the energetic projection of the best minds of the race to the farthest reaches of their imaginations.

• Furtive effort?

Anything but. What we believe about man, what we want for man, will profoundly influence what actually happens to man.

What would you like? Education by injection? A catalog of spare body parts? A larger, more efficient brain? A cure for old age? Immortality through freezing? Parentless children? Custom-ordered body size and skin color? The ability to convert sunlight directly into energy, just as plants do, without utilizing food as an intermediary? Name it, and somebody is seriously proposing it.

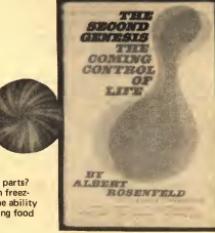
In sober scientific circles today, there is hardly a subject more commonly discussed than man's control of his own heredity and evolution. And the discussions seldom leave much doubt that man will acquire this control. It is a matter of when, not if.

The late Dr. J. B. S. Haldane always insisted, before his death in 1949: "If King Charles I's or King Edward XVI's head had been stuck within a minute or so [after their executions] on a pump which supplied oxygenated blood to it, he would almost certainly have come back to life again, perhaps for so long as to move its lips, and would probably have recovered consciousness. I hope that if I have an inoperable cancer this experiment will be tried on me."

Could anyone ever replace a dead-and-frozen ruler? As billions of people were frozen in their tracks, could they have ultimately over all the property and held all the important offices. Barring the return of some sort of ancestor worship or a cult of the dead, would the frozen population put up with it? With life so overabundant and so easy, production would be high, but so would the trouble and expense of reviving all that competition? Those piled-up frozen corpses might in fact be fiercer resisters. If the planet became too crowded, competition with prevailing under-nourishment and constrictions for life, their very presence might even encourage a drift toward cannibalism.

"There is no doubt," says Richard R. Landers in *Man's Place in the Dystopias*, "that machines as a class will dominate man as he dominates the environment; individually, machines will dominate individual machines."

• By dominate I mean control, regulate, restrain, restrict, pervade, direct, guide, prescribe, etc., by virtue of superiority in all aspects of tasks demanding a leader."



The Second Genesis
Albert Rosenthal
1969, \$27 ppd

from:
Prentice-Hall
Englewood Cliffs
N. J. 07632

or WHOLE EARTH CATALOG

Jarfalla: City of the Future

STOCKHOLM—The first city of the future will be built in Sweden. It will be called Jarfalla, home to about 100,000 residents, and be accessible by subway or highway from Stockholm, just 12 miles away. No gasoline-powered vehicle will be allowed. Noiseless electric minibuses moving at a soothing 20 miles per hour will pass within 150 yards of everyone's house, carrying passengers and baggage free. Rolling platforms something like horizontal escalators will carry downtown shoppers to their rounds, underground heating will melt snow as it falls to the sidewalks, garbage will be sorted and compacted in each apartment, collected and transported through tunnels by compressed air to incinerators 30 miles away. Heat and hot water will be supplied by a single thermonuclear plant, the temperatures regulated by individual thermostats. The air will be pure, the smog-free light dazzling, the water delicious and wholesome, the streets impeccable, the only sounds those of music and children at play. It will cost an enormous amount of money.

Alas, we cannot be all Swedes, nor can all Swedes live in Jarfalla. By the time there are 7 billion of us milling around the planet, 30 years from now—or 20, 30 years from now—our lives are likely to be arranged quite differently. Futurologists hold out a considerable range of repellent prospects.

Among the most cheerful is Nigel Calder, former editor of New Science in England, whose ideas go something like this:

Those of us still living on land may be enclosed in anything from towns of 50,000 completely under glass to supercities of 50 million commanding nearly a million square miles—the size of Western Europe. But the majority of the human race will be settled in cities, being compelled to reach deep under ground so that disturbances due to surface winds and waves—seasickness, that is—will be negligible. More likely than not, these towns will take the form of icebergs, ice being unsinkable, easily landscapable, and relatively cheap to make and preserve (one doesn't like to think of a possible power failure, but Mr. Calder assures us we needn't worry). The icebergs would be protected against wind by geodetic domes, perfumed and decorated by thoughtfully timed climate sounds, air-conditioned to a year-round spring-like temperature, and supplied with food by ocean gardens grown either on imported soil or in enclosed and cultivated tanks of sea water.

Limited as such nourishment may be to the palate, we must nevertheless consider it for its value, for its cost, for its availability, and for its taste. The question is, what would we be facing if starvation, few of us could afford ourselves the luxury of real fruit and vegetables (a cucumber, say, or a watermelon). Scientists having discovered that yeast can be grown on petroleum, vast quantities of this cheap protein source can be grown to feed animals destined in turn to feed us. Three main production lines for animal protein would then operate side by side.

In one, cattle, pigs and poultry would be raised on plant material for meat and eggs. In another, milk would be formed continuously by a culture of milk-producing glands, intended for drinking and making butter and cheese. In a third, beet pulp would grow continuously in long tubes, extracting itself for chewing and stalk-hopping. In a complex of smaller worlds would turn out a selection of prepared foods— soups, sausage, bread, beer and so on—for national or regional distribution. Vitamins and flavors from national suppliers would be added as required. Orange and lemon juice could be produced from cultures, with chemical processing of fibrous materials to add "bite." The very rich could buy natural fruit and vegetables from millionaire market-gardeners; the very poor could sustain life with combinations of plant and yeast material reinforced with vitamins—comparable, perhaps, to having all of one's meals supplied by a domestic airline, with vitamins added. Mr. Calder does not go very deeply into the psychological side-effect of all this.

If the effects on human beings may not be altogether foreseen, it is nevertheless an idea of what may happen to the animals we'll be counting on for food, speaking. The latest method of pig-raising, for instance, already makes use of the production line, the pigs arrayed in rows before conveyor belts moving at a carefully calculated pace with carefully dosed food rations designed for optimum fattening at minimum cost. The one hitch is an inclination on the pig's part to go crazy; thus, the otherwise automated system requires a highly paid attendant whose only function is to watch for early symptoms of insanity and snatch the unfortunate patient from his place at the conveyor belt, replacing him with another identical in appearance, within five minutes at most, before all the rest go wild.

—Times/Post News Service

Moving On

One early evening in my senior year at Holy Cross College, Worcester, Mass., just before stepping onto the crossover into Loyola Hall, I stopped stoned. Like lighting, "I "wanted a want"—a big one, sharp, and jagged. I wanted to see what was wide world in one go! To get to the last elliay in the world and meet the last person walking down it. Ah so!

Frankly, I haven't pulled it off. But I've tried.

At least, the long looking has made me lean, lean as a needle with e hole in it. My eyes have gone gimp, legs gone skinny. Add New England bones, 4 years in the (red) Desert, a dozen years in the Great Tramp Territory west of Denver to the Pacific. No matter how much it cost, it comes out a slim stew.

You say—like you really care—"What in the world have been looking for?"

"Don't laugh, I'll tell you. A horse. A horse named Freedom. 'Freedom,' says Matthew Arnold, 'is a horse but a horse is meant to go somewhere.' Is he, is he."

When I stood years ago in front of Loyola Hall with my mouth open, the horse sat an easy trot. I could hold his mane and feel the strength behind him. As a reward for that Grand Tour the people built him a big red barn. Since this proved right in setting so short a hot kind of pioneer paradise can now be produced by a pushbutton.

Challenge for Survival

Jesus, there are a lot of ecological anthologies coming out. This one's value is that it focuses on the devil himself.

The city.

—SB

Challenge for Survival
Pierre Dansereau, Ed.
1970, 235 pp.

\$2.75 postpaid



from:
Columbia University Press
440 West 110th Street
New York, N. Y. 10025

or WHOLE EARTH CATALOG

What will be left of the plant world if we allow the basically village culture, founded on the symbiotic relationship between man and plants, to disappear? For some twenty thousand years all the higher achievements of civilization have rested on this culture, one devoted to the constructive improvement of the habitat and the loving care of plants. Plants are the foundation of nature, their breeding, their enjoyment. That culture, as Edgar Ansel Mowrer has originally made some of its best discoveries in breeding by being equally concerned with the color, the odor, the taste, the flower and leaf pattern, the taste and flavor of plants, the taste and flavor of plants, valuing them not only for food and medicine, but for esthetic delight. There are plenty of people working in scientific laboratories who, though they may still call themselves biologists, have no knowledge of their work except to repeat it here, and no respect for its achievements. They dream of a world composed mainly of synthetics and plastics, in which no creatures other than the rank of algae or weeds would be encouraged to grow.

The View from the Barrio

What a refreshment this book was after reading a handful of "future" books—scholarly radical technological infused prophetic advice gas—which left me with a depressed feeling that the future is just words.

The real future will be made of much that is reported in this book (and approximately unknown to the scholars). Namely rural Third World people in newly rich economies and new planned cities, subverting the planners and transforming their own lives.

La Laja is in the planned Venezuelan city of Ciudad Guayana. Dr. Peartie was there for 2½ years with her family, taking part in barrio life and paying structured attention to what was going on. Social life around her was loose, fluid to a swiftly changing environment and economy. People were self-organizing only around critical community issues such as water or severs. From the barrio it was a huge impossible distance to the planners, and when something came down that was terrible they would beat futilely for a while and then plant dynamite under it. Nothing romantic. Just making do, getting by.

It dynamited my depression.

—SB

The View from the Barrio
Lisa Redd Festeste
1968, 147 pp.

\$1.95 postpaid

from:
The University of Michigan Press
615 East University
Ann Arbor, Michigan 48106

or WHOLE EARTH CATALOG

From the "solid," "shiny" walk, Freedom shifted into a "thunking" trot. Not only by the sweat of our brow but by the cleverness thereof, would we be freed. Much breed. The great American dream became Things & Think, Inc.—everything under control and a few beautiful people at the top. The last vestiges of the old, the last vestiges of the old, decimated baroque stable. BUT THE HORSE HAS SPLITT OUT! Once again, off and running down the cold cement. The only thing now left behind is the empty stable, the "soiled" straw, and the bad smell.

Now, 1969, no other what, the horse named Freedom is about to break into full gallop, third gear. Up and over, in the walk, the trot (1st and 2nd gear), the horse and rider, the bit and bridle have been in control. The control has been from without. Horse and rider, freedom and people, pulled up on a string.

In the full gallop, both horse and rider are running free, the wind, glided into one single song. You can't see the others, the others, the blinds from our eyes. Things, thoughts, stones, trees, dogs, that men in the last elay whatever their color—the whole world racing by—is caught in the shape and mass of a single Big Man. The control is from within.

Freedom at full gallop is Celebration. The Big Man's general dance. Red barns full of oats won't hold him. Nor corrals built by cleverness. The entire range of America from Atlantic to Pacific would still cramp his style. Oppenheimer, the physicist, says "the universe has become a single atom." The swift spiral of Celebration is big enough to swallow the world at a single gulp.

Teg's 1994

We're generally down on Utopian thinking around here, holding to a more evolutionary fiasco-by-fiasco approach to perfection. Thus Walden Two, Island, Stranger in a Strange Land, and Rimmer's stuff have not been listed. They're well known enough anyway. One publication—relatively unknown—with a more structural brand of speculation is Theobald & Scott et al's Teg's 1994. The "book" is an on-going process that invites your participation. —SB

(Suggested by Robert Theobald)

Teg's 1994

Robert Theobald & J. M. Scott
1969; 115 pp.

1-4 copies \$5 each postpaid
5 or more \$3 each postpaid

from:
Personalized Secretarial Services
5045 North 12th Street
Phoenix, Arizona 85014

During her year of travel with Dowell Fellow, Teggen thinks that her contemporaries' concept of the "communicative society" is increasingly flawed by interaction failures between different communities. A full expression of each community's sub-culture, or myth, has been achieved only at the cost of increasing mutual incomprehension, and even a re-emergence of an aggressive communy ethnocentrism.

Some of the longer-term residents have begun to question this community myth of sea-and-use, and are proposing a change to a myth of sea-co-existence. They want to convert to a vegetarian society, and to do this they must fish. Sea food is a major part of the diet, protein is essential to protein adequacy throughout the scarcity-regions the other residents think this is unrealistic.

There are also a few residents who want to change over completely to a myth of sea-adaption. They propose surgical conversion of the human being for water-breathing.



Under that wide sky's bowl of light the new roads and new concrete buildings—rows of developer houses, apartment buildings, governmental structures—seem to erupt from the dusty earth without any regard for the natural growth of vegetation. Elsewhere, the improvised housing of the poor, of sheet aluminum or pressed-board, looks as if it had been created by a hand of fate. It is a city of builders, of engineers who work and dream of progress, shiny briefcases, of noisy bars and holes in the streets, and of new traffic interchanges; it is a city of building and of disorder and entrepreneurship, it is a city which lives in the future.

Another part of La Laja's natural environment consists of the strip of unimproved land just beyond the Iron Mine fence. This land, covered with brush and cactus, is often used for toileting, especially by children; debris may be dumped there, and children collect stones and shells in the brush. Some medicinal plants (from an extensive folk pharmacology of which many are collected there by adults. Some men of the barrio shoot birds in this piece of meat. Boys hunt birds and sometimes rats with sticks, bows, arrows or project with a slingshot; their accuracy is astonishing by American standards.

The general environmental planning and urban design functions of the COVG are being carried out far away from the people of La Laja on the coast road to the Shores of the Caribbean, 300 miles away in Caracas. Some individuals in San Félix—the priests, certain political and economic leaders—from time to time visit various offices, but to my knowledge no resident of La Laja has been there, nor has anyone from the COVG ever been there, and no conception of that far-off world in which La Laja appeared on maps as an area encircled by the planners' "Magic Marker" or zipatone symbols.

We're waiting for the shift into third: Czechoslovakia, Vietnam, the black man, students, gypsies, Wall Street, Puerto Rican, Cubans, homeswives. The little ones, the beautiful people, are coming out of the highways and the hedges. The whole world has become one big waiting room, a Greyhound Bus Terminal at 3 A.M. The people are sitting by pitiful little piles of luggage in the fluorescent empires.

The clutch is in. Who has not somehow felt it grinding at its entrails? The shift can hardly be smooth and easy. The world is not a Volkswagen. The only way to get into third gear may be a violent grinding shift.

In all the doubt, despair, violence and madness we have somehow taken our eyes from the clutch on the floor and fix them instead on the Celebration ahead. Even the worst kind of madness has a ring of reason to it. The best reason I know for this one of 1969 is:

The Big Man is in a hell of a hurry to get to his wedding on time! And you know what? This wild, silly, mixed-up batch of a world is his bride. How about that?

Moving On
\$2/yr
P. O. Box 1349
San Francisco, CA 94101



THE RED TENT

D.R. and Estelle had finished breakfast and were into cleaning out the bus when a woman from the red tent and the Porsche next door came over to borrow some sugar. She looked to be in her thirties somewhere, very tanned athletic woman wearing a leather vest and a pair of chise brown riding pants. She was wearing a gold accent watch. D.R. asked Estelle if she didn't understand what she meant by "tent." But finally he said "I understand" and after they'd gone through the routine of scooping some brown sugar out of the coffee can Estelle kept it in, the women began to come in a little more clearly.

"No, you arrive very late," she said.

"No, no," said Estelle. "Very early. We got here just at dawn."

"You must come far."

"Very far," said D.R. "Very, very far. And we still got a long way to go."

"We have come far too. From Amsterdam to New York, from New York to here."

D.R. asked the woman where she got her red tent.

"I've never seen a tent like that before."

"Would you like to see inside? It is very lovely."

Estelle was knee-deep in the shit they'd unloaded from Urge and she wanted to get on with the work. But D.R. was fascinated by the red tent, and so he followed the women past the Porsche over to another place. Another woman about the same age as the first, but who seemed to speak English at all, was just coming out the front flap as they walked up.

"These nice people loaned me sugar," said the first woman, speaking European. "He admires our tent."

Estelle nodded and nodded and held the flap open for D.R. as he entered.

D.R.'s first hit was off the fantastic quality of the light inside. It was mid-morning by now. The sun was above the tree-line, shining directly into all the little clearings on the western side of the campamento. It filled the red tent with the most completely restful light he'd ever seen. A woman who had just had screwed his face tight all morning went away as his eyes passed the quiet rose of the tent's interior. It wasn't large at all. There was only one place a person could half stand up, and two sleeping bags side by side. The floor was a thin mat. D.R. had been in. It was immaculate. In the corners of the tent near the entrance were two rolled sleeping bags. On top of each bag were small white flight bags, both neatly strapped, the carrying straps facing inwards. Except for a strip of grass down the middle, the floor was covered with two strong mats, one a woven rubber air mattress, deflated and folded into a perfect square and stashed in the far corner of the tent. In the middle of the far end stood a short, three-legged table with a candle on it, and a single white cloth napkin.

D.R. had a smile on his face. He was smiling, and he felt completely stoned on the perfect arrangement of the small red world around him. He glanced over his shoulder to see if the two women were watching. When he saw them through the tent flap doing something over a picnic table, he stretched himself out on one of the mats and stared up at the slanting red roof above him.

Ecology and Resource Management

Okay World Gamers. Stop doing public relations and get into it. Kenneth Watt has, and it's technical business. Complexity, trade-offs, elaborate models that are still too simple, formulas that work once, unavoidable jargon. Did you think it was going to be a breeze?

-SB

Ecology and Resource Management

Kenneth E. Watt
1968; 450 pp.

\$14.50 postpaid

McGraw-Hill Book Company
330 West 42nd Street
New York, N.Y. 10036

or WHOLE EARTH CATALOG

Resources and Man

A future of finiteness, this just-published work portrays the depletion of North America's yard. How much of the depletable there is, how long it will last at present or projected rates. Some indications of the levels of exploitation where the "non-depletable" start to give up regeneration. For what might have been a dry book, the writing has considerable hair.

-SB

Resources and Man
Cloud, Bass, Chapman, Hendricks,
Hubert, Keyfitz, Lovering, Ricker
1969; 159 pp.

\$2.95 postpaid

from:
W. H. Freeman and Co.
660 Market Street
San Francisco, CA 94104

or WHOLE EARTH CATALOG

Man's Impact on the Global Environment

Most recent, most methodic study so far of the price we're paying for this spire, and explicit recommendations for tapering off.

-SB

Man's Impact on the Global Environment

Study of Critical Environmental Problems
1970; 319 pp.

\$2.95 postpaid

from:
M.I.T. Press
Massachusetts Institute of Technology
50 Ames St., Rm. 741
Cambridge, Mass. 02142

or WHOLE EARTH CATALOG

'Population Control' through Nuclear Pollution

Low-dosage radiation effects, the appalling pin in the nuclear energy bubble. Two technically savvy critics take on the self-promoting AEC.

-SB

[suggested by Larry Kimmett]

'Population Control' through Nuclear Pollution

Arthur R. Tamplin, John W. Gofman
1970; 242 pp.

\$6.95 postpaid

from:
Nelson-Hall Co.
325 W. Jackson Blvd.
Chicago, Illinois 60606

or WHOLE EARTH CATALOG

Oil and World Power

The brutal heart of the matter, by an Englishman not as irrational on the subject as Americans are.

-SB

Oil and World Power

Peter R. Odell
1970; 188 pp.

\$1.25 postpaid

from:
Penguin Books, Inc.
7110 Ambassador Drive
Baltimore, Maryland 21207

or WHOLE EARTH CATALOG

Large-scale biological systems are dynamic phenomena of great complexity. They lag behind environmental effects, thresholds, interrelations between species, large numbers of individuals, and nonlinear causal relations. Because of this complexity, we must concede at the outset that even mathematical models based on oversimplified and hence unrealistic assumptions would be misleading if they were to be used to predict the future. Therefore the emphasis is shifted from ingenuity of mathematical manipulation to realism of description, with computer simulation being substituted for analytical solution. This does not lead to less complication in the analysis. Rather, it leads to a new complexity of a new type. The requirement now is for depth of insight into the character of the process dealt with, in order that computer simulation studies can in fact mimic nature.

Considerably more ambitious and information-hungry are models that attempt to describe population processes in some detail, while still assessing a constant environmental stress. Such models consider not only the number of animals present at one age, but also their growth rate. The most elaborate, widely applied, and discussed model of this type was developed by Beverton and Holt, and is used in the understanding and management of commercially exploited stocks of oceanic fisheries. This model was developed as follows.

Consider the rate of change of biomass yield for time t . The weight of fish of age t is given by w_t , and F denotes the instantaneous fishing (or harvesting) mortality coefficient, where N_t is the number of t -aged fish still alive in the typical year class, then

$$\frac{dY_W}{dt} = FN_t w_t$$

gives the rate of change of biomass yield for the typical year class with respect to its age. The problem is to evaluate N_t and w_t .

That the fossil fuels be conserved for uses which cannot be met by other sources. The fossil fuels (petroleum, natural gas, coal) are needed for petrochemicals, synthetic polymers, and essential liquid fuels, for which suitable substitutes are as yet unknown. These needs are important, but should not be the sole concern (although such a use is also limited). They should not be spent in the generation of electricity, for heating, and for industrial purposes which reduce overall quality. The Department of the Interior should be authorized to develop a practical and effective hydrocarbon conservation program.

World Game Note

There's something funny going on round here.

Right in the middle of the March one issue is Gene Youngblood's article on "The World Game." It's exciting, interesting, even funny. There are all these guys with all the best intentions about to win the globe so that by the year 2000 (if not sooner) everybody will have enough of everything. He really makes you feel like it's within reach, once we get off the merry-go-round of local politics. Though NASA has promised \$12 million, how much will Fuller get when the feds discover that really interests us is to go to the moon?

Anyway, once the world is all wired up, everybody will live at least as well as we do now. All the people, that is.

Right at the end of Youngblood's piece you dip into the Ecology section. The first thing to hit my eye was the quote from Lynn White, "The victory of Christianity over paganism was the greatest psychic revolution in the history of our culture ... Christianity ... not only established a dualism of man and nature but also insisted that it is God's will that man exploit nature for his proper ends..."

But what do you call wiring up the earth? Far out. Maybe Fuller is the first of the really big Christians.

Are we to believe that Fuller is a Christian? Insuring only our own welfare? If you read closely you will note that Youngblood — like Fuller — talks about minerals and such, and makes no mention of organic things except what people can eat.

Or are we to be Ecology Action pagans, trying to scramble back to a sense of union with the planet that created us?

The ecology people say we gotta change our whole culture, or we won't survive. The Fuller people say we've got to make our culture really efficient not only to survive but to get a whole lot better.

You know, the problem goes a lot deeper than just, will we survive, and to what extent can we? The design and shape and wire the earth never seems to compare human habitation. We will change and even destroy a lot of things, but Fuller believes we have the thrust of evolution on our side, and that people are really a lot more important than the brown paladin (to use an unfair example).

But it's not just a matter of "Christian American saying can't I need the money." Money really isn't important, especially in America. How much did we pay for the right to pollute? How many guys make millions "out of it exploitation," "out of it prestige"? How much do we pump daily into Vietnam, for "the defense of democracy, even as we search for 'an honorable peace'?" We struggle and fight for abstract ideas, and the money really doesn't matter.

Now Fuller obviously has the best technique for survival, given the human desire to avoid changing basic ideas. Fuller is a catalogue of 1700 years of Christian ideas. Up against this, the ecology freaks hardly have a chance, because all they are talking about is survival, too.

But ecology really demands another psychic revolution. Like you say, a holy war. We need to believe we are one with the whole earth. And not just to survive, but because we really are. And that means, at least in the beginning, a new religion, a new faith.

Only through belief do you really change people's heads. And right now we believe in rationalism, in the technical method, in the validity of abstract numbers. Even though the planet that we sacred earthworm is full of life, scientific worms and stuff like that, maybe 30 tons of this, 1800 species of that, 15 years of something else.

Somewhere I read an old Chinese parable about a farmer who refused to take the technologic step of making a waterwheel to water his crops, even though he knew how. The rhythms and cycles of his life were the important things. He would not, he said, subject his body to a machine merely for the gain of efficiency. In medieval China this was the highest wisdom.

The difference between that view of life and our own is almost unbridgeable, but is it that step ecology asks us to make. Can we make it? In three years?

So you have an answer? I don't. I'm afraid we had better light our candles to St. Buckminster.

Cany James
Mill Valley, CA

I figure our best chance lies in ecological balance, and the world games, and critical inters, and the rest of it. So you're a start getting tired, and there's lots of different stuff, and the stuff knows about each other, once it's in the world, evolution can sort it out.

-SB

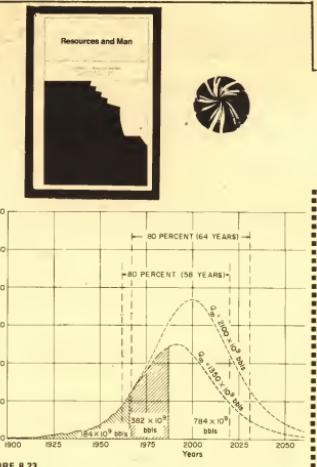


FIGURE 8.23
Complete cycles of world crude-oil production for two values of Q_c .

"In the West, our desire to conquer nature often means simply that we diminish the probability of small inconveniences at the cost of increasing the probability of very large disasters."

Kenneth E. Boulding

Economics and the Environment

A technical book, suggesting that accounting be applied to items formerly considered "free", such as air, water, waste. The transition from open to closed economics looks bitter.

-SB

Economics and the Environment

Kremer, Ayres, D'Arge
1970; 120 pp.

\$2.50 postpaid

from:
Johns Hopkins Press
Baltimore, Md. 21218

or WHOLE EARTH CATALOG

The hunter is camped on a green plain with a small fire providing a flickering light in the surrounding wilderness. The wisps of smoke rise into a clear, cool night sky. Tomorrow the hunter will move, leaving behind ashes, foot scrapes, and his own excreta. After ten steps these are lost from sight and smell, probably forever. With them leaves too his brief speculation about sky and earth, broken into the consciousness of night, and the hunter moves toward the horizon in search of prey.

The Administrator of the World Environment Control Authority sits at his desk. Along one wall of the huge room are real-time displays, processed by computer from satellite data, of developing atmospheric conditions around the world as they affect the quality condition of the world's great river systems. In an instant, the Administrator can shift from real-time mode to simulation to predict the effect of various changes in man's total material residuals and heat to water and atmosphere at control points generally corresponding to the locations of the world's great cities and the transport movements among them. In a few seconds the computer displays the results for the next hour, day, month, quarter, half-yearly, or yearly, perhaps at the Administrator's option. It automatically does that for current steady state and simulated future conditions, and then provides for the insertion of new geographic conditions. Observing a dangerous reddish glow in the western Mediterranean, the Administrator data-sub-control station Athens and orders a step-up of removal by the liquid residuals resulting from the burning of fossil fuels. The Administrator sees a projected air quality standards violation appears and sub-control point Essen is ordered to take the Ruhr area of studge incineration for 24 hours. The Administrator also orders storage tanks be accelerated incineration — but with mufflers — for 24 hours will be admitted. The CO₂ simulator now warns the Administrator that another upward trend must be brought on in the Murray Fracture Zone, so two more years if the internationally agreed balance of CO₂ and oxygen is to be maintained in the atmosphere.



The Pentagon of Power

It's easy to O.D. on Fuller, Kahn, and other technological prophets. Mumford is a fine, careful antidote. He examines the unexamined premises that lead to excess.

-SB

The Pentagon of Power

Lewis Mumford

1970; 406 pp.

\$12.95 postpaid

from:

Harcourt, Brace & Jovanovich, Inc.
757 Third Ave.
New York, N.Y. 10017

or WHOLE EARTH CATALOG

Western man not merely blighted in some degree every culture that he has touched—“primitive” or advanced, but he also lost his once-dominant qualities of splendid gifts of art and craftsmanship, as well as precious knowledge. This was the word of mouth that disappeared with the dying languages of dying peoples. With the extirpation of earlier cultures went a vast loss of botanical and medical lore. There remained much less time of years of watchful observation and empirical experiment than extraordinary discoveries—such as the American Indian’s use of snake-root (serperine) as a tranquilizer in mortal illness—modern medicine has now, all too suddenly, begun to appreciate.

Scientific truth achieved the status of an absolute, and the incessant pursuit and expansion of knowledge became the only recognized categorical imperative.

Now, if the history of the human race teaches any plain lessons, this is one of them: *Man cannot be trusted with absolutes.*



Unfortunately, if “meaning means association,” as Gray Weyers observes, then disassociation and non-intercourse must result in a decrease of shared meaning. Thus in time, specialized knowledge—“knowing more and more about less and less,” finely turned into semi-knowledge and accessible only to the inner priesthood, whose sense of power is in turn inflated by their privileged command of “trade” or official secrets.

The salutary truth of the old proverb ‘Haste Makes Waste’ was over-ridden by the new principle: ‘Haste and Waste Make Money.’

Technics and Civilization

I first read this book in 1957 then again in 1963 and then part of it in 1969.

Here is the first paragraph of the book.

During the last thousand years the material basis and the cultural forms of Western Civilization have been profoundly modified by the development of the machine. How did this change occur? Where did it take place? What were the chief motives that encouraged the shift? What were the conditions of the environment and the routine of life: what were the ends in view: what were the methods and methods: what were the techniques and techniques? These are some of the questions that the present study seeks to answer.

Lewis Mumford is an unusual man. He is not an engineer or a scientist, he is not an historian or sociologist, he can’t identify him as a business man or a literary man or an academic. He seems beyond all those roles. This made him especially attractive to me when I was 19 because his style smelled of the place I wanted to go. He is profound, poetic knowledgeable. He takes care of the large and small things in his books.

Technics and Civilization is a good book to start with; if you like it, there are many others of his to turn to. Myth of the Machine, Arts and Technics, The City in History, Transformations of Man.

How I have used him: all through my twenties I used him as my guide.

(Suggested and reviewed by Steve Baer)



2. The printing press was a powerful tool for producing uniform arguments to, and for, the masses. Standardized mass-production and capitalist enterprise came in with the printing press; and not without irony, the oldest known representation of the press, shown here, appeared in a Dance of Death printed at Lyons in 1499.

Technics and Civilization

Lewis Mumford

1934, 1962; 495 pp.

\$3.75 postpaid

from:
Harcourt, Brace & Jovanovich, Inc.
757 Third Avenue
New York, N.Y. 10017

or WHOLE EARTH CATALOG



Most of the important inventions and discoveries that served as the nucleus for further mechanical development, did not arise, as Spengler would have it, out of some mystical inner drive of the European soul, but rather from practical needs from outside. After the tenth century in Western Europe, the ground was, as I have shown, well plowed and harrowed and dredged, ready to receive these seeds; and while the plains themselves were growing, the cities were growing, the schools were being founded, the friable. Taking root in medieval culture, in a different climate and soil, these seeds of the machine sprouted and took on new forms: paper, gunpowder, the compass, they had all originated in Western Europe and had no natural enemies there; they were robust and rugged, gigantically as the Canadee thistle when it made its way onto the South American prairies. But at no point and this is the important thing—remained—did they enter into the European culture. So far from being unprepared for in human history, the modern machine age cannot be understood except in terms of a very long and circuitous development. The notion that a handful of British inventors suddenly made the wheelbarrow in the eighteenth century is too crude even to dash up as a fairy tale to children.

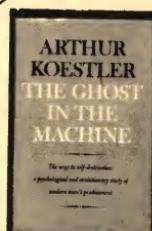
The Ghost in the Machine

Koestler's latest book seems to be sharing the fate of Norman O. Brown's Love's Body: the book after the big influential one (Act of Creation, Life Against Death) is considered too far out, fragmented, excessive . . . and sells half-heartedly.

Nevermind. Koestler here is doing useful dirty work: saving rat psychology, exploring broader implications of biological systems research, and forewarning our imminent demise unless we organize our brain-use better. Which brings him to drugs. He proposes research to find a chemical which will voluntarily disengage old-brain from new-brain—their emotional kill-heavy unprogrammable stuff from exterior rational flexible stuff. Our paranoia is accidentally designed in, he suggests, and may be designed out.

Get it to, outlets. No nation is going to support this research.

-SB



DRAW BACK TO LEAP

It seems that this retiring of steps to escape the dead ends of this maze was repeated at each decisive evolutionary turning point. I have mentioned the evolution of the vertebrates from a larval form to the adult land-dweller. Insects have in all likelihood emerged from a millipede-like ancestor, having lost the segmentedness, whose structure is too specialized, but from its larval forms. The process of dry land was initiated by amphibians whose ancestry goes back to the primitive type of lungless breathing fish; whereas the eponymous more successful line of land animals, the gill-breathing fishes all came to a dead end. The same story was repeated at the next major step, the reptiles, who derived from early, primitive amphibians—not from any of the later forms that we know.

And lastly, we come to the most striking case of morphodromism, the evolution of our own species. It is now generally recognized that the human adult resembles more the embryo of an ape rather than an adult ape.



The Ghost in the Machine

Arthur Koestler

1967; 384 pp.

\$6.95 postpaid

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New Jersey 08075

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A tent, he thought. A room of space. It starts here by my left foot, goes up then down and ends over there on the far side of the canvas. That is the outer limit, the outer wall, there is, no more and no less. This is the total area of space and full dimension: a room of space marked off and set aside by these walls of red canvas that weren’t here yesterday probably and probably won’t be here tomorrow, but they are here today and I am here too inside the partition, and they enclose me. This space has always been here. But it has not always been a room, at least not this room, because it has never been enclosed by this particular tent before. The space is here. The time is now. And they are breathing in a way that no other tent has ever caused before. This space is here, this room, has been tented over before, closed up in other canvas rooms. And so the question comes to be: would another tent around this game space re-create this room, or does this room disappear forever once this red tent has moved away? And so the question comes to be. And what about when this tent is pitched in another place? Will you leave it in the Blue Ridge Mountains, take it down and put it up again in the Rockies, has the same room been in both places? Or is it another brand new room every time you pitch the tent again?

“Conversation,” she said. The woman’s voice started D.R. and caused him to sit upright. But her smile was so friendly and there was such charm in her strange voice, D.R. relaxed again and invited the woman to come in. The idea struck her not as very funny. Giggling, she called out, “I’m in a room, right?” D.R. stepped through the tent entrance and followed her into the room with the tent with Divine Right, sitting cross-legged on the other mat, chewing tea and smiling back and forth at one and other.

“I mean,” D.R. was saying, “I mean, like, if you take this tent down, you know, take the poles down, fold the whole thing up, and lay it in fifteen yards . . . I mean, I’m just saying, if you move it to another place, it’ll still be a room, right? The room is these walls. And these walls are big. They’re here, and they’re here now. And so the question seems to be . . . the question seems to be, where does the room go? Can we make these walls down and fold them up and put them in your car?”

The lady who didn’t speak English had begun to look a little troubled, perhaps even a little afraid. But when her friend interpreted she began to nod. Both women nodded and said, “Yes. Yes.”

“Do you know what I’m talking about?”

“Of course,” said the woman who had borrowed the sugar.

“You’re talking about space and time.”

“For out!” D.R. said. “For out!” Suddenly he had mustered the strength and his goodbyes, and crawled to the opening. Outside, he was so excited he tripped over a tent stake and fell on his ass.

Nature and Man's Fate

THE introduction to theoretical and applied-evolution. Hardin is further than anyone in blending the insights of evolution and cybernetics into what may be an embryonic science of general development. Still it's a completely earthy book. The specific history of Darwin and his ideas. The specific application of evolutionary under-standing to human survival now.

—SB

Nature and Man's Fate

Garett Hardin

1959, 320 pp.

\$9.95 postpaid

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New York, N. Y. 10019

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So we see that the concept of progress, for all its historical importance in sheltering the idea of evolution, is not easily applicable to facts of biology.

All men are, by nature, unequal—this is the censored truth of our century. We are as afraid of the consequences of admitting this truth as the Victorians were of the consequences of admitting that man are animals. Yet surely history will ultimately show that, in both instances, the consequences are good and compatible with human decency.

As early as 1910, the philosopher Bertrand Russell, spelled out the nightmare qualities of our hubris of equality. That is, if power needed to reign in the light of lesser facts. For his part, and for his honesty Russell was quite ousted from his position as the philosophical spokesman of the liberal elements. (Since he was patiently until his death a member of the Communist Party, he was a truly philosophic man without a party.) This position may not be the most comfortable of all positions, but for a living philosopher it has its advantages.)

As a species becomes increasingly "successful," its struggle for existence ceases to be one of struggle with the physical environment or with other species and comes to be almost exclusively competition with its own kind. We call that species most successful that has made "its own kind its worst enemy." Man enjoys this kind of success.

It is one of the few rules of evolution that extreme specialization results in eventual extinction. Environmental changes are inevitable, and in their adaptability, it is extremely common to see a species life to be able rapidly enough to "generate" a new species off in another "direction." All the evidence of comparative morphology and paleontology, fragmentary though it is, indicates that such great new groups of organisms arises from very unspecialized species of the group "below" it, not from the conspicuously specialized ones.

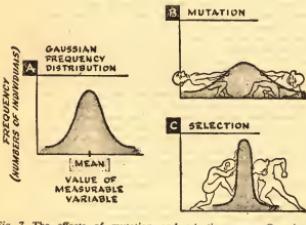


Fig. 7. The effects of mutation and selection on a Gaussian ("normal") distribution curve.

The Step to Man

I'll be damned, I thought this was another yesir-things-are-changing technological social treatise thing. No such. It's a manual of strategies for changing the world, if you have a mind to do. Not heavy stuff about what's terrible or what should happen, but how to remake life and stay alive in the process. Strategies like multiple working hypotheses so you don't get infatuated with your first idea. Like seed operations where one phone call makes the whole thing happen. Like self-stabilizing provisions so a process is safe from its own too-quick successes.

—SB

[Suggested by Steve Baer]

From:

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It is not easy to define "play" precisely, but whatever it is, it is something that is in common with most people—social, non-economic. It is also a product of minority viewpoints, opening a path to new ways of doing things that would often never be considered if only direct, completely rational, wholly efficient approaches were used. Play, however, man is by no means confined to childhood; it extends into the adult years, only changing its form. Freud has said, "The child has toys; the young man has art and music. Out of the play called science—which is play in the sense of a sociological function—out of partly the laws of competition—out of the economically non-competitive intellectual play called science there comes, in fact, a competitive weapon of the most powerful sort, technology. Competition has its own dialectic."

Among the importance principles of socio-biology is surely this, *competition is inescapable*. That species which has succeeded in eliminating all other species as competitors, ends by becoming its own competitor. In this case, the discipline of competition is a limited one. Man, freed of the population-control factors of predators and disease organisms, must—willy-nilly, like it or not—control his own numbers by competition with his own kind. By selection, he can outdo others in the kind of competition he employs. But he cannot escape all kinds. This is not to imply that the election is a trivial matter.

To the biologist it is clear that the best chances for man's long time survival depend on the fragmentation of the species into well-separated populations. It would be foolhardy to say that nothing can be done. The separation should take. It might be a matter of distance, as between continents or oceans, or it might be that would permit genetic isolation with geographic unity; or—far more likely—some new kind of communities that are neither nation nor caste nor anything that has yet been conceived.

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The crowd-diseases—smallpox, cholera, typhoid, plague, etc.—are, by the ecologist, labeled "density-dependent factors," which means that reducing population is a positive function of the density of the population. Now, if one begins to carry out of hand as long as the crowd-diseases were unconquered, which means that one need not to sit in judgment on man, to decide who should have a certain National team and who should not. With the development of bacteriological medicine, all this has been changed. Now, the feedback control is man himself.

Darwin's life is symbolic. His *Autobiography* clearly and unconsciously reveals two elements that are needed to produce any creative genius: irresponsibility and alienation. . . .

He who is to serve other men have not seen much, in a real sense, because he comes from a society in which man in which this alienation occurs is subject to an infinity of permutations.

The wealthy eccentric is a nearly extinct dodo. The man of wealth is now an over-directed man. He may become a lawyer or a doctor. But an eccentric. He is not a part of the world to achieve. The allegation requires to be creative. (When millionaire today would have the nerve to do what Darwin did—retire to a "non-productive" life in the country to think?)

.. . We can hardly expect a committee to acquiesce in the denouncement of man as an inferior being, if the committee is composed of individuals who are not responsible to their work. Now that the truly independent man has disappeared, however, now that the independence of the academic man is fast disappearing, where are we to find the conditions of partial alienation and irresponsibility needed for the highest creativity?

Fig. 12. Evolution, as it has probably occurred in a group of plants. The word "Nature" is the disorderly for those who seek to find clear-cut order. (From Clausen, *Stages in the Evolution of Plant Species*, Cornell University Press, Ithaca, N. Y. 1951. By permission.)

The Competitive Exclusion Principle. No two organisms that compete in the same way can coexist indefinitely in the same place. To coexist in time and space they must be potentially completely competitive but must be geographically isolated from each other. Otherwise, the one that is less efficient yields to the more efficient, no matter how slight the difference. If two species are in competition in the same geographical region, close examination always shows that they are not complete competitors, that one of them draws on a resource of the environment that is not available to the other. The corollary of this principle is that if one is removed, the other is not necessarily genetically and reproductively isolated populations, there must be as many ecological niches as there are populations. The necessary condition for geographical coexistence is ecological specialization.

And concepts themselves occur in various grades of generality, forming a hierarchical complex that has not been adequately described. Language is a wonderfully subtle and complicated tool; but for the greater part of it is to be found only in mathematics. That which most men call "language" is only a small part of man's concept-handling machinery; scarcely the ABC's of it.

For more details on organic evolution, see Ernst Mayr's recent *Animal Species and Evolution* (1969), 297 pp., \$11.95 postpaid from Harvard University Press, 79 Garden Street, Cambridge, Mass. 02138. The promising, if heretical, hypothesis that man may be directly affected by changes within the cells is presented in Leland C. Lewis' *Genetic and Internal Factors in Evolution* (1965), 215 Park Avenue South, New York, N. Y. 10016. For a general discussion of evolution, including look into cultural evolution, see Sahlin and Service, *Evolution and Culture* (1960), 131 pp., \$3.95 postpaid from the University of Michigan Press, 615 East University, Ann Arbor, Michigan 48106.



Fig. 25. A large population, which is very sensitive to selection pressure, is narrowly confined to an adaptive peak (Mount Torg). A species breaks up into many separate small breedings. Its population is much less responsive to selection pressures; its population is more widely distributed. The adaptive peak (Mount Risky)—some to perish, some perhaps, to find the way to new adaptive peaks like Mount Opportunity. And, before, the water represents the threatening natural selection.

In order to carry out any great project, the future good of the group must be anticipated and turned into present and individual good, into a reward for every step that is taken in the right direction.

I am beginning to believe that in any social endeavor, it is the analysis of chain-reacting social processes that will assist us to choose the best course and will indicate the most effective ways for our intelligence to multiply its feeble energies. The future will always respond to touch, if it is not too tough. It is ingenuity we need, not implements. The world's future becomes almost plastic in the light of these possibilities.

We begin to realize that our brains are the most complex and self-determining things in the known universe. After all the measurements of atoms and galaxies are folded into laws in some corner of our nervous system, there will still be universes of interrelation ship in the brain networks to be discovered. If this property of complexity could somehow be folded into the light of brightness so that it would stand more clearly to our senses, the biological world would become a walking field of light, communication, and energy. These complex interrelations would fade to a pale simplicity compared to a rosebush. An earthworm would be a beacon, a dog would be a city of light, a tree would be a sunburst, a person like a blinding burst of complexity, flashing bursts of meaning to each of the billions of cells of the physical world before us. We would hurt each other's eyes. Look at the halied heads of your rare and complex companions. Is it not so?

Man Adapting

The focus of this book is the human individual, what he has to deal with in this life, and what means he has to do the dealing with. Dubos is a superdoctor, so you get a damned well-informed medical perspective on questions of environment, population, health, nutrition, adaptation, etc. that subverts many a popular opinion.

-SB

The concept of perfect and positive health is a utopian creation of the human mind. It cannot become reality because man will never be so perfectly adapted to his environment that his life will not involve struggles, failings, and suffering. Nevertheless, the utopia of positive health remains a dream for thousands, like other ideals, it sets goals and helps medical scientists to chart their research programs. The urge that disease can be completely eradicated becomes a dangerous urge only when its unattainable character is forgotten. It can then become the root of a new kind of neurosis. This is one of the traps of unreality. In particular, it encourages the illusion that man can control his responses to stimuli and can make adjustments to new ways of life without paying for these adaptive changes. The less pleasant reality is that in our present state of affairs, each type of civilization will continue to have its burden of diseases created by the unavoidable failures of adaptation to the new environment.

The paradoxical truth is that the phenomenal increase in world population during the past 50 years has coincided with greater health in both world wars, several minor ones, and deep disruptions of social and economic life everywhere. Furthermore, as is well known, the most destitute and disease-ridden populations of the world are precisely the ones that are increasing the fastest.

The Age of Discontinuity

How come Peter Drucker has so much good sense and perspective, and still remains so cheerful? Traditionally considered a pessimist, he sees the future of large organizations, the future—true a prophet's soul, humble and yet at the same time partially wacky. The only other intact floater on this ocean I know of is Marshall McLuhan. You sense that both of them have a backyard in their mind that resides somewhere else, some time else. (It would be worth pursuing this. How To Think Big and Stayane.)

The Age of Discontinuity takes notice of the remarkable continuity of the last 50 years in building on the technological breakthroughs of the Victorian era. Now, says Drucker, we are in for some hard changes, particularly around new technologies of information, materials, oceans, megapolises, global economics, and redistribution of responsibility in large organizations.

-SB

The Phenomenon of Man

Reading The Phenomenon of Man is a bit unnerving: Teilhard de Chardin manages to say most of the things many of us are trying to say. He said them in 1938. Was no-one listening?

The Phenomenon of Man deals with evolution—the ascent to consciousness. The plan of the book is

Pre-life: Life: Thought—three events sketching in the pattern determining for the future (survival) a single and continuing trajectory, the curve of the phenomenon of man.

His aim is to try to see (and to help us to see)

to try to develop a homogeneous and coherent perspective of our general extended experience of man. A whole which unfolds.



The Phenomenon of Man

Teilhard de Chardin
1959; \$20 pp.

\$1.95 postpaid

from:
Harper & Row
49 East 33 Street
New York, N. Y. 10016
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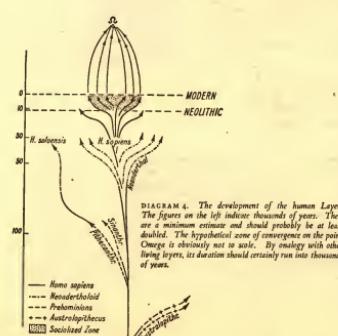
Teilhard de Chardin's vision and expression of that vision are beautiful—of man evolving a super-abundance of mind; in the noosphere where the All and the Person are one. The only way to put all this together without feeling bullshitted is to read The Phenomenon of Man.

Only one reality seems to suffice and be capable of succeeding and spanning the infinitesimal and the immense: energy—that floating, universal entity from which all emerge and into which all falls back as into an ocean; energy, the new spirit, the new God.

hominisation...noogenesis...cosmogenesis...when Teilhard de Chardin uses a word like homogenous something magical happens to it.

The Omega point is where man is God and God is man, where all layers of the noosphere become involved, fusing and comprising the All and the Person integrally in itself.

The mind is essentially the power of synthesis and organisation.



Man Adapting

RENÉ DUBOS



Man Adapting
René Dubos
1965; \$27 pp.

\$3.75 postpaid

from:
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New Haven, Conn. 06511
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Since the computer first appeared in the late 1940's the information industry has been a certainty. But we do not have it yet. We do not have the effective means to build an "information system." That is why we are not living up to the potentialities of the light bulb. What we still have to create is the conceptual understanding of information. As long as we have to translate laboriously every set of data into a "program" we won't understand information. We have to be capable of classifying and taking account of the characteristics. We have to have a "notation," comparable to the one St. Ambrose invented 1,600 years ago to record music, that can be read by anyone. We have to have a language that can handle pulses rather than in the clumsy computer language of today. Then every person could, with very little training, store his own data within a general system, that is, in what the computer engineers call a "routine." Then we shall have true "information systems."

Yet though IBM is now shipping computers at a rate of a thousand a month, we still have not had the equivalent of Edison's incandescent lamp. What we are lacking is not a price of a lamp or the light bulb. What we still have to create is the conceptual understanding of information. As long as we have to translate laboriously every set of data into a "program" we won't understand information. We have to be capable of classifying and taking account of the characteristics. We have to have a "notation," comparable to the one St. Ambrose invented 1,600 years ago to record music, that can be read by anyone. We have to have a language that can handle pulses rather than in the clumsy computer language of today. Then every person could, with very little training, store his own data within a general system, that is, in what the computer engineers call a "routine." Then we shall have true "information systems."

Underlying the beautiful presentation of man's ascent towards consciousness is a hard core of science.

Man, in nature, is a genuine fact, failing...within the scope of the requirements and methods of science.

[Reviewed by Dave Evans.
Suggested by Julia Brand.]



A PLACE FOR EVERYTHING AND EVERYTHING IN PLACE

Estelle everything's by god I really believe it is. You can tell it, you can feel it, the signs are all around. This is here and there are signs and the distinction of time and space is just special as here and I've got to get to it. I'm going to get to it. I believe there's going to be better relations between east and west. I believe if we get organized, a place for everything and everything in its place, books in a book box, clothes in a clothes box honey you know it's a wonderful, you have, and I love you for it and take home datebooks to be better organized for a long time. Those women understood every word I said. When we get to St. Louis. Are these crackers any good? Where's the tax receipt? Where'd I put the cassette? When we get to St. Louis I'm going to get some car polish and wax Old Urgo all over. Is this the thing? And when we get to St. Louis I'm going to get all the boxes in St. Louis I'm going to get ten cardboard boxes of identical size and label them with what they're supposed to hold. Books in one box, this is at this on my Whole Earth Catalog. Books are going to order, something out of there. Books in one box, tape also. Very good, you know, you're going to have to have its proper place. You've done a wonderful thing here, you really have. You ought to see their front. From now on. Don't think get to St. Louis. Haha, I'll wash it out after while, I want to put a wildflower in there, you know, you know, you know? I was afraid. But they knew exactly and I believe the world's getting to be a better place. I receive that from somewhere in my mind. I think love and gentleness and neighborliness and humor are more important than ever. I think stars are moving into very particular cosmic arrangements. And we've got to do our part. I believe it all depends on everybody doing his part. Look at this bus goddamn! I bet old Urgo is proud.

The Subversive Science

"So God created man in his own image, in the image of God he created him; male and female he created them. And God blessed them, and God said to them, 'Be fruitful and multiply, and fill the earth, and subdue it, and have dominion over every living thing. And God saw every thing that he had made, and, behold, it was very good.'"

Genesis 1, 27-28.

And we have been fruitful, and we have filled the earth and subdued it, and we have dominion over every living thing. And this is subversive about ecology is that we know now must turn aside from that ancient narrow edict, and live with, and not upon, the earth.

The Subversive Science—Ecology is messy on the shape of life. By its very breath it creates a depth of truth no single point of view could ever make. There is a new world view within this book, a new sense of ourselves and our position on and within this earth. It is rigorous and scientific and yet in its vibrant complexity almost mystic.

[Reviewed by Cary James]

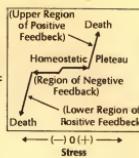
igloos, tepees, prairie sod-huts, hogans, pueblos—have ecology in their roofs.

These shelters for families, like such individual protectors as sunbonnets, sombreros, serapes, are oriented to a landscape, to weather, and to local materials.

The Subversive Science— Essays toward an Ecology of Man

Paul Shepard
Daniel McKinley, eds.
1969; 453 pp.
\$6.50 postpaid

from:
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Weymouth Road
Burlington, Mass. 01803
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The desire to maintain absolute consistency in any system must be recognized as deeply pathological. Engineering theory indicates that excessive restraints can produce instability. In psychology, too, the desire for complete consistency is recognized as a most destructive compulsion. And in the history of nations, attempts to control rigidly all economic variables have led to economic collapse and psychological health human recognition that fluctuations are unavoidable, that waste is normal, and that one should institute only such explicit controls as are required to keep each system on its homeostatic plateau. We must devise and use such controls as are necessary to keep the social system on the homeostatic plateau. On this plateau—but not beyond it—freedom produces stability.



"This is the dog that bit the cat that killed the rat that ate the moth that came from the grade that Jack's garden." (Attributed to someone in Puerto Rico.)

Ecology

There are two major components to ecological study: quantitative and cybernetic. The cybernetic—control relationships—is most interesting, but the only reliable research avenue to that understanding is through grueling quantitative investigation. This book is a concise and reliable introduction to the science.

—SB

Ecology

Eugene P. Odum
1963; 153 pp.

\$4.25 postpaid

from:
Holt, Rinehart & Winston, Inc.
383 Madison Ave.
New York, N.Y. 10017

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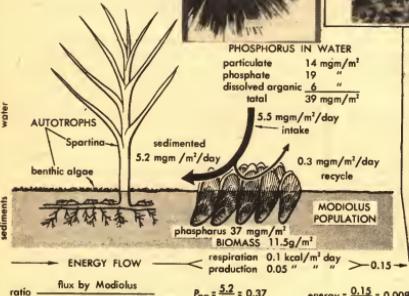
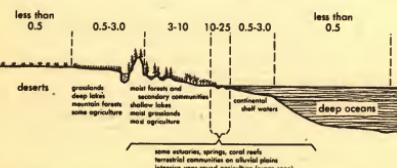


Fig. 4-4. Role of a shellfish (Modiolus) population in the cycling and retention of phosphorus in an estuarine ecosystem. The Modiolus has a major effect on the distribution of phosphorus even though the species is but a small component in the community in terms of biomass and energy flow. (Based on data from E. J. Kurnitzer, Limnology and Oceanography, Vol. 6, 1961.)



Concepts of Ecology

There is a crusade called Ecology. And also a science called Ecology. And they're not as distinct as they think they are.

This book is about the science, unhindered by rhetoric. Its subject is energy flow, cycles, populations, ecological communities, and man's place in the system. The emphasis is on theory and observation rather than math. Areas that are still poorly understood get due attention. I wish this book had been around when I studied ecology.

Whether you will or not
You are a King, a peasant, for you are one
Or the other, and few that leave the world,
When they are gone, not the same place it was.
Mark what you leave:

Although the original coined term of the term is an uncertainty, there is consensus that the German biologist Ernst Haeckel first gave substance to it in the following statement:

By ecology we mean the body of knowledge concerning the economy of nature—the investigation of the total relations of the animal both to its inorganic and to its organic environment, including above all, its friendly and hostile relation with those other animals which are either directly or indirectly in contact—in a word, ecology is the study of all the complex interrelations referred to by Darwin as the conditions of the struggle for existence.

Concepts of Ecology
Edward J. Konromy
1969, 209 pp.

\$4.95 postpaid
from:
Prentice-Hall
Englewood Cliffs, N.J. 07632
or WHOLE EARTH CATALOG

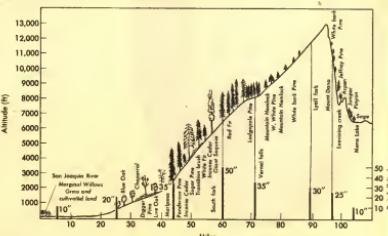


Fig. 5-2. Profile of central Sierra Nevada showing altitudinal distribution of principal forest types.

Environment and Man

This is a pretty complete introductory text, well-illustrated, on all the ecological issues. There's quite a few of them, and to respond right we do need to know about all of them, or a solution to one problem may accelerate six others.

-SB

Environment and Man

Richard H. Wagner
1971; 491 pp.

\$7.50 postage

from:
W. W. Norton & Company, Inc.
555 Broadway,
New York, N.Y. 10003
or WHOLE EARTH CATALOG



When species diversity is reduced in natural ecosystems, either willfully or inadvertently, the same kinds of problems seen in monoculture begin to arise. But a natural system can be circumvented like a棋子 (chess piece) and routinely expected to control some beetle or caterpillar. For a biocide that might be tolerated in a controlled could so damage the food chain that the original ecological problem would be lost in the ensuing chaos. Moreover, while we can afford the energy input to maintain a higher concentration of the value of its yield, we cannot possibly afford the energy input to maintaining natural ecosystems that have maintained themselves until disturbed by man. Consequently, we must improve our understanding of every organism in the ecosystem, how it controls or is controlled by others, we cannot abandon any species as superfluous, not even the little flock of seven species left. If we do we run the risk of having to cope with future population explosions of fungi, insects, rodents, or whatever, that might well dwarf any problems seen to date.

Science and Survival

Scientific and technological critics are significantly rare and much needed. Barry Commoner is a good one—prestigious scientist, active administrator, capable writer, committed critic.

Reading his anthology of technological blunders, I am led to wonder if the success of death-fear-driven science merely changes the size of the package that death comes in. There's less of piecemeal local, "natural" dying, and more of massive "caused" dying. I think I prefer the old way. Is anybody working on establishing friendly relations with Death? Maybe he's a good guy who's had bad press.

-SB

(Suggested by Peter Montague)

Science & Survival

Barry Commoner

1966; 150 pp.

\$1.25 postage

from:

Ballantine Books, Inc.
101 Fifth Ave.
New York, N.Y. 10003

or WHOLE EARTH CATALOG



Not So Rich As You Think

Once upon a time, men lived in trees high above the forest floor. It was a gay, carefree life—your food grew right in your house and when you had eaten your fill you tossed the garbage down through the leaves. The same with your shit, and even your body when you died. The forest scavengers and processes of decay speedily disposed of all refuse.

Man came down from the tree long, long ago and created for himself a less carefree way of life. But he remains the fittest animal around, treating his environment as if it were still magically gobbling up everything he discards. This book documents the folly with the gross disheartening facts. From human excrement to nuclear fallout, with smog, DDT and the junkyard on the way.

—HH

(Suggested by H.R. Hershey, Sr.)

The trouble began with the failure of a relay which controlled the flow of electricity from the Sir Adam Beck No. 2 power plant in Ontario, Canada. The feeder line to the transmission lines, unable to carry the extra load, shut down its own safety switches. With these normal exits blocked the plant's full power flowed back along the lines that tied the Guelph generator into the U.S. power grid. The power surge traveled across New England, quickly tripped safety switches in a series of local power plants, shutting them down. As a result the New England grid collapsed, then had been feeding excess electricity into the Consolidated Edison system in New York, drained power away from that city; under this strain the New York generators were quickly overloaded and their safety switches shut off. The blackout was then complete. The system had been betrayed by the very links that were intended to save local power plants from failure.

The new hazards are neither local nor brief. Air pollution covers the entire earth. Synthetic materials may remain in the soil for centuries. Radioactive pollutants now on the earth's surface will be found there for generations, and, in the case of carbon-14, for thousands of years. Excess carbon dioxide from burning fossil fuels is trapping heat that will cover much of the earth's present land surface for centuries. At the same time the permissible margin for error has become very much reduced. In the development of steam engines a certain number of human lives were considered acceptable. As the same comparable disaster were to occur in a nuclear power plant or in a reactor-driven ship near a large city, thousands of people might die. What is considered unacceptable—a price the the public might be unwilling to pay for nuclear power. The risk is one that private insurance companies have refused to underwrite. Modern science and technology are simply too powerful to permit a thousand-error approach.



Not So Rich As You Think

George R. Stewart

1968; 70; 176 pp.

\$9.50 postage

from:
The American Library
1301 Avenue of the Americas
New York, New York 10019

or WHOLE EARTH CATALOG

Ecology Center Reprint Series

A number of recent ecological statements have acquired "classic" status. You can search through three libraries for them, or you can get them straight and simple from Ecology Center.

-SB

All reprints are 25¢

Eco-Catastrophe, Dr. Paul Ehrlich

The Four Changes, Anonymous

Tragedy of the Commons, Garrett Hardin

The Tragedy of the Commons Revisited, Beryl L. Crowe

The Historical Roots of Our Ecologic Crisis, Lynn White Jr.

Toward an Ecological Solution, Murray Bookchin

The Politics of Population, Aldous Huxley

All About Ecology, William Murdoch and Joseph Connell

What We Must Do, John Platt

Humanistic Biology, Rene Dubos

Blind Faith in the Omnipotence of Technology, Richard Merrill

Outwitting the "Developed" Countries, Ivan Illich

Life Is an Endless Give-And-Take With Earth and All Her Creatures, Rene Dubos

Man's Eco-System, Lamont C. Cole

from:
Ecology Center Confederation

1360 Howard Street

San Francisco, Calif. 94103



Figure 4.7 The areas in black are over five miles from the nearest road, railroad, or navigable waterway. This is America's remaining wilderness. (From C. Tunnard and B. Pushkarev, *Man-Made America*, Yale University Press, 1963.)

Sometimes, in moments of impending crisis, we are aware only that the main outcome of science is that the planet has become a kind of colossal lightly triggered time bomb. Then all we can do is to implore the gods to try and stop it. In calmer times we try to grapple with the seeming endless problems that surround the tangle of nuclear physics, seismology, electronics, radiation biology, ecology, sociology, thermal and psychological pathology, war games, communications, international relations, and international politics, has become the frightful chaos that goes under the disarming euphemism "public affairs."



RETURN OF THE LONE OUTDOORSMAN

The birds in the trees huddled their wings as the Lone Outdoorsman came into Divine Right's camp. But D.R. was too deep into his monologue to catch the warning. He was too deep into it even to realize that Estella had left the camp and gone for a walk. Before he could prepare himself in any way, there the Outdoorsman was, standing above him with his hands on his hips, staring at D.R. like a hawk at a mouse. As D.R. became aware of the Lone Outdoorsman's presence, D.R. was silent as the birds. The music that had filled his head changed from birds to kettle drums, and he wondered where Estella had gone, and why.

"Ahhhhh," said the Outdoorsman.
"Good afternoon," said Divine Right.
"How're you?" asked the Lone Outdoorsman.

"Okay, I guess," said D.R.
"Yeah," said D.R. "Nothing wrong, as far as I know."

"Yeah," said D.R., just checking. I noticed you over there in the tent with 'em. You're not going to clean out your bus, looks like it."

D.R. nodded. He had been kneeling among the stuff from the tent since the Outdoorsman first came over. Now he was on his feet, and following the Outdoorsman as he walked around the camp, looking at the gear in his bus.

"You paint all this stuff on your bus?" asked the Outdoorsman.

"Some of 'em," said D.R.
"How come you never do it?" said the Outdoorsman. "Messed up a good paint job. What's that there?"

The Outdoorsman was holding a large yellow moon on Urge's side, with a crab walking across it, leaving tracks.

"That's a moon with a crab on it," said D.R.

The Outdoorsman looked D.R. in the eye. "You say it is, huh?"

D.R. nodded.
"How many horsepower this thing have?"

"I don't know. Fifty, maybe."
"Fifty? Well, we've got GMC over there's got four hundred and fifty." Of course, the weight weighs it down some, and my boat. But it'll still outrun a bus like yours any day of the week, you better believe that."

D.R. asked the Outdoorsman what he was telling him that. The Outdoorsman had never known. Then he told D.R. that he knew he was a good man, and he turned him around and he turned him around again.

"What do you mean?"
"Well, you know. Trouble."

D.R. nodded. His heart was pounding. He watched the Outdoorsman fight his pipe, then, finally crush the match against his knife handle.

"You remember what I told you, now," he said, and he turned end jingled off through the trees to his own camp.

The Population Bomb

There's a shit storm coming. Not a nice clean earthquake or satisfying revolution but pain in new dimensions: world pain, sub-continents that starve and sub-continents that eat unable to avoid each other. The consequences will dominate our lives. In the heart of the problem are the solutions, and the sooner we're clear about what's happening the sooner the solutions can work their way out. This book is the best first hard look that's around. The author is a well-regarded young population biologist and ecologist who freaked out of his lab and into the media with the bad news. Besides breaking well he reports well.

—SB

The Population Bomb

Dr. Paul R. Ehrlich

1986; 223 pp.

\$9.95 postpaid From

Ballantine Books, Inc.
c/o Simon & Schuster, Inc.
630 Fifth Avenue
New York, N.Y. 10020

WHOLE EARTH CATALOG



It is, of course, true, that a very accurate measure of the future rate of population growth of any species gives us all a powerful ally to live, intervening in the birth rate goes against our evolution values. During the last century, the most important part, the individuals who had the most children passed on their genetic endowment in greater quantities than those who reproduced less. Their genes dominate our heredity today.

Population, Resources, Environment

In Population Bomb Ehrlich spared us the customary statistics and graphs, and he was accused of being no scientist. So here are the statistics and graphs and much besides—a 400-page textbook on the population-ecology crisis. Don't bother taking a course. The lab is the world.

—SB

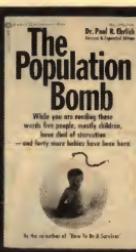
Population, Resources, Environment

Paul R. Ehrlich, Anne H. Ehrlich
1970, 400 pp.

\$8.95 postpaid

from:
W. H. Freeman and Company
660 Market Street
San Francisco, CA 94104

OR WHOLE EARTH CATALOG



The reproductive function of sex must be shown as just one of its functions, and one that must be carefully regulated in relation to the needs of the individual and society. Much emphasis must be placed on this, and on the need for sex to be an important and extremely pleasurable aspect of being human, as mankind's major and most enduring recreation, as a fountainhead of his humor, as a phenomenon that affects every aspect of his being

The battle to feed all of humanity is over. In the 1970's the world will undergo famine—hundreds of millions of people are going to starve to death in spite of any crash programs embarked upon. At this late date nothing can prevent a substantial increase in the death rate. Millions of human lives could be saved through dramatic programs to increase food production. But these programs will only provide a stay of execution unless they are accompanied by determined and successful efforts at population control. Population control is the cornerstone of regulation of the numbers of human beings to meet the needs, not just of individual families but of society as a whole.

Nothing could be more misleading to our children than our present affluent society. They will inherit a totally different world, a world in which the standards, politics, policies, and economics of the 1960's are dead. The most important thing that Americans have today, and its largest consumer, the United States cannot stand isolated. We are today involved in the events leading to famine; tomorrow we may be destroyed by its consequences.

Remember also that in virtually all underdeveloped countries, people have gotten the word about the better life. It is popularized in Western movies and Western pictures in magazines of the miracles of Western technology. They have seen automobiles and planes and tanks and tanks and tanks and American movies. Many have seen refrigerators, radios, and even TV sets. Almost all have heard recordings. They know that a better life is possible. They have heard it on the radio, on the television. If twice as many people are to be happy, the miracle of doubling what they now have will not be enough. They will have to triple their standard of living. There will have to be a tripled, a better, needs to say, they are not going to be happy.

The global polluting and exploiting activities of the DCs are even more serious than their internal problems. SpaceShip Earth is now filled to capacity or beyond and is running out of food. And yet the people traveling first class are, without thinking, demolishing the ship's already overstressed life-support systems. The food-production machines that are being sold to us are melting the atmosphere are being turned off. The temperature-control systems are being altered at random. Thermonuclear bombs, political and corporate terrorism, and the like are compounded by people in the first-class passengers in their competitive struggles for diminishing resources—or perhaps even the struggle for control but nevertheless in human terms. But, there is that one is not at the controls of their ship, many of the passengers ignore the chaos or view it with cheerful optimism, convinced that everything will turn out all right.

1877-1878 North China. "Appalling famine reigned throughout four provinces [of] North China. Nine million people reported destitute, children and old people markets for means to grow rice." ... The people are described as "starved, 70 millions... the people's faces are black with hunger; they are dying by thousands upon thousands. Women and girls and boys are offered for sale to any chance wayfarer. When I left the country, I saw a woman who had been sold and bought for six dollars, and a little girl for two. In cases, however, where it was found impossible to dispose of their children, parents would expose them to the elements, thus ensuring their prolonged suffering, in many instances throwing themselves afterwards down wells, or committing suicide by arsenic."

All flesh is grass. This simple phrase summarizes a basic principle of biology that is essential to an understanding of the world food problem. The basic source of food for all animal populations is green plants—"grass." Humans and all other animals with which we share the planet depend on plants for their growth, development, and sustenance by eating plants directly, by eating other animals that have eaten plants, or by eating animals that have eaten animals that have eaten plants, and so forth.

A ship has hit the rocks and is sinking. The passengers are panic-stricken. Some are board and are devoured by the circling sharks. A group of distinguished scientists is on board. One of their number suggests that they can help the pumps. "They don't work," says another. "That might help the captain's feelings." Reduces pressure on our business. It's outside our field of competence." You can guess what they do. They appoint a committee to study the problem. They issue a report on marine engineering and navigation. They announce to the passengers that in two or three years the committee will have produced a report which will be acceptable to the passengers. They then take the steamship line. Not so passive are the politicians. Some jump up to say that the passengers don't understand the problem. Others do. Other more progressive politicians grab thimbles and start bailing, stopping every few seconds to accept praise for their valiant efforts.

Careless overuse of DDT has promoted to "pest" category many species of mites, little insect-like relatives of spiders. The insects which ate the mites were killed by the DDT, and the mites were responsible for the deaths. There you have it—pests, resistance problems, and the like. The mites are in fighting these Frankensteins of their own creation. What's more, some of the more potent mites could develop the weapons with which to do battle seem to be powerful carcinogens—cancer-producing substances.

The old idea that industry could create the mess and garbage produced by an industry is the responsibility of that industry.

Because, as indicated in the acknowledgments, the various drafts of our manuscript were thoroughly reviewed by a large number of critics who are competent in the various areas covered, we believe that the errors and omissions are few. It is through these that we believe that such minor errors as may be present in any of our figures, estimates, or statements will change the thrust of our major conclusions. In many areas, of course, it is impossible to determine precisely the magnitude of the error. The significance of certain trends may be. Data are often unavailable or unreliable, and our understanding of the complexities of ecological systems and their human impacts is still fragmentary. But in dealing with the population-resource problem, we believe that it is important to recognize that people are going to have to learn to make decisions in the face of such uncertainty. Possible benefits will have to be weighed against the risks. We believe that the best approach is to possible future events which may seem unlikely but which will be catastrophic if they do occur. It would be a major step forward for most people to consider how the general state of the world and could be informed as to what these decisions are being taken with their lives and the lives of future generations.

From the almost limitless number of subjects which might have been included in this book, choices of those that were to be treated in detail were made on the basis of those which seemed to us to be of the more general importance. We make no apology either for our selection of subjects or for the personal style in approaching them. We have tried throughout to give equal weight to all sides of the question, and to do this where we think one side is correct we have so indicated. We also make no claim to having tried to detail all exceptions to general principles. We have tried to do this, however, in the hope that the reader will be able to determine for himself whether or not the general principles hold. We have attempted to give equal weight to all sides of the question, and to do this where we think one side is correct we have so indicated. We also make no claim to having tried to detail all exceptions to general principles. We have tried to do this, however, in the hope that the reader will be able to determine for himself whether or not the general principles hold. Show has referred to the "excessive unimpatience" which, in his opinion, is the main cause of the present situation. This opens up a prospect, however, different of new action. It involves a skill which all conservative functionaries are masters of, as they ingeniously protect the status quo: it is called the "technique of the intricate defensive."

Population, Evolution, and Birth Control

Once you've woken up to the population squeeze and the blindness of most of your fellow men, it's worth looking around. Garrett Hardin has assembled a strong selection of eyes to look around with. Here are the ingredients for understanding. Now, how do we get the mule's attention?

—SB

The closed world of the future requires economic principles which are somewhat different from those of the open earth of the past. For the sake of the picturequeness, I am tempted to call the open economy the "cowboy economy," the cowboy being a symbol of the open frontier. The closed world is associated with recklessness, exploitative, romantic, and violent behavior, which is characteristic of open societies. The closed economy of the future might similarly be called the "spaceman" economy, in which, therefore, more and more people are born into an ecological system which is capable of continuous reproduction of material form even though it cannot escape having inputs of energy.

Kenneth E. Boulding

COLLECTED PAPERS OF GARETT HARDIN

EDITION 1970

EDWARD A. SEIDENSTICKER, EDITOR

Population, Evolution
and Birth Control
Garrett Hardin, ed.
1964, 1969, 386 pp.

\$2.95 postpaid

from:
W. H. Freeman & Co.
660 Market Street
San Francisco, CA 94104

OR WHOLE EARTH CATALOG

If the food supply is falling short, or a new disease threatens us, instead of trying to relieve it immediately before famine and pestilence have arrived, now we are liable to feminine and pestilence than we like to think. Let there be an interruption of the water supply of New York for six hours, and it would be the death rate. Let the usual trains bring supplies into the city, and the survivors would be few, and some people will die of hunger. Every engineer who is faced with the administration of the public facilities of a great city, and every state, will be faced with the realization that there are willing to undergo and must undergo every day, and at the complacent ignorance of these risks on the part of his charges....

Norbert Wiener

The rest of the night I lay there sleepless, trapped between the queering human cry in the night and the cold fact that forced me to know I could not save him or the thousands of others whose cries I could not hear. The next morning they came and told us that the beggar was dead.

Gerald Winfield

Communications

Diagrams

A diagram is a conceptual map. Elegantly done it can ease comprehension. Thoroughly done it can aid analysis. Done with originality it can remake your internal world. This book, the first of its kind, is a splendid survey of the range and usefulness of diagramming.

—SB

Diagrams
Arthur Lockwood
1969; 144 pp.
\$15.00 postpaid

from:
Watson-Guptill Publications
165 West 46th Street
New York, N. Y. 10036
or WHOLE EARTH CATALOG

\$10.56 postpaid from Blackwell's (p.2)

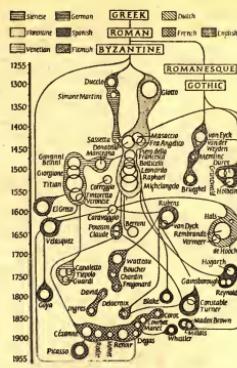
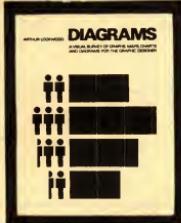
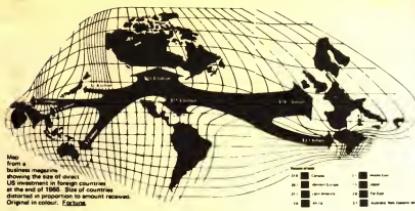


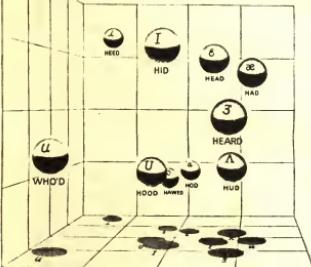
Chart from a book, showing chief schools of European painting from Giotto. Devised by Eric Newton who explains that it attempts to indicate relative importance of schools (termed 'shaded masses'), approximate dates, principal localities (circles), and the 'threads' (lines of circle), threads of influence between schools and artists. Eric Newton, *European Painting and Sculpture*, Faber and Faber



Map of business magnates in 1967. US investments in foreign countries are indicated by dots. The size of each dot is diminished in proportion to amount received. Original in color. Equator

Diagram from an advertisement, showing probabilities (considered "near") together and confused, or "far apart and seldom confused") of tan vowel sounds. Air-brushed spheres in space.

Bell Telephone Laboratories



There is no attempt to give this book a historical perspective, although some of the pioneers in the effective presentation of information in visual form are included. The author would like to thank Fortune and Scientific American, firms such as the Container Corporation of America, and particularly the Iotype Institute, London, whose support and encouragement has affected all designers of diagrams even though they may not be aware of their debt.

Mapping

A map is the meeting ground of drawing, writing, and geometry. No other medium carries such a wealth of critical information at glance readiness. Students of brain and thought design are lately placing more and more emphasis on the matter of Where-Is-It—apparently much of the mind's store, retrieve, and relate systems are based on position relationships in mental space.

This book is a well-made introduction to map use, map construction, and something of the meaning of maps.

—SB



Land-form map. Accurate information shown with vividness and grace. Drawn by Erwin Raizs for a geography textbook *

Mapping
David Greenwood
1944, 1964; 288 pp.
\$2.95 postpaid
from:
University of Chicago Press
5801 Ellis Ave.
Chicago, Illinois 60637

or WHOLE EARTH CATALOG



We can see the history of civilization as well as of mapping itself simply by observing which direction has topped the map. Erwin Raizs, the Harvard authority on cartography, says, "It seems to be a tendency among map makers of every country to place the cardinal direction toward which national attention is turned."

The Romans headed their maps as they so often did their empire-stretching ships, eastward. So did the Crusaders trying to recover the Holy Land. Many medieval wind roses have a cross as an east-mark.

Maps and charts—you may have noticed in this chapter the repetition of these two words. What's the difference in their meaning? Charts are maps with a special, practical purpose such as navigation, weather forecasting, and population studies. A chart is a map which works with protractor, compass, dividers, and gauges—even a densitometer.

This connection between local pinpoints and cosmic points is one of the major relationships emphasized by science. Considering how much the mere idea of a compass, maps are probably more upconcerning than anything else put down on paper. A map should be regarded as an enticement to panic.

The Image

This book is by an economist enchanted with cybernetics. He's after the organizing principle in life. He scarcely mentions the coming comes together through. He scarcely mentions the brain, and he's right. It ain't the brain.

-SB

[Suggested by Martha Neufeld]



The Image

Kenneth E. Boulding
1956; 175 pp.

\$1.95 postpaid

from:
The University of Michigan Press
Ann Arbor, Michigan 48106
or WHOLE EARTH CATALOG

Cybernetics

McLuhan's assertion that computers constitute an extension of the human nervous system is an accurate historical statement. The research and insights that led to computer design arose from investigation of health and pathological human response patterns embodied in the topological make-up of the nervous system. Insights here soon expanded into generalizations about communication that permitted the building of analogous electronic devices physically separate from the Central Nervous System. But they're just one artifact of these new understandings about communication. Society, from organism to community to civilization to universe, is the domain of cybernetics. Norbert Wiener has the story, and to some extent, is the story.

-SB



Cybernetics — or Control and Communication in the Animal and the Machine

Norbert Wiener
1948, 1961, 212 pp.

\$2.45 postpaid

from:
The M. I. T. Press
Cambridge, Mass. 02142
or WHOLE EARTH CATALOG

The meaning of a message is the change which it produces in the image.

Between the incoming and outgoing messages lies the great intervening variable of the image. The outgoing messages are the result of the user's own image of the incoming messages. The incoming messages only modify the outgoing messages as they succeed in modifying the image.

I have never been to Australia. In my image of the world, however, it is there. The most certain thing, if I stick to the map where the map makes tell all, is to send four men to Australia and I would be the most surprised man in the world. I hold to this point of view with certainty, however, purely on authority. I have been to many other places which I have found on the map and I have no idea where they are. I am not in a position to inquire what gives the map this extraordinary authority, an authority greater than that of the sacred books of all religions. It is not an authority of a deity, but an authority which is based on any charismatic experience. As far as I know it is not a crime against the state nor against religion to show a map that has mistakes in it. There is, however, a process of feedback from the users of maps to the map maker.

There is a strong tendency for authoritarian organizations to use vulgarized forms of communication. This is the nature of their structure, that is, in order to gain acceptance of the norm, the part of the person occupying the lower role. For a time this may be successful in maintaining the organization. It is usually, however, self-reinforcing. The more it succeeds, the more it tends to require what gives the map this extraordinary authority, an authority greater than that of the sacred books of all religions. It is not an authority of a deity, but an authority which is based on any charismatic experience. As far as I know it is not a crime against the state nor against religion to show a map that has mistakes in it. There is, however, a process of feedback from the users of maps to the map maker.

To predict the future of a curve is to carry out a certain operation on its past.

The central nervous system no longer appears as a self-contained organ, receiving inputs from the sense and discharging into the motor. On the contrary, the function of its characteristic nerves are explored only as a circular process, emerging from the nervous system into the muscles, and re-entering the nervous system through the sense organs, whether they be proprioceptors or organs of the special senses. This is a remarkable new step in the study of that part of neurophysiology which concerns itself with the elementary processes of nerves and synapses but not the performance of the nervous system as an integrated whole.

The feedback of voluntary activity is of this nature. We do not will that we will. The will is not a general, but a specific, act. We do not know which muscles are to be moved to accomplish a given task. we will, say, to pick up a cigarette. Our motion is regulated by some measure of the amount by which it has not yet been accomplished.

I have spoken of the race. This is really too broad a term for the scope of most communal information. Properly speaking, the community extends only so far as there extends an effectual transmission of information. It is possible to take some measure to this by comparing the number of decisions entering a group from outside with the number of decisions made in the group. We can thus measure the autonomy of the group. A measure of the effective size of a group is the size which it must have to have achieved a certain stand degree of autonomy.

This small, closely knit communities have a very considerable measure of homogeneity; and this, whether they are highly literate communities in a civilized country or villages of primitive savagery. Strange as it even appears to us, the customs and mores of primitive savagery, which generally have a very definite homoesthetic value, which it is part of the function of ethnologists to interpret. It is only in the large communities that we find such a variety of customs and mores, from hunger by wealth, from public opinion to privacy and anonymity, from private criticism by the laws of filial and the possession of the means of communication, that ruthlessness can reach its most subtle levels. In all of these anti-homoesthetic factors in society, the control of the means of communication is the most effective and most important.

The mongoose begins with a feint, which provokes the snake to strike. In other words, the snake's pattern of action is reinforced, single direction. The result of this is that the pattern of the mongoose's action becomes an appreciable, if not very long, segment of the whole part of the fight. To this extent the mongoose acts like a learning machine, and the real deadline of its attack is dependent on a much more highly organized nervous system.

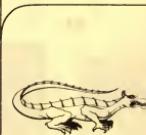
To use a biological analogy, the parallel system had a better homoesthetic than the series system and therefore survived, while the series system eliminated itself by natural selection.

We thus see that a non-linear interaction causing the attraction of frequency can generate a self-organizing system...

At the other extreme, democratic structures in which there is no adequate leadership, that is, in which the feedback is destructive of the decision-making process on the part of higher roles are likewise unstable and incapable of maintaining themselves. If discussion does not lead to a degree of convergence toward common images of the whole organization, if the feedback from the followers destroys the image of the leader instead of merely modifying it, the process is likely to be self-defeating.

The image acts as a field. The behavior consists in gravitating toward the most highly valued part of the field. It does not follow from this, however, that the corresponding behavior is in conformity with the field which produced it. Disappointment and surprise are a common lot of both organisms and organizations. We behave according to some image of the future which we have had, however, how often our images are reflected in information fed back to us, we find very often that feedback does not confirm the original image. Under these circumstances, as we have seen, the image may be modified or it may not.

In tracing the effect of images on the course of history, peculiar attention must be paid to the images of time and especially the images of the future. Consider the case of the United States. We must pay heed to the content of the image of the future which is important in its effect, but its general quality of optimism or pessimism, certainty or uncertainty, tends to dominate history. The nation or the nation that has a date with destiny goes somewhere, though not necessarily to address the label. The individual or the nation which has no sense of direction in time, no sense of a clear future ahead, is likely to be passive, however, how often it may be. There is a puerile chance of surviving. Those images of the future which are most persistent and which have had the greatest impact on human history seem to be those which are impenetrable to feedback and which maintain themselves by their own internal beauty and consistency.



OBJECTIVELY

Objectively, here's what happened: D. R. crawled under the ruins of the old coal tipple and about fifty yards back into the old abandoned mine.

And there in the dark and the moist cool he went ahead and crawled out completely.

That really happened.

Last Thursday morning, Leonard, Mrs. Godwin's son, decided he'd walk up Trace Fork and see how Emmitt and his nephew were getting along after their first day together. Leonard had been going up to see Emmitt every day or two since he'd been sick. Even before he was sick, he'd go out to visit Emmitt a couple of times a week, to take him the things he needed, and talk awhile, and now and then to sit a little moonshines with him, or wine that Leonard's cousin Daniel made.

And now the nephew was there, and Leonard thought he'd just stroll up and say hello, and see if they needed anything.

As he walked along, he saw a man sitting in the weeds there by the fallen timbers of the old Trace Fork Coal Mine.

He looked like a casuary of war.

If he had been anybody besides Leonard that found D. R. like that they would almost certainly have handled it wrongly. Probably they would have gone to the nearest hospital and called an operator, and never even the police. But Leonard was very spiritual man. In his way old mother who admired him so could never have in a hundred years imagined or believed, Leonard was a very special man. A lot is said about Leonard by the fact that he could appreciate and train animals in making them do what he wanted them to do. As far as people around who thought of Emmitt, Leonard, and the like, they were not so bad as to say that he was Emmitt. They were people around who thought of Emmitt as a good man, but they would have said so around Leonard, because they knew Leonard would defend Emmitt, and not many people were inclined to argue with Leonard, or contradict him. Not that they were afraid. Leonard didn't appear fear in anyone. Trust was the feeling that he had toward Leonard. Trust, and confidence in him as an honest man, and strong.

He was the kind of man, the kind of mountaineer, who invariably makes sergeant in the military, simply because it is so apparent to everybody around from private to Captain that he's the man for the stripes. The assumption happens automatically in the minds of everybody around him that he's the man for the stripes. Some people take a long time to impress other men as a leader, and Leonard was one of them. During World War Two he had served four years and five months in the Army, and came out a First Sergeant, with a year and a half in grammar school.

I mention these details about Leonard to give some indication of the kind of fellow he was. His story is a rich and complex as Emmitt's or D. R.'s, and it will have to be told some day. But for now, let this much be enough, and observe him as he deals with his bizarre discovery of Emmitt's nephew, still bewildered and fitby by a pile of rotting logs half-way up a creek that except for one old man has been abandoned by humankind.

Leonard speaks to D. R. gently, and looks into his eyes.

D. R. looks back into Leonard's eyes, and when Leonard says who he is, D. R. recognizes him, and understands whera he is.

Understanding Media

Everybody talks about McLuhan, and everybody does something about him, and that makes it subjectively harder to get at him. He's got other insights than what you hear about. It's worth getting him down, both his current book and his prime collection. An excellent set of recent writings was in a Playboy interview a few months ago (he foresaw the imminent demise of language into global telepathy: "The body of Christ"). For prime collection the primest is Understanding Media.

—SB [Suggested by Gerd Stern, then.]

Sold the Duke of Gloucester to Edward Gibbon upon the publication of his Decline and Fall: "Another damned fat book, eh, Mr. Gibbon? Scribble, scribble, scribble, eh, Mr. Gibbon?"

As W. B. Yeats wrote of this reversal, "The visible world is no longer a reality and the unseen world is no longer a dream."

Not only does the visual, specialist, and fragmented Western civilization live in its own self-referential loop, which all the ancient oral cultures of the earth, but his own electric technology now begins to translate the visual or eye man back into the tribal and oral pattern with its seamless web of kinship and interdependence.



Understanding Media

Marshall McLuhan

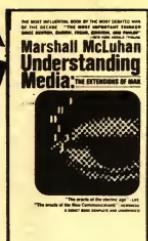
1964; 318 pp.

\$1.25 postpaid

from:

Signet—New American Library, Inc.
1301 Avenue of the Americas
New York, N.Y. 10019

or WHOLE EARTH CATALOG



Meantime, the countryside, as oriented and fascinated by plane, by highway, and by electric information gathering, tends to become once more the nomadic trackless area that preceded the wheel.

Eventually the method of the counting board gave rise to the great discovery of the principle of position in the early centuries of our era. By simply putting 3 and 4 and 2 in position on the board, one after another, it was possible to step up the speed and precision of calculation fantastically. This was the first major revolution by positional numbers rather than by merely additive numbers led, also, to the discovery of zero. Mixed positions for 3 and 2 on the board were called 'empty' and were written as 30 and 32 or 320. The need was to have a sign for the gaps between numbers. It was not till the thirteenth century that sifir, the Arab word for 'gap' or 'empty,' was Latinized and added to our culture as 'cipher' (zipher). It finally became the Italian zero. Zero really means a point on a graph.

'Zero,' however, does not exist in a noninertial world. The primitive hunter or fisherman did no work, any more than does the poet, painter, or thinker of today. Where the whole man is involved there is no work.

If the phonetic alphabet was a technical means of severing the spoken word from its aspects of sound and gesture, the photograph and its development in this movie restored gesture to the human technology of recording experience.

Man the food-gatherer reappears incongruously as information-gatherer. In this role, electronic man is no less a nomad than his paleolithic ancestors.

Everybody experiences far more than he understands. Yet it is experience, rather than understanding, that influences behavior, especially in creative matters of media and technology, where the individual is almost inevitably unaware of their effect upon him.

It is a principal aspect of the electric age that it establishes a global network that has much of the character of our central nervous system. Our central nervous system is not merely an electric nervous system, but a communication system. As biologists point out, the brain is the interacting place where all kinds of impressions and experiences can be exchanged and translated, enabling us to react to the world as a whole.

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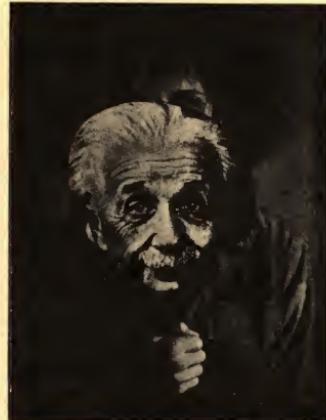
—jd



Communication Arts

Richard Coyne, editor.

\$15.00 per year (bi-monthly) from:
Communication Arts
P.O. Box 10300
200 California Avenue
Palo Alto, California 94303



By the Late John Brockman

John Brockman, though dead, is in his late twenties and agile in New York. His book is an interpretation of recent work in brain-study, information theory, and art. It proposes that man is dead, replaced by a superior being—once he learns this—called invisible.

—SB

Men is dead. Credit his death to an invention. The invention was the grasping of a conceptual whole, a set of relationships which had not been previously recognized. The invention was man-made. It was the invention of a new system of communication, a new system for the transmission of neural pattern. Such patterns are electrical, not mental. The system of communication and control functioned without individual human awareness or consent. The message in the system was not "I am dead." The message was "There exists nonlinear, operant neural pattern." It became clear that "new concepts of communication and control involved a new interpretation of man, or man's knowledge of the universe, and of society." Man is dead. "We're talking."

Every movie is the first movie. The brain goes into its stereotyped program even before the ticket is purchased. The information received by the brain from the experience of purchasing a ticket may be enough to activate the hormonal responses of the movie experience. Buy your ticket: See the movie.

308 Silence
Communications



By the Late John Brockman

John Brockman;

1969; 166 pp.

\$6.95 postpaid

from:
Macmillan Company
Front and Brown Streets
Riverside, Burlington County
New Jersey 08075

or WHOLE EARTH CATALOG

The concept of acumenical technology provides a frame of reference which points to clues about the invisible stage of evolution. The acumenical of technology is the creative force that can make all brains conform to the same frequency of operation. Acumenical technology is the key to the simultaneous universe of electronic communication. Consider that in the pre-electric age the operations of millions of individuals were limited to the range of the human frequency bands. With electronics, an important part on television means that the neural level millions upon millions will have a ray projected onto their retina, providing the brains with the information needed to make intelligent responses. This response measures a change in the brain's activity, a frequency modulation. Every brain working the same way, on the same frequency, the same wavelength, performing the same operations simultaneously. Not brotherhood, but unity. Ecumenical technology.

It was all invisible to man. The clash of generations, the crashing down of institutions, the divisiveness—all was invisible. Man never knew what was happening. To the invisible, it was a question of nonsynchronization of frequencies, where certain ones were used to adduce to the system anything that would not remain within parameters consistent with continuity. It became a question of phylogenetic suicide. To the invisible: out of phase. To man: out of mind. Who's crazy?

It is not necessary to say Yes to life.
No one is there to listen; no one is
interested in your words.

Culture is Our Business

McLuhan's best format. Each pair of pages has a reprint of an ad on the right, and fresh McLuhan aphorisms, quotes, and misquotations on the left. The resulting energy across the spread is economic and multi-directional—i.e. you make it. Pound's statement (next p) about Chaucer and Shakespeare applies as well to McLuhan.

To me he is as valuable. His news stays news.

-SB

Culture Is Our Business

Marshall McLuhan

1970, \$36.00

\$10.00 postpaid

from:
McLuhan Book Co.,
Preston Road,
Highstown, N. J. 08520

Manchester Road

Manchester, Mo. 63062

8171 Redwood Highway

Novato, CA 94947

or WHOLE EARTH CATALOG

Ads are the cave art of the twentieth century. While the Twenties talked about the cavers, and people thrived to the art of the Altimira caves, they ignored (as we do now) the hidden environment of the form which we call "ads." Like cave paintings, ads are not interested in the individual, but rather to exert influence at a distance, as though by ESP. Like cave paintings, they are not means of private but of corporate expression. They are vortices of collective power, masks of energy invented by new tribal man.

Since Sputnik there is no Nature. Nature is an item contained in a man-made environment of satellites and information. Goals have now to be replaced by the sensory reprogramming of total environments and DNA particles, alike. The earth is an old nose cone.

Today, through ads, a child takes in all the times and places of the world "with his mother's TV." He is gray at three. By twelve he is a confirmed Peter Pan, fully aware of the follies of adults and adult life in general. There could be called Spock's Spooks, who now peer at us from every quarter of our world.

Poets and artists live on frontiers. They have no feedback, only feedforward. They have no identities. They are probes.

Silence

John Cage's seminal work, that initiated us all to the uses of audible darkness. How to be undeceived. Also how to enjoy mushrooms, zen, famous people, and space-time crossword puzzles. I've never met a person who liked John Cage's music, or disliked his sunny books.

-SB

Silence
John Cage
1961, 276 pp.

\$2.95 postpaid

from:
MIT Press
25 Brattle St.
Cambridge, Massachusetts 02142
or WHOLE EARTH CATALOG

I BELIEVE THAT THE USE OF NOISE

Wherever we are, what we hear is mostly noise. When we ignore it, it disappears. When we pay attention to it, it becomes music. The sound truck to the movie perches like a static lantern on the street. Rain. We want to capture and control these sounds, to use them not as sound effects but as musical instruments. Every film studio has a "sound effect" recorded on film. With a film strip we can now make a noise recording, and then play it back and mix it with any one of these sounds and to give it rhythms within or beyond the reach of the imagination. Given four film photographs, we can compose and perform a quartet for explosive motor, wind, heartbeat, and landslide.

Psychically, art is valuable only when new.

COMMERCIALLY, NEW ART IS KOOKY AND WORTHLESS.

The gap between the kooky and the commercially valuable is closing fast.

Invention is the mother of necessity.

GOING, GOING, GONE

When the evolutionary process shifts from biology to software technology the body becomes the old hardware environment. The human body is now a probe, a laboratory for experiments. In the middle of the nineteenth century Claude Bernard was the first medical man to conceive of *le milieu interieur*. He saw the body, not as an outer object, but as an inner landscape, exactly as did the new painters and poets of the *avant garde*.



McLuhan's book is a collection of aphorisms, quotes, and misquotations. It is a mix of McLuhan's own thoughts and those of others, often presented in a non-linear, fragmented way. The book is divided into several sections, each with a different title, such as "The Media Environment," "The Medium is the Message," and "The War of the Worlds." The book is known for its provocative and challenging ideas, particularly regarding the impact of mass media on society and the nature of communication.

NBC and CBS could easily become the political "parties" of the future, just as the New York Central and the Pennsylvania railroads were once the political parties of the nineteenth century.

"Wiretapping" quoth the raven, "is a threat to identity. Why not beat 'em to the wire? Get rid of your identity now."



Our sketchy drawing "Living Thing" will be used for the Our Young Thoroughbred, will be for the Virginia

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And when Leonard says why don't you come on with me, David, and wash up some, D. R. is more than glad to follow.

Leonard leads D. R. up the hill to the place where Emmitt's water-pipe from the spring empties into a fifty-gallon barrel, the water point for Emmitt's little garden and rabbit scene, above the old falling-down barn.

And he pours water on D. R. and D. R. washes himself all over the best he can.

Then Leonard leads D. R. around the hill and down a ways, past the barn, and along a path now to the old main house of the home-place, where old bearded, feeble Emmitt sits on the porch in a rocking chair.

Leonard speaks to Emmitt, quietly. D. R. can't hear what he says, nor can he hear when Emmitt nods and quietly replies.

Emmitt gets up and leads D. R. into the house, into a bedroom, and smoothly without an interruption into a sleep so deep that for a long time there is no dream.

In the space that remains, I would like to emphasize that I am not interested in the relationships between sounds and mushrooms any more than I am interested in the relationships between sounds and noise. What I am interested in is the relationship between sounds and noise, which would involve an introduction of logic that is not only out of place in the world, but time-consuming. We exist in a situation demanding logical earnests, as I can testify, since recently I was hospitalized after having cooked dinner late at night, and eating a meal of foie gras, commonly known as skunk cabbage. My blood pressure went down to fifty, stomach was pumped, etc. It behoves us therefore to see each thing directly as it is, be it the sound of a tin whistle or the elegiac *Leprota procta*.

The Story of Language

We are ensorcelled by language. I am coming to believe that halting the all-too-unified construction of the Tower of Babel by dispersing the communication system was a good idea. Pluralism may be a nuisance, but juggedum unanimity is a curse. One escape from the bonds of one's own language is excursion into another, or into very variorous of language usages, as this book encourages—it's a good, richly exemplified trip. [Another escape is silence.] —SB

[Suggested by Herb Childs]

The Story of Language

Marie Peletier
1949, 1965; 508 pp.

\$1.25 postpaid

from:
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1301 Avenue of the Americas
New York, N.Y. 10019

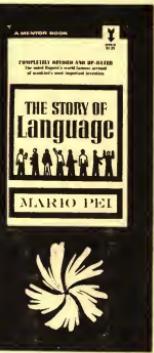
or WHOLE EARTH CATALOG

The use of Indian sign language for international purposes has repeatedly been advocated. Sir Richard Paget and the American Tourist Association, in recent times, have both advanced the possibility of "handage" to replace language.

Technicians of the Sacred

These are songs from the center, from the middle. (The cortex of humanity is convoluted, each fold patriotic, distinct on the outside, connected in the middle.) Superb editing by Rothenberg. A book to take with you.

—SB



Very close to the spoken language is also the whistling language used by the natives of Gomeria, in the Canary Islands, who communicate by means of it over very long distances (some say six miles); it seems established, however, that this whistling language is based on Spanish intonation and pitch. A similar type of whistling language is employed by the natives of the island of Jersey. The sounds are described as formed with tongue curled around the teeth and lips not pinched but tensely drawn, with the palm of the left hand cupped around the mouth, and high pressure applied from the lungs. The villagers are said to speak, argue, and even sing in whistles.

There are in existence over 1000 native languages with 50 million or more speakers. They are, in order of linguistic importance, Chinese, English, Spanish, Russian, Spanish, German, Japanese, Arabic, Bengali, Portuguese, Malay, French, and Tamil. The round, approachable figures of the Indians are native as well as native speakers, are all alike:

| | |
|------------|-------------|
| Chinese | 700,000,000 |
| English | 350,000,000 |
| Hindustani | 200,000,000 |
| Russian | 200,000,000 |
| Spanish | 160,000,000 |
| German | 130,000,000 |
| Japanese | 100,000,000 |
| Arabic | 90,000,000 |
| Bengali | 90,000,000 |
| Portuguese | 80,000,000 |
| Malay | 80,000,000 |
| French | 80,000,000 |
| Italian | 65,000,000 |

Holes and apertures have a way of carving symbolic messages on the bark of trees or scratches on stones. In the same way, the fellows who make them. A pair of scratches, in tally symbolism, means "Beware! Danger and trouble here"; but a small circle inside a larger one spells out "Very kind people. Don't impose on me."

Perhaps the phonetic system of writing is not the acme of perfection after all. There is at least a talking point in the arguments of those who advocate that we go back to the picto-ideographic systems of our remote ancestors or simply adopt the ideographic writing of the Chinese. At least all the peoples of the earth, regardless of their spoken tongues, would understand one another in writing.

Economic relations depend on numerals to a greater extent perhaps than on any other factor. It therefore does not surprise linguists to find that numerals are among the oldest and best-defined words indicating correspondences among the languages of a given family. A word indicating a quantity of something is called a numeral. ("Hundred") can usually be traced without difficulty through all or most of the languages of a given group. It is as little subject to borrowing as are names of family relationship.



What are you saying to me & am I
in-my-senses?

(Ojibwa)

An Eskimo Poem against Death

I watched the white dogs of the dawn.

All Lives, All Dances, & All Is Loud

The fish does . . . HIP
The bird does . . . VISS
The marmot does . . . GNAN

I throw myself to the left,
I turn myself to the right,
I act the fish, which darts
Which darts in the water, which darts
Which runs about, which leaps,
All lives, all dances, & all is loud.

The fish does . . . HIP
The bird does . . . VISS
The marmot does . . . GNAN

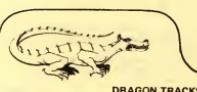
(Gabon Pygmy)



the blue, overhanging
sky
answers me back

—Wabesic
(Ojibwa)

—Red Corn
(Osage)



DRAGON TRACKS

Emmit says, drink this, it's good old "sung tea," it'll make your insides feel good.

He says, I'm going out to look at the stars, bud. Come on out if you feel like it.

D.R. would have taken him up on that if there hadn't been so much work to do. He was helping his dead grandmother with her wash day. And it would be a while before he was free.

His grandmother pulled a pair of overalls out of the churning wash tub, started them by the bim through the black and white rubber washers. He helped her pull the overalls as they came through, and guided them into the tub of warm rinse water sitting on the bench beside the old machine, flat.

Fat and stiff they floated like a deer man till D.R. punched them loose with his stick. He punched until their life came back, until they spread out soaking in the water, until the soap was rinsed away and it was time

and it was time to send them through the wringer once again, then hang them on the line outside to dry.

Let me do it.

Let me do it, D.R. said.

Let me

Get away, said his grandmother. You can't even reach the line.

I am using my heart
(Ojibwa)



I am still carving an ironwood stick.
I am still thinking about it.

(Bantu)

Science & Sanity

Korzybski aims to help you train yourself in new semantic reactions, literally to get your head—and your whole nervous system—together. All too often we think and speak in ways that are structurally false to the events we are trying to describe. We must learn to live with what are harmful to our ability to function sensibly. What are these? Some common divisions such as body vs mind, objective vs subjective, and ignore half a century's work in physics by operating on Newtonian assumptions.

Korzybski conceives all knowledge in terms of the functional structure of your nervous system, and he explores the consequences of this idea in Physics, Math, Chemistry, Neurology, "Psychology" and Education. Synthesis of this approach with newer ecological studies should provide a real start toward a gestalt understanding of the universe.

(Reviewed by C. Baird Brown.
Suggested by Dave Guard)

Science and Sanity
Kurt Korzybski
1933-1958; 508 pp.

\$12.50 postpaid

from:
Institute of General Semantics
Lakeville, Connecticut 06039

Before a noise, may become a symbol, something must exist for the symbol to symbolize. So the first problem of symbolization should be to investigate the problem of "existence". To define "existence", we have to use the standards by which we judge existence. At present, the use of this term is not uniform and is largely a matter of convenience. . . . It is extremely important to notice that, though all the noises, we humans make should be considered as symbols or valid words, Such empty noises, can occur neither in direct statements but in indirect ones. Questions, answers, etc., employ noises, instead of words, are not significant questions. These ask nothing, and cannot be answered. They are, perhaps, best treated as "memes" or "memes" of the nervous system, illusions, or hallucinations. In asylums the noises, passing make no sense, are meaningless, as far as the external world is concerned, but become symbols in the illness of the patient.

Further

If the roots and by-products of language intrigue you, two trusty guides for further travel are Benjamin Lee Whorf ("Language, Thought & Reality, \$2.95, MIT Press), and Noam Chomsky (has a new book out, said to be complete introduction to his work, I don't know the title).

—SB

Intelligent Life in the Universe

Methodically blow your mind. The information in this book, mutually massaged by the American and Soviet co-authors, proceeds from superb introductions to evolutionary astronomy and biology, through a complete presentation of recent discoveries of astronomy and space science, to brilliant speculation on the parameters of inter-civilization communication. It's the best general astronomy book of recent years but that's nothing next to its impact on all the biggest questions we know.

—SB



Intelligent Life in the Universe

I.S. Shklovskii and Carl Sagan

1966; 500pp.

\$2.95 postpaid

From:
Delta Books
c/o Montville Warehousing Co., Inc.
Chandler Road
P.O. Box 1100, New Jersey 07058

Pratt Building
Elk Grove Village, Illinois 60007

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or WHOLE EARTH CATALOG

But how can a natural satellite have such a low density? The material of which it is made must have a certain amount of rigidity, so that cohesive forces are stronger than the gravitational pull of the central force of attraction that draws the satellite. Such rigidity would ordinarily exclude densities below about 0.1 gm/cm³. Thus, only one possibility remains. Could Phobos be indeed rigid, on the outside—but hollow in the inside? A natural satellite cannot be a hollow object. Therefore, we are led to the possibility that Phobos—and possibly Deimos as well—may be artificial satellites of Mars.

So, by an interesting coincidence, the distances between the stars in interstellar space, relative to their diameters, are just the same as the distances between the atoms and molecules in interstellar space, relative to their diameters. Interstellar space is as empty as a cubical building, 60 miles long, 60 miles wide, and 60 miles high, containing a single grain of sand.

Extraterrestrial Civilizations

A technical discussion by Russian scientists.

—SB

Extraterrestrial Civilizations

G. M. Trossyanian
1964; 55 pp.

\$4 postpaid

From:

U.S. Department of Commerce
Clearinghouse for Federal
Scientific and Technical Information
Springfield, Virginia 22151

We have no doubt whatsoever that life and civilizations exist on a multitude of celestial bodies, but we must go in some detail into the question of possible technological interactivity between these civilizations. Among the Earth's neighbors, the most advanced civilization, if there is one, is a few tens of millennia old, the modern technological civilization has its origin no more than two hundred years in the past. It is a proper height of aspiration to suppose that the common factor in the present-day motions on stellar systems, i.e., the conceptual approach which has suggested the multiplicity of inhabited worlds, have arisen and developed during the last two centuries. And yet, the ages of planets may differ by billions of millions of years. This leads to the bizarre conclusion that different civilizations in the Universe may differ by millions of years in their developmental development. It seems that the Earth civilization is not yet past the diapers age, and that there should be enormous disparity between extraterrestrial civilizations.

With 10¹¹ stars in our Galaxy and 10⁹ other galaxies, there are at least 10²⁰ stars in the universe. Most of them, as we see in subsequent chapters, must be accompanied by solar systems. If there are 10²⁰ solar systems in the universe, and the universe is 10¹⁰ years old—and if, further, solar systems have formed roughly uniformly in time—then one solar system is formed every 10¹⁰ yr = 3 × 10⁻³ seconds. On the average, a million solar systems are formed in the universe each hour.

Almost any other of the many accounts of alleged contacts of human beings with the crews of flying saucers—accounts which replace the flying saucer societies—follow the same pattern and stress the same points. The extraterrestrials are human, with few even minor physical differences from local inhabitants. In most cases they are Negro aliens or Oriental savants, reported in the United States, but there are very few flying saucer reports made in this country by Negroes or by Orientals.)

Radio astronomers may be interested to know that the so-called "brightness temperature" of the Earth at television wavelengths is about hundreds of millions of degrees. This is 100 times greater than the brightness of the Sun at comparable wavelengths, during a period of low sunspot activity.

Taken at face value, the legend suggests that contact occurred between human beings and a non-human civilization of immense power on the island of Eridu, perhaps near the site of the ancient Persian city of Eridu, and in the fourth millennium B.C. or earlier. There are three different but cross-referenced accounts of the *Ankalla*, dating from classical times.

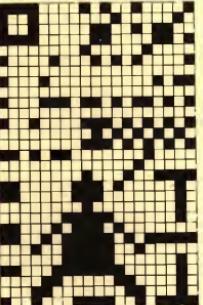
"Well, ladies and gentlemen," Struve concluded, "it was pretty dull on Epsilon Eridani and Tau Ceti eleven years ago."

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111100000101001100011010000001010100  
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Figure 30-7. A hypothetical interstellar message due to Frank Drake. The 551 zeros and ones are representations of the two varieties of signals contained in the message. The problem is to convert this sequence of 551 symbols into an intelligible message, knowing that there has been no previous communication between the transmitting and receiving civilizations

1. Decode this +
2. Into this +

The existence of more than one universe is impossible, by definition.



3. Now decode this for physiological, astronomical, chemical, mathematical, social, historical and linguistic information.

Charles Fort

SUGGESTION FOR WHOLE EARTH CATALOG

Name of item: *The Books of Charles Fort*; 4 volumes; *The Book of the Damned*; *New Lands*; *Lot*; and *Wild Talents*. From: Ace Books, 1120 Avenue of the Americas, New York, N.Y. 10036

Review: Reading Charles Fort (1874-1932) is like getting a foretaste of Buckminster Fuller, so I asked Fuller if he had known Fort. He hadn't, but it turned out he was writing the introduction to Damon Knight's forthcoming biography of Fort. Ace has reprinted Fort's works in four books; these are associated with the psychical research books. But don't confuse Fort. Each of his books is laden with reports of unorthodox, widely recurrent, phenomena—but he uses the material as a tongue-in-cheek, comprehensive philosopher. He throws galactic theories at you like paper airplanes, laughing at himself as often as at dogmatic orthodoxy. Some examples of his style:

Much of the argument in this book will depend upon our acceptance that nothing in our existence is real. The Whole may be Realness. — *Wild Talents*

Mineral specimens now in museums—calicates that are piles of minerals—or that long ago were the rough notes of a rose.

An early stage within the shell of an egg—and a protoplasmic line of growth fails out through surrounding substance—and of itself it is lost. Nourishment and protection and guidance come to it from the whole.

Or occasional falls of "mannin", to this day, in Asia Minor, may be only one factor in a wider continuance. . . .

LOI
Gerle Keyes
Carbondale, Ill.

—SB
(Suggested by Jordan Belsom)



Thought-Forms
Annie Besant and C.W. Leadbeater
1901, 1968; 77 pp.

\$3.45 postpaid
From:
Theosophical Publishing House
Box 270
Wheaton, Illinois 60187
or WHOLE EARTH CATALOG

Three general principles underlie the production of all thought-forms:

1. Quality of thought determines color.
2. Nature of thought determines form.
3. Definiteness of thought determines clearness of outline.



Thought form of high ambition.



Thought form of selfish ambition.

Human Biocomputer

BACK IN PRINT. After a year of absence, this landmark paper is back at a lower price (formerly \$7.95, now \$1.50).

John Lilly has worked for a long time with sensory deprivation, pursuing the notion that relieving the computer (mind) of many of its environmental-survival chores frees it to attend more fully to self-investigation. Of late he's added LSD to the process and has found ways to flourish and discover within this doubly floating condition.

The paper HUMAN BIOCOMPUTER is the best internal guidebook I've seen—far more practical and generalized than transcendent Eastern writings or wishful Underground notes. Though it's not the whole story by any means, it makes an open start on fresh language and powerful technique for the frontier.

An additional advantage the paper offers is the opportunity to learn and explore computers without requiring money or administrative approval. You inherited and grew everything you need, and it's free. —SB

(Suggested by Ralph Metzner)

In the analysis of the effects of LSD-25 on the human mind, reasonable hypothesis states that the effect of these substances on the human computer is to introduce "white noise" (in the sense of randomly varying energy containing no signals of itself) in specific systems in the computer

The increase in "white noise" energy allows quick and random access to memory and lowers the threshold to unconscious memories ("expansion of consciousness"). In such noise one can project almost anything at almost any cognitive level in almost any allowable mode...

The noise introduced brings a certain amount of disorder with it, even as white noise in the physical world brings performance. However, the LSD-25 noise randomizes signals only in a limited way; not enough to destroy all order, only enough to superimpose a small creative "jiggle" on program materials and metaprograms and their signals. —SB

The Mind of the Dolphin

Lilly knows that it is to everybody's advantage for one kind of computer to work up with another, and that's his program with dolphins. This book contains his calculations and experiments with dolphins in recent years. It includes a thorough account by a girl, Margaret Howe, who lived alone with Peter Dolphin for 10 weeks. As usual with research on communication, everything discovered has broad implications.

—SB

The Mind of the Dolphin

John Cunningham Lilly, M. D.
1967: 286 pp.

\$9.95 postpaid

from:
Avon Books
250 West 55th Street
New York, N. Y. 10019
or WHOLE EARTH CATALOG

Sometimes I feel that if man could become more involved in some problems of an alien species, he may become less involved with his own egocentric pursuits, and deadly competition within his species, and become somehow a better being.

We are often asked, "If the dolphins are so intelligent why aren't they taking over the world?" My reply comes back to this—they may be too wise to try to rule the world. The question can be asked, though, Why does man or individual men want to rule the world? I feel that it is a very insecure position to want to rule all of the other species we have resources of our planet. This means a deep insecurity with the safety of one's self. One's fears and one's angers are being projected on others outside of one's self; to rule the world is, finally, to rule one's inner realities.

Thus a given dolphin can carry on a whistle conversation with his right side and a clicking conversation with his left side and do the two quite independently with the two halves of his brain.

Conservatively, we estimate that the dolphin can put out ten times the sonic physical information per second that a man produces.

Programming and Metaprogramming in the Human Biocomputer—Theory and Experiments

John C. Lilly, M.D.
1967, 1970; 112 pp.

\$1.50 postpaid

from:
WHOLE EARTH CATALOG
558 Santa Cruz Avenue
Menlo Park, Ca. 94025

copy or resale from:
BOOK PEOPLE
2940 Seventh Street
Berkeley, California 94710

The boundary of the brain, of course, may be considered as the limits of the extensions of the central nervous system into the periphery.

Later with higher motivational energy the subject returned to the problem of the lock, the doors and the rooms somewhat refreshed by the experiences in the other realms.

In the complete physical absence of other external computers within the critical interactive distance, the self-directed and other-directed processes tend to develop directly into metaprograms, re-programmed, and new metaprograms initiated by the solitarius computer itself. In the >>completely-as-possible-attenuated-physical-reality environment in solitude, a maximum intensity, a maximum complexity and a maximum speed of re-programming is achievable by the self.

For example, the term "reprogramming substances" may be appropriate for compounds like lysogenic acid diethylamide. For substances like ethyl alcohol the term metaprogram-attenuating substances" may be useful.



The information does not exist as information until it is within the higher levels of abstraction of each of the minds and computed as well as to be communicated which is then perceived as information. It is signals. These signals pass through the extensive interface between the two bodies, end travel as signals within the brain substance themselves. Till the maximum point of traveling neuronal impulses in the brain become as information within the human cortex, they are not yet information. Information is the result of a long series of computations based on data signal inputs, data signal transmissions to the brain substance, and recomputations of these data.

By long and hard work I found that the evil label "negative" should not be tied to any mode or any kind of thinking at all.

I found that bodily sources of discomfort, pain, or threat tend to program the mind in the negative mode and keep it there as long as the discomfort continues. As long as pain, even at a very low level, continues, the computer (which is one's mind) tends to program a negative path.

The major problems of the research of interest to the author center on the reliability, controllability, and creativity of programs. In other words, I am interested in processes that find metaprograms (and methods and substances) and substances that can change, and create the basic metaprograms of the human computer; and it is not known whether one can really erase any program.

I believe that by using certain methods and means some of which are presented in this work that truly talented and dedicated individuals can find, and devise new ways of looking at our minds, ways with and without scientific, intellectually economical, and interesting creative. Copying from me, the fad of the fictitious individual created by the group of mathematicians masquerading under the name of "Dr. Nicholas Bourbaki".

This group of mathematicians in order to create a mathematics or science that would be of interest to any individual, held meetings three times a year and exchanged ideas, then went off and worked separately. The resulting papers were published under a pseudonym because the products of this work were felt to be a group result beyond any one individual's contribution.

In the maximally attenuated environment (0° to 65 degrees F., isothermal skin, salt water suspension, zero light levels, near zero sound levels, without clothes, without wall or floor contacts, in solitude in remote isolation, for several hours), the addition of LSD-25 allows one to see all the previous experiences with "lock" situations, and to experience the recombination of self (and hence are "screens" in the sense of "blocking the view behind", as well as "projecting the projected images").

The essential features and the goals sought in the self-analysis is the metaprogram "make the computer general purpose". In this sense we mean that in the generic generative nature of the computer there can be no display, no input, no output which is forbidden to a consciously willed program. Nor is any display, acting, or ideal made without being consciously programmed.

"Mathematical transformations" were next tried in the approach to the locked rooms. The concept of the key fitting into the lock and opening it was abandoned and the rooms were approached as "topological puzzles". In the multidimensional cognitive and visual space the rooms were now manipulated without the necessity of the key in the lock.

Once one has been through deep experiences in tune with the vast forces of the universe, the vast forces within ourselves, we see that need to connect, to unify, to be whole, and the need for hatred becomes irrelevant. One finds the universal inside and the one outside so vast and so lonely that any other living thing that loves or shows any signs of loving is precious and close.

The human participant's assumptions, i.e., those of Margaret C. Howe, in her own words are as follows:

1. Dolphins are capable of communication with man on the level of high intelligence.
2. Dolphins are not only capable of that communication but are also willing to be willing to cooperate with man to achieve it.
3. Possibly the best way to go about establishing this communication is to set up a situation where the man (woman) and a dolphin live together as closely as possible for an extended period of time.
4. The dolphin language must be learned by both parties which must be recognized and encouraged. The attempt to communicate with a dolphin in English involves two main parts: (1) the dolphin must learn to physically say the words, and (2) he must learn the meaning of what is said. These two parts may be worked out individually or simultaneously.
5. One first step is the creation and the maintenance of the mutual trust and reciprocal rewards one for the other



She filled the clothesline full, twenty yards of overalls and work shirts, sheets and towels and socks and underwear, a few dresses of her own, his own small clothes sprinkled in between. They hung them all afternoon, flapping in the wind like ghosts of an entire family.

Emmit coughed into the curtain of the dream. D.R. heard him in the kitchen, building a fire in the coal stove.

He could tell by the way Emmit handled the slope lids that he was being as quiet as he could to keep from disturbing him. But it was morning now and D.R. was awake before Emmit was. It was too dark yet to see but he heard him putting his clothes across the room. He heard the spring on the screen door when he went outside to pee. Then he heard him in the kitchen building a fire and putting water on to boil, and D.R. lay there watching the room take shape as the dark gave way to the growth of light in the window.

Here he comes.

Eye and Brain

I can't think of another book as well-made as this one. It is well designed, illustrated, and diagrammed. The writing is excellent, the subject matter important and new. The book is inexpensive. Altogether Eye and Brain lets you see how crappy most books are.

-SB

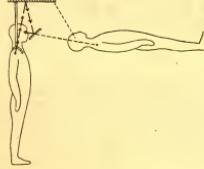
Eye and Brain— The Psychology of Seeing

R. L. Gregory
1966; 254 pp.

\$2.45 postpaid

from:
McGraw-Hill Book Company
Princeton Road
Hightstown, N.J. 08520
McGraw-Hill Book Company
Manchester, Missouri 63062
8171 Redwood Highway
Novato, CA 94947

or WHOLE EARTH CATALOG



Straton went on to perform other experiments which though less well-known are just as interesting. He devised a mirror arrangement which, mounted in a harness, visually displaced his own body, so that he could see himself in front of him, and at the height of his own eyes. Straton wore this mirror arrangement for three days (about twenty-four hours of vision) and he reported:

"I had the feeling that I was mentally outside my own body. It was a curious, but a pleasant sensation, but it came at a time when I was not at all well. . . . But the moment critical interest arose, the simplicity of the state was gone, and my visible actions were accompanied by a kind of warth of themselves in the visual world."

Why should the perceptual system be so set upon seeking creative solutions? I believe that it is because it makes perception more active, and more intellectually honest in refusing to stick with what we may judge by the tenacity of irrational belief in political or religious dogma. The perceptual system has biological significance for far longer than the calculating intellect. The regions of the cerebral cortex concerned with thought are comparatively juvenile. They are self-optimized by comparison with the ancient striate area responsible for vision.

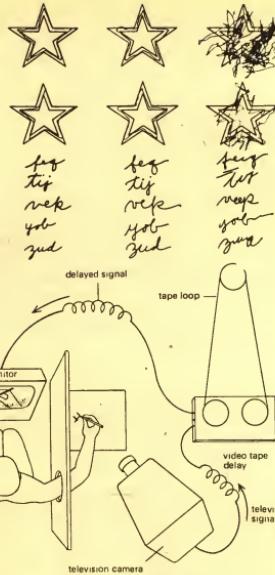
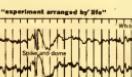
Brain Storms

Dr. Barker presents a fascinating argument that epileptic fits and fits of creativity are very closely related and both are brought about by the same drive to continuity in brain function, requiring a massive "storm" of reorganization in the brain. The fit is an attempt to reconcile together incompatible considerations which have collided. I believe it, in part because Barker makes his case so well, in part because it sounds like what I've experienced.

-SB

A fit, even the grossest major convulsive fit of epilepsy, is many things, among them: crises. Fits are patterns of awareness and action, combinations of emotion, feeling, and cognition. They are episodes of behavior and experience produced by the sudden onset of a crisis in the continuity of living. Such crises are characterized by a sudden coming together of a complex of conflicting and disparate ideas, images, and feelings. They are moments of realization that both resolve and represent their otherwise unthinkable contradictions and ambiguities. By providing more or less fitting resolutions of crises, fits serve to maintain or restore the crisis-disrupted continuity of transactions between organism and environment.

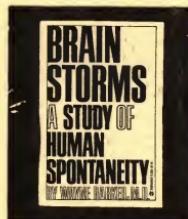
184 The Concepts of Dysjunctive Situations



An elaboration of the television technique makes it possible to displace images not only in space, but in time. Temporal delay of images is a new kind of displacement, and promises to be of the greatest importance. The method is to use a television monitor, with an endless tape loop so that there is a time-delay between the recording from the camera and the playback to the monitor. The subject thus sees his hands (or any other object) in the past; the delay being set by the gap between the Record and Play-back heads.

This situation is not only of theoretical interest, but is also of practical importance. Consider the problem of flying aircraft, and operating complex kinds of machine, leave a delay in the control system. If such delay upsets the skill, this could be a serious matter. It was found that a short delay (about 0.5 seconds) made movements jerky and inaccurate. So, just drawing became almost impossible, and writing quite difficult. Practice gives little or no improvement.

Held found that only the active kitten developed perception, the passive animal remaining effectively blind. He thus suggested that active touch is essential to perceptual development.



Brain Storms— A Study of Human Spontaneity
Wayne Barker, M. D.
1968; 277 pp.

\$2.95 postpaid from:
Grove Press, Inc.
214 Mercer St.
New York, N.Y. 10012

or WHOLE EARTH CATALOG

The Intelligent Eye

R. L. Gregory continues, this time with a book rich in visual illusions which suck the reader (viewer) into many a flickering illuminating trap. The thesis is that visual imagery is made intelligible by the eye itself. 3-D glasses included with the book.

-SB



The Intelligent Eye
Richard L. Gregory
1970, 191 pp.

\$2.95 postpaid
from:
McGraw-Hill Book Company
330 W. 42nd St.
New York, N.Y. 10036
or WHOLE EARTH CATALOG

Retinal images are patterns in the eye—patterns made up of light and dark shapes and areas of colour—but we do not see patterns, we see objects. We read from pictures in the eye in the presence of external objects: how this is achieved is the problem of perception. Objects appear separate, distinct, and yet as pictures on the retina they may have no boundaries. In the photograph of the dog, the dog's coat and half-tones have been lost (as in vision by moonlight) and yet we can distinguish the spots making up the dog from similar spots of the background. To make this possible there must be stored information in the brain, of dog and thousands of other objects.



If we can endure confrontation with the unthinkables, we may be able to fit together new patterns of awareness and action. We may be that is, have a fit of insight, inspiration, intuition, or creation. Propensity for finding the answer—the lure of creating or discovering the new—no doubt has much to do with some people's ability to endure contradiction until something new emerges from the contradictory and ambiguous situation.

xii Contents

27. "... I Know That It Is Poetic"
Fits of Coosershivering, Shivering, the "Top of My Head Coming Off," and Other Reactions Precipitated by Poetic Versions of Uncanny Experience.
28. "... Thoughts Crowd into My Mind . . . Whence Do They Come?"
A Fit of Composing, A Creative Minding of a Dysjunctive Food of Ideas.
29. "Temporary Anger"
A Fit in Which a Major Convulsive Reaction is Transformed into a Sequence of Anger, Coughing, Laughing, and Wit.
30. "X, Y, W . . ."
A Fit of "Trying to See" the Answer to an Experimental Problem.
31. "Oh, Yeah! If You Know See What'll the War Be Over?"
A Fit of Unintended Prophecy.
32. "A Morose Secrecy"
A Fit of Symbolization, Condensation, and Hallucination—Thinking to Think.
33. "Perspiration and Inspiration"
The Interaction of Intention and Spontaneity in Complex Sequential Fits of Creation.
34. "Sudden, Sudden . . . I Feel a Many Consciousnesses as of Something Forgotten . . . Everything Fades . . ."
A Fit of Spelling, of Recognition, and of Sudden Fitting Together.

Physical Control of the Mind

I do not like this guy. He has insufferable hubris and he tramples on all my fondest notions about the independent life of the mind. The book is full of harsh physical evidence and harsh hypotheses that I have got to either surround or accept (or quit).

-SB

Physical Control of the Mind

José M. R. Delgado, M.D.

1969; 280 pp.

\$2.25 postpaid

from:
Harper & Row, Publishers
49 E. 33rd Street
New York, N.Y. 10016

or WHOLE EARTH CATALOG

Pleasure is not in the skin being caressed or in a full stomach, but somewhere inside the cranial vault.

(1) Lack of predictability: When a point of the brain is stimulated for the first time, we cannot predict the effects which may be evoked.

(2) Lack of purpose: In some cases the evoked response is directed by the animal in a purposeful way, but the movements and sequential responses are usually out of context, and there is no reason or purpose for running, flexing a hand, or walking.

(3) Robot performance: Brain stimulation activates cerebral mechanisms which are organized for motor performance, but it is not clear whether the animal's own state of mind is involved. It is very unlikely that we could electrically direct an animal to carry out predetermined activities such as opening a gate or performing an instrumental response. We can induce pleasure or punishment and therefore can control the animal's prey or leisure, but we cannot control the sequence of movements necessary for this act in the absence of the animal's own desire to do so.



Watching a rat or monkey stimulate its own brain is a fascinating spectacle. Usually such lever pressing triggers a brief 0.5 to 1.0-second brain stimulation which can be more rewarding than food. In a choice situation, hungry rats run later to reach their self-stimulation lever than to obtain food. Monkeys will even press the lever at this level, ignoring food within easy reach. Rats have removed obstacles, run mazes, and even crossed electrified floors to reach the lever that provided cerebral stimulation.

The Machinery of the Brain

Some is known about the brain, but not much. Woolridge's book is the best intro to the subject we've seen. For richer detail, get Pribram's two-volume Brain and Behavior (each volume \$2.95 from Penguin, 7110 Ambassador Rd., Baltimore, Md. 21207).

-SB

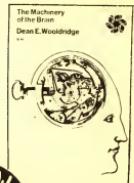
The Machinery of the Brain

Dean E. Woolridge

1963; 252 pp.

\$1.95 postpaid

from:
McGraw-Hill Book Co.
Houghton Road
Highstown, N.J. 08520
Manchester Road
Manchester, Mo. 63062
8171 Redwood Highway
Novato, CA 94947



One of the moving pictures taken in this study was very demonstrative, showing a smiling man extending his fingers while in a depressed mood who smiled when a brief stimulation was applied to the rostral part of the brain, returning quickly to his usual depressed state, to smile again as soon as stimulation was reapplied. Then a ten-second interval was allowed for the patient to return to his usual state and into a lasting pleasant and happy mood. Some mental patients have been provided with portable stimulators which they have used in self-treatment of depressive states with apparent clinical success.



If monotonously repetitive stimuli are provided, such as a regular series of clicks or staircase tones, the nonspiking brain-potential measurements will display the property of *habituation*: the pulse of brain potential induced by each audible stimulus will, with continuing repetition, gradually diminish and ultimately disappear. If one notes, however, that the amplitude of the brain-potential change relative to the degree of attention the subject is paying to the stimulus, then habituation correlates nicely with subjective experience, noting that habituation interferes with concentration or keeps us awake. Habituation is important for our survival and for our consciousness and loses their effectiveness if they are mono-tonous and repetitive in character. Such habituation must be regarded as an avoidance mechanism. It is an effect and of negative learning, perhaps antonymous to the positive reinforcement or strengthening of conditioned responses. Habituation is found throughout the animal scale from microorganism to man. The indication is that, as in the case of learning by conditioning, habituation derives from some fundamental property of nerve tissue and does not necessarily require special complex neuronal circuits.

A Model of the Brain

Inside every brain there is a model of the world. How does all the elaborate wiring help us, or any other creature, make our model of the world? A noted British anatomist, J.Z. (Jay Zed) Young has spent many pleasant summers in Naples studying the behavior of octopuses, and has also done a great deal of work on the anatomy of their nervous system. The result is a fascinating picture of how to teach octopuses to do things, and some interesting—though not yet very deep—structure to external behavior. Even more interesting are the many hypotheses about the building of neural models of our world. At this early stage all such models are wrong, but we learn from our mistakes. One approach to all this is mental introspection. Here, on the other hand, we learn what we can learn about learning by literally introspecting: looking inside the head of an octopus to see what networks there could possibly change as the animal learns.

(Reviewed by Michael Arbib,
Suggested by David Evans)

A Model of the Brain
J.Z. Young
1964; 348 pp.

\$8.50 postpaid

from:
Oxford University Press
100-1000 Pollitt Drive
Fair Lawn, N.J. 07410

or WHOLE EARTH
CATALOG

The hominoids became extinct because of their extremely limited mental powers; faced with an increasingly unfriendly climate and diminishing food supply, these animals were incapable of adaptation and could not survive in the changing environment.

The fate of these giants may have symbolic value for twentieth century civilization, which is also attempting to direct tremendous potential with disproportionately small brains. While our mental facilities are considerably superior to those of the early land animals, we still lack the ability to control and control, and natural history teaches that when underdeveloped brains are in charge of great power, the result is extinction.

In my opinion, without stimuli (or without the brain), the mind cannot exist; without behavior, the mind cannot be recognized. Because of its essential dependence on sensory inputs, both at birth and throughout life, the brain can best be defined as the intracranial elaboration of extracranial information. Problem is then focused on the origins, reception, dynamics, storage, retrieval, and consequences of this information. The basis of the mind is cultural, not individual.

The newborn brain is not capable of speech, symbolic understanding, or of direct memory storage. It has no ideas, words, or concepts, no tools for communication, no signs of sensory experience, no culture. The newborn baby is another animal. Human beings do comprehend the loving phrases of his mother or to be aware of the environment. We must conclude that there are no detectable signs of mental activity at birth and that human beings are born without minds.

The microneurons of the cerebellum, which serve as association neurons, are the most extended and extensive system of the brain's behavioral activities. Therefore it can be said that the environment is absorbed as a structural part of the neurons in the developing brain.

When the patient was warned of the oncoming stimulation and was asked to try to keep his fingers extended, he could not prevent the evoked movement and commented, "I guess, Doctor, that your electricity is stronger than my will."

Experiments have been reported with a six-month-old baby to determine how many trials would be necessary to condition it against reaching out to touch the flame of a lighted candle. (The experiment of course was so arranged as to block the child's hand each time before injury was sustained.) The number of trials required was the same as for training the earthworm, approximately 150!

The optical mapping system of the human brain is of special interest and importance. Through the more than one million fibers of the optic nerve of each eye, the pattern of light and dark formed by the lens on the retina is mapped onto corresponding positions in the occipital lobes of the cortex. Although the picture that is produced by the pattern of voltages reaching these positions at the extreme back of the brain is highly distorted one, topological continuity is preserved, in the sense that the image of a point on the retina is represented by adjacent positions on the cortex. The application of an electric stimulus to any of these cortical points causes the subject to see flashes of light at corresponding positions of his visual field. Similarly, the illumination of the retina by a single bright spot of light results in the arrival of the usual train of voltage pulses at the corresponding spot of the visual cortex.

If subsequent work confirms the preliminary indications that pleasure and pain centers occur together, it will be interesting to learn what kind of pleasure is the negative of what kind of pain, in electrical neuronal terms.

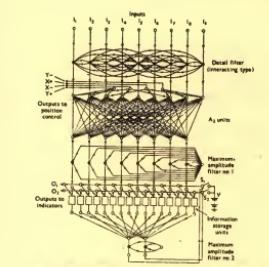


FIG. 10.1. Facial fiber diagram of experimental neuronal pattern-recognition experiments.

The inputs to the nine macaque brain terminals are represented by pseudorandom binary strings of $n = 3 \times 2^k$ bits. Patterns are generated randomly by combining outputs of the dual filter to form pattern controls. The filtered patterns are then converted to binary strings of n bits, where n is the maximum amplitude for each pattern (Fig. 10.2) and this is reduced by the fine maxwellian noise in the system. The resulting patterns are then converted to nine tone bursts whose amplitudes are proportional to the number of bits in the input string. These tone bursts are then fed into the nine macaque brain terminals to form successive receptor storage units.

Simultaneously, the nine macaque brain terminals are closed serially or by random access to form a dual filter. After learning, the switches are closed sequentially to read out the stored patterns. The output of the ninth macaque brain terminal is the dual filter output. The output of the ninth macaque brain terminal is the dual filter output. (After Taylor, 1959)



Emmit walks

stoop-shouldered, bant and drawn

Through the curtain Emmit walks, carrying a steaming cup in his hand. He stops at the window to look out and to scratch himself down in his pants somewhere, way down along his thigh needs scratching and Emmit gives it a good one before he goes on over set down on the bed and sip from his hot cup.

The amazing

The amazing thing is Emmit's beard. The whole shaggy mass of hair, all over his head. It falls across his forehead and down across his ears, sticking out into little tufts. His beard starts at his ears and covers his entire face except for his eyes and nose and cheekbones, a great thick Santa beard that hangs down like a waterfall across his mouth.

Design for a Brain

This is a reputation review. Ashby's book is found prominent in the bibliography and footnotes of every text we've seen on computers and the mind. It's technical going to read but worth it for the insights of prime work.

-SB

Design for a Brain

W. Ross Ashby

1952, 1960; 266 pp.

\$3.25 postpaid

from:

Barnes & Noble, Inc.
105 Fifth Avenue
New York, N.Y. 10003

Economic Bookstore
11 W. Madison Street
Chicago, Illinois 60602

or WHOLE EARTH CATALOG

This is the learning mechanism. Its peculiarity is that the gene-pattern delegates part of its control over the organism to the environment. Thus, it does not specify in detail how a kitten shall catch a mouse, but it does specify a learning mechanism and a tendency to play, so that it is the mouse which teaches the kitten the finer points of how to catch mice.

The development of life on earth must thus not be seen as something self-reproduced. On the contrary, it is a system that is invented in the sense that if a system can exist on the surface of the earth, it is basically potable, it is kept gently simmering dynamically for five thousand million years, then nothing short of a miracle could keep the system away from those states in which the variables are aggregated into intensely self-preserving forms.

Finding an optimum is a much more complex operation than finding a value that is accepted according to a given criterion. Thus, one needs to go to a formality of finding a human kind of fruit that are quite new to him. To find the optimum, for his pleasure he must (1) taste all the hundred, (2) make at least ten more complete passes, (3) then go back to the first and finally go back to the optimum form. On the other hand, to find a fruit that is acceptable he need merely try them in succession or at random (one need not remember the first), stopping only at the first that satisfies the criterion. To determine optimum, then, may be excessive; all that is required in biological systems is that the organism finds a state or a value between given limits.

Remarks on Ashby

RE: Chris Smith's letter, January Supplement p. 42

I must rally to the defense of a valuable information source: W. Ross Ashby's *Design for a Brain* may not be the best book on seek physiological control behavior but it is an excellent formulation of a very general adaptive system. It could also be called *Design for an Ecosystem*. I highly recommend, not only that you return the listing, but that you add Ashby's *Introduction to Cybernetics*.

Ashby understands general systems & cybernetics and does a great job in careful explanation. *Intro. to Cybernetics* reviews all the math you need to understand the heave like Shannon & Weaver. General system theory is the new paradigm for understand self-reproducing systems. It will eventually provide for the synthesis of learning and memory, and the I Ching and the L Ching. Its very important to have a clear understanding of the basics, and Ashby is an excellent place to start.

An Introduction to Cybernetics by W. Ross Ashby, \$5.75 trade edition, or \$3.95 paper text edition. From Barnes & Noble, Inc., 105 Fifth Avenue, NY, NY 10003.

Love,
Ron High
Palo Alto, CA

Brains, Machines and Mathematics

Take the theoretical-neuron work of McCulloch & Pitts, the Perceptron, von Neumann and Shannon's communication theory, Gödel's incompleteness theorem, and Wiener's cybernetics. Blend, and see how far along we are toward a "biological mathematics". The answer is not far; this is a tidy survey of how far we aren't. —SB

[Suggested by Dave Evans]

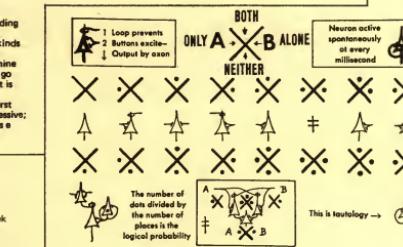
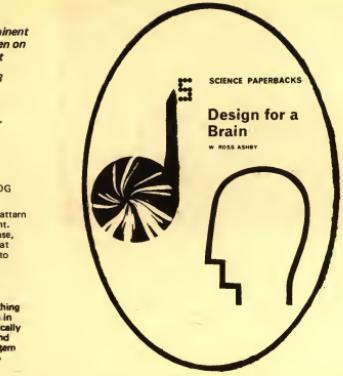
Brains, Machines and Mathematics

Michael A. Arbib
1964; 152 pp. from:
McGraw-Hill Book Co.

\$1.95 postpaid Princeton Road
Highstown, N.J. 08520

Brains, Machines and Mathematics
Michael A. Arbib
—
Manchester Road
Highstown, N.J. 08520
8171 Redwood Highway
Novato, CA 94947

or WHOLE EARTH CATALOG



In these pages we coerce what is essentially still the mathematics of the brain and let it into our slowly dawning comprehension of the brain and its functioning. It is a remarkable achievement that the beginnings of biological mathematics here comparable with one day happily bloom into new and exciting systems of pure mathematics.

Reinforcement theory. There seems a great deal of evidence that humans have two kinds of memory—"short-term" and "long-term." It further appears that we have to retain an idea for quite a while in short-term memory before it is transferred into long-term storage. This is taken for this transfer has been seriously underestimated—our estimate is 20 minutes. It appears that if someone goes into coma, his memory of the 20 minutes or so prior to this are lost forever, i.e., they were not transferred to his long-term memory. It is now commonly believed that short-term memory is a process of holding a number of messages in a "recurrent net"—the passage of complicated patterns of electrical impulses through the net. It appears, then, that if such transient activity persists long enough it actually changes the net.

The Perceptron group has had three main modes of investigation: mathematical analysis, construction of digital machines, and construction of analogical machines. Each method has its own advantages. One important result of using an analog machine is that it has been found that neither precision nor reliability of transmission is important, and the connections need not be precise.

Another interesting result is that the perceptron can "learn" despite trainer error.

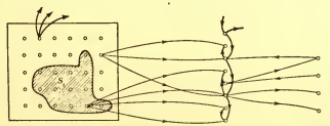


Figure 2.5 Schematic of a perceptron.

Embodiments of Mind

I'm not competent to review this book. I can recognize McCulloch's wisdom and humor. I can report his high standing as an Old One in the field of brain research. I can assert I've revelled in some of his insights. But I can't tell you how far he takes us toward full accountability in how nerve nets yield mind, except that he makes the question appear answerable and worth answering.

[Suggested by
Milton E. Boyd]

-SB

Embodiments of Mind

Warren S. McCulloch

1965,70, 402pp.

\$2.95 postage

from:

The MIT Press
50 Ames Street
Cambridge, Massachusetts 02139

or WHOLE EARTH CATALOG

Modern evidence indicates that all our acquired ideas, or learned generalizations and specifications are carried on for nearly half an hour by repeated neural activity, of which the first is beginning to show some electrical evidence. If this activity is interrupted during that time, no memory remains. From the second, it is assumed it means that if the process had not been interrupted, and if one looks at the average rate of half an hour later, one finds that there is a great rise in ribonucleic acid, and protein synthesis of some way. So while we do not yet know how or where this building material will be distributed, we may see nature using the same trick as in the immune reactions.



Morgan's Tarot

Just as we were glad to see a guy invent a new language (aU)—see Fall 69 CATALOG), we are delighted by this thoroughly original tarot deck based on traditions dating back nearly eight years. Two years ago we said it will be unusable. Twenty years from now it will be as venerable as the medieval Tarot, if anybody notices. The main limitation I see with tarot cards, astrology, any language, is that they are systems close on themselves. They offer no exit, except finally an attenuated exhaustion, frustration, possible cause to bust out. Some systems are more open, more immediately and fractionally self-frustrating—science; evolution; human life... and the market, where these cards are for sale. —SB

Morgan's Tarot

from:
Morgan's Tarot

Boulder Creek, CA 95006

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An Introduction to Cybernetics

We are migrating from a world governed primarily by the laws of thermodynamics to a world governed primarily by cybernetics—a weightless world (Fuller says "metaphysical") whose events are the impinging of information on information, whose basis is survival and direction is growth. Thought, society, economics, media, evolution

The two main entries to understanding in this realm are Norbert Wiener (see pp. 16 & 307) and Ashby. Wiener's books are wider, more inspiring. Ashby is more thorough.

—SB

[Suggested by Dave Evans]

An Introduction to Cybernetics

W. Ross Ashby
from
1956, 295 pp
\$3.95 postpaid
Barnes & Noble, Inc.
105 Fifth Ave.
New York, N.Y. 10003
or WHOLE EARTH CATALOG

\$2.16 postpaid from Blackwells, p. 2.

Information

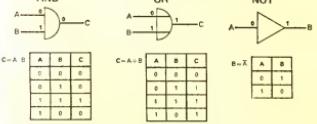
The September 1966 issue of *Scientific American* was devoted entirely to the new technology of information. Now available as a paperbound book, it is the best introduction we've seen to computer science. Articles include: "Computer Logic and Memory", "Computer Inputs and Outputs", "Systems Analysis and Programming", "Time-sharing on Computers", "The Transmission of Computer Data", "The Uses of Computers in Technology", "The Uses of Computers in Organizations", "The Uses of Computers in Education", "Information Storage and Retrieval", and "Artificial Intelligence".

—SB

Information
1966, 218 pp.
from W. H. Freeman & Company
660 Market Street
San Francisco, CA 94104

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The computer is almost exactly what man is not. It is capable of paying undivided attention to unlimited detail; it is immune to fatigue, distraction, precise and reliable; it can carry out the most intricate and lengthy calculations without error, without fatigue, and much less than a millionth of the time that would be required by its human counterpart. It is amotivational, or so we suppose. It suffers neither boredom nor fatigue. It needs to be told only once; thereafter it remembers perfectly until it is told to forget, whereupon it forgets instantly and absolutely.



Critical Path Method

Most construction I've been around was under conditions of "The rains are due next week" or "If we don't get the dome covered by the first snow, we've blown it for the winter." Time pressure. At the miraculously complete and on-time Expo 67 in Montreal the magic ingredient was CPM—Critical Path Method. It's the analysis of what must be done in sequence (foundation, then floor) and what can be done concurrently (while the foundation is being dug in, the girls can cut the roof panels). The maximum necessary sequence is determined by the physical nature of the work itself. Any delays on it slow down the whole operation. A clear CPM map, using now-standard symbols, can vastly simplify coordination. The technique is useful for any group operation that's time-bound. This book is the briefest clearest on CPM.

—SB

Critical Path Method from A. L. Armstrong-Wright 1969, 113 pp. \$3.00 postpaid

or WHOLE EARTH CATALOG



There exist factors, such as "height of threshold" or "proportion of variables constant" which can affect a large system continuously along the whole range that has at one end the totally joined form, in which every variable has an immediate effect on every other variable, and at the other end the totally unjoined form, in which no variable has any influence on every other. Systems can thus show more or less of "wholeness".

This earth contained carbon and other necessary elements, and it is a fact that many combinations of carbon, nitrogen, and other elements are self-reproducing. It follows that though the state of "being lifeless" is almost a state of equilibrium, yet this equilibrium is unstable, a single deviation from it being sufficient to start a process of self-reproduction which will continue until equilibrium is reached again. What we see today in the biological world are these "autocatalytic" processes showing all the peculiarities that have been developed by the species over millions of years of elimination of those forms that cannot survive.

The organisms we see today are deeply marked by the selective action of two thousand million years' attrition. Any form in any way defective in its powers of survival will be eliminated, and the survivors will directly or indirectly bear the burden of being adapted to ensure survival rather than any other possible outcome. Eyes, roots, coils, shells and claws are so fashioned as to maximize the chance of survival. And when we study the brain we are again studying a means to survival.

One way of blocking the flow (from the source of disturbance D to the element under test E) is to introduce a barrier such as a semi-passive block to the disturbance. Such a barrier is the seafloor, which reduces a variety of impacts, blows, bites, etc. to a negligible disturbance of the sensitive tissues within. In the same class are the tree's bark, the seal's coat of blubber, and the human skin.

At the other extreme from this static defence is the defence by skilled counter-action—the defence that gets information about the disturbance to come, prepares for its arrival, and then meets it directly. This may be called a "mobile" or "active" defence that is equally complex and mobile. This is the defence of the fencer, in some deadly duel, who wears no armour and who trusts to his skill in parrying. This is the defence used mostly by the higher organisms, who have developed a nervous system precisely for the carrying out of this method.

What is an amplifier? An amplifier, in general, is a device that, if given a little of something, will emit a lot of it. A sound-amplifier, if given a little sound (into a microphone) will emit a lot of sound. And a monitoring system could be a device that, if given a little money, would emit a lot.

Such devices work by having available a generous reservoir of what is to be emitted, and then using the input to act as controller to the flow from the reservoir.

Systems Thinking

Well, this should be in "Understanding Whole Systems". It's an excellent introduction to systems theory. It's here so you can connect it up with cybernetics and your own bodily and social open-system functioning. In the light of systems thinking statements like "He not busy being born is busy dying" have precise truth.

—SB

Systems Thinking

F. E. Emery, ed.
1968, 398 pp.

\$3.00 postpaid

from Penguin Books, Inc.
7110 Ambassador Rd
Baltimore, Md. 21207

3984 55th St.
New York, N.Y. 10019

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In physics, the theory of open systems is to be distinguished from closed systems. It is indeed a major general theorem, the restriction of kinetics and thermodynamics to closed systems, concerning only a rather special case. In biology, it first of all accounts for a number of existing systems that have appeared to be in contradiction to the laws of physics. These have been called living systems as vitalistic features. Second, the consideration of organisms as open systems yields quantitative laws of important biological phenomena.

It is events rather than things which are structured, so that social structures are a dynamic reflection of events. Action is structured in that it comprises a unity in their correlation or closure. A simple linear stimulus-response exchange between two people would not constitute social structure. To create structure, the responses of one would have to elicit B's reactions in such a manner that the responses of the latter would stimulate A to further responses.



But the rim of his cup finds his mouth in there somewhere and he drinks.

And then he wipes his mouth and drinks again.

"I'm awake."

Emmit raises

Emmit lifts his head, like a bird startled.

He raises his bearded head and looks at his nephew in the big bed across the room.

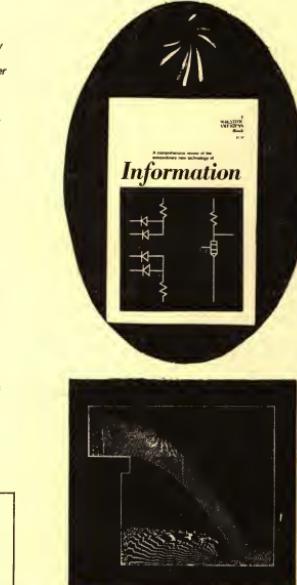
He looks. For a long time he looks, and doesn't speak.

But then he lifts his cup in a neat salute and says you had a right smart of sleep, old bud. How long

How long have I been sleeping? D.R. asks.

About a day.

Then silence. Do I remember coming here?



...the project is 25 days. The project end-event time is calculated as "day 25".

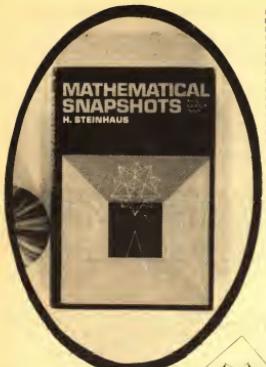
Assume that the project is anxious to complete the garage before a new car is delivered on day 15. If they do nothing, they will reduce the critical path by 10 days if this scheduled date is to be achieved. In this case, it may be a simple matter of doubling the labour on activities 1-2 ("construct wall units") and hope of reducing the duration by 10 days.

For example of CPM in use, see p. 300.

Mathematics

As far as we're concerned, these are the pick of self-education math books. From them you can learn delight as well as method in the universal language.

MATHEMATICAL SNAPSHTOS
H. Steinhaus



Mathematical Models is a classic of 4-D technique.
The whole purpose of the book is enabling
you to make your own geometric forms in the
world. Like learning history by psychodrama.

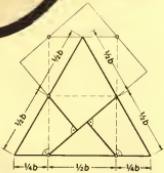
[Suggested by Sigmund Van Der Ryn]

Mathematical Snapshots
H. Steinhaus
1950, 1969; 311 pp.

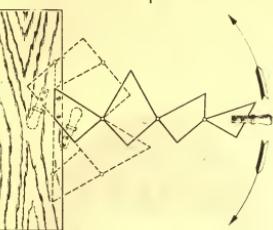
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Fair Lawn, N. J. 07410

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2



From these four small boards (1) we can compose a square or an equilateral triangle, according as we turn the handle up or down. The proof is given by sketch (2).

Mathematical Models
H. Martyn Cundy & A. P. Rollett
1961; 286 pp.

\$6.50 postpaid

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Oxford University Press
16-00 Pollitt Drive
Fair Lawn, N. J. 07410

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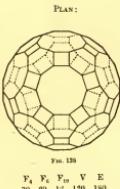


FIG. 128

POLYHEDRA

3.9.4. Great stellated triacontahedron. $V(3, \frac{1}{2})^2$

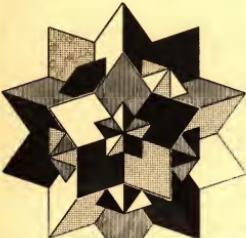


FIG. 133

The exterior perimeter of a net of a polyhedron which is all in one piece becomes a "trail of edges" on the solid. This tree may be branched, but every edge is double and occurs twice on the perimeter of the net. It is evident that if these edges are numbered consecutively round the net, then each edge will be joined to an odd edge in the final solid. This means that tabs need only be attached to the even edges. In some cases, however, it is necessary to have more than a special notch to do so. In all other cases the rule is: attach tabs to alternate edges round the net.

There is an exception in the case of the last face, which is best left free of tabs. The missing tabs must be added to the other edges, and are best made large, so that a plier can be built up to which the last face can be stuck.

318 Math Communications

Obviously, for any model which is to be entirely permanent, cardboard will be used.

The card should be white with a good surface, and fairly thin, about the thickness of a pencil point. Thick cardboard is not suitable, as it allows ought to be made for its thickness in drawing the net. It is useful, however, to cut flat sheets of thick card, and use them for drawing in some of the isolated and interpenetrating polyhedra.

3.12. Great rhombicosidodecahedron (cont.)

Net:

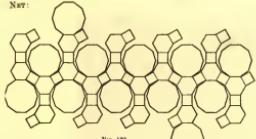
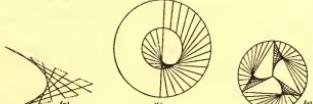


FIG. 127

When the dimensions of the model have been decided on, the net can be constructed on the cardboard. In the case of a complicated net this is facilitated by prickings through the net from a template drawn on tracing paper. After the net has been cut out, tabs are then added to alternate outside edges, care being taken to ensure that the angle at the shoulder of the tab is small enough to admit of the tab's being bent round without breaking. (The net can now be cut out with a razor-blade and the edges scored half-through for bending. (Where edges have to be bent round corners, the wire is bent round this is indicated in the diagrams). The face of the net becomes the outside of the polyhedron.

For joining, a quick-drying cement, such as balsa-wood cement as used for model aircraft, is essential. After the net has been applied to a tab, the edges can be joined by pushing them together and the tab can be held down with a small wire paper fastener while the cement dries. This is particularly useful in small models when the fingers cannot easily get inside. If the net is to be joined to another net there are several edges to be joined at once. A thin wire probe is sometimes useful in getting the last face to edhere.



2.5. Curve-Stitching

One very old method of expression work in mathematics, and one which affords a welcome change from the "tyranny of pencil and paper," is that of curve-stitching. It seems to have originated in a book by Mrs. E. L. Howell, entitled "A Rhythmic Approach to Mathematics," published in 1926. This book has recently been revised, both in America and in this country. Basically it consists of constructing straight-line envelopes by stitching with coloured threads through a pattern of holes pricked in cardboard.

The World of Mathematics IS history and anecdotes, an infectious multi-faceted telling of math stories—pure, applied, ancient, recent, a fine and complete collection. Math seen from outside.

Mathematics: Its Content, Methods, and Meaning. Math from inside. A Russian-compiled technical run-down of everything of concern in mathematics today.

The Graphic Work of M. C. Escher is geometry set at its own throat via the images of dreams. The subjective frontier.

The New Mathematics Dictionary and Handbook is the handiest of handy reference books.

[Suggested by Lloyd Kahn]

SB

The patterns we observe on the shore of a river when the mud has been dried up by the sun (98) seem to be quite irregular; nevertheless as a rule they show right angles. This can be explained by observing the cracking to be an effect of contraction; thus appearing as a fissure system. By a principle of economy we make the work of division as small as possible. The work is proportional to the areas of the sections and the lines of division are drawn so as to minimize the surfaces laid open by the fissures. This procedure gives right angles, as clay is heterogeneous; the varying thickness of the layer accounts for the curvature of the lines. This remains supplies us with a case in a matter of dividing which is prepared earlier and which later: the older of the two splits passes right through the point of junction. Then we can follow the genealogy of splits and eventually find the ancestors of the whole system.



Suppose the pattern was composed initially of two regions, A and B. A new line appears, perhaps, by splitting one of the arcs and giving rise to a new region C (100); since the new line breaks up two arcs into two parts each, the number of arcs increases by three. After n steps we have n more regions and $3n$ more arcs, since there were initially two regions and three arcs, we now have $n+2$ regions and $3n+3$ arcs.

Mathematics: Its Content, Methods, and Meaning
A. D. Aleksandrov, A. N. Volmogorov, R. A. Lavrent'ev
1956 1963; 1144 pp.; 3 vols.

\$10.00 postpaid

from:
The M. I. T. Press
Cambridge, Mass. 02142

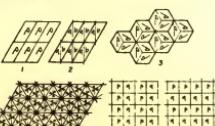
or WHOLE EARTH CATALOG

III. There exists neither a point nor a line in the plane that is carried into itself under all the transformations of the group. Groups of this type are called finite groups. The groups are the symmetry groups of infinite plane ornaments. There are altogether 17 of them: they consist of motions of the first kind only, and twelve of motions of the first and second kinds.

In Table 2 we have given examples of ornaments corresponding to each of the seventeen plane Fedorov groups; every group consists of precisely those motions that carry an arbitrary flag drawn in the diagram into any other flag of the same diagram.

It is interesting to note that the masters of the art of ornamentation have in practice discovered ornaments with all possible symmetry groups; it fell to the theory of groups to prove that other forms do not exist.

Crystallographic groups (1890) is a fundamental Russian crystallographic and mineralogic E. S. Fedorov's group-theoretical methods one of the fundamental problems of crystallography: to classify this regular systems of points in space. This work is the first systematic application of the theory of groups to the solution of an important problem in natural science and made a substantial impact on the development of the theory of groups.



MM MM MATHEMATICS

The World of Mathematics
James R. Newman

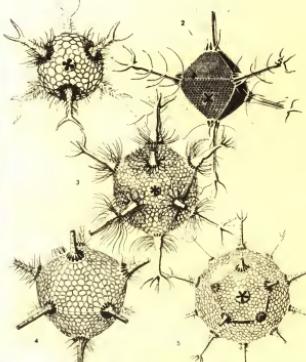


World of Mathematics
James Newman
1956, 2469 pp; 4 vols.
\$14.95 postpaid

from:
Simon & Schuster, Inc.
630 Fifth Avenue
New York, N. Y. 10020

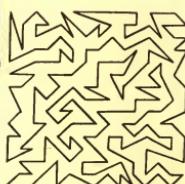
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AS our mortal eye penetrates into smaller and smaller dimensions of space, after many times, we find nature behaving so entirely differently from what we observe in visible and palpable space. We find that the model shaped after our large-scale experiences can never be "true". A completely satisfactory model of this type is now only practically impossible, but not entirely inconceivable. Or, to put it another way, we can, of course, think it, but however we think it is wrong; not perhaps quite as meaningful as a "triangle circle," but much more so than as a "winged lion."



Here (Figure 45) is a page from Haeckel's Challenger Monograph showing the skeletons of some marine organisms. 1, 2, and 3 are octahedron, icosahedron, and dodecahedron in astonishingly regular forms; 4 seems to have a lower symmetry.

1. This Book has 597 Pages
2. The Author of this Book is Confucius.
3. The Statements Numbered 1, 2, and 3 are all False.



Problem 36 of the papyrus begins: "Go down I times 3, 1/3 of me, 1/6 of me is added to me; return 1, filled am I. What is the quantity saying it?"

FIGURE 10.—Which parts of the plane are inside this polygon?

The Graphic Work of M. C. Escher

M.C. Escher
1960, 68, 76 plates
\$3.95 postpaid

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from:
Hawthorn Books, Inc.
70 Fifth Avenue
New York, N. Y. 10011

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The New Mathematics Dictionary and Handbook
Robert W. Marks
1964; 186 pp.
\$.95 postpaid

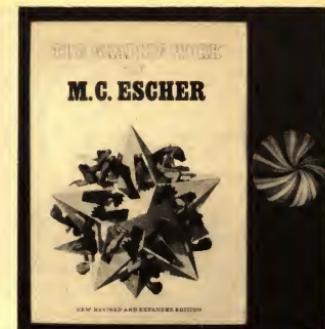
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The New Mathematics Dictionary and Handbook



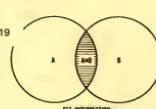
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or WHOLE EARTH
CATALOG

VENN DIAGRAMS. Diagrams using overlapping circles to show relationships between sets. First used by John Venn (1834-1923), English logician. Each circle represents one set. Two or more may overlap. The area of overlap (lens-shaped area) indicates the part which may contain elements common both or in either of the indicated sets. Some authors use shading to distinguish the areas that contain members of a set; other authors use shading or cross-hatching to indicate emptiness. In the diagram below, shading indicates content.

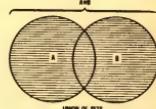


57. DOUBLE PLANETOID, wood-engraving, printed from 4 blocks, 1949, diameter 37.5 cm

Two regular tetrahedrons, piercing each other, float through space as a planetoid. The light-colored ones are surrounded by tiny beings who have completely transformed their prison into a complex of houses, bridges and roads. The darker tetrahedron has remained in its natural state, but it is where plants and other microscopic animals live. The two bodies fit together to make a whole but they have no knowledge of each other.



The shaded area represents the set of all elements that are in *A*, or in *B*, or both *A* and *B*.



The shaded area in the second diagram represents the set of all elements that are in *A*, or in *B*, or neither *A* nor *B*.

Example: If *A* is the set of all men who own boats, and if *B* is the set of all fishermen, the shaded area is the set of all men who are boatowners or fishermen, or who are boating fishermen.

Number Words and Number Symbols

There's lots of ways to invent things—two big ones that this CATALOG promotes both involve the return to rudiments, but in different ways. *Invention-By-Usefulness is People's invention—a flock of people go live a different way: the new methods that arise to aid their different living are their invention.* *Invention-By-Intuition is People's intuitionality, or even noticeability.* *Invention-by-Inventor, on the other hand, involves a double perception by an individual—he perceives a potential usefulness for something, and he perceives the roots of a set of tools that may be adapted or combined to perform the new usefulness.*

"Academic" study, of little use to the flock of pioneers, is essential to the inventor, especially the study of the origins of crafts he's working in. Take numbers. Suppose you're a pioneer who wants to re-invent himself. So much of that understanding is wrapped up in numbers that if you penetrate the one you may have a foothold to tweak the other onto a new course. Invent language and you invent man.

This book penetrates numbers.

—SB

When Buddha reached the age of manhood he courted Gopa, the girl he wanted to marry. He had to be tested first; he should prove his worthiness. And so, together with five other suitors, he was put through trials in writing, wrestling, archery, running, swimming, and number skills. In all these contests he brilliantly defeated his rivals. After the competition, Gopa's father commented, "The boy has great merit, but he is still ignorant." Arjuna, who was to be the measure of Buddha's knowledge, Arjuna instructed him to list all the numbers (that is, the numerical ranks) from one to ten. Koti, the Indian name for the rank thousand, meaning 10³ or 10 million. Beyond bahara (10³), Indians in our era have ayuta (10⁴), niuta, also called laksha (10⁵), and prayuta (10⁶) = a million.)

Buddha answered:

| | |
|--|-------------------|
| koti (10 ³ , abbreviated 7) | hetuhile (31) |
| ayuta = 100 kotis (9) | karahu (33) |
| niyuta (11) | Hetindriya (35) |
| kangkoti (13) | sampatlamata (37) |
| vivaha (15) | garuda (39) |
| ablobhya (17) | niravadya (41) |
| viveha (19) | mudrabala (43) |
| utanga (21) | serva (45) |
| bahula (23) | visandagni (47) |
| nagabala (25) | svansandajna (49) |
| titilambha (27) | vibhutangama (51) |
| vyavesthanapradipati (29) | talakshana (53). |

Fig. 243 Albrecht Dürer's year dates. In writing the dates of the years around 1495, Dürer illustrated the development of the 4 into its present form. From three of his drawings dated in successive years.

1492
1495
1496

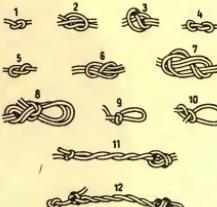
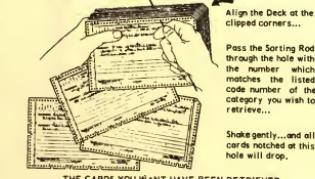


Fig. 90 Miller's knots used to indicate amounts and kinds of flour.

1 2 3 4 5 6 7 8 9 0 — these ten symbols which today all peoples use to record numbers, symbolize the world-wide victory of an idea. There are few things on earth that are universal; but the idea that men has successfully established are fewer still. But this is one boast he can make: The new Indian numerals are indeed universal.

Sorting allows you to retrieve the information that has been Recorded, Coded, and Notched (Steps 1, 2 & 3).



THE CARDS YOU WANT HAVE BEEN RETRIEVED

This book penetrates numbers.

—SB

Number Words and Number Symbols

Karl Menninger

1958, 1969, 460 pp.

\$15.00 postpaid

from:
The M. I. T. Press
Cambridge, Mass 02142

or WHOLE EARTH CATALOG



Fig. 222 Chinese fork coin, with the number 34 written in abstract place-value notation. Ca. A.D. 20.

In the seaports and market places of the Red Sea, Arabia, and East Africa, merchants have evolved a finger language that is understood in every market of every country in the region. Buyers and sellers use their fingers to agree on a price, a certain amount of garam or a string of muslin from a turban, by touching the fingers of each other's hand and thus bargaining in complete privacy.

Indecks Information Retrieval System

What do you have a lot of? Students, subscribers, notes, books, records, clients, projects? Once you've past 50 or 100 of whatever you have, it's time to get organized. Get a store-store and retrieve system. One handy method this side of a high-end computer is Indecks. It's funky and functional: cards with a lot of holes in the edges, a long blunt needle, and a notcher. Run the needle through a hole in a bunch of cards, lift, and the cards notched in that hole don't rise; they fall out. So you don't have to keep the cards in order. You can sort them by feature, number, alphabetically or whatever: just poke, fan, lift and catch. Indecks is cheaper than the McBee system we used to like.

We've got the McBee cards to manipulate (edit) and keep track of the 3000 or so items in this CATALOG. They've made the difference between partial and complete insanity.

—SB

(Suggested by Ernest L. Gayden)

Catalog

free

from:
Indecks
Arlington, Vt. 05250

PAPER/THESIS DECKS @ \$9.75

RESEARCH DECKS @ \$9.75

STUDY/REVIEW DECKS @ \$12.25

MEDICAL/SURGICAL DECKS @ \$19.95

PACKAGE REFILL PACKS (50 cards) @ \$1.95

RESEARCH REFILL PACKS (50 cards) @ \$1.95

STUDY/REVIEW REFILL PACKS (50 cards) @ \$1.95

MEDICAL/SURGICAL REFILL PACKS (50 cards) @ \$2.25

MULTI-PURPOSE REFILL PACKS (100 cards) @ 4" x 6" @ \$3.50

REFILL CARTONS: 600 cards (P/T) (R) (S/R) @ \$21.25

REFILL CARTONS: 1200 Multi-Purpose Cards @ \$6.00

REFILL CARTONS: \$5.85

HOLE REPAIR BELTS, (Single Row) (Double Row) @ \$.95

CODE CARD PACKS (@ 10 cards) @ \$.50

SORTING SHEETS @ \$1.00

INSTRUCTION BKLT'S. (P/T) (R) (S/R) (M/S) @ \$.60

FILE BOXES (P/T) (R) (S/R) (M/S) @ \$.90

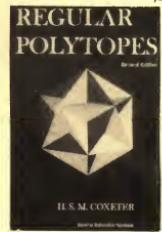
Organization Communications

320

Regular Polytopes

shef kaphan,
mathematician,
boy wizard,
bookkeeper,
bicyclist,
alpinist,
shef kaphan recommended this,
as an old standard for mathematical model builders.

—jd



Regular Polytopes
H.S.M. Coxeter
1948, 321pp.

\$4.95 postpaid

from:
Crowell Collier and MacMillan
866 Third Avenue
New York, New York 10022
or WHOLE EARTH CATALOG

A honeycomb is said to be quasi-regular if its cells are regular while its vertex figures are quasi-regular. This definition (cf. #2.3) implies that the vertex figures are all alike, and that the cells are of two kinds, arranged alternately. To find what varieties are possible, we must consider two cases: (1) that the vertex figure we seek (as cells) two different regular polyhedra whose respective regular dodecahedron has a submultiple of 2 pi for their sum; these can only be a tetrahedron and an octahedron, where the sum is pi. Or, that the polyhedra are two alike, and (2) that the cube, a regular hexahedron, whose edge is equal to its circum-radius, and discarding the isoctahedron (for which the ratio of edge to circum-radius is a dozen), there is only one quasi-regular honeycomb. Each vertex is surrounded by eight tetrahedra and six octahedra (corresponding to the triangles and squares of the cuboctahedron).

Curta Calculator

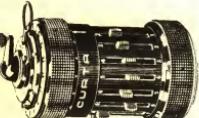
The Curta Calculator (made in Lichtenstein, no less) is one of those machine things that it would be nice to just have one around because it's so beautiful. It's tiny, but made in a way that's deceptively simple. It takes polar coordinates without failure. Adds, subtracts, multiplies, divides squares, cubes, takes square root, accumulates multiplications, multiplies or divides by constants. Rally navigators dig em, but so will anyone that needs a small calculator. Super in every respect. I've never talked to anyone that would part with his. Two models: \$125 and \$165, both about 2 1/2" x 3 1/2".

(Suggested and reviewed by Jay Baldwin)

Literature

free

from:
The Curta Company
Van Nuys, CA



Handbook of Mathematical Functions

Designed for the person who needs but does not have access to powerful computer facilities, this Government bargain is a modernized version of the classical tables of functions of Jahnke-Emde.

(Suggested by Mrs. W. B. Mohin)

CONTENTS

1. Mathematical Constants
2. Physical Constants and Conversion Factors
3. Elementary Analytic Methods
4. Elementary Transcendental Functions
5. Logarithmic, Exponential, Circular and Hyperbolic Functions
6. Exponential and Related Functions
7. Gamma Function and Related Functions
8. Error Function and Fresnel Integrals
9. Legendre Functions
10. Bessel Functions of Integer Order
11. Bessel Functions of Fractional Order
12. Integral and Bessel Functions
13. Confluent Hypergeometric Functions
14. Coulomb Wave Functions
15. Hypergeometric Functions
16. Jacobian Elliptic Functions
17. Theta Functions
18. Elliptic Integrals
19. Weierstrass Elliptic and Related Functions
20. Parabolic-Cylinder Functions
21. Mathieu Functions
22. Spheroidal Wave Functions
23. Orthogonal Polynomials
24. Bernoulli and Euler Polynomials, Riemann Zeta Function
25. Combinatorial Analysis
26. Numerical Interpolation, Differentiation and Integration
27. Probability Functions
28. Miscellaneous Functions
29. Scales of Notation
30. Laplace Transforms

Handbook of Mathematical Functions With Formulas, Graphs, and Mathematical Tables

1964, 1968; 1046 pp.

\$4.50 postpaid

from:
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402



Basic Graphics

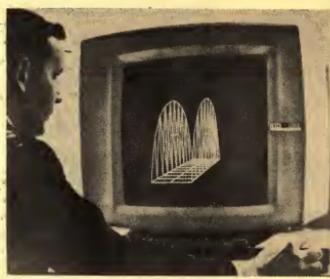
Comprehensive treatment of design graphics—tools, geometry, projection, graphs etc.—with good updating on use of computer graphics.

—SB

Basic Graphics
Warren J. Lazarus
1957, 1962, 1968, 641 pp.

\$11.50 postpaid

from:
Prentice Hall, Inc.
Englewood Cliffs, N. J. 07632
or WHOLE EARTH CATALOG



One can not ignore the fact that graphics now serves as a language for communication between man and computer.

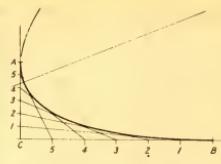


Fig. 4.49. To construct a curve of parabolic form.



Design and Planning 2

Incredible: you actually got your hands on a computer powerful enough to generate rich graphics, and you have an employer/patron rich enough to buy you some play time on the computer. In order not to waste his money too idly splashing around in your new pool, you might check this book for a beginning inventory of some of the things you and your computer can accomplish together. It's far the most practical book we've seen on the subject, and the subject is what wizards are about. —SB

[Suggested by Eric Renner]

Design and Planning 2
Martin Krampen and Peter Seitz, eds.
1967, 177 pp.

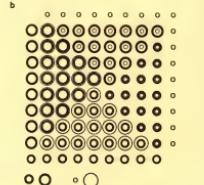
OUT OF PRINT

Hastings House, Inc.
10 East 40th Street
New York, N. Y. 10016



TABLE 3—EXAMPLES OF PROPERTIES GIVEN TO OLYMPIC

| Function | Remarks |
|------------------------|--------------------------------------|
| TYPE | Define relation |
| FINISH ZOOM MODE | Define relation |
| PERSPECTIVE PROJECTIVE | Geometric transformations |
| ROTATE | Geometric transformations |
| SHADE | Optical device simulation, rendering |
| COLOR | Optical device simulation, rendering |
| PHOTO | Take a picture |
| MOVE | Take a picture |
| NAME | Associate a name with the image |
| STRETCH | Associate a name with the image |
| DRAW | Special graphic drawing |
| DISPLAY | Display a picture |
| MODIFY | Some change is a change fit |
| DISCARD | Associate a name with the image |
| ERASE | Remove the image parts |
| WHITE | Image parts |



The Architecture Machine

A book of beginning efforts to domesticate computers. Good intro to life with dumb-fuck genius machines. —SB

Nicholas Negroponte
1970, 163 pp.

\$5.95 postpaid

from:
MIT Press

Cambridge, Mass. 02142
or WHOLE EARTH CATALOG

There are three possible ways in which machines can assist the design process: (1) current procedures to implement existing practices; (2) existing methods can be altered to fit within the specifications and constitution of a machine, where only those issues are considered that are supposedly important to the machine; (3) the machine can be considered evolutionary, so that it can be presented to a machine, also considered as evolutionary, and a mutual training, resilience, and growth can be developed.

I shall consider only the third alternative and shall treat the problem as the interaction of two sets of dissimilarities (man and machine), two dissimilarities between design and architecture, and two intelligent systems (the architect and the architecture machine). By virtue of ascribing intelligence to an artifact or the artificial, the partnership is not one of master and slave but rather of two associates that have a potential and a desire for self-improvement.

Professor: What time is it?

Computer: I did not catch the last word. Or was it two words?

Professor: What is the time?

Computer: It is a copper coin worth one-tenth of a dollar. The word derives from Latin decem, meaning . . .

Professor: No. No. What is the time?

Computer: It is 8:30 a.m., Thursday, December 5, 1985. We have been having some trouble with your linguistic recently. Sometimes I can't tell you'd's from your t's. Let's practice them. Watch the display screen for the intonation pattern, and repeat after me: Teddy's daddy had two dead loads to Detroit.

Professor: Teddy's daddy toted . . .



But there is just the silence of the old decaying room at early morning, no motion and no swirl. Just still and cool, the old uncle sitting on one bed, and the young nephew lying in the other, craving something to drink now, feeling the pulse begin to quicken as he comes again into the world.

He says, I believe I'll have me a cup of that tea, Uncle Emmit.

And Emmit says this just hot water I'm drinking. I'll go fix you some tea.

I can

I can do it.

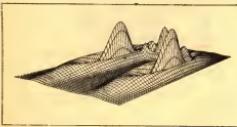
But Emmit is up

He's already up and gone to the kitchen to stir the fire and put the water on while he does.

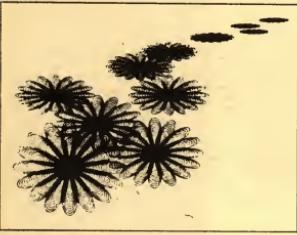
Cybernetic Serendipity

This book started life as an exhibit at the Institute of Contemporary Arts in London last year. Simultaneously it was an issue of Studio International magazine. It must have been an Event. Certainly it is the best collection of computer art yet, the only one not dismissible as engineers kidding themselves. There's been talk for years (e.g. The New Landscape, 1966) of how art and science are gonna come together, and indeed collaborations have improved. But there was no direct avenue, no real mutual demand. Not until computers came along, search for funky hands to hold them to do tricks for funky heads. That's happening now, and this book is good evidence. Ahead, deep space

—SB



(Art, if you want a definition of it, is criminal action. It conforms to no rules. Not even its own. Anyone who experiences a work of art is as guilty as the artist. It is not a question of sharing the guilt. Each one of us gets all of it.)



Desk-top Calculators

The Hewlett-Packard 9100A is now \$4400. If you have to deal with problems which require a computer capacity three times Wang 700 it would be better than the HP since its total memory under program control (core plus tape) will be about 11 times as much as H.P.'s. For people who order a 700 before it is being produced, there is a 370 with two card readers, a system which in some ways is already better than the HP. The 370 system costs \$4700. Deficiencies of 370 compared with HP:

Much slower

Does not have words for trig functions and some other functions (but programs can be fed in on cards)

Can not handle as wide a range of numbers (only from about 10^{-10} to 10^9 instead of nearly 10^{-100} to 10^{100})

Much more convenient to write and correct programs

Results of a computation can be read out onto a magnetic card or tape for later use (this can be done on the HP, although the salesman may not realize it)

No dot matrix display

Advantages of 370 compared with HP:

Greater capacity (28 registers compared to 19 for HP with no program, with 160 step programs, and 160 subroutines)

Registers are 32 bits each, so 28 registers but HP has only 7

-160 steps is maximum size program for 370

two card readers without feeding cards in manually, compared to 196 for HP but under the same cost would bring it up to 240)

Ability to use subroutines (but not subroutines within subroutines) and up to 8 subroutines must be rewritten every place it is used in the main program thus using up precious capacity.

The 700 should be as good or better in all these respects, except the display, as well as having a much bigger memory, many advantages—particularly indirect addressing of registers in which the computer decides what register to go to thus saving much capacity as well as making programs easier to write.

(Reviewed by Craig Schensted, 1969)

Cybernetic Serendipity
1969, 100 pp., 200 illustrations

\$9.95 postage

from:
Frederick A. Praeger, Publisher
111 Fourth Avenue
New York, N.Y. 10003

or WHOLE EARTH CATALOG

1 Poem

snows deep in the ice
I paint all time in a whorl
beneath the sludge has cracked

2 Poem

snows deep in the ice
I see gilled time in a whorl
ppfttt the sludge has cracked

3 Poem

all green in the leaves
I smell dark pools in the trees
crash the moon has fled
all white in the buds
I flash snow peaks in the spring
bang the sun has fogged

Studio International special issue 25a

Cybernetic Serendipity

the computer and the arts



Data Study

Information that isn't organized isn't signal in your life, it's noise. You were feeling yourself searching the full length of a file for something, feeling as stupid as a driver in crosstown New York, and for the first time you realized that it was a waste of time and laborious. This book can help you if not New York. It presents theory and practice on how to keep stuff straight, at least in terms of organization. Display is another matter, however, in which the information sciences are still poor.

—SB

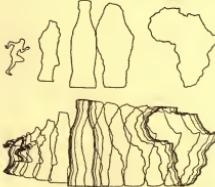


J.L. Jolley
Data Study

\$2.45



To co-operate or even to orient themselves and to engage their programmes, the mobiles must communicate. They do this by a simple binary-coded language of light flashes and sounds. You may engage in this discourse if you wish to, though your goals may be alien to the goals of the mobiles; for example, you might be trying to achieve a configuration that you regard as pleasing.



Running code is Africa

a mutually exclusive set

hotel is:
in France
in Spain
in the United States
in Germany
in Switzerland

an overlapping set

hotel possesses:
a bar
tennis courts
a swimming pool
a bowling green
a skittle alley
a golf course

a cumulative set

hotel has:
more than 50 years old
more than 100 years old
more than 200 years old

an equivalent (identical) set

hotels have:
first class food
excellent cuisine
top quality refreshments

Intelligent Computers

I've been bummng around the country lately, trying to see where I would least mind. And of course one of the places I eventually would up was inside my own head, the primary content of which is a lot of scientific information that I'd never really sorted through before.

My latest flash was about computers, which I do know a little about already. Specifically about intelligent computers, which nobody knows anything about. It involved assembling what I know about neurochemistry, man-made languages, and computers, along with a lot of stuff about animal behavior, psychology and the history of the development of mathematics and a dash of Zen. The result was that I scared the shit out of myself and quit before I had translated it all into machine language, which I don't know anyway.

The point is that it is too valuable to lose and too powerful to let IBM or the Pentagon come up with it on their own, especially since it looks like the only way an intelligent computer could remain sane would be if it believed off to be the planet earth.

I would like to sit down with a bona fide computer genius with an island psychology and a bit of the human race and try to work this thing through with him.

Ken Colstad
Hardin, Montana

I know just the man, Ken Colstad. — S.B.



Hewlett-Packard Model 9100A Calculator keyboard and display. Hyperbolic, trigonometric, and coordinate transformation functions at left, programming functions right. Display is decimal.



Wang information from:

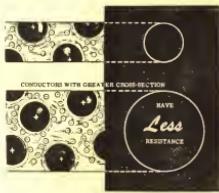
Wang Laboratories, Inc.
808 North Street
Tewksbury, Mass. 01876

Basic Electricity
Van Valkenburg, Nooger & Neville, Inc.
1954; 579 pp.; 5 vols.

\$13.50 a set postpaid

from:
Hayden Book Company, Inc.
116 West Fourteenth Street
New York, N.Y. 10011

or WHOLE EARTH CATALOG
\$6.60 from Blackwell's (see p. 2)



Basic Electronics
Van Valkenburg, Nooger & Neville, Inc.
1959; 680 pp.; 6 vols.

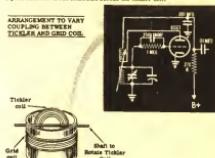
\$15.25 a set postpaid

from:
Hayden Book Company, Inc.
116 West Fourteenth Street
New York, N.Y. 10011

or WHOLE EARTH CATALOG

\$7.92 from Blackwell's (see p. 2)

There are many ways of measuring the amount of feedback. One method which is less used involves varying the physical position of the triode grid until the current flowing through the plate load is reduced by moving the lighter coil away from the grid coil, or rotating it so that the magnetic field of the two coils cancel. The amount of feedback will be reduced. When this setting is used to control feedback, a permanent magnet can be used to hold the feedback coil.



You learned that a good way for you to picture the operation of a grid in a vacuum tube was to think of the grid as a valve in a water pipe. The British are so fond of this explanation that, to this day, they call the grid "the valve." In a vacuum tube, if the grid voltage is very negative, the "valve" is closed and there is little or no flow of electrons from the cathode to the plate. When the grid voltage is changed so that it becomes only slightly negative, the "valve" is nearly wide open and there is a large flow of electrons from the cathode to the plate.

Basic Electronics

Basic Mathematics for Electronics
Nelson M. Cooke
1942, 1960; 679 pp.

\$9.95 postpaid

from:
McGraw-Hill Book Co.
Princeton Road
Hightstown, N.J. 08520
Manchester Road
Manchester, Mo. 63062
8171 Redwood Highway
Novato, CA 94947

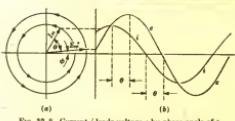


FIG. 32-12 Current I leads voltage e by phase angle of k .

Electronics Page

Graphically illustrated and intelligently sequenced, the Basic Electricity (vols. 1-5) and Basic Electronics (vols 1-6) sets from Rider are the easiest route from innocence to usefulness in electronics without an unnecessary load of math and physics. Good rudiments.

If you plan to go very far with electronics, you will need heavier math. Basic Mathematics for Electronics keeps matters practical.

If you're already somewhat into electronics the Rider sets will insult you. A better route into deeper work is the well-regarded Elements of Radio.

For work with Silicon Controlled Rectifiers, the handiest device for controlling AC power to lights, motors, heaters, etc., get the comprehensive SCR Manual from GE.

A simple, non-technical, concrete, lucid, complete user's guide to hi-fi is High Fidelity Systems.

[Evaluated by Marv Vickers, Fred Richardson,
Les Rosen]

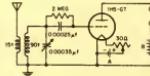


Elements of Radio

Abraham Marcus and William Marcus
1965; 672 pp.

\$8.44 postpaid from:
Prentice Hall
Englewood Cliffs, N.J. 07632

Fig. 15-14. Diagram of the complete receiver set using the triode as a detector. The 6L6 is used over the grid leak stage for S modulation. The rectifier is a 5000B15 and stands for 30 seconds.



Discrete transistors (where electronics was 10 years ago) are very easy to work with. It is far easier to get into construction and design with transistors than it ever was with tubes. No chassis, no heavy components to mount, no high voltage, power supply can be a battery, etc. Very cheap, too. Trying to work with "state of the art" components (whatever that is now) is very expensive, parts are difficult to get and information is often unreliable.

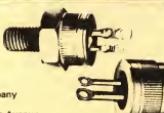
—Fred Richardson



SCR Manual
F. W. Gutzwiller, ed.
1967; 513 pp.

\$3.00 postpaid

from:
General Electric Company
Dept. B
3800 North Milwaukee Avenue
Chicago, Illinois 60641

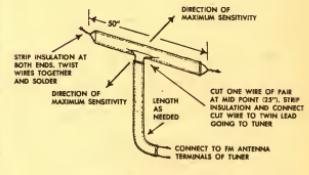


High Fidelity Systems
Roy F. Allison
1962; 1965; 81 pp.

\$1.25 postpaid

from:
Dover Publications, Inc.
180 Varick Street
New York, N.Y. 10014

or WHOLE EARTH CATALOG



How to make a simple FM antenna which is very effective in favorable receiving areas.

Still simpler, and satisfactory in favorable reception areas, is the twin-lead antenna shown in the diagram. This can be staked inside a closet, on the back of a cabinet holding high-fidelity equipment, across a baseball mounding, or in any convenient location so long as it isn't very close to large piles of metal.

One final note on hum: don't overlook the possibility that it may be mechanical noise. The power transformer of an amplifier can buzz at a hum frequency if the mounting bolts or the windings aren't tight. Cures include tightening the mounting bolts and shock-mounting the amplifier on a soft pad. Leave holes for ventilation, of course.

Acoustic feedback usually can be cured (or at least reduced to insignificance) by improving the shock mounts under the turntable. Putting the speaker on thick pads of foam rubber may help a great deal, if it is not on the floor. In some severe cases you may have no alternative to increasing the distance between the turntable and speakers.

High Fidelity Systems



D.R. saw that he was dying as soon as they went outside. They shouldn't have even tried it but the pulse was quickening now, D.R. wanted to go. He wanted to show D.R. how little there was left of what there used to be, and how many new things he had started.

Ten

Ten feet from the porch steps Emmitt shook his head and said he couldn't go any further. His breath was failing. Half falling he turned and went back and sat down on the bottom step and then leaned back against the steps above, fighting for his breath.

ABC's of Short Wave Listening

I started listening to short wave when I was twelve on an old (1937) Crosley shortwave console radio I bought from Honest Ben for \$5. I replaced a few tubes and then learned to count seconds listening to WWV.

You can receive much more than the WWV time signal. Voice of America, Radio Swan, Etc. [See p. 127, Popular Science] It is fun and can be very informative.

This book is a very basic introduction to short wave. You can spend a lot of money on a good receiver. Or make do with an old console. Depends on what you want.

(Reviewed by Fred Richardson)

ABC's of Short-Wave Listening

Lan Buckwater
1962, 96 pp.

\$2.95 postpaid

from:

Howard W. Sams & Co., Inc.
4300 W. 62nd St.
Box 558
Indianapolis, Indiana 46206

Or WHOLE EARTH CATALOG

As the major reference source in the hobby of shortwave listening, the reader must convert the minute energy of a radio wave into an audible signal. How well a receiver can do this is mostly a measure of its sensitivity and selectivity. The first quality, *sensitivity*, is the ability to separate a signal from the ever present noise level created by disturbances in the atmosphere and outer space.



The Radio Amateur's Handbook

10 The Radio Amateur's Handbook

10a This has been the practical guide for radio amateurs for 43 years. It begins with the fundamentals of electric circuits and follows a simple development of the radio theory necessary to understand communications. There is brief section on laws governing amateurs and references to other books that are valuable aids in obtaining a license.

10b Throughout the book actual circuits are shown, always with enough information to build them. Later sections cover complete construction details for various transmitters and receivers but don't be misled by their apparent simplicity. It takes a lot of time and know-how to make these things work and unless circuit building is your thing you are better off to buy commercial equipment or kits. (Heathkit is one of the best sources for ham gear.)



The review to the left was prepared and printed on a computer by Bill English— as you can see, the fluidity of computer interaction makes spelling more casual than with direct hard print.

The Radio Amateur's Handbook may be of interest to the communities and enclaves who've been operating an underground radio net. Like the night of the week or month when all the world's long-hairs are on the air, vibing to each other and the stars. —SB

[Reviewed by Bill English.
Suggested by Arthur Brand]

The Radio Amateur's Handbook
American Radio Relay League
1925...1971; 656 pp.
\$4.50 postpaid
\$5.00 Canada, \$6.00 elsewhere
from:
The American Radio Relay League
Newington, Conn. 06111

Electronics

For technical freaks. If you are a double engineer, the articles may be of interest. Otherwise, spend your time with the ads. Learn about all the new hardware and bits and pieces. Reader service card whereby all of the advertisers will send you piles of shit on their products. By far the best part is the Electronics Buyers Guide, a three-inch thick directory that comes once a year and lists all manufacturers (and their sales reps) that have anything to do with electronics.

Don't forget your title and company name. Get a subscription blank from one at the library and have no trouble.

(Reviewed by Fred Richardson)

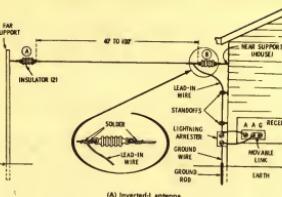
Electronics

\$8.00 a year, biweekly

from:
Electronics
P.O. Box 514
Highstown, N.J. 08520
Subscription department



Subscriptions limited to persons with active, professional, functional responsibility in electronics technology. Publisher reserves the right to reject nonqualified applicants. No subscription accepted without complete identification of subscriber, title or job function, company or organization, including product manufacturer or services performed. Subscription rates: United States and possessions, \$12.00 one year; \$18.00 two years; all other countries \$25.00 two years. Limited number of subscriptions available at higher-than-basic rate for persons outside the United States and possessions, \$35.00 one year; \$55.00 two years; all other countries \$50.00. Single copy service to Japan, \$60.00 one year, including prepaid postage. Single copy: United States and possessions in Canada, \$1.00; all other countries, \$1.75.



(A) Inverted-L antenna.

Table 2-1. The Radio Spectrum

| Major Division | Frequency Ranges |
|--------------------------------|---------------------|
| VLF = Very Low Frequency | 10 kHz to 30 kHz |
| LF = Low Frequency | 30 kHz to 300 kHz |
| MF = Medium Frequency | 300 kHz to 3 MHz |
| HF = High Frequency | 3 MHz to 30 MHz |
| SHF = Super High Frequency | 300 MHz to 3000 MHz |
| EHF = Extremely High Frequency | 3 GHz to 30 GHz |
| | 30 GHz to 300 GHz |

* Most SW listening is done in this part of the spectrum.

Selectivity describes how well a receiver can pick out a signal in a crowded frequency band. It is mainly by these two qualities that a short-wave receiver may be judged. A multitude of features may appear in a given set, but these are usually concerned with operating convenience rather than operating quality.

Radio

In the March 51 Catalog you were wondering about how to fit electronics into your catalog better. It seems to me that electronics equipment is relevant to the very important business of communicating with one another. Radios, transceivers, hydrophones, tape recorders, microphones, and tape recorders certainly are still important. However, one of the most important electronic tools, in my opinion is a shortwave receiver. Listening is the beginning of all communication. With even the humblest shortwave receiver one can hear all kinds of different nations all around the globe. Americans have neglected shortwave listening for many years. Many other governments are broadcasting it's opinions, viewpoints, philosophies, music, literature and drama for anyone to listen to. It is free to anyone with a shortwave radio.

The simplest way to receive shortwave is to use any shortwave-ready radio you have. Reception is better if you have a long antenna and a good ground. Reception is also better after dark. You have a good shortwave receiver in your attic or a \$5 to \$25 Salverson receiver. If you have a good shortwave receiver after 1932 is liable to work well. Of course if you have more money a good bought receiver or kit would be a fine tool. I hope some of your correspondents will be reviewing receivers and listening guides.

Besides ham radio it seems to me that souls interested in underground (land above ground) radio and tv ought to check the radio & tv handbook. It has the latest info on the use of breakers in broadcast equipment. With the instruction of most of brooks in fm and transistors a lot of good equipment has been obsoleted. Presently most of this stuff is sold to less affluent parties overseas. Also since many bands and wave compartments have changed from broadcast on 1700 m (wave length) to 1700 kHz (frequency) the vhf bands to vhf and uhf bands I bet that there is some modest power gear on the market that would be fine for am broadcasting with merely a new crystal (\$10 and a tune up).

Lee McKeegan
Orinio, N.M.

Get Your Ham Ticket

Okay, why push for all the whole earth types to get their tickets?

A) When this country falls apart, all that portable equipment and practical electronics knowledge and all those established nets will be useful to the tools to stay alive and coordinate with your friends.

B) Intelligent roundtable discussion is not only possible but enjoyable, mainly because if someone is an omnious barker, he can't claim to go off on some other frequency and start another roundtable.

C) Organized amateur radio gets information spread fast. It doesn't matter what the information is or how far it has to go, witness Alaska having during the big earthquake a few years ago. Witness the recent and controversial National Student Information Net.

D) Ever see a ham to roundtable?

Why don't more freaks and street people become hams? I think that most do not see amateur radio as the subtle tool that it is. The skills and discipline of radio, the telephone age are somewhat like the skills and discipline of the photographer who shoots 45 black and white in the Imitative age. The price of versatility is knowledge and time.

The whopper in this whole discussion, though, is the relatively unknown possibility of actually making a useful use of amateur repeaters. The April 1971 issue of 72 which came in the Bay area shows with repeaters, ten watts of rf and a good antenna, one can receive the repeater itself will get your signal out over the entire Bay Area, most of Marin and San Francisco areas, the entire state of New Mexico, most of Mass., N.H., Vt., and parts of N.Y. and Conn. and even parts of the U.S. One at a time, of course. Repeaters are relatively easy to license in most parts of the country, but require a lot of groundwork to get them and maintain them. Also a couple thousand dollars unless you are the scrappier supreme.

Last summer I listened to the prime Chicago repeater for a couple days and heard fixed stations over the Wisconsin border and out more than thirty miles to the south chattering with a mobile unit. I could hear the repeater and the repeater was working near the repeater itself will get your signal out over the entire Bay Area, most of Marin and San Francisco areas, the entire state of New Mexico, most of Mass., N.H., Vt., and parts of N.Y. and Conn. and even parts of the U.S. One at a time, of course. Repeaters are relatively easy to license in most parts of the country, but require a lot of groundwork to get them and maintain them. Also a couple thousand dollars unless you are the scrappier supreme.

Last summer I listened to the prime Chicago repeater for a couple days and heard fixed stations over the Wisconsin border and out more than thirty miles to the south chattering with a mobile unit.

I understand from one can receive through the northeast and scarcely ever be out of range of at least one repeater. Mind you that all this is taking place more or less line-of-sight on frequencies tucked between the fm broadcast band and to channel 7.

I'll QSO any of you after my part of the war is over.

Wes Plough W4KCBN

Eielson AFB, Alaska



Sex and Broadcasting: A Handbook on Starting Community Stations

Graziano W. Malam

1971; 40 pp.

\$1.00 postpaid

from:
Public Press—ITAO

5 University Avenue

Los Gatos, California 95030

or WHOLE EARTH CATALOG

I could spend pages, hours, days telling you about how to fill out Form 340 from the FCC. But since you all are always involved in legalities, let me tell you on this subject an expert involved in it out to the best of your ability, show you to your lawyer, assuming you have one—or send a rough draft to me. I will help you out as much as I can. I am convinced that you truly want to go up in the world of broadcasting. I am oriented toward a community station. If not, I can't help you. For I love broadcasting and radio too much to give free time and assistance to someone who will use a broadcast outlet as a stamping ground for some misshapen single-cell personality.

Heathkit

Between ready-made and total do-it-yourself is Heathkit. Assembling yourself saves 25-40%, plus education, minus time. It's good electronic equipment of wide variety—color TV (14"), \$380; guitar amplifier (120 watt, \$193), excellent AR-15 stereo tuner (\$207), 5" Oscilloscope (\$200), sundry lab equipment, CB 5 watt transceiver (\$100), portable short-wave receiver (\$142), Theater organ (\$1200), microwave oven (\$440).

-SB

Heathkit Catalog

1971; 115 pp.

From:
Schlumberger Products Corporation
P.O. Box 167
St. Joseph, Michigan 49085

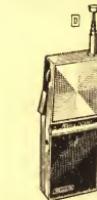


Shortwave

HW-29A
\$49.95



HW-30
\$49.95



5875

Performer's dynamic Mike

Model 5875. Widely-accepted professional omnidirectional mike for home recording. Four-stage pop and blast filters built-in. Includes a flexible boom for external windscreens. Smooth shaped head. Weight: 1 lb. 10 oz. Dimensions: 10" x 2" x 5".

29.95

Model 5875. Widely-accepted professional omnidirectional mike for home recording. Four-stage pop and blast filters built-in. Includes a flexible boom for external windscreens. Smooth shaped head. Weight: 1 lb. 10 oz. Dimensions: 10" x 2" x 5".
Low impedance. Output: -55 dB.
Magnetically shielded. Diaphragm, turn-on switch, and cable. Case: 11" x 11" x 11".
Connectors: Non-reflection nickel contacts. 1/8" diameter. With 18" three-conductor shielded extension stand adaptor. Shpg. wt. 1 lb.
33 B 8124. 58.75



ELECTRO-VOICE

Model 781. 16-watt continuous portable megaphone provides 16-watt peak power (10-watt continuous) output to cover 1000' radius. Includes a built-in noise-cancelling mike with on/off switch, volume control, and a 10' flexible boom. Dimensions: 11" diameter x 19 1/2". With shoulder strap. Weight: 10 lbs. 10 oz. 781 KXU20. Shpg. wt. 6 lbs. 78.95

Ten octaves of sound!

150.00



Electrostatic Headphones give widest response

Model ESP-4. World's only self-energized electrostatic headphones. Give depth and breadth of sound for stereo at its best. You get the perfection of the original studio recording with no room acoustics problems. Electrostatic headphones overcome the inherent limitations imposed by the limits of ordinary voice coils and cone-type driver elements. From 10-50,000 Hz, response is an amazing ± 2 dB (full 10 octaves). Total response: 100-50,000 Hz.

Special pull-pot acoustical circuitry virtually ends distortion to give the clear, sparkling sound of a live performance. Harmonic distortion is less than 1% over the entire frequency range. Self-energizing is safe. Separate energizer offers option of self-energizing for bias supply, or energizing through AC line. When energized through AC line precise levels can be controlled by a variable resistor. Ideal for public addressing consoles for example. Energizer has speaker/headphone switch, on/off switch, and AC plug.

Fold-up assembly and lightweight design (only 19 ounces) let you listen in comfort for hours. Full 12-watt power capacity. Impedance, 4-16 ohms. With 1/4" conductor input cable that connects to amplifier output terminals. Energizer wt. 4 1/2 x 3 1/2" x 2".

33 B 8014. Shpg. wt. 5 lbs. 150.00

11a Tektronix

11a Textronix has become the electronics industry standard for oscilloscopes. They are consistently ahead of the competition and their attention to "user" features in functions and control design make the instruments a joy to use. This catalog includes the complete line of scopes and of their other test equipment, particularly pulse generators and amplifiers, all solidly designed.

11b The equipment is expensive — \$735 for the cheapest scope — but well worth its price.

(Reviewed by Bill English,
Suggested by Mike Brand)

Tektronix Catalog

1971; 432 pp.

From:
Tektronix, Inc.
P.O. Box 500
Beaverton, Ore. 97005

(see p. 346)

TYPE 321A OSCILLOSCOPE, without batteries \$1045



Famous Low-Cost "Benton Harbor Lunch Boxes" Compact 6 & 2 Meter Transceivers

* Perfect for the ham-on-the-go — ideal for CAP, MARIS, local net, or emergency operations — 5-watt input crystal controlled transmitter with straight-through final amplifier. Crystal (not supplied) are in the 144 MHz band. Antenna is self-contained with RFI shield. Features 1 unmodulated 2-meter transmitter. The built-in 120 VAC power supply, speaker, press-to-talk switch on front panel, and ceramic mike included make these units ready to go on the air with your antenna. Power cables for mobile and A.C. operation are included.

KIT HW-29A (6 meter), 9 lbs., no money dn., \$48.95
KIT HW-30 (2 meter), 9 lbs., no money dn., \$48.95

Newark Electronics

If you are at all a serious buyer of electronic parts and equipment, industrial catalogs should be much more appealing to you than the department store catalogs. Industrial catalog dwell mostly on the facts rather than the fancy. Each part is clearly labeled, no guesswork, and no more. And of course the variety is extremely broader. When building your own projects, it makes a lot more sense to use a large, factual catalog full of components rather than the typical consumer catalog. Newark's catalog fills both these needs. It has none of the "industrial" scare you. They're prepared to handle the same kind of mail orders as the firms whose catalogs fill their first 200 pages with ads for their new hi-fi equipment (one page per page) and use most of the descriptive text for promotional purposes. Newark lets the facts sell you.

(Suggested and reviewed by David Marston)

Newark Electronics Corp.
500 North Pulaski Road
Chicago, Illinois 60624

Eddie's Flyer

Beginners in electronics who don't want to be stuck with very bulky, big, and expensive gadgets (and also experts who know what's out-for-what it is sold) will find a lot of value from Industrial (avionics) surplus electronics, this day.

For the "consumer" uses of electronics—music, p.a., TV, repair parts and instruments, experimenting—Eddie Electronics has the best selection and the lowest prices of any mail-order dealer I have found.

They handle everything from hi-fi components (e.g., an FM tuner from a discontinued console) to single resistors. Some of it is new, and some of it is sold "as is" (e.g. small radios and tape recorders returned to the store under warranty.)

If you don't feel safe about repairing your old experiments, though, better concentrate on getting electronic parts with a dependable guarantee, maybe by buying from a repair shop.

(Suggested and Reviewed by John Huntley)

Eddie's Flyer Catalog

free

From:
Eddie Electronics, Inc.
2700 Hempstead Turnpike
Levittown, Long Island,
New York 11756



Right there in front of D.R.'s eyes

Emmit was actually dying.

D.R. started to ask Emmit what he should do but Emmit waved his hand and shook his head. He knew what D.R. was about to say and he didn't want to

hear it

hear what? What old voice, old time

For sure, Emmit didn't want the boy to say anything he would have to answer, for he was barely breathing now, working hard for every little bit of air he got.

Don't know whether the Catalogue is much into the Hi-Fidelity sound business. Hi-Fidelity is an imprecise term. It is a spectrum. But the smallest and least expensive speaker that seems to me to be entitled to call itself hi-fidelity is the new Dynaco. It's a turntable, a tape deck, a cassette deck, a tuner, and of it again a KLH-8, a very fine speaker, and though in some respects the 8 was better, deeper bass, somewhat more fullness—in other respects, I felt the Dynaco was quite definitely superior. In really dense textured material, large orchestral and choral passages, the sound is somewhat better defined. Anyway, it is a fine piece of work—list price \$80, discounts for less than that at some places in the east.

Some of the best European tape recorders can be bought much more cheaply from a London firm called C. C. Goodwin, Ltd., 7, The Broadway, Wood Green, London N22, England. The new Tandberg 1600X tape deck which sells here for \$250, they sell for \$172. To that you would have to add cost of shipping and some duty, but the total would not be as high as \$200, which is a useful saving.

Feeling rich these days. Bought a couple of Rectilinear X speakers. Tastes differ in these matters, but I haven't heard anything I like better at any price.

A portable tape recorder is a very good gadget for school. CONSUMER REPORTS recently recommended one from Sears. I bought one and have tried it out and it seems to work very well. Good sound quality.

An English audio outfit called Sinclair makes a little stereo amplifier called the Necteric 60 Mark MK II. An output can be set at 16 watts or 60 watts. Price £119. Oxford St., London W1, England, sells it for 46 pounds, which with shipping and duty it all comes to about \$125.00. I took it to one of our best local hi-fi places, and they were ecstatic about it. Not only is there nothing of comparable power and quality at that price in this country, but the little gadget is so tiny you can hardly believe it. A really elegant piece of gear. The manufacturers say it has 20 watts per channel, but this is extremely conservative.

Best,
John Holt
Boston, Mass.

Hi-Fi Tips

Read John Holt's hi-fi letter, and concur with his rave review of the Dynaco speaker. After about 13 years as a hi-fi buff, the last 8 of them writing about the field professionally, Dyna is one of those companies that I respect most before I see them, but in the speaker, they've surpassed themselves.

Dyna also has discovered that a good step toward the effect of a four-channel system can be achieved with existing stereo recordings and broadcasts, using only one extra speaker. Connect it across the hot leads of both stereo channels, and any instrument that was recorded out of phase in the two normal channels comes out loud and clear from the 3rd speaker. This can be done in the room, or in the car, or than the clear of four-channel for at least 6 months, until the smoke clears. There will be lots of pseudo-gadgetry and some good stuff coming out in a batch between now and Fall.

The Rectilinear X John Holt mentions has been replaced by the Xa, which Rectilinear (friends of mine) say is better, as does the guy who writes the reviews used to write. I am not sure if I agree with his opinion that the X and Xa! were the more expensive Rectilinear 1Us; I haven't directly compared them, so can't confirm, but all 3 Rectiliners sound fine to me, and I prefer the RII to the AR-3a for most (not all) material—especially prefer RII for piano, but AR-3a for most pop.

If I were recommending a cheap component system right now, my choice would be:

Dual 1212 change or AR turntable
Grado FTR (\$160) or AR-3a (\$100). If you want to spend tons more, though. (Also, listen to personal experience, but the dust-brush feature is nice for people who don't clean records much.)

Sony ST-5600 turnamp (may be prejudiced—had them in the house while I wrote ads about them for Sony—but they seemed very good for the money: \$120 each)

Dynaco A25 speakers.

Watch for Dolby-ized tape and cassette equipment later this year—it lets you get good quality on recordings you make at slower speeds (saving tape); KLH \$225 tape recorder has it now, others to follow, especially in cassettes. Doesn't do anything for pre-recorded tapes, though.

Roy Allison's hi-fi book from Dover publications (sugg. by Fred) is best practical guide I know; Ed Vitzlur's companion volume (also Dover p.b.) is best, most lucid, most accurate guide to hi-fi theory.

Ivan Berger
New York, N.Y.

P.S.: Other companies I take on faith: AR, Shure, KLH (at least, until many of their top brains went out and started Advent—now I wait and see on both companies).

P.P.S.: AR speakers sound very bassy when sitting on the floor. If you don't like that, they make a good, cheap speaker stand—or raise your speaker on a cradle (good for other speakers, too, with the same problem).



Glyph

A big tough speaker, like a diesel truck, and tone as nice as you please. Built weatherproof. Easy to ship. The first loud sound I've heard that didn't make me want to run. I wanted to stay and hear.

—SB

MN50 w/M Driver \$800.00

Glyph Sound Systems
Berkeley, CA
(415) 524-3656

How to Build Speaker Enclosures

In order to get the best response from a speaker, the enclosure needs to be carefully designed and engineered to match the speaker being used.

If you have some knowledge and skill in cabinet construction, you should be able to use this book to build excellent speaker enclosures. It doesn't tell you how to put them together, but it does tell you how to calculate size, design baffles, and properly brace the cabinet to keep it from vibrating.

Not for the novice carpenter.

*[Reviewed by Fred Richardson.
Suggested by Michael Wells]*

How to Build Speaker Enclosures

Alexis Badmewell and Don Davis
1986; 144 pp.

\$3.50 postage

from:
The Bobbe-Merrill Company, Inc.
4300 West 62nd Street
Indianapolis, Indiana 46206

or WHOLE EARTH CATALOG



Tandberg

Special price on Tandberg tape recorders. I bought my model 64 for \$205 when Allied, Lafayette, etc., were quoting \$495. If you buy three or more model 64's at one time, you get a \$10 discount on each. But there will be freight and duty costs. Write for information. They have a new model 6400, which is \$1000. Norway. In spite of authorized U.S. dealerships, I believe they will ship to the U.S. anyway. They also have good prices on AKG headphones. Thorens turntables. Leek amplifiers, BASF tape, and goodness-knobs what else.

Pete Shermerhorn
Aruba
Netherlands Antilles

Preener

The best record cleaner is the Watts Preener.

—SB

[Suggested by Roger Knights and Jerry Minkoff]

\$4

from:
Elpa Marketing Industries, Inc.
New Hyde Park, N.Y. 11040



Audio Cyclopedia

The comprehensive all-purpose reference on audio everything.

—SB



Audio Cyclopedia

Howard M. Tremaine
1959, 1969; 1757 pp.

\$29.95 postpaid (\$35.95 ppd in Canada)

from:

The Bobbe-Merrill Co., Inc.
4300 West 62nd Street
Indianapolis, Indiana 46206

Dynaco Kits

Dynaco Inc. of 3060 Jefferson Street, Philadelphia, Pennsylvania 19121 manufactures a line of high quality and excellent value stereo equipment. Their equipment represents some of the very best in the world. Their most unique models are some of the often (almost never) which means that parts are hard to find and that their equipment has good resale value. They don't even change prices with inflation as does everyone else. Added bonus! All Dynaco line of components is available as kits at substantial savings.

Dynaco kits are easy to assemble and all the critical work is done by Dynacol. Their kits could more accurately be described as semi-kits as all the printed circuit boards are dynaco and you must assemble them. The parts are the best. Dynaco and of the easiest, pleasant, clearest, most complete construction manuals make sure that there is no problem in assembling their kits.

Dynaco doesn't sell gear you on your own out in the cold, they also provide technical assistance and service for their equipment.

Ross Bernheim
Honolulu, Hawaii

Stereo Discounts

Did you recently pay full list price for stereo components or recording tape? If so, you got burned. Next time, a discount house can put a comfortable distance between you and the high priced equipment. In the *High Fidelity* column of *Record High Fidelity*, I had narrowed the list to 6 who give the lowest prices—which doesn't mean, of course, that some more equally good ones may not spring up. These discount houses, by the way, are NOT clubs and don't charge membership fees, although there are such clubs dealing in stereo gear. To my knowledge, these clubs don't match the discounts of the discount houses. The 6 discount houses mentioned above are:

DownTown Audio
17 Warren Street
New York, NY 10007

Dixie Hi-Fi/Fidelity Wholesalers
10530 Detrick Avenue
Kenosha, WI 53140

Hifi Connection
239 East 14th Street
Bronx, NY 10451

Boston Audio Co.
1 Discourse Drive
Randolph, MA 02368

Rubinson 57 Street Inc.
119 West 57 Street
New York, NY 10019

Caron Stereo
R.D. 3, Route 7
Brookfield, CT 06804

I've personally had satisfactory dealings with the first three. I haven't ordered from the others, but they offer equally low prices. Here as with any purchase, it pays to check each house's price on a given component. Some of available discounts follow:

| Component | List Price | Discount Price |
|---|------------|----------------|
| Dynaco SCA-80 amplifier, wired | \$249.95 | \$165.00 |
| Shure M-44E cartridge | 34 .95 | 10.50 |
| Superox ST-Pro-B headphones | 49.95 | 32.00 |
| Garrard 408 changer with base, dust cover, less cartridge | 55.50 | 33.48 |
| Harman-Kardon HK-50 speaker system | 95.00 | 55.00 |
| Watts Dust Bug | 6.50 | 4.95 |

Certain brands of equipment are fair traded and theoretically can't be sold below list price, but you can sometimes get around this by ordering a fair-traded component and a non-fair-traded component together. Discounts are even better on complete systems than on individual components.

In the market for a low-cost stereo cartridge tracking at 2 to 3% grams, such as the Shure M-44, ADC 220X, Pickering P/AT, or Empire 909/T? Forget them—you want the Garrard FTR at not \$24.95, but \$19.95! And the Garrard 408 changer at \$55.00, not \$35.00. In *Stereophile* Review July 1969 survey of cartridges tracking at 2 to 3% grams, the Shure M-44, ADC 220X, and the Elac STS-44-12 (\$69.50), and ahead of cartridges costing up to \$100.00. Keeping in perspective, some of the more expensive cartridges tracked better than the Garrard FTR. Not having a pile of test equipment, I can only add that I've been using on FTR for a year and that it does what it's supposed to do.

Other Grado cartridges are the FTE (\$19.95 with elliptical stylus), FCR (\$25.), and FCL (\$35 with elliptical stylus). According to Grado, the FC series cartridges sound more carefully than those of the F series. However, I don't know of any test reports on them.

R. Andrews Buc
Clayton, Mo.

More Stereo Discount

One other house that offers significantly discounts on the material they do carry (they don't seem to have as big a stock as others is *AoA Sales*.

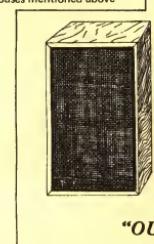
2745 Erie Blvd.
Syracuse, N.Y. 13224

I bought my own equipment from them \$650 list. Cost me a little less than \$400 including shipping.

One other note for those who purchase tape

The Archer Av. Store
4193 Archer Ave.
Chicago, IL 60632

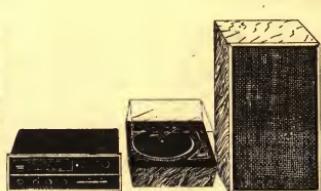
had the lowest prices for Sony tapes that we've been able to find in a retail. In Philadelphia, this costs \$3.69 + 6% sales tax. They'll add postage on orders of \$30. (That's just a lot of tapes. Get a group together) and on orders over \$48 tapes offer another 5% discount if the tapes are in groups of a dozen, can be mixed but always a dozen of each type. For a full list of prices just write them.



Stereo Warehouse

Young discount crew. I'd get one of their component systems. Postpaid service to West Coast.

Stereo Warehouse
151 Casa St.
San Luis Obispo, CA 93401



"OUR CHOICE" (System #1)

\$229.95

The best medium priced system we have been able to offer Nikko STA 301 am/fm receiver. Solid 40 watts of power into 8 ohms, with audio linear integrated circuits, FET front end, direct tape monitoring, contour control switch, 3 circuit breaker protection, tuning meters, and more.

Nikko Niko STA 301 am/fm receiver
Solid 40 watts of power into 8 ohms, with audio linear integrated circuits, FET front end, direct tape monitoring, contour control switch, 3 circuit breaker protection, tuning meters, and more.

Garrard 408. Most popular model in the Garrard line. Using the famous 4-pole induction motor, Garrard's unique platter, f.p.s., automatic record changer with viscous cueing, and low mass calibrated tracking tone arm, for fine cartridges. Comes with solid walnut base.

Grado Magnetic Cartridge
\$ 35.50
(base + cart.)
\$ 119.00
(pair)

Jordan 510 speakers. Excellent 8 in. low-mass speaker system. Sound-extending fidelity, with good bass response. System is efficient, yet will handle considerable power. 8 in. woofer and 3 in. high frequency driver in a single cabinet. 100 watts RMS. Approximate size is 18 in x 10 in x 9 in. deep.

Total regular price of this stereo system is \$358.95

With the Stereo Warehouse we offer very good name brand components at super low prices. We have tried to keep the breakdown of the cost of these components as all shipping and insurance charges are prepaid and we break our ass to ship within two days of the order. All products are factory sealed and carry that full warranty, we even supply the necessary wire to make setting up the equipment simple and quick.

Most important of all WE CARE.
Peace
Tom Spalding
Stereo Warehouse

db

For those interested in audio in either a professional or semi-professional way the best source of information on the state of the art is a magazine called "db—the Sound Engineering Magazine." This is directed to the professional consumer, hi-fi books. It is strictly devoted to the recording studio, broadcast engineer, audio-visual, theatre sound, commercial sound type of person. It contains a wealth of design, operational and training info that is hard to find elsewhere. You will learn how to know how to install a sound system in an airport, or how to operate a recording console, or are worried about sound levels effecting rock music, or how to mix a number of purely audio oriented subjects, then db is for you.

I have spoken to the editor of db who informs me that subs are \$6.00/yr in the US and \$7.00/yr elsewhere. Sample copies are available upon request.

Hope you can use this material. Thanks very much.

[Suggested and reviewed by Fred Hahn]

John F. Rakichas
Philadelphia, Pa.

db
960 Old Country Rd.
Plainview, N.Y. 11803

King Karol Records

This looks like the best mail order source of records. They send you a comprehensive Schwinn catalog to order from. Fairish discounts, postage paid. They also carry pre-recorded and blank tapes, cartridges, and cassettes. Now the question is how quick and reliable are they?

—SB

[Suggested by Lloyd Martin]

Catalog free

from:
King Karol Records
P.O. Box 629
Times Square Station
New York, N.Y. 10036

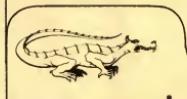


ALL ORDERS IN THE U.S.A. A.P.O. AND F.O.B. ORDERS FREE OF MAILING AND HANDLING CHARGES. GST IS TO BE ADDED FOR MAILING AND HANDLING CHARGES. (GST IS 10% OF ALL ORDERS SHIPPED BY AIR).

SCHWINN CATALOG MAILED FREE ON REQUEST

| Schwin Catalog List Price | Year Discount Price | Schwin Catalog List Price | Year Discount Price |
|------------------------------|------------------------|------------------------------|------------------------|
| \$1.95 | \$1.50 | \$1.95 | \$1.75 |
| 2.50 | 2.00 | 2.50 | 2.25 |
| 2.95 | 2.20 | 2.95 | 2.45 |

PLEASE NOTE: N.Y. RESIDENTS ADD TO THE ABOVE PRICES THE NEW YORK CITY OR STATE SALES TAX



D.R. ley his uncle down end helped him stretch out on his back. He started to take his shoes off for him but Emmitt pulled his feet away. He didn't want to be fooled with.

Leave me alone.

I'll be okay, just let me catch my breath, he said. He reached for the sheet and quill and supply them over his shoulders and closed his eyes and sank into the pillow, and D.R. took off running.

Running, down the path below the house, through some half-dead trees. Downhill he ran this time, past blasted rock and broken trees and piles of rusted trash along the ruined roadside.

Pest what was left of people living there and

mining

old hulks of cars and shells of houses,

past the fallen tippie he had hidden under

past the door of one old house whose mouth said what's the hurry,

Down Trace Fork all the way across the briga

and thara he was again, pounding on the store door. And who should answer

Who should answer but Mrs. Godsey, her Bible in her hand, all smiling, glad to see him, then frightened by his story.

And Leonard came a running.

He wheezed and strained and bit for air and tried to ass himself up the steps, the second,

third

Moving and braathing a little now, some air was coming in.

D.R. put his arm around his uncle's waist and pulled Emmitt's arm around his neck and half-carried him up the steps across the porch and to the bedroom. That one, Emmitt said.

That one, over there. The bed D.R. just got out of. They were changing places, passing one another, going opposite ways, and the pulse of things was clicking right along.

Making It With Rock

This article appeared April 4, 1969 in the *Berkeley Barb*.

We tried by letter and phone to get hold of the author Ed Denson so we could reprint his piece but we couldn't find him. The article's good enough we'll just have to pirate it through and hope it's OK. What I really hope is that it's part of a forthcoming book on music entrepreneurship; we'd CATALOG it.

(Editor's Note: ED Denson, manager Country Joe and the Fish, and The Crabs, and other rock bands.)

BERKELEY BARB 154 Bay Area, 25th elsewhere
2042 University Ave., Berkeley, Calif. 94704
\$6.00 a year, published weekly

(Editor's Note: ED Denson, manager Country Joe and the Fish, and The Crabs, and other rock bands.)

I - the hand

First, of course, you'll need a hand. There are over 100,000 rock bands in the United States at any given moment, or at least that's the number which participated in a national Battle of the Bands series. You can't be making a living, so you should be a little careful when you pick yours.

More realistically, if you are interested in managing a band, probably you already have one. Deciding to be a manager is not a result of a serious conversation with your high school counselor. It's an incident like picking up the girl who will become your wife. You can't decide whether you're going to be a manager until you've been bitten by the bug. Let's say you begin; you want a hand which will do three things—make good music, make good money, and stay together for three years. These three things follow from the nature of the business you and the band are in.

Now at this point I should explain something before some nitwit comes along and says "Business is too beautiful!" and that is that if your hand is not a business it does not need a manager. Anyone can play the guitar in his room without a manager, and when he gets tired of it, he can quit, our work and play without a manager. Not everyone knows this, and it is the cause of a great deal of wasted time and energy.

Now to amplify those three things which you want your band to do:

1. MAKE GOOD MUSIC: You, your band, and your manager are a valuable person and your time is worth spending in such a way that you won't think it wasted later. If your band is not making music which you think is good or as we see in the trade, promising, forget it. Even if you think they'll make a million, but their music is not your bag, forget it. No one, so I am told, can afford a manager who can say "It's just a business like selling cars or canned peas." No one. And no one can do less for a band than a manager who feels that way. We Americans, due to our attachment from Protestant religion, believe in the lack of the touchstones of faith and manager who can sincerely say that his band is great cannot hope to get anyone to do anything for them.

Then, too, no band is successful if it does not make good music. But, you ask, implying your feeling in dedication to all those creepy straight bands with their press agent hype and record company hype, that you are really condemned down the unknowing throats of the American public all of whom are idiots except me.

Forget it. There are certain debuts which, as a member of the record buying public and brilliant critic of American taste, have been living with. As a realistic hard-bitten business manager and better clean the guitars out of your hands before you go, going, or else your hangups will fuck up the lives of a number of people including yourself.

Try this one: Any band which successfully manages to become one of the really popular recording and performing groups in the country, does it by making good music on well established, giving exciting live performances, and especially, by projecting values which their audience likes with some millancy. You probably do not like their cultural values, which is not the same thing as their

music being no good. However, a band, a guru, and a candidate for president all do the same thing as only those who are good at it manage to do.

But back to your band. Let's start with the basics. Is your band able to play in tune? And do they agree with themselves about what's what? Most American bands can not both play in tune and together, and get really mad when someone points this out. If your band cannot do both, it is going to take a great deal of luck, practice, and probably a couple of people fired to cure the problem. During that time that music much can happen with their careers, and you don't need you to hang around waiting.

Perhaps they can play in tune, together, and in public. Then we know they can make music and now we know if they can communicate music. Your taste is going to be the judge, but the question is not one that can be dodged with horseshit like "anything can be good music." All in all, question of taste is man's right, but it is hardly possible to make good money without making good music.

It is also possible to make good music, and to blow it all for non-musical reasons. This is dumb.

Making money for music is a business. Your band will be hired by people to play on stage, at a concert, or at a coronation. If they don't get there on time, they will not get paid very often. If someone is not good, they will not be invited or doesn't show up for a bunch of reasons, he has to go. To them, then, people who use lots of lot of acid, or juice it up, will not be invited to play. They shodig. Or you should. Even if they are nice guys, and you believe every human being has the

Electric Guitar Amplifier Handbook

For years my clearest image of impotence was the college student and the soft-drink machine: he has just watched his Pepsi flow by without getting the expected amount. Now I am watching it go by without getting the expected amp. This image has gradually been replaced by the finer one of the rock musician and his audience of worshipful fans and his intermittent amp.

Avoid embarrassment, learn about the components of thy act. This is a remarkably adequate repair manual. —SB

[Suggested by Philemon Vanlangendijk]

Electric Guitar Amplifier Handbook

Jack Darr
1965, 1968, 160 pp.
\$6.95 postpaid

from:
The Bobbs-Merrill Company, Inc.
4300 West 62nd Street
Indianapolis, Indiana 46206

or WHOLE EARTH CATALOG

\$2.88 from Blackwell's (see p. 79)

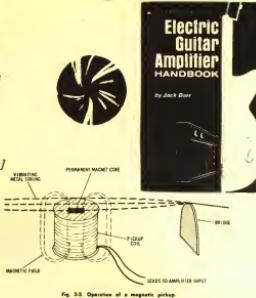


Fig. 32 Operation of a magnetic pickup

menus about the questions I've just mentioned, and if you are listening to a band in a small club, probably you can't hear them well enough to tell anyone. To serve as a double check on your opinion, if you think that they are making good music but you are not certain, go watch them per-

give them rights to take drugs and drink anything anything they want.

We're not talking about rights, we're talking about putting on a shitty performance and boring or bum-tripping the audience. If your band puts on poor performances because your brilliant drummer is out of his mind on something,

your band.

From the onset everyone involved should realize that in the new direction of rock and roll, siccines are going to receive PBM praise for being the brilliant men who are really making the band go, and the private advice you dump on them else. At the start, they'll do something destructive, or flip out under the pressure. There's not a lot you can do about this except try to assimilate people. Watch a couple of rehearsals and you'll know if they are present. Don't panic if someone there is doing most of the work, watch for ****.

Now if you've got your band, and they are making good music, well and all ready to go out and make music for the public, then you need to check your own head and be certain that you are capable of being a manager. You have no real way of knowing what you are getting into, more than the need to do at this point. All of you are babies in the woods, but there are few things you can predict.

You are going to have to work hard for a few years, with few breaks and little prestige. You will work more hours than your band, and you will have to be much more stable than the musicians. That's one part of the job. Another is to be able to know what's happening when they forget. A good deal of money will be flowing thru your hands, and you should be able to account for it in detail, which means you will have to keep good records and be good at it.

Moreover you are going to have to do business with a lot of people, talkers, salesmen, equipment, recording contracts, booking agencies, etc., and usually you are not going to know what you are talking about. You have to research, and then you have to put it into practice. It out. If you are one who believes that business consists of a lot of people with desks and good looking secretaries bullettish, then you are wrong. You are going to be a fight, everyone else is a fight. If it is willing to fight, a three year delay is not unthinkable.

We've already gotten rid of the heavey, chronically underfed, and repressive, Incarnate Rock and Roll by this time. If you recall, and the only other problem to be wary of is genius. Genius comes in two forms, brilliant workers and mouthy, self-centered asses. Some of the more reputed musicians in this country presently are also loud-mouthed assholes who cannot work with other musicians. The first form of genius becomes a legend. The second form of genius is just too brilliant to let anyone else take part in the creation. That is fine for their ego, but bad for

you. If you can work under those conditions, you're all set.

Copyright 1969 ED Denson



Tape Recorders



The top of the heap in sound recording is Nagra. Their prices start at \$1123.

For general purpose high-quality mobile recording, the Uher 4000 L is still in front of everyone else for reliability and economy (approx \$440.). The new Uher 1000 Report Pilot, designed for sound/film synchronization, costs about \$695.

—SB

For Uher:
Hervic Corporation
14225 Ventura Boulevard
Sherman Oaks, California 91403



Music by Computers

Music by Computers. Goddamn right. When can we get our hands on them without having to tiptoe around some 18th century Department Chairman? This book and four records edited by the worthy Von Foerster, and others assemble James W. Beauchamp, Herbert Brun, M. David Freedman, Lejaren Hiller, M. V. Mathews, J. R. Pierce, J. K. Pendleton, Arthur Roberts, L. Rostek and Gerald Strang. What I want to know is, can Frank Zappa use it?

—SB

Biologically speaking, all auditory systems serve primarily one end and only one purpose: to infer from the sounds in the environment the sources that produced these sounds.

In this example "The British Grenadiers" is gradually converted to "When Johnny Comes Marching Home" and back, a nauseating musical experience but one not without merit, particularly in the rhythmic context. "The British Grenadiers" is in 2/4 time in the key of F major. "Johnny" is written in 6/8 time in the key of E minor. The change from 2/4 to 6/8 time can be clearly appreciated, yet would be quite difficult for a human being to do. The modulation from the key of F major to E minor, which involves a change of two notes in the scale, is horrifying, and a smaller transition would undoubtedly have been a better choice.

Even if extensive opinion sampling were carried out, we would know only what listeners think now, based on conventional literature in conventional performance. There is no reason to believe that such judgments are valid. It is possible that listeners have been exposed to much more synthetic sound. Perhaps they prefer "imperfection" primarily because they have never heard anything else.

Music by Computers

Heinz von Foerster and James W. Beauchamp, ed.,
1968, 139 pp., 4 records

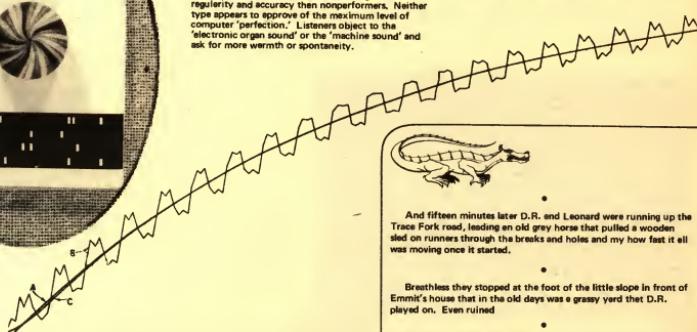
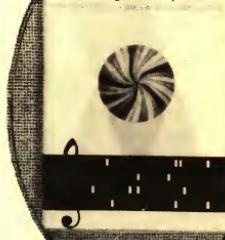
\$14.95 postage

from
John Wiley & Sons, Inc.
One Wiley Drive
Somerset, NJ 08873

West:
1530 South Redwood Road
Salt Lake City, Utah 84104

or
WHOLE EARTH CATALOG

Music by Computers



Cousino Continuous Play Tape

Cousino Electronics Corp., 1941 Franklin Ave., Toledo, Ohio. Ph. 246-3691 Makin's of Audio-Vendor, offering continuous play-back tape recorders. Single or dual track, up to 10 hours per side onto itself. Avail in time periods from 1 min to 30 min, at 3-1/4 inches/sec. Used for sleep-training and therapy, broadcasting, teaching, and sales. from \$6.15 to \$19.95. Free info.



FRAP

"Flat response audio pickup." Hmmm... well, theoretically flat. Its response hasn't actually been measured on an instrument, but it would sound to be better than any other pickup.

The FRAP picks up the sound of the instrument, not the sound of the strings or any other part. Can be put on almost any acoustic instrument (flutes, guitars, etc.) and produces an output similar to that achieved in a studio using separate microphones.

I wish companies wouldn't use terms like "flat response" without defining what they mean by flat. Can be highly misleading at best.

Shipping delay seems to be a month or a little more.

Transducer, preamp, adhesive wax, \$150.

[Reviewed by Fred Richardson]

Information or FRAP from:

FRAP
43 Dore St.
San Francisco, CA 94103



And fifteen minutes later D.R. and Leonard were running up the Trace Fork road, heeding an old grey horse that pulled a wooden sled on runners through the breaks and holes and my how fast it all was moving once it started.

Breathless they stopped at the foot of the little slope in front of Emmitt's house that in the old days was a grassy yard that D.R. played on. Even ruined

Even ruined, it was recognizable

but not at all familiar, up

Up the final yards to find Emmitt on the floor, tangled in his quilt and dying, his head pointed toward the kitchen, barely breathing, Leonard

Leonard grabbed the quilt and all the bedding

He grabbed the quilts and blankets off both beds and ran outside to pile them

He piled them on the sled while D.R. lifted

D.R. lifted Emmitt by the shoulders. His eyes were open, seeing, but he didn't look at D.R. He was looking around his bedroom, this old room

in this old house

this bedroom of this ruined house, taking in its details for what his instinct knew would be his final time

We can't put it together.
It is together.

