What I Have Learned

A collection of 20 autobiographical essays by great contemporaries from the *Saturday Review*

Augustine Cardinal Bea Danilo Dolci C. A. Doxiadis Ilya Ehrenburg Dwight D. Eisenhower Buckminster Fuller James M. Gavin Harry Golden Eric Hoffer Robert M. Hutchins

Horace M. Kallen Salvador de Madariaga Robert Moses Reinhold Niebuhr Alan Paton Chakravarti Rajagopalachari Herbert Read Hans Thirring Warren Weaver John F. Wharton

A SATURDAY REVIEW BOOK

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A collection of twenty autobiographical essays by great contemporaries from the "Saturday Review"

R. Buckminster Fuller

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1 Preface

NORMAN COUSINS

Adventures in Ideas and Learning

The idea for the series in "What I Have Learned" came from four short lines in The *Practical Cogitator*, edited by Charles Curtis and Ferris Greenslet. Originally published in 1945 and reissued in 1962, the Cogitator is one of the most compact, varied, and satisfying intellectual and literary feasts to appear in this country in the post-World War II years. The four sentences came from Charles Beard in response to a query by George Counts, now eminent professor at the University of Southern Illinois School of Education, once a professor of my own when I was a student at Columbia Teachers College: "How long would it take you to tell all you have learned from your lifetime's study of history?" Dr. Beard felt the great lessons of history could be summed up in just four lines:

- 1. Whom the gods would destroy, they first make mad with power.
- 2. The mills of God grind slowly, but they grind exceeding small.
- 3. The bee fertilizes the flower it robs.
- 4. When it is dark enough, you can see the stars.

Each of these sentences, of course, opens out on a universe of human thought and experience. Each seems enigmatic or paradoxical; all represent a challenge to the individual mind—not just to see fully into and beyond the separate statements but to relate them to personal experience.

Over the years, we have found Professor Beard's apothegms a most useful way of getting people to talk about themselves. There is a vivid recollection, for example, of a philosophical conversation with Jawaharlal Nehru in 1953. We were seated on the broad lawn in back of the prime minister's house in New Delhi. He was at the

height of his popularity as leader of India's four hundred million newly independent people. Nehru relished reflective conversation and often complained that politics and contemplation didn't go well together. He said he regretted being so busy doing things he didn't have time to look into the meaning of them. Yet each man had the obligation, he supposed, to scrutinize his life and to ask whether it was teaching him anything—a paraphrase of Socrates' famous observation that the unexamined life isn't worth living. Nehru was just as much at home with the ideas of the ancient Greeks as he was with Eastern thought. He said he wondered how many people could penetrate their own experience in order to locate the essential lessons.

We mentioned Professor Beard's brief philosophical distillations. They delighted Nehru. Then we asked him how he would respond to the challenge put to Professor Beard by Professor Counts. He sat back in his lawn chair and slowly sniffed a tiny rose. Then he said: "I have often wondered whether I have learned anything at all in my life, really. It is possible the most important lessons are stored in the subconscious and that we act on them without identifying the source or even knowing they are there.

"One lesson I know I can identify. The teacher was Gandhiji. He taught me—he taught us all—the importance of making the means consistent with the ends. If you had worthwhile goals but pursued violent or evil means, the goals would change for the worse. Politicians are not philosophers—though I agree with Plato it would be nice if this were so. Anyway, it is somewhat out of tradition for a politician to make the means consistent with the ends. Few things are more typical of politics than the ease with which it degenerates into violence. Yet I have learned that it is worth trying to keep good ends from being diminished by poor means. Trying helps—at least a little.

"The second lesson I think I may have learned," he continued, "is that there is no natural conflict or contradiction between free will and determinism. Life is both. Life is like a game of cards. You have no control over the hand that is dealt you. The hand corresponds to determinism. The way you play the cards corresponds to free will. So I think I have perhaps learned it is better to make the most of what you are than to exhaust yourself in lamentation because you are not someone else."

Nehru's emphasis on the dominance of moral lessons over the practical ones was also clear in Albert Schweitzer's reaction to Beard's miniaturized formulations. "All my life I have been asking myself not just what I have learned but what civilization has learned," Schweitzer said in our last conversation at the hospital in Lambar6n£. "And I have come to feel that the greatest discoveries have to do with ethics. Man is still in search of an ethic which alone can give his life true meaning and beauty. For me, the greatest ethic is life-and-world affirmation. If we can develop true reverence for all life, we may be able to understand it. We cannot manifest it or be part of it without reverence. This, I think, is what I have most of all learned. There is also the need to understand the reality of the existence of God inside each man and to know how to make that inner kingdom manifest."

It is against this background that the "What I Have Learned" series was conceived and planned. Our hope had been that Nehru and Schweitzer would contribute to the series. Nehru said, characteristically, that he would only embarrass himself by revealing how little he had learned after all, but said he would try to find time to contribute. During the next year, he wrote us three long letters detailing his preoccupation with India's problems and world issues. Schweitzer, also characteristically, sent long handwritten letters, apologizing for the quality of the penmanship (he said he had inherited his arthritic fingers) and telling of his world concerns.

Though neither Nehru nor Schweitzer is represented in the "What I Have Learned" series or the book, their place in the development of the idea must be acknowledged. Their responses, as well as the original brief quotations from Charles Beard, were highly pertinent and useful in describing the project to possible contributors and in setting the stage for the book.

This volume of "What I Have Learned" consists of twenty essays. Publication of the book, however, will not mark the end of the series in SR. The editors intend to continue publishing the essays so long as reader interest in the series is sustained. It is possible that additional volumes may be brought together. All this, however, is for the future. Meanwhile, the editors hope the book will serve as a reminder that man can still preside over his experience. The perception of a better future must not be confined to soothsayers or astrologers. The proper assessors of human hopes are those who can comprehend the connection between cause and effect and who can extract governing principles from the multiplicity of events and forces. The learning experience is still the precarious and vital one. The human race may not be able to generate as much conceptual thought as it can use, but it would be disastrous not to use as much as it has. Fortunately, thought does not have to be quantified—not even in an age obsessed with numbers. Even to promote respect for thought adds to the basic energy and quality of civilization.

Norman Cousins

2 How Little I Know

RICHARD BUCKMINSTER FULLER

"Tell mein five thousand

Written words"-

(Equivalent, at my oral rate,

To three-quarters of an hour's discourse) "What you have learned—

In your lifetime,"

Said Norman Cousins.

"That ought to be easy" said I.

Three weeks have gone by-

I recall that Thirty-eight years ago I invented a routine Somewhat similar to Muscle development Accomplished through A day-by-day lifting Of progressively heavier weights.

But my new

Intellectual routine

Dealt with the weightless process Of human thought development Which subject is Known to scholars As *epistemology*.

And I have learned

That such words as Epistemology Stop most of humanity From pursuing

Such important considerations As the development Of the thought processes.

So my new discipline Was invented for dealing Even with the ephemeral Which word means

Conceptual but *weightless*—As is for instance

The concept of circularity.

My new strategy required That on successive days

I ask myself

A progressively larger

And more inclusive question Which must be answered Only in the terms of Experience.

Hearsaids, beliefs, axioms,

Superstitions, guesses, opinions Were and are

All excluded

As answer resources

For playing my particular Intellectual development game.

However, when lacking Any possible experience clues I saw that it was ineffectual To attempt to answer Such questions as for instance "Why I?"

Or

"Why...

Anything?"

And because it was my experience 'That some individuals Proved as persistently faithful In reporting their experiences to me As were my own senses The rules of my game permitted My inclusion of such individuals' Directly reported experiences In my inventory of experiences For use in my progressively Great and greater Selfquestioned answering.

In playing that game I soon came

To what I assumed to be both

The largest askable and

The largest answerable

Question:

"What do you mean,"

I asked myself,

"By the word

Universe?

If you can't answer

In terms of

Direct experience

You must desist

From the further use

Of the word UNIVERSE

For, to you

It will have become

Meaningless!"

The twentieth century physicists, In defining the physical universe

As consisting only of energy,

 $Deliberately \ excluded \ the \ metaphysical \ universe-Because \ the \ metaphysical$

Consists only of imponderables,

Whereas the physical scientists Deal only with ponderables—Wherefore their physical universe Excluded for instance

All our thoughts,—

Because thoughts are weightless-

But thoughts are experiences-

Wherefore I saw

That to be adequate

To the intuitively formulated

And experience-founded controls

Of my ever bigger

Question and answer routine,

My answering definition

Of UNIVERSE

Must be one which

Embraced the combined

Metaphysical and physical Components of UNIVERSE.

Thus my self-formulating answer emerged, And has persisted unshattered

By any subsequent challenges

From myself or others

As:

"By universe I mean:

The aggregate of all humanity's

Consciously apprehended

And communicated

(To self or others)

Experiences."

And later I discovered that

Eddington had said *"Science* is:

The conscientious attempt

To set in order

- The facts of Experience."
- And I also discovered
- That Ernst Mach-
- The great Viennese physicist, Whose name is used
- To designate flight velocity
- In speed of sound increments, Known as Mach numbers–Said:
- "Physics is:
- Experience
- Arranged in
- Most economical order."
- So I realized that
- Both Eddington and Mach
- Were seeking to put in order
- The same "raw materials"—
- I.e. Experiences-
- With which to identify
- Their special subsystems Of UNIVERSE.
- Wherefore I realized that
- All the words in all dictionaries
- Are the consequent tools
- Of all men's conscious
- And conscientious attempts
- To communicate
- All their experiences-
- Which is of course
- To communicate
- Universe.
- There are forty-three thousand cunent words In the Concise Oxford Dictionary.
- We don't know who invented them!
- What an enormous, anonymous inheritance!
- Shakespeare used ten thousand of them With which to formulate
- His complete "works."

It would take many more volumes Than Shakespeare's to employ The forty-three thousand—Logically and cogently.

In a five thousand word article

I would probably have use for Only one thousand.

Are forty-two thousand Of these words

Superficial and extraneous In reporting on

What I have learned?

I have learned that

You would think so

If you ever saw a magazine's Space rewrite editor At work on my work!

"What's stopping you?" said Norman "I'm not stopping—I've never started.

I can't find the self starter

Or, more truthfully,

The self starter can't find me

Oh-there it goes"

Womb days–Womb days–Dear old tummy tomb days–

I can't consciously recall Those busy elementary assembly days But post-graduate activity in Experimental biology By me and you (one and two) Which surprisingly produced Wee thee (we three) And more (four) Suggests to us

That our subconscious reflexing Can never forget

The satisfactory routines of our 273 Undergraduate days.

Probably no billionaire Out here in the air "Ever had it so good."

It is understood

That if you know that I know How to say it "correctly" (The exact meaning of which I have not yet learned) Then I am entitled to say it All incorrectly

Which once in a rare while Will make you laugh. And I love you so much Whenever you laugh.

But I haven't learned yet What love may be But I love to love And love being loved And that is a whole lot Of unlearnedness.

I haven't learnt yet What laughter is But a mother told me How surprised was she When an undergraduate first Belly laughed in her Alma mater Dormitory.

I haven't learned

How or why



Figure 2.1: C - G T - A A - T G - C A - T G -C

Universe contrived to implode And intellectually code The myriadly unique Chromosomically orchestrated DNA-RNA,

Quadripartite moleculed, Binary paired, Helically extended

And unzippingly dichotomied Regenerative symphonic Jazz, as

A one and two, Three and four Me You,

Thee they

And more Thine and mine, Sweet citizen.

THYMINE-CYTOSINE GUANINE-ADENINE

That tetracouplet

Won the Nobel prize

The Wilkins, Crick and Watson Waltz

And that GC-TA jazz

All synced into

The non-simultaneous aggregate Of complex frequency integrated, Multi-degrees of freedom permitted, Individualized sequences,

Of experience evolutions,

Which we wave-modulatingly identify, In the subconsciously formulated, Tongue and lips shaped, Omni-directionally propagated,

Air wave patterning-

Sound

WORLD

–Whirled into the world Of positive and negative Of–

MALE	and	FEMALE
Singular	and	Plural
Discontinuous	and	Continuous (has ovaries)
Compression	and	Tension

Hunter	and	Consolidator
Differentiator	and	Integrator
0		
Ι		
In		
live		
evil		
evllution		
devil		
and Out		
and 1 O v e		
and e v O 1		
and evOlution		
and 1 O v e d		
The Devil lived But	never loved Wh	nich is lonely—L —one —only As are all Self Isola-
tions		
So let's withdraw F	rom exclusivity,	Into world music Where—As yet dancing to The
DNA waltz—I am now	v seventy years,	or Approximately 600,000 hours old.
I have slept away 2	00,000 of those	hours. While another 200,000–Which is half of
My 400,000 awake	hours—	
Have gone into rou	ıtine work whic	h has been Prescribed, imposed or induced by
other men—Such as	being "educate	d," earning a living, Paying taxes, obtaining li-
censes, Answering te	elephones and q	uestionnaires.
And another 100,0	-00	
Half of the remaini	ing 200,000 awa	ke hours—Have gone also into routine work
But this time prese	ribed	
In the by-laws of m	iembership	
In the non-simulta	neous inventior	n Universe—
As one of its impre	ssively indepen	dent, Variable functions—
A human member.		
Each such membe	r is	
A metabolically reg	generative	

Ninety-nine per cent automated, Individually unique,

Abstract, pattern integrity system, Whose input-output energy involvement And control capability

Must continually expand, extend, relay, rebuild And maintain, as "operative,"

An interior-exterior, bi-partite tool complex Beginning with an integrally centralized organic set Which is subsequently extended into

An extra-corporeally decentralized organic set.

Both of which interior and exterior sets consist of Progressively interchangeable and intertransformable Chemical, hydraulic, pneumatic, Electro-magnetic, thermodynamic, Molecular and anatomical, Structural patterning processes.

All of which complex Regenerative processes

Are compounded as a unitary, Invisibly minute, Abstract pattern marriage operation, Inaugurating a new individual life Which like a telephone message Has some of the thoughts of both parties Yet weighs nothing in itself But makes its compounded Pattern self known

By a complex pattern of orderly and local Physical environment displacements, Which—as the circular wave Emanating in any liquid Such as water, milk or kerosene, From the impact of an object Dropped in the liquid—Grows or expands regeneratively.

But as with the circularly expanding Weightless wave emanation There occurs also at outset A momentary displacement exchange As a centralized splash-back Dissipated against gravity To balance the local accounts.

And thus there is propagated An abstract and weightless Horizontally flowing Wave impulse pattern integrity Which though visibly apprehended By its succession of local displacements Does not consist of an horizontally moving

And ever increasing aggregate Of water molecules.

There is another experiment

Which discloses the pattern integrity Which can be demonstrated By taking three different Pieces of rope of equal diameter One of manila

One of nylon

One of cotton

And making a beautiful running splice Of one end of the manila rope Into the end of the nylon rope

And the other end of the manila rope Into the end of the cotton rope.

Next we make a simple back loop knot In the end of the cotton rope And slide it along the cotton rope Until it slides along over the splice Into the manila rope and along the manila Until it slides past the splice Onto the nylon And makes it clear

That the knot is neither

Cotton, manila, nor nylon But a pattern integrity Made visible to us

By its temporary local displacement Of the electro-magnetic frequencies Visible to us as colors

Within the frequency range Tuneable by our human optic system.

Neither water nor rope

"Went" anywhere

Only the weightless pattern integrity Moved from here to there.

So too does the complex wave package Of human being pattern integrity Begin to compound and Expand regeneratively

The local environment's chemical association And disassociation events;

Continually shunting more

And more chemical event patterns Into its local disturbance—Like a tornado gaining twist, Power and *visible presence* on Earth By inhibiting ever Greater quantities of Locally available dust, fibers, Water droplets and larger objects—Until the new human being Nine months later emerges From its mother's womb As a seven-pound, placid Pink tornado.

And this tomato tinted tornado—me—Swollen 24 fold to approximately 160 pounds—Each day takes in and compoundingly processes Approximately three pounds of foods, Six pounds of water and Sixty-four pounds of air—

From which it extracts six pounds of oxygen:-

Amounting at my seventy years To a cumulative total

Of approximately 1,000 tons-

The weight of one United States Navy's World War Two destroyer, Or 300,000 fold my arrival weight.

But the thousand tons Is in effect the weight Of a seventy years long Thirty-six inch girthed "rope" Twisted of imaginary strands Of food, water and air molecules Drawn randomly from all around Earth, And twisted temporarily together.

Into the molecular rope A complex slip knot has been "tied" Which complex knot Is both internally and externally In the exact pattern Of the complex, pattern integrity:—Me,— Which has been slipped Along the rope By time.

And as the knot passed, The rope behind it Disintegrated and Its atoms dispersed And deployed into Other biosphere function patternings.

Concurrently with "slipping" of corporeal "me" The extra-corporeally decentralized Originally integral functions of "me" Are externalized into a complex of tools Averaging ten tons of steel, Twenty-nine tons of concrete Plus one mixed ton

Of all the other metals

Per each industrialized man.

And man's tool extensions

Process universe energies, Occurring only external to man, and Provide each 1965

North American type industrialized human With 200, 24 hour serving, energy slaves; Each slave being capable

Of doing as much physical work as A human can do;

But at a ten millionfold

Finer degree of precision;

While working tirelessly Under conditions of heat

And cold which would destroy man.

All of this combined internal and external Metabolically regenerative man package Arrives without any instruction manual Covering either its own operation

Or that of the non-simultaneous Universe Within which man must function As an independent variable.

But the human package

Of integral and deployed tooling Has fortunately

The built-in subconscious capability Of self-discovery which in turn Has discovered its conscious ability To discover experimentally and progressively The ability to formulate concepts and words And thereby to relay to other contemporaries, And to subsequent generations of man, The apprehended data and Comprehended principles Apparently governing Some of the Operations Of Universe

Including man.

Of my remaining 100,000 hours 60,000 have been used

In getting from here to there;

And that has left me

A bonus of 40,000 hours

Or 6% per cent of my life's total hours To invest at compound interest In whatever way the "Conscious" I

Wishes.

It is hard therefore to explain Why conscious I

Should have behaved so perversely As to have concentrated on producing Explosives equivalent in destructive capability To fourteen tons of T.N.T.

Per each and every human on Earth.

And how perverse I have been Is only to be comprehended When it is realized

That the 14 tons per capita Of self annihilating explosives Represent an energy harvest Which if properly cultivated Could have been made to support At high standard of living All human life on earth

For all the rest

Of this century

While thus providing the opportunity To invest the gained time

In providing for all Human generations to come.

I'm not inclined to use The word "Creativity" In respect to human beings, What is usually spoken of as creativity Is really a unique and unprecedented Human employment of principles Which exist a priori in the universe.

I think man is a very extra-ordinary Part of the universe

For he demonstrates unique capability In the discovery and intellectual identification Of the operative principles of universe —Which though unconsciously employed Have not been hitherto differentiated, Isolated out and understood

As being principles, By other biological species.

Rejecting the word "creativity"

For use by any other than The great intellectual integrity Progressively disclosed as conceiving Both comprehensively and anticipatorily The complex interpattemings

Of reciprocal and transformative freedoms In pure principle

Which apparently govern universe And constitute the verb god,

I go along with the 5,000 year old Philosophy of the Bhagavad-Gita Which says "Action is the product Of the qualities inherent in nature. It is only the ignorant man, Who, misled by personal egotism, Says 'I am the doer.' "

I am most impressed

With the earliest recorded philosophic statements By unknown individuals of India and China.

Through millenniums the philosophies Have become progressively

Compromised and complicated.

I am an explorer, however,

Of the generalized design science principles Which seemingly differentiate Man from animal

And mind from brain.

The word "generalization"

As used in the literary sense, Means "a very broad statement." It suggests covering too much territory —Too thinly to be sound.

The literary men say "This is too general."

In the mathematical sense, The meaning of generalization Is quite different.

The mathematician or the physicist Looks for principles which are Persistently operative in nature, Which will hold true in every special case.

If you can find principles That hold true in every case, Then you have discovered What the scientist calls A generalized *principle*.

The conscious detection of

Generalized principles which hold true Under all conditions

And their abstraction from any and all Special case experiences of the principles

-Is probably unique to humans.

By abstraction, I mean an idealized, "Empty set" statement

Such as, for instance, one of my own!,

It is inconceivable that a dog

Tugging at its leash at one time

And, compressing its teeth

On a bone at another time,

Should formulate consciously

The generalized

"Only coexistence of tension and compression,"

Though the dog is subconsciously coordinate In tension-compression tactics.

To generalize further than

"Tension and compression are only coexistent,"

We may say that "plus and minus Only coexist" And generalize even further By saying "Functions only coexist." Then there is an even more powerful And intellectually more exalted stage Of generalization of principles And that is the generalization Of a complex of generalizations -Such as-unity is plural and at minimum two -Which combines the generalized law Of the coexistence only of functions With the theory of number. In turn we discover the generalizations Governing the associative powers Of the nucleus and of the weak interactions For the unity is two Of the congruent, convex and concave spheres As evidenceable in the generalized laws Disclosed conceptually, arithmetically, and geometrically In synergetics. I am certain that what we speak of As human morality Is a form of tentative generalization Of principles underlying Special case experiences of human potentials, Behaviors, actions, reactions and resultants. Man has also the unique ability To employ generalized principles -Once recognized-In a consciously selective variety Of special case interrelationships. The whole regenerative process Of intellectual discovery And specialized use of generalized principles Is known as teleology. **Teleology embraces** The theory of communication, Though as yet having special case limitations. It is an hypothetical

Approach to a pure, abstract generalization To say that *teleology Is only intuitively initiated by humans.*

Intuition alerts brain

To first apprehend

And then recognize

Each special case experience

Within some minimum number Of special case recognitions.

Intuition alerts mind

To comprehend, and Formulate conceptually

The abstract generalization Of a principle recognized

As operative in all the special cases. Intuition alerts brain to

The objectively employable generalized principle In hitherto unexperienced special case Circumstances inexplicably remote From the earlier set of

Special case experiences within which

The generalized principles were first experienced Before their generalization Occurred in the mind.

Teleology-as part

Of communications theory Relates to the pursuit of truth As entropy and antientropy.

It may be that

Communications theory

May be mathematically equated With electrical

Transmission theory Whereby the higher The meaning or voltage The more efficient And longer distance Communication attainable.

Based on experiments With any and all systems,

The second law of thermodynamics Predicts the inexorable energy loss Known as ENTROPY.

Because the escaping energy Does so diffusely, In all directions,

Entropy is also known Mathematically

As "The Law of Increase Of the Random Element."

Before it had been discovered By rigorous experimentation That light has a *velocity* It was erroneously assumed To be "self-evident"

That light was instantaneous—That all stars in the sky Were "right there now" In exact geometrical pattern, Being seen instantaneously And simultaneously

By all who looked their way.

But since Michelson's measurement Of light's speed

We have learned that The light from the sun, Our nearest star, Takes eight minutes To reach us here on Earth. From our next nearest star Light takes two years

To reach our planet Earth.

And other stars Are so far away Their light takes millions

Of years and more To reach us.

Assuming instant-universe Classical Newtonian Science Also assumed that universe Must he an instant system—A simultaneous unit machine, In which every part Must be affecting Every other part, In varying degrees But in simultaneous unity. They assumed also that the Unit and simultaneous universe Must of course obey The great Second Law Of Thermodynamics Whose, inexorable, Entropic energy loss Required self-dissipation And ultimately utter Self-annihilation Of universe.

"Running down" they called it Wherever "down" may be.

Though light's speed Of seven hundred million miles per hour Is fast

It isn't anywhere nearly as fast As "instant"-

Which means reaching anywhere "In no time at all."

Ergo, the Einsteinians Instituted experiments

To ascertain the behavioral characteristics Of a physical universe comprised Of only partially overlapping, Progressively intertransforming, Non-simultaneous, energy events.

The Einsteinian Era scientists' experiments Showed that entropic energies Accomplished their disassociations here Only through associations *there*— That is by regroupings elsewhere.

Thus early twentieth-century scientists Found the intertransformative Energy quanta transactions,—To be eventually,

But not always immediately,—One hundred per cent accountable.

As a consequence of

The Einsteinians' experiments The eighteenth and nineteenth centuries' Concept of a continually Self-dissipating universe

Had to be abandoned

And in its place was established The, experimentally required, Law of Conservation of Energy Which states that energy May be neither created nor lost; Ergo the energetic universe Is the minimum, But non-simultaneously realized, Energy exchanging system, Which is to say That physical universe, As experimentally demonstrated Is the minimum and only Perpetual motion process, Which as an aggregate of finite, Dissimilar and non-simultaneous Energy events Is in itself Sum totally finite.

All the foregoing Dissipates the foundations Of the Newtonian world's Cosmogony and economics Which assumed That a "running down world" Suggested the prudence Of saving, conserving and hoarding; And that those who spent Were fools who would perish As resources dwindled.

Though entropically irreversible Every action

Has its reaction and resultant, And every nuclear component Has its positive or negative Behavioral opposite Which is however Not its mirror image.

And the irreversible situations Give an evolutionary direction To otherwise stalemated Conditions of physical universe.

For instance it is discovered That wealth, whatever else it may be, Cannot alter an iota of yesterday And can alter only The present and forward Metabolic regeneration Conditions of humanity.

Song of the Dead And the Quick–Newton was a noun And Einstein is a verb.

Einstein's norm makes Newton's norm INSTANT UNIVERSE, Absurd.

"A body persists In a state of rest Or—

Except as affected—" Thus grave stones are erected!

Non-simultaneous, physical universe Is Energy; and "Energy equals mass Times the second power Of the speed of light." No exceptions!

Fission verified Einstein's hypothesis-

Change is normal Thank you Albert!

Irreversible verse.

Einstein's intellect

Defined energy as $E = MC^2$ Energy cannot define intellect. Intellect the metaphysical Is comprehensive to Energy the physical.

While Universe is finite

Energy is *definite* Because definable.

Energy is XY.

Intellect is 0.

The wealth of Earthians

Is irreversible.

Wealth cannot alter yesterday's experience.

It can only alter today's and tomorrow's experiences.

It can buy

Forward time in which intellect

May scientifically explore for The orderly interrelationships

Disclosed in yesterday's experiences

Which can be employed by intellect

To forecast

Anticipatory and orderly rearrangements of tomorrow By technological transformations Of the physical energy environments, Events and circumstances.

Wealth is the organized and operative Tool and energy capability

To sustain man's forward metabolic regeneration; To physically protect him;

To increase his knowledge

And degrees of freedom

While decreasing his interfrustrations.

Solo wealth is to commonwealth

As Xis to X^4 .

Wealth is: Energy compounded With *intellect's know-how*.

Every time man uses his *know-how* His experience increases

And his intellectual advantage Automatically increases.

Because of its *conservation* Energy cannot decrease. Know-how can only increase. It

is therefore scientifically clear That:—wealth which combines ${\tt Energy}$ and intellect

Can only increase, and that wealth can Increase only with use

And that wealth increases As fast as it is used.

The faster—the more!

Wealth is accountable as

The inanimate energies shunted Onto the ends of industrial levers Whose physical capability is Stateable in forward, automated, Man days of travel miles

With first class comprehensive services

Including food, lodging, clothing, Amusements, communication, information And medical services Based on the average physical experiences Of a top civil service rating's World travel involvements.

Has man a function

In Universe?

In dynamical balance With the inside-outing, *Expanding universe Of* radiant stars, Man witnesses Radiantly dormant Earth as A collecting or outside-inning, *Contracting phase, of* universe. Earth receives and stores, A continually increasing inventory Of sun and star emanating radiation In its lethal-energy-concentrates Sifting, sorting and accumulating Spherical Van Allen belts.

In addition to the Van Allen belts The succession of Earth's concentric Spherical mantles, e.g.,

The ionosphere, troposphere *et al.*, Constitute an extraordinary series Of discrete filters for The random-to-orderly sorting, Shunting, partially accumulating

And final inwardly forwarding

Of the benign radiation residues

To the biosphere stage

Of Earth's continual and orderly Processing of its discrete share Of the expanding universe propagated Energy income receipts.

Earth also receives daily

Additional thousands of tons

Of expanding Universe dispatched Stardust.

This concentration around Earth's surface

Of the universe deposited dust Apparently consists of 91 of the 92 regeneratively patterning Chemical elements

In approximately the same systematic order Of relative abundance of those elements

As the relative abundance

Of those same elements

As they are found to occur In the thus far inventoried Reaches of universe.

The biological life on earth

Is inherently anti-entropic

For it negotiates the chemical sorting

Out of the Earth's crust's

Chemical element inventory

And rearranges the atoms In elegantly ordered

Molecular compound patternings.

Of all the biological anti-entropics,

I.e., random-to-orderly arrangers, Man's intellect is by much

The most active, exquisite and effective agent Thus far in evidence in universe.

Through intellect, man constantly succeeds In inventing technological means Of doing ever more orderly

I.e., more efficient,

"Better sorted-out,"

Local universe, energy tasks

With ever less units of investments

Of the (what maybe only apparently), "randomly" occurring

Resources of energy,

As atomic matter,

Or energy, as channeled electro-magnetics.

To guarantee

All of life's

Anti-entropic functioning

The intellectual integrity universe,

That has designedly arranged the great game Has also arranged that mankind

Like all the other living species, Has its ultra-shortsighted, Built-in, "desire" drives,

Its romantic conception ambitions And protectively colored self deceits, As well as its longer distance "needs," All of which cause each specie To pursue its particular

"honey" With its particular rose-colored glasses, As does the bumblebee

Which at the same time

Inadvertently and unconsciously performs Myriads of other tasks, Designed with fabulous Scientific capability by nature, Which inadvertent in co-ordinate tasks Unknown to the separate creature species Are all essential to realization

Of the regenerative continuance Of the much larger

Survival support conditions For the generalized

Ecological system of "all life."

It is part of

The comprehensively anticipating, Design science of life

That the bumblebee's self-unviewed, Unwitting, bumbling tail

Bumps into and knocks off male pollen, Which it later

And again inadvertently,

Knocks off upon the female botanical organs, Thus unconsciously participating in A vastly complex ecological interaction Of the many energy processing Bio-chemical "gears" Of the total life system Dynamically constituted by All the living species. The myriad inadvertencies Of all the living species Have sum totally provided

A metabolically sustaining

And regenerative topsoil process Which-it is realized now,

But only by

Our retrospectively gained knowledge-

Has kept man

Regeneratively alive on Earth

For at least two million years,

While ever improving

His physical survival advantages And increasing his longevity.

This vast "game playing" of life

Has also indirectly occasioned,

Not only the regenerative multiplication Of human beings,

But also a progressively increasing Percentage who survive in conditions

Of ever improving Physical advantage.

I think man is very properly concerned About that which he does not understand.

I don't think that it is the machine per se That bothers man;

It is just not understanding

Anything

That disturbs him.

When an accident bares

Portions of human organs

Familiar only to doctors, Those organs look foreign And frightening to people.

Stick your tongue way out Before a mirror.

It is a strange looking device.

If existing originally and

Transcendentally as psyches only, Individuals had to choose,

And assemble their own sets

Of organic parts,

Having been assured of mortal incarnation And of mortal "honey chasing" experiences But only after successful selection And completion of the assembly—And were endowed—as psyches—Only with an aesthetic

Sense of selectivity,

Being devoid of any understanding Of either the separate or integrated Functions of those parts—No humans would merger

Those co-operatively functioning parts

Into Mortal beings

For no part of the "guts"

Would be chosen.

Nature had to skin over the regenerative Chemistry and physics controls, With an aesthetically intriguing, Pseudo-static, sculptural Baby doll unity In order to trick the immortal psyches Into the problem beset, Temporary occupation

Of such humid process regenerative machines As those of the humans.

I have learned

That man knows little

And thinks he knows a lot.

When any man can tell us

Just how and why he is handling and disposing The energies of his breakfast;

How he breaks down his chemical energy and To which glands is he routing

The diversified energies of his ham and eggs;

Or when any man can tell us

That he is deliberately

Pushing each of his million

Head hairs

Out through his scalp

At specifically preferred rates

And in specifically controlled shapes

For specific purposes

We may say that this man

Knows a little,

But I don't know of any man

Who can tell me

So little even as

Why we have hair.

I am the most unlearned man I know.

I don't know anyone

Who has learned

How little one knows

As have I.

But that does not belittle

The little I seem to know,

And I have confidence

In the importance of remembering

How little we know

And of the possible significance Of the fact that we prosper. And at some times even enjoy Life in Universe

Despite the designed in littleness That we have to "get by with."

I like algebra

Positives more powerful than negatives

minus wins plus wins only by default plus wins

 $(+)_{X}(-) = (-)(+)_{X}(+) = (+)(-)_{X}(-) = (+)$

The game is over–Plus wins two to one.

What the astronomers rank as

The nearest "bright" star to Earth

Is "Rigel Kent"

Which is three hundred thousand times Further away from Earth than is the Sun. It

is easy to see a man

One third of a mile away and

We were surprised when young

To see a man

At that distance

Swinging a sledge

To drive a post into the ground

And to realize

That the sound of his maul

Hitting the post top

Registered in our brain As reported through our ears Four seconds later Than had the visual news Which "long since" had told us That he had once more Hit the post.

Through physical experiments Performed by our scientists We have learned that The highest known velocity Among physical phenomena Is the speed of light and all radiation Relayingly scanned by nerve lines To our brains' television conceptualizing Through the optics of our eyes.

Because the speed of light Is approximately 186,000 miles per second, And the Moon is

About twice that distance Away from Earth.

If we had a large mirror on the Moon, And we flashed a powerful Light toward the Moon It would take four seconds For the light to be reflected back To our eyes.

That is, the light takes

Two seconds to get to the Moon And two more seconds To return to Earth.

And the overall four seconds lag

Of the visual report

Is the same time lag as that in

Our childhood realized lag

Of the sound *report*

Behind the visual report Of the post-sledging event.

Because the light coming to Earth

From the Moon

Takes two seconds to make the trip,

And because the light

Coming to Earth from the Sun

Takes eight and one-half minutes,

And because the light

Coming to us from Rigel Kent

Takes four and one-half years, We all see a live show

Taking place in the sky

Four and one-half

Years ago.

And as we gaze around

The starry heavens

We see right now

Live shows of "yesterdays"

Ranging from millions to sextillions of years ago, As we look at the stars

We see all of history Now alive. It took only two million years and Four and one-half billion human babies To establish a human survival beachhead Aboard the little

Eight thousand mile diameter Spherical Spaceship EARTH. Whereby life could successfully realize Its highest known potential life span Possibly to continue indefinitely As one self-rejuvenating generation. Few of the stars we look at, Live starring out there, Are young enough To witness

Those first human events Taking place on Earth Only two millions of years ago.

Since all the vital parts Of human organisms Have now become interchangeable, And many of them

Have also become interchangeable With inanimate mechanical parts, And since human longevity Is continually increasing There is a good possibility That humanity is developing A continuous man

Who will persist in prime health And youthful vigor.

With the lessening of need To replenish the population, With fresh baby starts

The built-in drives to procreate Will lessen and be manifest in a proclivity Of females to camouflage as male And male to camouflage as female Thus suppressing the procreative urge By superficial antipathetic illusions, While permitting and promoting Procreatively innocuous sex companionships.

Despite their billionfold numbers Babies and very young children Soon after their arrival on Earth Have uttered and continue to utter Spontaneous comments and questions—Concerning life on Earth And in Universe—

Which are so economical

And uniquely fresh

In viewpoint and formulation

As to be pure poetry

Proving, apparently, that Poetry is inexhaustible;

To which their sophisticated

And surprised off-guard adult audience Cliche unpoetically "Oh how cute." In the year 1964

The one hundred largest Industrial giant corporations, Born and reared

In the United States of America

Invested four out of five

Of their new plant and equipment Expansion dollars

In production and service facilities

In world lands outside the U.S.A.

This trending to World identity only

Of the industrial giants

Held true also not only with thousands

Of lesser magnitude

U.S.A, and European bom

Limited liability industrial organizations

But also with the Communist countries'

Giant industrial organizations.

Wherefore world industrialization trends swiftly-

And altogether transcendentally

To man's conscious planning—

Into an unitarily co-ordinate

World giant

With built-in automated,

Research fed,

Computer analyzed and selected,

Evolutionary self-improving

And self-transforming

Through alternatingly regenerated

Competitive precessioning

Of all the variable functions

Of general systems theory.

TRUTH

I have learned that truth

Is an omni-present, omni-directional,

Evolutionary awareness,

One of whose myriadly multiplying facets Discloses that there are no "absolutes"

-No "ends," in themselves-no "things"

-Only transitionally transformative verbing.

It seems possible to me

That God may be recognizable

In man's limited intellection

Only as the weightless passion drive

Which inspires our progressive searching For the-momentarily only-

And only most-truthful-thus-far-possible—Comprehension of all the interconnections Of all experiences.

It seems then to me

That the nearer we come to understanding, The nearer we come to the

Orderly omni-interrelationships

Of all the weightless complex

Of all generalized principles

Which seem to be disclosed to us

As so important

As to be tentatively identified as God.

For it is the integratable interrelationships Of all the generalized laws

Which apparently govern

The great verb "universe"

Or the vastly greater

-Because comprehensively anticipatory-Verb intellecting

Which verb of optimum understanding Maybe "God."

It seems that Truth

Is progressive approximation

In which the relative fraction

Of our spontaneously tolerated residual error Constantly diminishes.

This is a typical

Anti-entropy proclivity of man —Entropy being the law Of increase of the random element.

Heisenberg's indeterminism, In which the act of measuring Always alters the measured, Would seem entropic were it not For the experimentally realized knowledge That the successive alterations Of the observed, Diminish

As both our tooling and instrumentation Continually improve;

Ergo intellection's effect

Upon measurement and the measured Is a gap closing,

And the pursuit of more truthful comprehension Is successfully anti-entropic.

Before Heisenberg, T. S. Eliot said, "Examination of history alters history" And Ezra Pound,

And even earlier poets, Reported their discoveries That in one way or another The act of thinking alters thought itself.

When we ask ourself

"What have we learned?" We feel at first

That the answer is "nothing."

But as soon as we say so We recall exceptions. For instance we have learned To test experimentally The axioms given to us

As "educational" springboards, and We have found

That most of the "springboards" Do not spring

And some never existed.

As for instance

Points, holes, Solids, surfaces, Straight lines, planes, "Instantaneous," "simultaneous," Things, nouns, "Congruence," "at rest"

The words "artificial" and "failure" Are all meaningless.

For what they aver

Is experimentally "non-existent." If nature permits a formulation It is natural.

If nature's laws of behavior Do not permit the formulation The latter does not occur. Whatever can be done

whatever can be do

Is natural,

No matter how grotesque, boring, Unfamiliar or unprecedented. In the same way Nature never "fails."

Nature complies with her own laws.

Nature is the law.

When man lacks understanding

Of nature's laws

And a man-contrived structure

Buckles unexpectedly,

It does not fail.

It only demonstrates that man

Did not understand

Nature's laws and behaviors.

Nothing failed. Man's knowledge or estimating Was inadequate. Step to the blackboard. Write out a number so lengthy It has never been written before. The pattern of numbers Constitutes a new form. The number is a doodle. And I cannot accredit novel form As creativity of man. The number of relationships between items Is always $N^2 - N$ 2 The relationships between four or more items Are always greater in number Than the number of items. Ergo, there are always more chords than notes And chords by themselves are not music. It takes two to make a baby But it takes God to make two. God is twoing God is threeing God is multiplying By dividing The second law of thermodynamics-Entropy-is also as we have learned The law of increase of the Random Element I.e., every system looses energy-but Synergy means Behavior of whole systems Unpredicted by The behavior of their parts.

EN-ergy behaves entropically.

SYN-ergy behaves anti-entropically.

God is entropy

And God is also anti-entropy,

God is synergy

God is energy.

And God is always A verb-The verbing of Integrity. I assume that the *physical universe is definite* And the *metaphysical universe is finite*. What men have called infinite I call finite And what men called finite I call definite—i.e., definitive. By my philosophy The finite, but imponderable Metaphysical universe Embraces the definite, Ponderable, physical universe. *Finite* is not conceptual. Definite is conceptual. I have mathematical proof That the difference between the sums Of all the angles around all the surface vertices Of any conceptual, definitive physical system And the finite but non-conceptual metaphysical universe Is always 720° Or a difference of only one Definitive tetrahedron, Therefore, the combined Physical and metaphysical universe is finite. You can't buy anything worthwhile Like spontaneous love or understanding. Though metaphysically finite These are imponderables. The absolute would be Non-transformable, static and weighable. Ergo, experimentally meaningless. Infinity is only local And occurs within definite systems, As for instance

Following a great circle Around a sphere Which because of the fact That lines,-Which occur experimentally Only as energy vectors-Cannot go through The same point At the same time— Due to interference, Which means also that lines As curves Cannot re-enter, or "Join back into themselves," Therefore, the circling line Can only wrap around And over its earlier part-As the knot-making Sailor says it, The circle when followed Around and around Results in a coil Which is An assymetric spiral, Which may be followed experimentally Only as long as intellect follows. Not being simultaneous Universe cannot consist of one function. Functions only co-exist. Universe while finite is not definable. I can define many of its parts But I cannot define The non-simultaneously occurring Aggregate of experiences Whose total set of relationships

Constitutes the whole universe

Though the latter as an aggregate of finites Is finite.

All the words

In all the dictionaries, as noted before, Represent all of humanity's attempts To express Universe.

And while the dictionaries are finite

All the words

In all the dictionaries

Cannot be read simultaneously

And there is not one

Simultaneous sentence

Inherent and readable

In all the words.

In the same way

All the non-simultaneous experiences

May not be conceived

And expressed as

A simultaneous system.

Ergo, there is no thinkable and logical Simultaneous conception

Of non-simultaneous Universe.

There is strong awareness

That we have been overproducing

The army of rigorously disciplined

Scientific, game playing, academic specialists Who through hard work And sup-

pressed imagination

Earn their Ph.D.'s

And automatic contracts

With prime contractors

At fifteen thousand dollars

Per year-and more-

Only to have their specialized field Become obsolete and by-passed in five years, By severely altered techniques, instruments And exploratory stratagems.

Despite their honor grades

They prove not to be

The Natural Philosophers And scientist-artists, inferred by their Ph.D.'s But just deluxe quality Technicians or mechanics. And a myriad Of emergency committees-Multiplying swiftly From one or two **Emergency Committees** Appointed by the President, Have altogether discovered That what the Ph.D. scientists lack-To adapt themselves to change Has been officially pronounced to be "Creativity," But to my thinking They lack the unique capability of mind-Which is the ability not only to generalize And to integrate a complex Of pure generalizations But also to project teleologically-With fundamental understanding-In any special case, direction. Fundamental wisdom Can readily identify any and all Special case aspects within The generalized whole When listening Sensitively to one's intuitions By which alone The generalized sub-subconscious integration Of pattern cognition feed-backs Are articulated. Philip Morrison-Cornell's Head

Of the Department of Nuclear Physics—Talks about what he calls

"Left-hand" and "right-hand" sciences.

Right-hand science deals in all the proven Scientific formulas and experiments.

Left-hand science deals in

All of the as yet unknown or unproven—That is: With all it is going to take

Intellectually, intuitively, speculatively, imaginatively And even mystically

By inspired persistence

To open up the as yet unknown.

The great scientists were great

Because they were the ones

Who dealt successfully with the unknown.

All the "great" were left-hand scientists.

Despite this historical patterning of the "greats"

We have government underwriting Only the right-hand science,

Making it bigger and sharper,

Rather than more inclusive and *understanding!-For* how could Congress justify

Appropriations of billions for dreams?

So the billions went only For the swiftly obsoleting

Bigger, faster and more incisive

Modifications of yesterday's certainties, By Ph.D. specialists

Guaranteed by the great Institutes of Technology To which the Congress Allocated the training funds As obviously "safe"

And exempt from political criticism;

Despite that scientific investigation Had shown beyond doubt That almost all of America's

Top performance scientists Had been educated

In small, liberal arts colleges,

And that almost all

Of those top scientists Attributed their success

To their good fortune

In having studied intimately With a great inspiring teacher.

It would be considered

Political madness

To risk charges of corruption Through voting government funds To any individual

Especially to "Great inspiring teachers"—"Crack-pot, longhairs!"

So it goes-

To Hell with the facts

When re-election

To political office is at stake.

Everything that constitutes science Is unteachable.

And we recall that

Eddington said: "Science

Is the earnest attempt

Of individual initiative

To set in order

The facts of experience."

Scientific routines for specialized technicians And scientific formulas for their reference Alone are teachable.

Because we have been governmentally fostering Only right-hand science and Right-hand science to excess

The U.S.A. President's science advisor

Instituted last year

A new direction of search

For sources of so-called "creativity."

Financed by the National Academy of Sciences, He asked New York University's Art Department To bring together a representative group of America's leading art educators and artists.

It was felt by the National Academy

That the art educators-

As those who dealt with

Most of the almost drop-outs

Who had been switched into art

As a "last resort"—

Were probably intimate

With the type of emerging youth

Who were allowed to remain

In a freer state of mind

–In the world of art–

Than would they have been

If disciplined rigorously

In sharp specialization by the sciences.

That meeting, I thought fascinating

For it disclosed the artists as being

Individuals who develop powerful self-protection

Of their innate intellectual

And conceptual capability inheritance.

They often protect their innate capabilities Through intuitively triggered pokerfaced silence Which in the elementary or high schools

Is interpreted as non-cooperative, mental inferiority, Often causing early termination

Of their formal education.

I think the consensus

Of the New York University meeting

Was that individuals

Of original conceptual brilliance

Were most frequently

Detected, protected, and made to grow By equally sensitive art teachers.

"Great teachers."

Which agrees elegantly

With the statements

Of the proven scientists

Regarding their own experiences.

Congressional appropriations committees

Please take notice!

To see the whole world picture of science

As a part of a complete creative need-

As an artist's need to articulate—

Kepes at Massachusetts Institute of Technology Made a beautiful demonstration.

He took hundreds of 8" X 10"

Black-and-white photographs

Of modern paintings and mixed them thoroughly Like shuffled cards

With photographs taken by scientists Through microscopes or telescopes Of all manner of natural phenomena Sound waves, chromosomes and such.

The only way you can classify

Photographs with nothing recognizable in them Is by your own spontaneous

Pattern classifications.

Group the mealy, the blotchy, the striped,

The swirly, the polka-dotted, and their sub-combinations.

The pattern classified groups

Of photographs were displayed.

The artists' work and the scientists'

Were indistinguishable.

Checking the back-mounted data, it was found

That the artist had frequently conceived

His imagined pattern before

The scientist found it in nature.

Science began to take A new view of artists.

Loving mothers

Prohibit here and promote there-

Often in ways irrelevant or frustrating To brain-coordinated genetic evolution,

Often suppressing

A child's profound contribution Trying to emerge.

We have to look on our society

As we look on the biological world in general Recognizing, for instance,

The extraordinary contributions

Of the fungi, the manures, the worms, et al.—In the chemical reprocessing—And fertility up-grading of the earth.

We must learn to think

Of the functions of the trees' roots

As being of equal importance To the leaves' functions.

We tend to applaud

Only the flower and the fruit

Just as we applaud only the football player

Who makes the touchdown

And not the lineman

Who opened the way.

What society applauds as "creative"

Is often isolated

Out of an extraordinary set

Of co-equal evolutionary events, Most of which are invisible.

Evolutionary "touch-downs" are unpredictable-Sometimes centuries apart.

Who knows which child is to make the next breakthrough? In the next decade society

Is going to be preoccupied with the child Because through the behavioral sciences And electrical exploration of the brain We find that given the right environment And thoughtful answers to its questions *The child has everything it needs educationally Right from birth.*

We have thought erroneously of education As the mature wisdom And over-brimming knowledge of the grownups Injected by the discipline pump Into the otherwise "empty" child's head. Sometimes parents say "don't" Because they want to protect the child From getting into trouble. At other times when they fail to say "no" The child gets into trouble. The child, frustrated, stops exploring. It is possible to design environments Within which the child will be Neither frustrated nor hurt Yet free to develop spontaneously and fully Without trespassing on others. I have learned to undertake Reform of the environment And not to try to reform man. *If* we design the environment properly It will permit child and man to develop safely And to behave logically.

Order is achieved through-positive and negative

Magnitude and frequency controlled alteration

Of the successive steering angles.

We move by zig-zagging control

From one phase of physical universe evolution to another.

The rudder concept of social law is most apt.

The late Norbert Wiener chose the word cybernetics

Derived from Greek roots of "rudder"

Because Wiener, Shannon and others in communication theory

Were exploring human behaviors

And their brain-controlled "feed-back," etc., As a basis for the design of comput-

ers—And it became evident

That the human brain

Steers man through constant change.

No sharp cleavage is found

Which identifies the boundary between life and non-life Between the heretofore so-called "animate" and "inanimate."

Viruses,

The smallest organized structures

Exhibiting "life"

May be classified either-

As inanimate or animate-

As crystalline or "cellular" forms.

This is the level also at which

The DNA/RNA genetic code is essentially A structural pattern integrity.

Such pattern integrities

Are strictly accountable

Only as mathematical principles

Pattern integrities are found

At all levels of structural organization in universe.

The DNA/RNA is a specialized case

Of the generalized principle of pattern integrity

Found throughout life and non-life.

All pattern integrity design

Is controlled by

Angle and frequency modulation.

The biological corpus

Is not strictly "animate" at any point.

Given that the "ordering"

Of the corpus design

Is accomplished through such codings as DNA/RNA Which are essentially angle and frequency modulation.

Then we may go on to suggest

That "life," as we customarily define it Could be effected at a distance—Precession is the effect

Of one moving system Upon another.

Precession always produces

Angular changes of the movements Of the effected bodies and

At angles other than 180 degrees, That is, the results are never Continuance in a straight line.

Ergo all bodies of universe Are effecting the other bodies In varying degrees

And all the inter-gravitational effects Are precessional angular modulations And all the inter-radiation effects Are frequency modulations.

The gravitational and radiation effects Could modulate the DNA/RNA Angle and frequency instructions At astronomical remoteness—Life could be "sent on."

Within the order of evolution as usually drawn Life "occurred" as a series

Of fortuituous probabilities in the primeval sea.

It could have been sent or "radiated" there.

That is, the prime code

Or angle and frequency modulated signal Could have been transmitted

From a remote stellar location.

It seems more likely

(In view of the continuous rediscovery of man

As a fully organized being

Back to ever more remote periods)

That the inanimate structural pattern integrity,

Which we call human being,

Was a frequency modulation code message Beamed at earth from remote location.

Man as prime organizing "Principle" construct Was radiated here from the stars-Not as primal cell, but as A fully articulated high order being. Possibly as the synergetic totality Of all the gravitation And radiation effects Of all the stars In our galaxy And from all the adjacent galaxies With some weak effects And some strong effects And from all time. And pattern itself being weightless The life integrities are apparently Inherently immortal. You and I Are essential functions Of universe We are exquisite anti-entropy. I'll be seeing you! Forever.

Richard Buckminster Fuller

Architect/engineer R. Buckminster Fuller first gained prominence in 1927 with the invention of the Dymaxion House, a spacious, low-cost, high-strength dwelling uniquely suspended from a central mast. In the early 1930s he introduced the threewheeled Dymaxion car, which had a top speed of 120 miles an hour, went forty miles on a gallon of gasoline, and could turn in its own length. Of his many other inventions perhaps the most famous is his geodesic dome, whose design is based on a mathematical formula he himself developed and named "energetic synergetic geometry." Born in Massachusetts in 1895, Mr. Fuller is a graduate of Harvard University and U.S. Naval Academy. He has founded several design and manufacturing firms and served as a consultant to industry, the U.S. Government, the Ford Foundation, and most recently to the government of Japan. He has been a visiting professor, lecturer, and critic abroad and on many American campuses, including Harvard, Yale, Cornell, Princeton, the Massachusetts Institute of Technology, and the University of California at Berkeley. He now holds a professorship with life tenure at Southern Illinois University. His books include No More Second Hand God, Education Automation, and The Unfinished Epic of Industrialization.

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