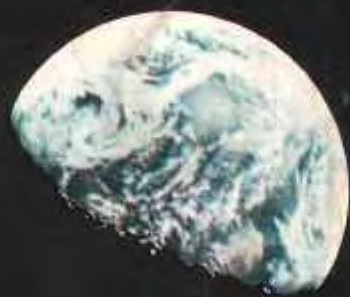


# WHOLE EARTH CATALOG

*access to tools*



Spring 1969  
\$4



# WHOLE EARTH CATALOG

## 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 the 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.*

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# CATALOG procedure



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With some indicated items the CATALOG also will ship. There is no price difference with the service; the CATALOG gets the markup instead of the other guy, is all. For west coast orders it may mean faster service.

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The WHOLE EARTH CATALOG is presently in the market for a national distributor.

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Advertising rates:

full page \$200	\$75	
	\$25	\$10
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Our obligation is to CATALOG users and to ourselves to be good tools for one another.

## This issue of the CATALOG, the second, was put together by:

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# Whole Systems

## Buckminster Fuller

The insights of Buckminster Fuller initiated this Catalog.

Among his books listed here, his most recent is probably the best introduction—it's a succinct summary of what's been on his mind for many a year and what's on his mind now: how mankind may hatch and survive the hatching. *An Operating Manual for Spaceship Earth.*

Of the other, larger, books, *Nine Chains to the Moon* is his earliest and most openly metaphysical, *The Unfinished Epic of Industrialization* the most beautiful, *Ideas and Integrities* his most personal, *No More Secondhand God* the most generalized, *World Design Science Decade* (co-authored with John McHale) the most programmatic.

People who beef about Fuller mainly complain about his repetition — the same ideas again and again, it's embarrassing. It is embarrassing, also illuminating, because the same notions take on different uses when re-approached from different angles or with different contexts. Fuller's lectures have a raga 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 faster, it'll drag you. Fuller won't wait. He spent two years silent after illness; language got him in trouble, and he returned to human communication with a redesigned instrument.

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

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

The revolution has come— get on fire from the top. Let it burn swiftly. Neither the branches, trunk, nor roots will be endangered. Only last year's leaves and the parasite-bearded moss and orchids will not be there when the next spring brings fresh growth and free standing flowers.

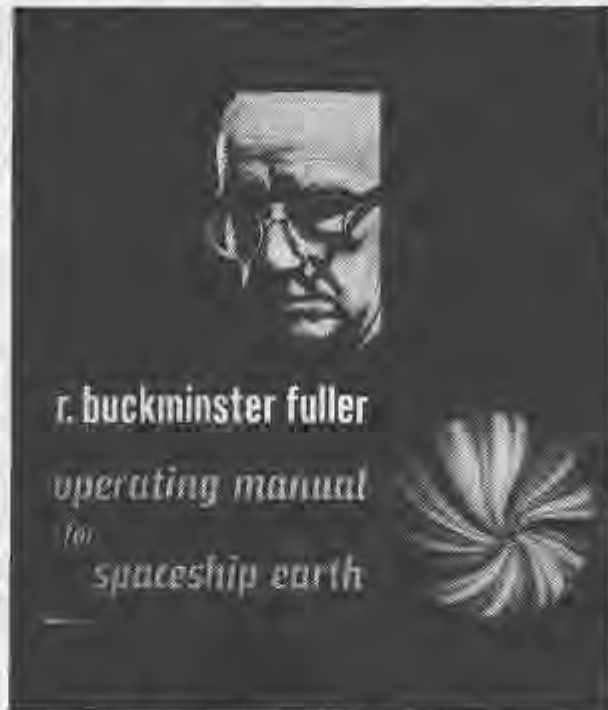
Here is God's purpose— for God, to me, it seems, is a verb not a noun; proper or improper; is the articulation not the art, objective or subjective; is loving, not the abstraction "love" commanded or entreated; is knowledge dynamic, not legislative code, not proclamation law, not academic dogma, not ecclesiastic canon. Yes, God is a verb, the most active, connoting the vast harmonic reordering of the universe from unleashed chaos of energy. And there is born unheralded a great natural peace, not out of exclusive pseudo-static security but out of including, refining, dynamic balancing. Naught is lost. Only the false and nonexistent are dispelled.

And I've thought through to tomorrow which is also today. The telephone rings and you say to me Hello Buckling this is Christopher; or Daddy it's Allegra; or Mr. Fuller 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 God 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 developed as beliefs and credits in "second hand" information.

Therefore it will be an entirely new era when man finds himself confronted with direct experience with an obviously a priori intellectually anticipatory competence that has interordered all that he is discovering.

[No More Secondhand God]



*Operating Manual for Spaceship Earth*  
Buckminster Fuller  
1969; 143 pp.

\$4.25 postpaid from Southern Illinois University Press  
600 West Grand  
Carbondale, Illinois 62903  
or  
WHOLE EARTH CATALOG

To comprehend this total scheme we note that long ago a man went through the woods, as you may have done, and I certainly have, trying to find the shortest way through the woods in a given direction. He found trees fallen across his path. He climbed over those crisscrossed trees and suddenly found himself poised on a tree that was slowly teetering. It happened to be lying across another 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 third big tree lifting. It seemed impossible to him. He went over and tried using his own muscles to lift that great 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 larger tree. I'm certain that the first man who found such a tree thought that it was a magic tree, and may have dragged 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 concept of the generalized 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, obviously desirable or utterly essential resources have been sufficient until now to allow us to carry on despite our ignorance. Being eventually exhaustible and spoilable, they have been adequate only up to this critical moment. This cushion-for-error of humanity's survival and growth up to now was apparently provided just as a bird inside of the egg is provided with liquid nutriment to develop it to a certain point. But then by design the nutriment is exhausted at just the time when the chick is large enough to be able to locomote on its own legs. And so as the chick pecks at the shell seeking more nutriment it inadvertently breaks open the shell. 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.

A new, physically uncomprised, 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 valve 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....

Possession is becoming progressively burdensome and wasteful and therefore obsolete.

You and I are inherently different and complementary. Together we average as zero—that is, as eternity.

■ [Operating Manual for Spaceship Earth]

Common to all such "human" mechanisms—and without which they are imbecile contraptions—is their guidance by a phantom captain.

This phantom captain has neither weight nor sensorial tangibility, as has often been scientifically proven by careful weighing operations at the moment of abandonment of the ship by the phantom captain, i.e., at the instant of "death." He may be likened to the variant of polarity dominance in our bipolar electric world which, when balanced and unit, vanishes as abstract unity 1 or 0. With the phantom captain's departure, the mechanism becomes inoperative and very quickly disintegrates into basic chemical elements.

continued



*Ideas and Integrities*  
Buckminster Fuller  
1963; 318 pp.

\$1.95 postpaid from Collier Books  
The Macmillan Company  
Order Dept.  
Front and Brown Streets  
Riverside, N. J. 08075

*No More Secondhand God*  
Buckminster Fuller  
1963; 163 pp.

\$2.25 postpaid from Southern Illinois University Press  
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Carbondale, Illinois 62903  
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Standing by the lake on a jump-or-think basis, the very first spontaneous question coming to mind was, "If you put aside everything you've ever been asked to believe and have recourse only to your own experiences do you have any conviction arising from those experiences which either discards or must assume an a priori greater intellect than the intellect of man?" The answer was swift and positive. Experience had clearly demonstrated an a priori anticipatory and only intellectually apprehendable orderlines of interactive principles operating in the universe into which we are born. These principles are discovered but are never invented by man. I said to myself, "I have faith in the integrity of the anticipatory intellectual wisdom which we may call 'God.'" My next question was, "Do I know best or does God know best whether I may be of any value to the integrity of universe?" The answer was, "You don't know and no man knows, but the faith you have just established out of experience imposes recognition of the a priori wisdom of the fact of your being." Apparently addressing myself, I said, "You do not have the right to eliminate yourself, you do not belong to you. You belong to the universe. The significance of you will forever remain obscure to you, but you may as sume 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."

[Ideas and Integrities]

I define 'synergy' as follows: Synergy is the unique behavior of whole systems, unpredicted by behavior of their respective sub-systems' events.

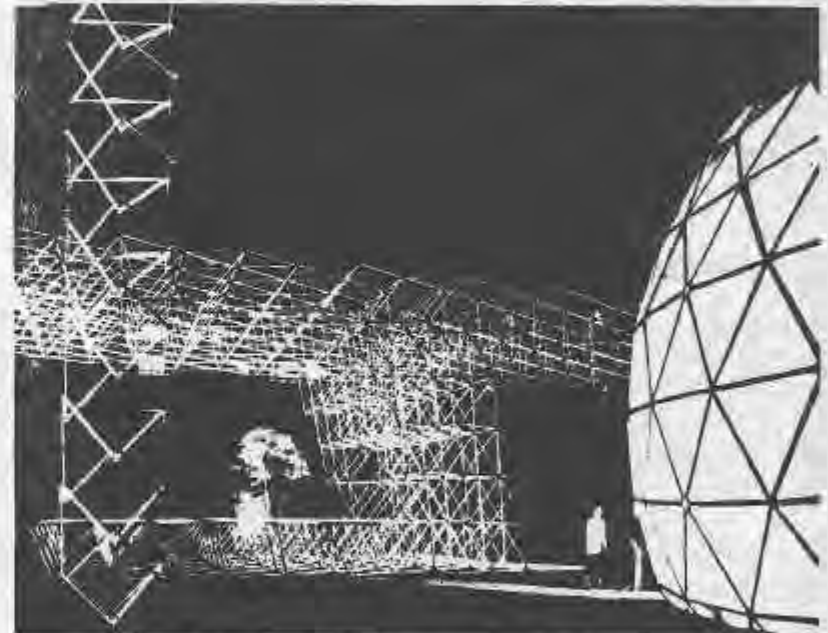
[Ideas and Integrities]

selfishness (self-preoccupation pursued until self loses its way and self-generates fear and spontaneous random surging, i.e. panic, the plural of which is mob outbreak in unpremeditated wave synchronization of the individually random components)

[No More Secondhand God]

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

[ "Omnidirectional Halo" No More Secondhand God]



This captain has not only an infinite self-identity characteristic but, also, an infinite understanding. He has furthermore, infinite sympathy with all captains of mechanisms similar to his. ....

An illuminating rationalization indicated that captains—being phantom, abstract, infinite, and bound to other captains by a bond of understanding as proven by their recognition of each other's signals and the meaning thereof by reference to a common direction (toward "perfect")—are not only all related, but are one and the same captain. Mathematically, since characteristics of unity exist, they cannot be non-identical. [Nine Chains to the Moon]



To start off with it is demonstrated in the array of events which we have touched on that we don't have to "earn a living" anymore. The "living" has all been earned for us forever. Industrialization's wealth is cumulative in contradistinction to the inherently terminal, discontinuous, temporary wealth of the craft eras of civilization such as the Bronze Age or Stone Age. If we only understood how 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 reflexes by his millenniums of slave functioning that 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 displace the obsolete games.

[WSD Document 3]

Tension and Compression are complementary functions of structure. Therefore as functions they only co-exist. When pulling a tensional rope its girth contracts in compression. When we load a column in compression, its girth tends to expand in tension. When we investigate tension and compression, we find that compression members, as you all know as architects, have very limited lengths in relation to their cross sections. They get too long and too slender and will readily break. Tension members, when you pull them, tend to pull, approximately, (almost but never entirely), straight instead of trying to curve more and more as do too thin compressionally loaded columns. The contraction of the tension members in their girth, when tensionally loaded, brings its atoms closer together which makes it even stronger. There is no limit ratio of cross section to length in tensional members of structural systems. There is a fundamental limit ratio in compression. Therefore when nature has very large tasks to do, such as cohering the solar system or the universe she arranges her structural systems both in the microcosm and macrocosm in the following manner. Nature has compression operating in little remotely positioned islands, as high energy concentrations, such as the earth and other planets, in the macrocosm; or as islanded electrons, or protons or other atomic nuclear components in the microcosm while cohering the whole universal system, both macro and micro, of mutually remote, compressional, and oft non-simultaneous, islands by comprehensive tension; — compression islands in a non-simultaneous universe of tension. The Universe is a tensegrity.

[WSD Document 2]

I was born cross-eyed. Not until I was four years old was it discovered that this was caused by my being abnormally farsighted. My vision was thereafter fully corrected with lenses. Until four I could see only large patterns, houses, trees, outlines of people with blurred coloring. While I saw two dark areas on human faces, I did not see a human eye or a teardrop or a human hair until I was four. Despite my new ability to apprehend details, my childhood's spontaneous dependence 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 has at birth. We could, of course, hypothesize that all babies are born geniuses and get swiftly de-geniused. Unfavorable circumstances, shortsightedness, frayed nervous 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 too many disconnects.

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 all endowed—the use of which circumstances had previously so frustrated as to have to put them in the deep freezer, whence only heliostatically hot situations could provide enough heat to melt them back into usability.

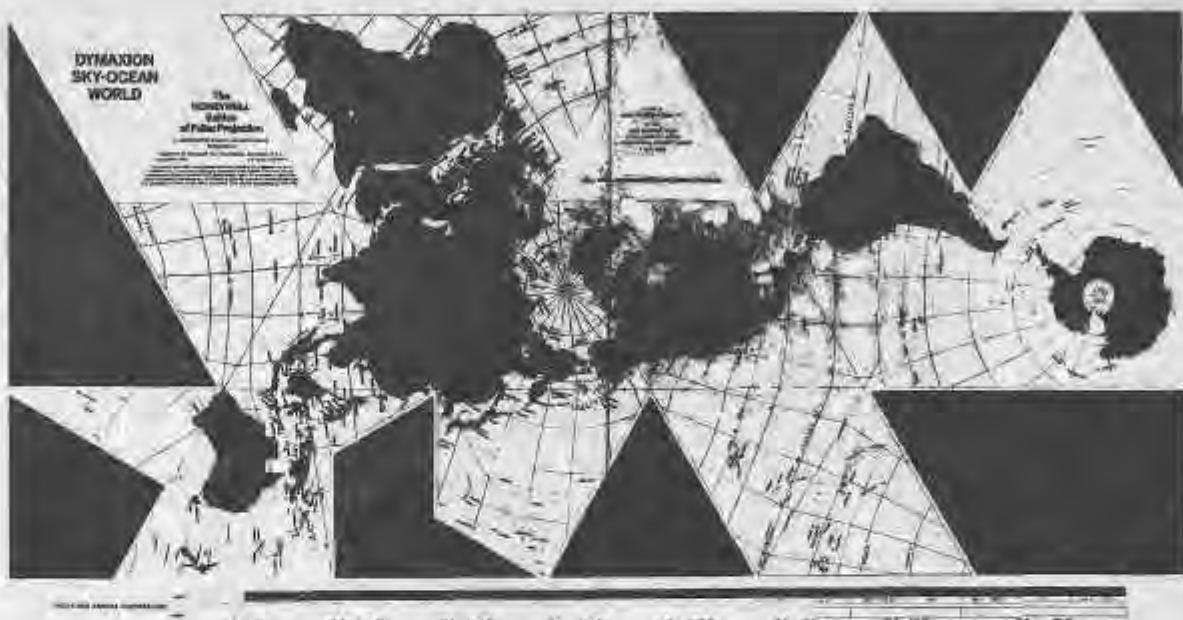
[WSD Document 5]

In the 1920's with but little open country highway mileage in operation, automobile accidents were concentrated and frequently occurred within our urban and suburban presence. Witnessing a number of accidents, I observed that warning signs later grew up along the roads leading to danger points and that more traffic and motorcycle police were put on duty. The authorities tried to cure the malady by reforming the motorists. A relatively few special individual drivers with much experience, steady temperament, good coordination and natural tendency to anticipate and understand the psychology of others emerged as "good" and approximately accident-free drivers. Many others were accident prone.

In lieu of the after-the-fact curative reform, trending 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 automatic traffic control stop-lighting systems. I saw no reason why the problem shouldn't be solved by preventative design rather than attempted reforms. My resolve: Reshape environment; don't try to reshape man.

[WSD Document 1]

<p><b>WORLD DESIGN SCIENCE DECADE 1965-1975</b></p> <p>From 1 (1965) Document 1 ANATOMY OF WORLD RESOURCES WORLD DESIGN SCIENCE DECADE</p> <p>World Resources Inventory Southern Illinois University Carbondale, Illinois, U.S.A.</p>	<p><b>WORLD DESIGN SCIENCE DECADE 1965-1975</b></p> <p>From 2 (1966) Document 2 THE DESIGN PROCESS</p> <p>World Resources Inventory Southern Illinois University Carbondale, Illinois, U.S.A.</p>	<p><b>WORLD DESIGN SCIENCE DECADE 1965-1975</b></p> <p>From 3 (1967) Document 3 COMBINATORIAL LOGIC</p> <p>World Resources Inventory Southern Illinois University Carbondale, Illinois, U.S.A.</p>
<p><b>WORLD DESIGN SCIENCE DECADE 1965-1975</b></p> <p>From 4 (1968) Document 4 THE BIOLOGICAL CONTEXT OF DESIGN</p> <p>World Resources Inventory Southern Illinois University Carbondale, Illinois, U.S.A.</p>	<p><b>WORLD DESIGN SCIENCE DECADE 1965-1975</b></p> <p>From 5 (1969) Document 5 THE PHYSICAL CONTEXT OF DESIGN</p> <p>World Resources Inventory Southern Illinois University Carbondale, Illinois, U.S.A.</p>	<p><b>WORLD DESIGN SCIENCE DECADE 1965-1975</b></p> <p>From 6 (1970) Document 6 THE ECONOMIC CONTEXT OF DESIGN</p> <p>World Resources Inventory Southern Illinois University Carbondale, Illinois, U.S.A.</p>



The Honeywell edition of Fuller's world map (more brightly colored than previous editions) is available for \$4.00 postpaid

from:  
P.O. Box 909  
Carbondale, Illinois 62901

'Still further—over the microphone STEPPED-UP electrically this music enters a super-or-sub-sensory wave-length frequency that makes it broadcastable, apparently BACK INTO THE UNIVERSE AGAIN, the full LATENT broadcast of which men on ships at sea, an aviator in the air, or Julia Murphy in a city hotel, or the farmer's wife, can tune in upon, without any personal-equation dissonance by unwanted diverting human beings in their presence, and so hear the music of the universe that Bach heard years ago.

'Here is IMMORTALITY!'

'Darling,—that radiant flash of infinite understanding had flashed between Jonesia and the X-man—I can understand those houses all right.'

[Nine Chains to the Moon]

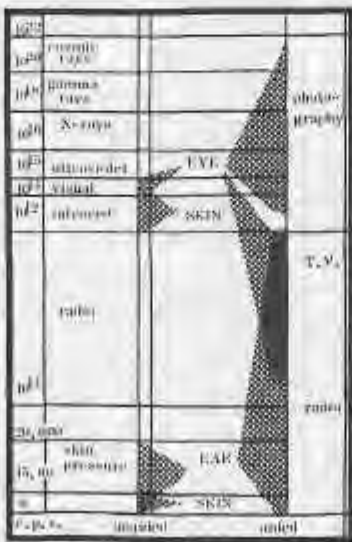
**Nine Chains to the Moon**  
1938, '63; 375pp.  
normally \$2.45 from  
Southern Illinois University Press  
or **WHOLE EARTH CATALOG**  
is out of stock until September 1969.

However, man unconcernedly sorting mail on an express train with unshattered faith that the engineer is competent, that the switchmen are not asleep, that the track walkers are doing their job, that the technologists who designed the train and the rails knew their stuff, that the thousands of others whom he may never know by face or name are collecting tariffs, paying for repairs, and so handling assets that he will be paid a week from today and again the week after that, and that all the time his family is safe and in well being without his personal protection constitutes a whole new era of evolution—the first really 'new' since the beginning of the spoken word. In fact, out of the understanding innate in the spoken word was industrialization wrought after millenniums of seemingly whitherless spade work.

[The Unfinished Epic of Industrialization]

**The Unfinished Epic of Industrialization**  
Buckminster Fuller 1963; 227 pp

\$4.50 postpaid from  
Small Publishers Company  
276 Park Avenue South  
New York, N. Y. 10010  
or **WHOLE EARTH CATALOG**



HUMAN DAILY METABOLIC TURNOVER

WSD Document 4

According to Ed Rosenfeld, Fuller is giving a June-July study project on *The World Game* at New York Studio School, 8 West 8th Street, New York City 10011.

World society has throughout its millions of years on earth made its judgements upon visible, tangible, sensorially demonstrable criteria. We may safely say that the world is keeping its eye on the unimportant visible 1 percent of the historical transformation while missing the significance of the 99 percent of overall, unseen changes. Forms are inherently visible and forms no longer can "follow functions" because the significant functions are invisible.

WSD Document 4

**Concept Twelve — SELF DISCIPLINES**

Working assumptions, cautions, encouragements, and restraints of intuitive formulations and spontaneous actions. My own rule: "Do not mind if I am not understood as long as I am not misunderstood."

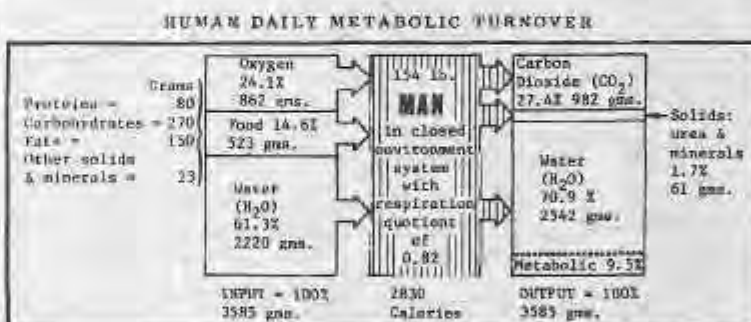
**Personal Self-Disciplining.** In 1927 I gave up forever the general economic dictum of society, i.e. that every individual who wants to survive must earn a living. I substituted, therefore, the finding made in concept one, i.e. the individual's entropic responsibility in universe. I sought for the tasks that needed to be done that no one else was doing or attempting to do, which if done would physically and economically advantage society and eliminate pain.

As a consequence, it was necessary for me to discipline my faculties to develop technical and scientific capability to invent the physical innovations and their service industry logistics.

My Recommendations for a Curriculum of Design Science:

1. Synergetics
2. General Systems Theory
3. Theory of Games (Von Neumann)
4. Chemistry and Physics
5. Topology, Projective Geometry
6. Cybernetics
7. Communications
8. Meteorology
9. Geology
10. Biology
11. Sciences of Energy
12. Political Geography
13. Ergonomics
14. Production Engineering

[WSD Document 6]



Source: Apogee, Douglas Missile & Space Publication No. 4, 1961, p. 8.

The *World Design Science Decade* documents contain some that is in the other books and much that isn't. The 6 volume set costs \$10.50 postpaid to students (formal and informal); \$30.00 postpaid to others. This is a very good deal.

We find that original question asking is a consequence of interferences, whether in the computer or the human brain. We find then that original questions are second derivative events in the computer life.

[WSD Document 2]

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

The will of history reads "for everybody or for nobody," and since we balk at "for nobody" it has to be "for everybody". And that's the way it is going, llokey-epit and the world around.

[WSD Document 3]



## 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 freaking well he reports well.*

It is, of course, socially very acceptable to reduce the death rate. Billions of years of evolution have given us all a powerful will to live. Intervening in the birth rate goes against our evolutionary values. During all those centuries of our evolutionary past, 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.

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 sex as an interpersonal relationship, as 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.

As White says, "By destroying pagan animism, Christianity made it possible to exploit nature in a mood of indifference to the feelings of natural objects." Christianity fostered the wide spread of basic ideas of 'progress' and of time as something linear, nonrepeating, and absolute, flowing from the future into the past.

The battle to feed all of humanity is over. In the 1970's the world will undergo famines—hundreds of millions of people are going to starve to death in spite of any crash programs embarked upon now. At this late date nothing can prevent a substantial increase in the world death rate, although many lives could be saved through dramatic programs to 'stretch' the carrying capacity of the earth by increasing 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 conscious regulation of the numbers of human beings to meet the needs, not just of individual families, but of society as a whole.

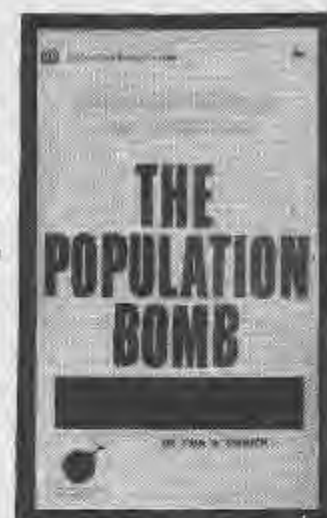
Nothing could be more misleading to our children than our present affluent society. They will inherit a totally different world, a world in which the standards, politics, and economics of the 1960's are dead. As the most powerful nation in the world today, and its largest consumer, the United States 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 possible to have. They have seen colored pictures in magazines of the miracles of Western technology. They have seen automobiles and airplanes. They have seen American and European movies. Many have seen refrigerators, tractors, and even TV sets. Almost all have heard transistor radios. They know that a better life is possible. They have what we like to call 'rising expectations.' If twice as many people are to be happy, the miracle of doubling what they now have will not be enough. It will only maintain today's standard of living. There will have to be a tripling or better. Needless to say, they are not going to be happy.

A ship has hit the rocks and is sinking. The passengers scream for help. Some jump overboard and are devoured by the circling sharks. A group of distinguished scientists is on board. One of their number suggests that they can help man the pumps. 'Oh, no!' shout the others. 'That might hurt the captain's feelings. Besides, pumping is not our business. It's outside our field of competence.' You can guess what they do. They appoint a committee to study the problem, with subcommittees on marine engineering and navigation. They announce to the passengers that in two or three years the committee will produce a wonderful report which will be acceptable to the passengers, the captain, and the steamship line. Not so passive are the politicians. Some jump up to say that the passengers don't understand the political realities of the situation. Other more progressive politicians grab thimbles and start bailing, stopping every few seconds to accept praise for their valiant efforts.

I predict that the rate of soil deterioration will accelerate as the food crisis intensifies. Ecology will be ignored more and more as things get tough. It is safe to assume that our use of synthetic pesticides, already massive, will increase.

Careless overuse of DDT has promoted to 'pest' category many species of mites, little insectlike relatives of spiders. The insects which ate the mites were killed by the DDT, and the mites were resistant to DDT. There you have it—instant pests, and more profits for the agricultural chemical industry in fighting these Frankensteins of their own creation. What's more, some of the more potent miticides the chemists have developed with which to do battle seem to be powerful carcinogens—cancer-producing substances.



*The Population Bomb*

Dr. Paul R. Erlich  
1968; 223 pp.

\$0.95 postpaid



from  
Ballantine Books, Inc.  
c/o Simon & Schuster, Inc.  
630 Fifth Avenue  
New York, N. Y. 10020  
or  
WHOLE EARTH CATALOG

## Famine 1975!

*Population Bomb has the world ecologist's viewpoint. Famine 1975! is the international-aid viewpoint, by brothers who've been there.*

### Famine 1975!

William & Paul Paddock  
1967; 276 pp.

\$2.35 postpaid

from  
Little, Brown & Company, Inc.  
200 West Street  
Waltham, Mass. 02154  
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WHOLE EARTH CATALOG



The old idea that industry could create the mess and then the taxpayers must clean it up has to go. The garbage produced by an industry is the responsibility of that industry.

Today, nearly half of the people in the undeveloped world are under the age of fifteen years.

More than any other single factor, the opportunity to have an abortion performed under safe and easily available conditions and, above all, legally, is the cause of Japan's success in population control. Such a method is completely taboo in much of the hungry world.

Haiti	Can't be saved
Egypt	Can't be saved
The Gambia	Walking Wounded
Tunisia	Should Receive Food
Libya	Walking Wounded
India	Can't be saved
Pakistan	Should Receive Food

Today twelve thousand people died of hunger in the world. Tomorrow another twelve thousand will die.

Los Angeles, for instance, has had stringent smog control laws for about 20 years. Breathed any of their air lately?

As Webb said, the frontier was, in essence, 'a vast body of wealth without proprietors.' Europeans moved rapidly to exploit the spatial, mineral, and other material wealth of the New World. They created an unprecedented economic boom that lasted some 400 years. The boom is clearly over, however, at least as far as land is concerned. The man/land ratio went beyond 27 people per square mile again before 1930. Since all of the material things on which the boom depended also come ultimately from the land, the entire boom is also clearly limited. Of course, how to end that boom gracefully, without the most fantastic 'bust' of all time, is what this book is all about.

## The Times Atlas of the World

*"A world remade must be a world remapped." That intelligent dictum was issued at the end of World War I by Lord Northcliffe, then proprietor of *The Times* of London. He didn't wait for someone else to do the job; *The Times Survey Atlas of the World*, with cartography by John Bartholomew of Edinburgh, was issued in 1921, and was recognized immediately as one of the finest atlases ever printed. The tradition has been continued, and the latest *Times Atlas—the Comprehensive Edition*—is the best place for an English-reading person to find where in the world something is located. The book also has a unique ability to convey the feel of the world. It measures 18" x 12 1/2" x 2", weighs 11 pounds, and contains 568 pages, of which 240 are double-page maps of superb accuracy and beauty. The index-gazetteer includes more than 200,000 entries, incomparably more than any other atlas of the world, and the entries are keyed not only by individual map coordinates, but by latitude and longitude as well (a feature offered by no other atlas). Despite the huge number of place names the maps are extraordinarily legible, and they are mercifully free of the pink-purple-yellow political emphasis offered by lesser cartographers. Some of the place names may look strange to American readers, because 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 is unfamiliar, the traditional anglicized name is also given, in parentheses.*

*The Comprehensive Edition of *The Times Atlas of the World* is published in the United States by Houghton Mifflin Company, Boston, Massachusetts. It is dedicated, by gracious permission, to Her Majesty Queen Elizabeth II, and bound in appropriately regal bright red linen, gold-stamped. It costs \$45, and it will make anything else on your coffee table seem puny, as the whole world should.*

(Suggested and reviewed by  
Dr. Morton Grosser.)



Distribution and Density of Population. Birth and death rates.

### Times Atlas of the World

Comprehensive 1 Vol. Edition  
1968; 568 pp.

\$57.50 postpaid from

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Wayside Road  
Burlington, Mass. 01803  
or  
WHOLE EARTH CATALOG



**Population, Evolution, and Birth Control**

Once you've waken up to the population squeeze and the blindness of most of your fellow men, it's worth looking around. Garret 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?

The closed earth of the future requires economic principles which are somewhat different from those of the open earth of the past. For the sake of picturesqueness, I am tempted to call the open economy the 'cowboy economy,' the cowboy being symbolic of the illimitable plains and also associated with reckless, 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, man must find his place in a cyclical ecological system which is capable of continuous reproduction of material form even though it cannot escape having inputs of energy.

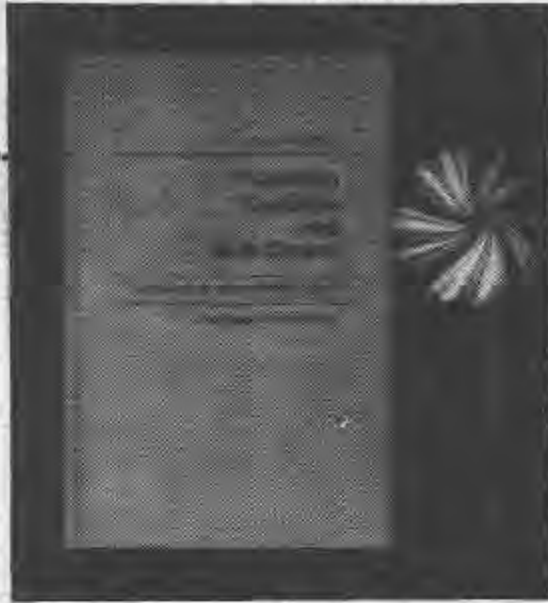
Kenneth E. Boulding

If the food supply is falling short, or a new disease threatens us, inventions to relieve it must be made before famine and pestilence have done their work. Now, we are far nearer to famine and pestilence than we like to think. Let there be an interruption of the water supply of New York for six hours, and it will show in the death rate. Let the usual trains bringing supplies into the city be interrupted for forty-eight hours, and some people will die of hunger. Every engineer who has to deal with the administration of the public facilities of a great city has been struck with terror at the risks which people 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 quivering 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



We must once again declare that the direct interruption of the generative process already begun, and, above all, directly willed and procured abortion, even if for therapeutic reasons, are to be absolutely excluded as licit means of regulating birth.

Equally to be excluded, as the teaching authority of the Church has frequently declared, is direct sterilization, whether perpetual or temporary, whether of the man or of the woman. Similarly excluded is every action which, either in anticipation of the conjugal act or in its accomplishment, or in the development of its natural consequences, proposes, whether as an end or as a means, to render procreation impossible.

Pope Paul VI

And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.

5. Abortion is the most widely used single method of birth control in the world today.
6. A properly performed abortion is much less dangerous than a normal childbirth. The most recent experience indicates that surgical abortion ('D and C'—dilation and curettage), as carried out legally in eastern Europe, is only one-eighth as dangerous as a normal childbirth in the United States (with complicated childbirths the contrast is even greater). A vacuum method of early abortion, first developed in Russia and now being used in England and America, will undoubtedly prove even safer.
7. Abortion does not produce sterility. An incompetently performed one can, of course.
8. Abortion, when legal, need not be expensive. In Roumania, it costs less than \$2.00. We should not expect such a bargain in the United States, but \$25.00 would perhaps be a reasonable fee by American standards. The essential thing is to perform the abortion early (before the 12th week). If it is performed early there is no need for a hospital: a clinic or a doctor's office will do. (You can't get in and out of an American hospital for less than two hundred dollars.)

Garrett Hardin

**Man's Domain**

Man's Domain

General Drafting Co. 1968; 75 pp.

\$2.75 postpaid

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

Manchester Road Manchester, Mo. 63062

8171 Redwood Highway Novato, CA 94947

or WHOLE EARTH CATALOG

I scarcely believe it. An inexpensive, paperback, lightweight but complete World Atlas that skips all the political planetary persiflage 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. Now how about a globe that does the same thing? (Like it's physical geography with the inside light off, dynamic geography—climate, transportation, population—when you turn the light on.) [Hm. I see they do have a Globographic System—consisting of sets of transparencies for overhead projection onto a 36-inch inflatable outline globe. We're going to press, too late to check.]

**Population, Evolution, and Birth Control**

Garrett Hardin, ed. 1964, 69; 386 pp.

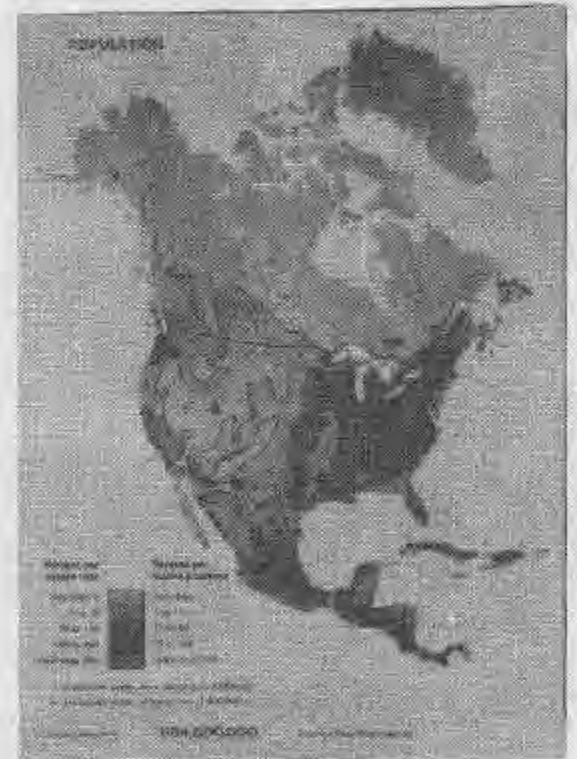
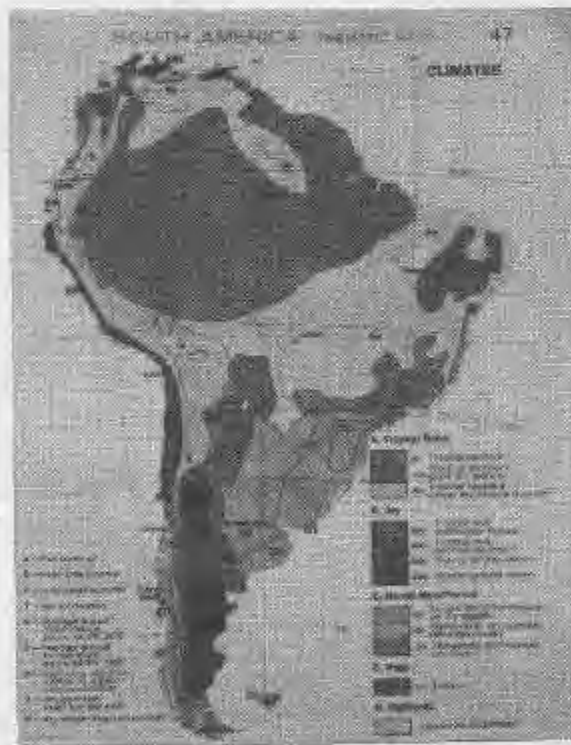
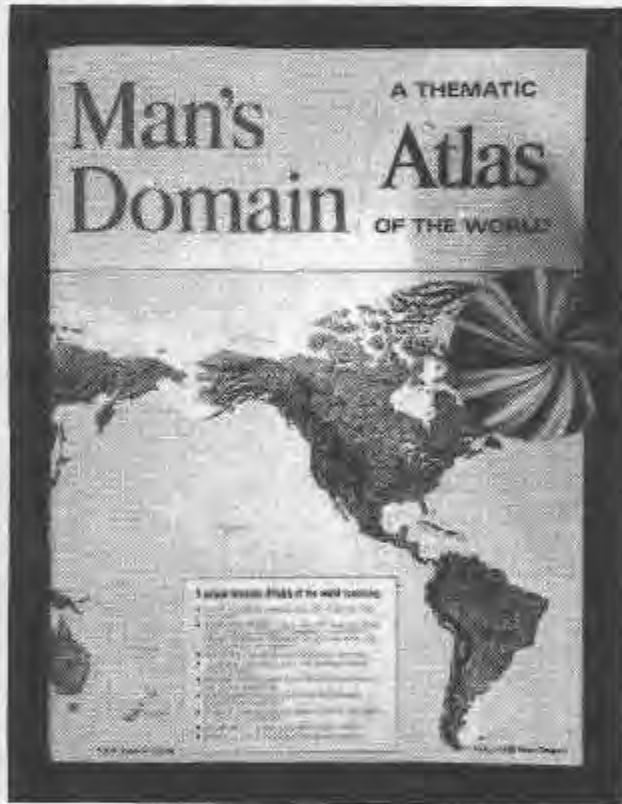
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Chapter III

Sturmius held, that the examination of the eye was a cure for atheism.

William Paley



**Cosmic View**

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

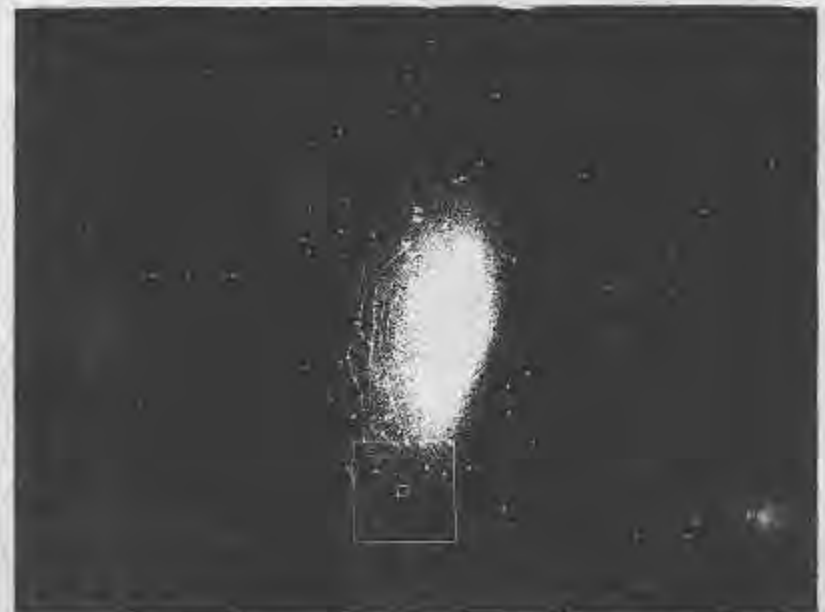
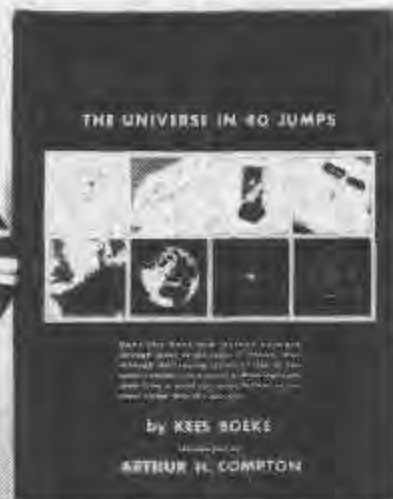
The man who conceived and rendered it, a Dutch schoolmaster named Kees Boeke, gave years of work to perfecting the information in his pictures. The result is one of the simplest, most thorough, inescapable mind blows ever printed. Your mind and you advance in and out through the universe, changing scale by a factor of ten. It very quickly becomes hard to breath, and you realize how magnitude-bound we've been.

Cosmic View Kees Boeke 1957; 48 pp.

\$4.50 postpaid

from: The John Day Company 62 West 45th Street New York, N.Y.

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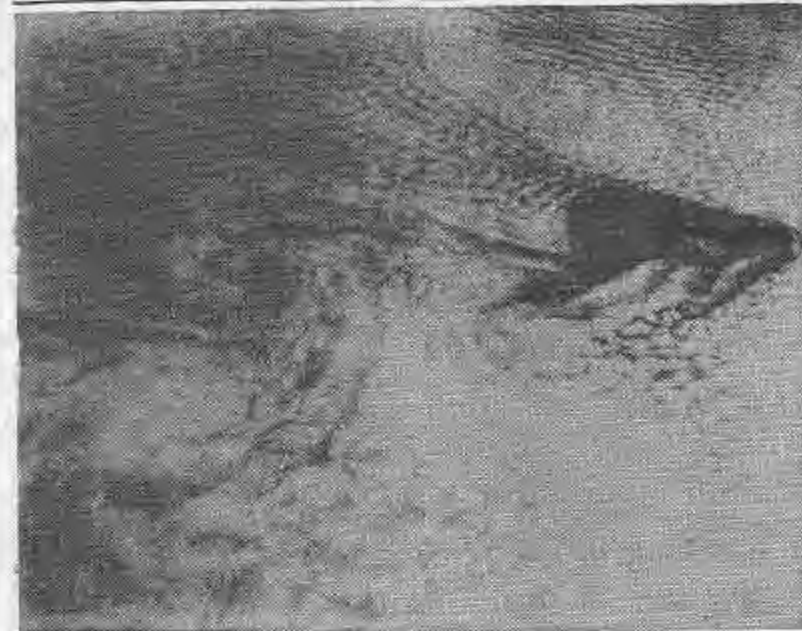
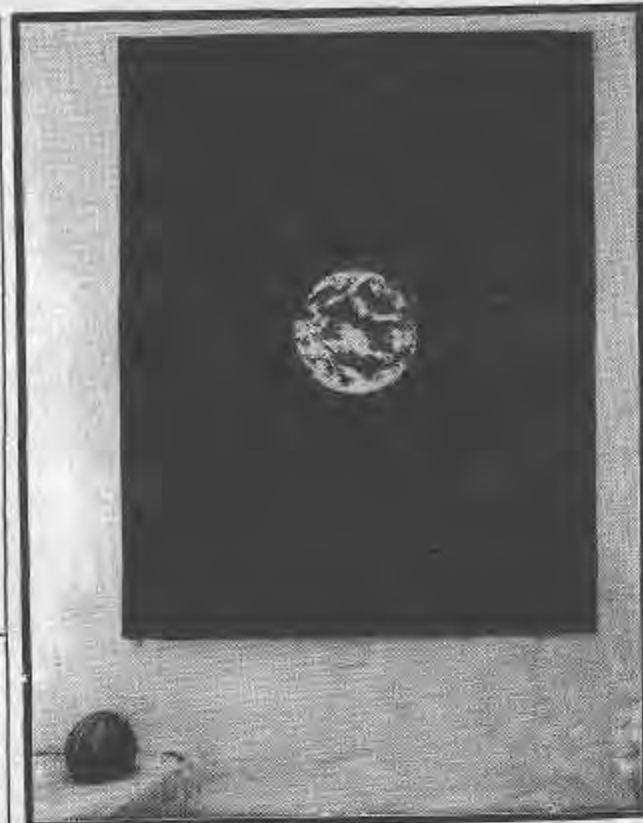




**Apollo 8**

One of the best films we've ever seen is available on loan free from NASA. It's called 'Debrief: Apollo 8', it's 28 minutes long, 16mm, color, sound. (But skip the sound—pedestrian and obvious; instead put something rich on the record player—Steve Miller's Children of The Future makes exquisite synch with 'Debrief: Apollo 8'.) The film is well shot and superbly edited. In it are transcendent sequences of weightlessness, remote blue Earth, Nevada Moon travelling by. The splashdown on dawn Pacific is mythic.

Inquire at nearest NASA offices, or write  
 Les Gever  
 Chief, Audio Visual Branch  
 Public Information Division  
 Office of Public Affairs  
 National Aeronautics and Space Administration  
 Washington, D. C. 20546



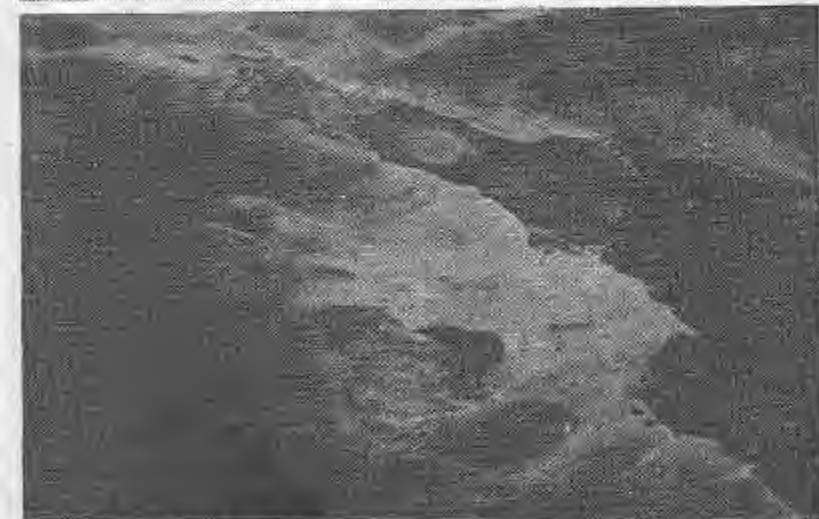
**Earth Photographs**

NASA SP. 129 is a hell of a book. Two hundred forty-three full page color photographs of our planet from the Gemini flights of 1965. If it were a Sierra Club book, and it could be, it would cost \$25. It costs \$7.

There are numerous discoveries in the book. One is that this beautiful place is scarcely inhabited and scarcely inhabitable.

**Full Earth**

Mandala 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 the same as the cover of the Fall '68 CATALOG, only 22" x 27". An order for five or more gets 50% discount.



A second photograph of California's Imperial Valley giving a clear view of the Salton Sea. No agreement exists concerning the cause of the gyre seen in the center of the sea. 8-85-45218



Earth Photographs from Gemini III, IV, and V.

spread from Earth Photographs

NASA  
 1967; 266 pp.

\$7.00 postpaid

**Exploring Space With a Camera**

NASA SP-168 (1968 O-292-583)  
 1968, 214 pp.

\$4.25 postpaid

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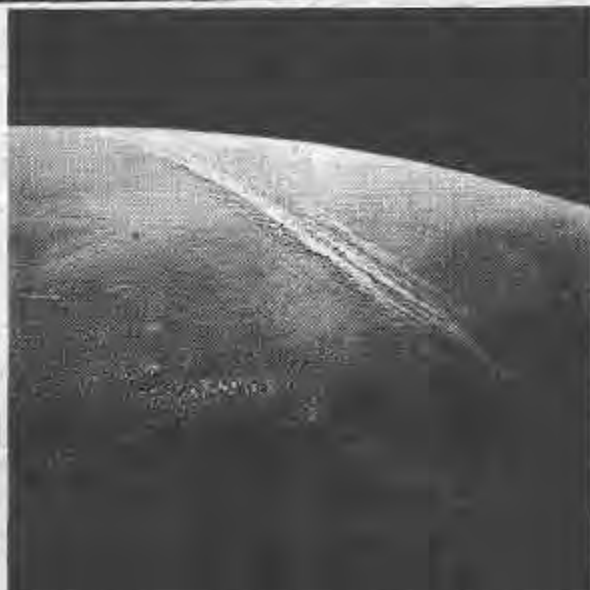
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 San Francisco, California 94102

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**Exploring Space With a Camera**

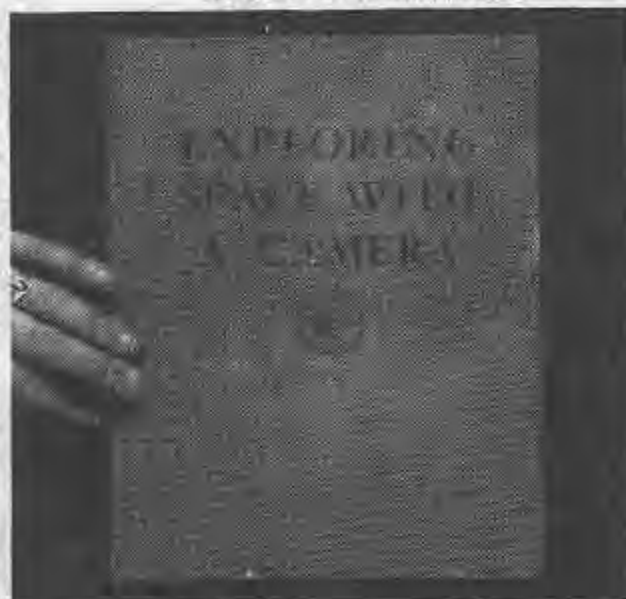
The Gemini photos book (above) is purer, but this new book of pictures from NASA really is better for understanding the whole systems of Earth, Earth-Moon, and Solar System. All of the outstanding photographs, color and black & white, up through Apollo 7 are here in one family album, with unusually complete information on what can be discovered in the images. It's NASA's bid for your interest in next steps in the real space odyssey. It's convincing.



A band of cirrus clouds crosses the picture of the Nile Valley and the Red Sea. "Such cloud bands," says Kenneth H. Nassau, Chief, Space Operations Support Division, Environmental Science Service Administration, "normally occur on the equatorial side of the core of a strong westerly windflow known

as the jetstream, in which winds of 200 knots to 300 knots more than 100 knots are common. Often seen in low detail in weather-satellite views, these cirrus bands are particularly useful as indicators of the direction of the upper-level wind. In the foreground, small cumulus clouds are allowed to remain

ESM-1117





**The World From Above**

*Close-up glamor shots of the Earth. Mystery shots (What is that? What's our altitude above it, 10 feet or 10,000?) (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.*



**The World From Above**

Hanns Reich  
1966; 83 pictures

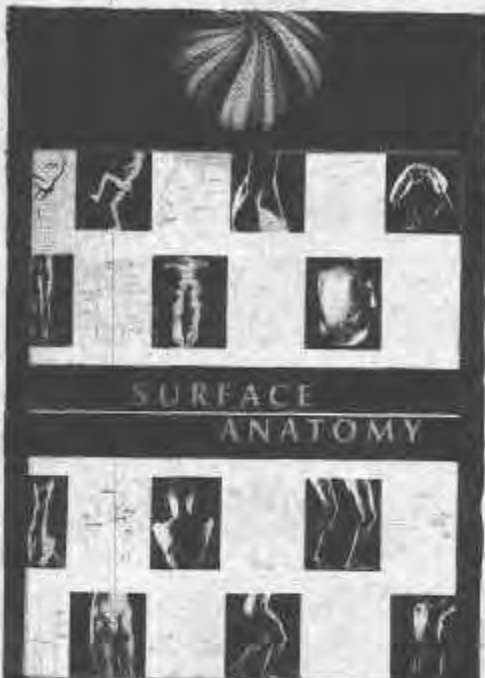
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New York, N.Y. 10010  
or  
WHOLE EARTH CATALOG

**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.*



**Surface Anatomy**

Joseph Royce  
1965; 124 photographs  
and some diagrams

\$12.50 postpaid

from:  
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WHOLE EARTH CATALOG







*The Whole Earth Catalog is one division of*  
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*Other present activities of the Institute include*

The cover photograph is from NASA's Apollo 8 mission. The statement is from *Energy Flow in Biology* (by Harold Morowitz, \$9.50 from Academic Press, 111 Fifth Avenue, New York, N. Y. 10003). The hand is Steve Durkee's.

*Computer education for all grade levels*



*Robert Albrecht, two members of the Computer Club, and two Commodore calculators.*

*Simulation games for classroom use*



*Dennis Dobbs, the Pacific ocean, and a class on the beach of simulation Atlantis.*

*Ortega Park Teachers Laboratory*



*Ortega Park Teachers Laboratory, one teacher, one student, and 70 acres of redwoods.*

*PORTOLA INSTITUTE was established in 1966 as a nonprofit corporation to encourage, organize, and conduct innovative educational projects. The Institute relies for support on private foundations and public agencies, to whom specific project proposals are submitted.*

*Because Portola Institute is a private organization with no need to produce profits or guarantee "success", it can experiment with new and unusual educational projects that would be difficult to administer within more structured organizations. For this reason the staff and facilities of the Institute are deliberately kept small and flexible.*

*Within its framework a wide variety of projects dealing with innovative education can be created as people with ideas are able to interest people with funds. New projects are always being considered, both within the existing divisions and programs, and within as yet unexplored realms of the learning experience.*

Portola Institute, Inc.  
 1115 Merrill Street  
 Menlo Park, CA  
 94025

More information on Portola Institute, please. Especially \_\_\_\_\_

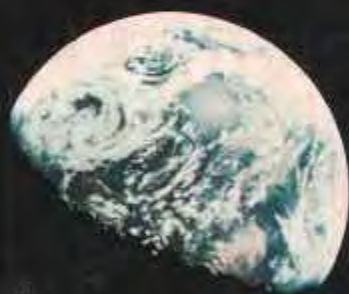
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*"The flow of energy  
through a system  
acts to organize  
that system."*