

Week 4. Ecology of Mind: Gregory Bateson

Bruno Clarke
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II Cybernetic Frontiers

Both Sides of the Necessary Paradox (Conversations with Gregory Bateson)

Fanatic Life and Symbolic Death Among the Computer Bums

Stewart Brand

Steps to an Ecology of Mind
Where the insights of Buckminster Fuller initiated the Whole Earth Catalog, Gregory Bateson's insights lurk behind most of what's going on in this Epilog

Through him I became convinced that much more of whole systems could be understood than I thought, and that much more existed wholesomely beyond understanding than I thought—that mysticism, mood, ignorance, and paradox could be rigorous, for instance, and that the most potent tool for grasping these essences—these influence nets—is cybernetics.

Bateson is responsible for a number of formal discoveries, most notably the "Double Bind" theory of schizophrenia. As an anthropologist he did pioneer work in New Guinea and (with Margaret Mead) in Bali. He participated in the Macy Foundation meetings that founded the science of cybernetics but kept a healthy distance from computers. He has wandered thornily in and out of various disciplines—biology, ethnology, linguistics, epistemology, psychotherapy—and left each of them altered with his passage.

This book chronicles the journey. It is a collection of all his major papers, 1935-1971. In recommending the book I've learned to suggest that it be read backwards. Read the recent broad analyses of mind and ecology at the end of the book and then work back to see where the premises come from.

In my view Bateson's special contribution to cybernetics is in exploring its second, more difficult realm (where the first is feedback, a process influencing itself, what Bateson calls "circuit"; and the second is the meta-realm of hierarchic levels, the domain of context, of paradox and abundant pathology, and of learning.)

Strong medicine.

—SB

Steps to an Ecology of Mind
Gregory Bateson
1972; \$1.75p
\$1.95 postpaid
from:
Ballantine Books, Inc.
201 E. 50th St.
New York, NY 10022
or Whole Earth



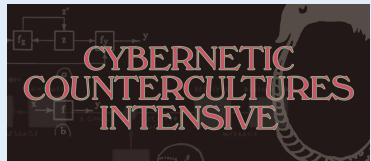
Gregory Bateson

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Gregory Bateson
The Pattern Which Connects

p.4

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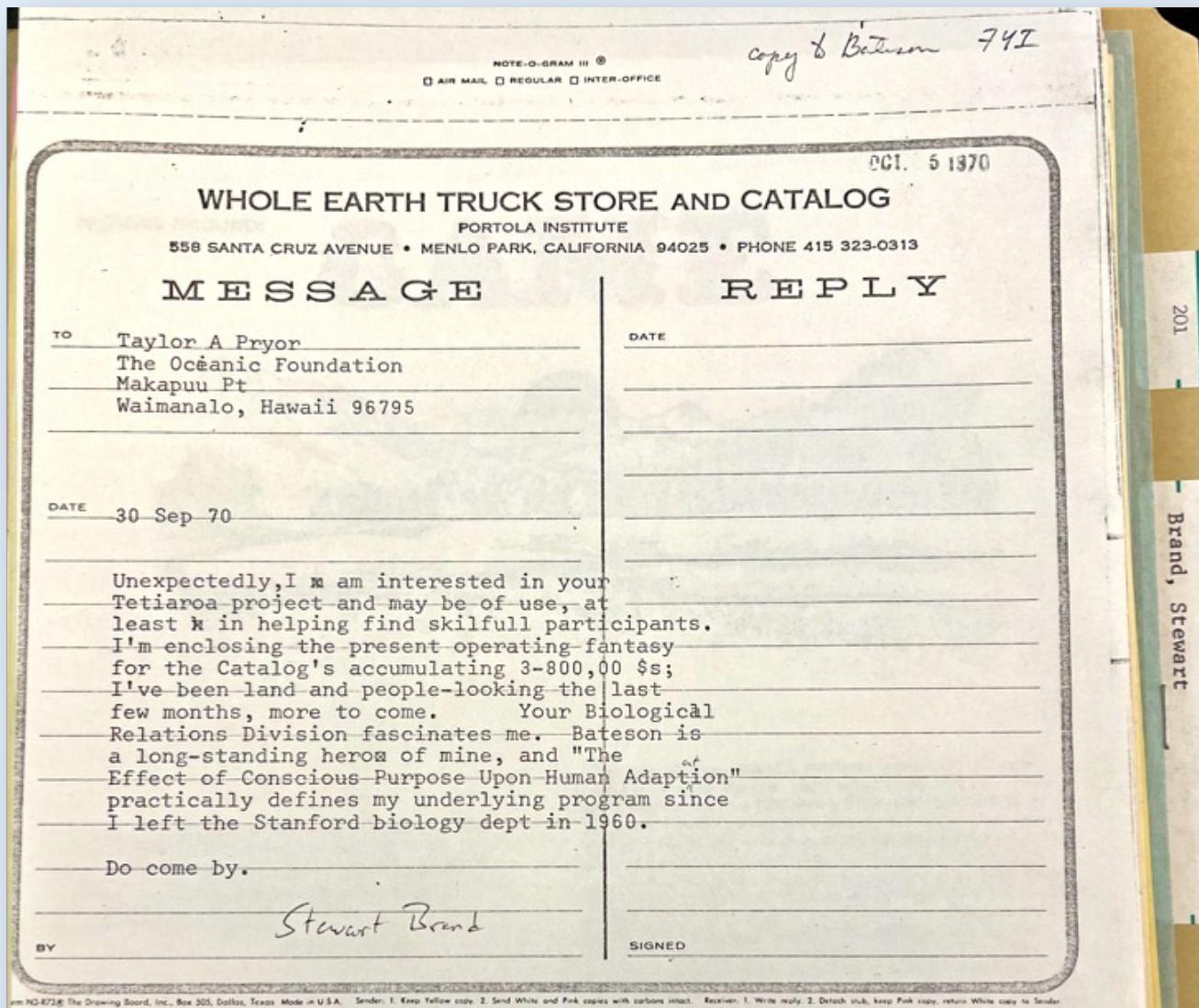
Week 4. Ecology of Mind: Gregory Bateson



Bateson,
Brand,
and the
Critique of
Consciousness

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Stewart Brand writes to Taylor Pryor, the director of the Oceanic Foundation in Hawaii, in the fall of 1970. He takes the opportunity to mention his admiration for Pryor's colleague there, Gregory Bateson. He cites a particular essay, "Effects of Conscious Purpose on Human Adaptation," as foundational for his "underlying program."



"... Your Biological Relations Division fascinates me. Bateson is a long-standing hero of mine, and "The Effect of Conscious Purpose Upon Human Adaptation" practically defines my underlying program since I left the Stanford biology dept in 1960."

The *Whole Earth Catalog* in Batesonian context:

In “Effects of Conscious Purpose on Human Adaptation,” Bateson argues that “conscious purpose” tends to get stuck on partial views. How would this argument “define” Stewart Brand’s “underlying program”? His remark implies that he approached his professional as well as personal practice as a “program” or dedicated mission. This would square with Brand’s day job in the later 1960s as Operations Coordinator of Education Fair for the Portola Institute of Menlo Park, CA. Alongside his fabled travels with Ken Kesey’s Merry Pranksters, Brand was also a young professional educator who invented a new publication platform for providing “access to tools.” Perhaps when he came across this Bateson paper, he recognized in its criticism of short-sighted decision-making a reminder of his own *conscious purposes*, a deliberate and audacious effort to leverage the *Whole Earth Catalog* operation to alleviate the existential and practical dilemmas—the geopolitical and cultural divisions—of the Cold War world at that moment.

Be that as it may, the text of “Effects of Conscious Purpose on Human Adaptation” quietly launches an epistemological polemic against the celebration of “rationality” in traditional Western humanism.

Gregory Bateson, "Effects of Conscious Purpose on Human Adaptation"

—A position paper for a conference Bateson convened and chaired in July 1968.

"Progress," "learning," "evolution," the similarities and differences between phylogenetic [that is, biological] and cultural evolution, and so on, have been subjects for discussion for many years. These matters become newly investigable in the light of cybernetics and systems theory.

In this Wenner-Gren conference, a particular aspect of this wide subject matter will be examined, namely the role of consciousness in the ongoing process of human adaptation.

Three cybernetic or homeostatic systems will be considered: the individual human organism, the human society, and the larger ecosystem. Consciousness will be considered as an important component in the *coupling* of these systems.

A question of great scientific interest and perhaps grave importance is whether the information processed through consciousness is adequate and appropriate for the task of human adaptation. It may well be that consciousness contains systematic distortions of view which, when implemented by modern technology, become destructive of the balances between man, his society and his ecosystem.

BC] Yes, but whose consciousness at which moment? Bateson presents "consciousness" as an indeterminate agent of unfixed number. Is "consciousness" a reified collectivity or an individual faculty, or both? And how does it relate to what Bateson elsewhere celebrates as *mind*?

Still, the power of this intervention is to bring this indictment at all, to call Western reason to account for its ingrained biases.

Gregory Bateson, "Effects of Conscious Purpose on Human Adaptation" (1968), continued:

. . . The problem of coupling self-corrective systems together is central in the adaptation of man to the societies and ecosystems in which he lives. . . . The problem of coupling man through consciousness with his biological environment is [this:] If consciousness lacks information about the nature of man and the environment, or if the information is distorted and inappropriately selected, then the coupling is likely to generate meta-random [rather than self-correcting] sequences of events.

It is surely true that the content of consciousness is no random sample of reports on events occurring in the remainder of mind. . . . It appears, however, that the system of selection of information for the screen of consciousness is importantly related to "purpose," "attention," and similar phenomena

If consciousness has feedback upon the remainder of mind, and if consciousness deals only with a skewed sample of the events of the total mind, then there must exist a systematic (i.e., nonrandom) difference between the conscious views of self and the world, and the true nature of self and the world. Such a difference must distort the processes of adaptation.

BC] The logic here appears to be that *consciousness* is a mere sample, random or not, of the whole comprehended by his concept of *mind*.

As in "What the Frog's Eye Tells the Frog's Brain"

If so, then "the true nature of self and the world" is generally *unconscious*. Art and ritual strive to make the true "unconscious purpose" symbolically transmissible, appreciable in glimpses, arcs we must try to complete.

It is suggested that the specific nature of this distortion is such that *the cybernetic nature of self and the world tends to be imperceptible to consciousness*, insofar as the contents of the “screen” of consciousness are determined by considerations of purpose.

—BC: Note how this argument takes the matter of *purpose*—the concern regarding teleology that was crucial to Wiener et al in their discussion of goal-directed behavior—to a new level of ethical reflection: what if we have chosen and pursued our most important purposes according to flawed or misguided premises?

The argument of purpose tends to take the form “*D* is desirable; *B* leads to *C*; *C* leads to *D*; so *D* can be achieved by way of *B* and *C*.” But, if the total mind and the outer world do not, in general, have this lineal structure, then by forcing this structure upon them, we become blind to the cybernetic circularities of the self and the external world. Our conscious sampling of data will not disclose whole circuits but only arcs of circuits, cut off from their matrix by our selective attention.

—BC: The modern Western mind, Bateson implies, is trained to expect all facets of its reality to follow *linear* causal chains. It thus pursues its purposes in a straight-line, bing-bang fashion, destructively oblivious at crucial moments to the *circularities* of the feedback circuits by which worldly systems actually operate, and by which our goals are actually achieved. The aim of his discourse is thus to raise our understanding to a more encompassing view of the *partiality* of consciousness, its *embeddedness* in “the cybernetic circularities of the self and the external world.”

—Bateson indicates that significant social pathologies stem from distortions of consciousness coupled to the pursuit of isolated purposes. A major instance is the environmental crisis. His prescient vision of the larger ecological havoc of present human practices was already in the works by the later 1960s:

The power ratio between purposive consciousness and the environment has changed rapidly in the last one hundred years, and the rate of change in this ratio is certainly rapidly increasing with technological advance. Conscious man, as a changer of his environment, is now fully able to wreck himself and that environment—with the very best of conscious intentions.

—A related social pathology is rampant corporatism across the political spectrum. Bateson's attitude was attuned to the anarchist or anti-corporatist wing of the counterculture of that moment:

A peculiar sociological phenomenon has arisen in the last one hundred years which perhaps threatens to isolate conscious purpose from many corrective processes which might come out of less conscious parts of the mind. The social scene is nowadays characterized by the existence of a large number of self-maximizing entities which, in law, have something like the status of "persons"—trusts, companies, political parties, unions, commercial and financial agencies, nations, and the like. In biological fact, these entities are precisely not persons and are not even aggregates of whole persons. They are aggregates of parts of persons.

—So how *do* we bring purposive consciousness into a more wholesome state?

Finally, it is appropriate to mention some of the factors which may act as **correctives**—areas of human action which are not limited by the narrow distortions of coupling through conscious purpose and where wisdom can obtain.

Of these, undoubtedly the most important is love. Martin Buber has classified interpersonal relationships in a relevant manner. He differentiates “I-Thou” relations from “I-It” relations, defining the latter as the normal pattern of interaction between man and inanimate objects. The “I-It” relationship he also regards as characteristic of human relations wherever purpose is more important than love. But if the complex cybernetic structure of societies and ecosystems is in some degree analogous to animation [or, living being], then it would follow that an “I-Thou” relationship is conceivable between man and his society or ecosystem. . . .

—“Correctives” are system specific but also derive from the main cybernetic root of control as guidance, or steering.

This could also be the Gaian sensibility, precisely what we Western moderns are struggling toward by the revalorization of Indigenous wisdoms.

—So again, how else can we bring purposive consciousness into a more wholesome state?

The arts, poetry, music, and the humanities similarly are areas in which more of the mind is active than mere consciousness would admit. “Le cœur a ses raisons que la raison ne connaît point. [Pascal: “The heart has its reasons of which reason knows nothing at all.”]

Contact between man and animals and between man and the natural world breeds, perhaps—sometimes—wisdom.

There is religion.

What a sentence!

Brand

201-5

7 October 1970

Stewart Brand
Whole Earth Truck Store and Catalog
Portola Institute
558 Santa Cruz Avenue
Menlo Park, California 94025

Dear Stewart Brand:

You were good enough to say nice things about me in a memorandum to Taylor Prior. Here is your reward.

Remember me to Mark Engel if you see him.

Yours sincerely,

Gregory Bateson, M.A.

GB:jvs

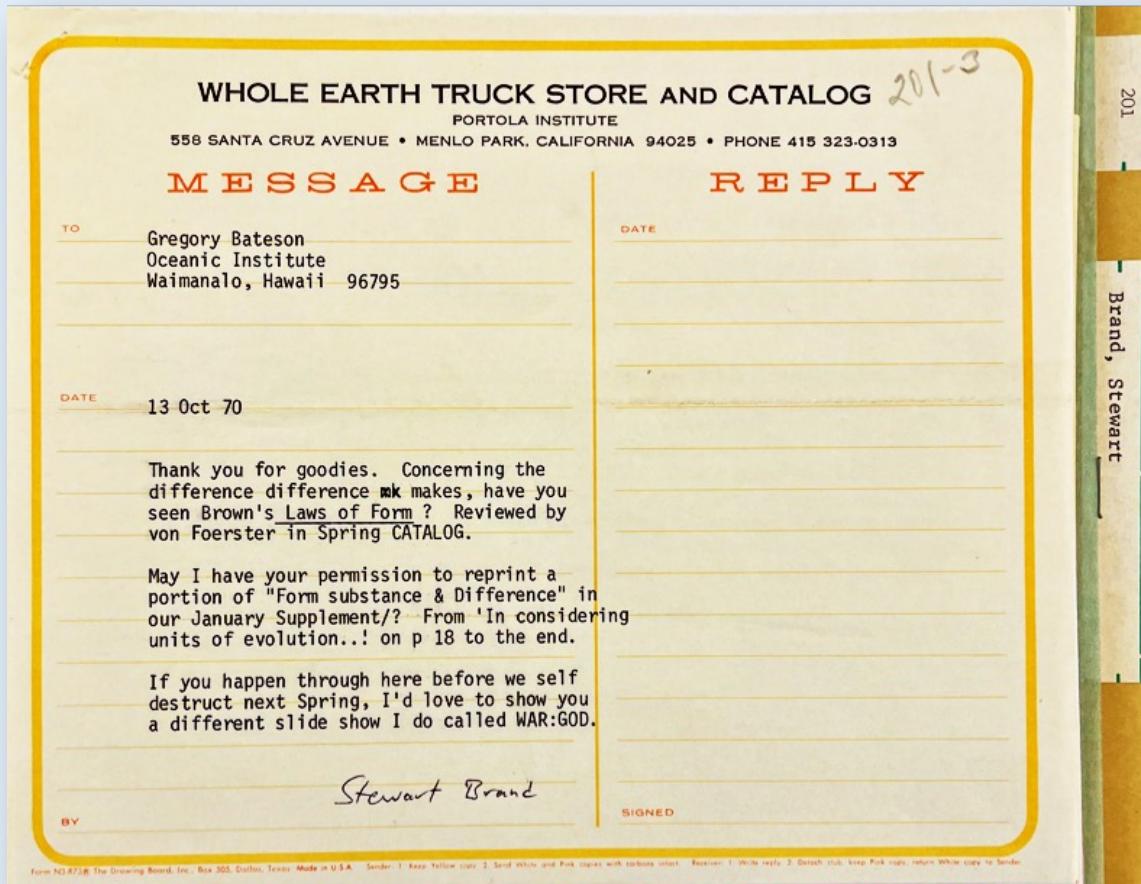
Enclosures

Meanwhile, Bateson rewarded Brand's admiration directly by sending him another recent article.

Gregory Bateson to
Stewart Brand,
10.7.70:

"You were good enough to say nice things about me in a memorandum to Taylor Pryor. Here is your reward."

Presumably Bateson sent Brand a copy of "Form, Substance and Difference," since Brand quickly requests permission to publish some of it.



Stewart Brand to
Gregory Bateson,
10.13.70:

"Thank you for goodies. . . .
May I have your permission to reprint a portion of 'Form, Substance & Difference' in our January Supplement?"

—BC: It seems that the permission issues were not resolved. No excerpt of this Bateson article appeared in the January 1971 WEC Supplement. It became broadly available a year later in *Steps to an Ecology of Mind*.



Steps to an Ecology of Mind
Gregory Bateson
1972; 517pp
\$1.95 postpaid
from:
Ballantine Books, Inc.
201 E. 50th St.
New York, NY 10022
or Whole Earth

No organism can afford to be conscious of matters with which it could deal at unconscious levels.

Mere purposive rationality unaided by such phenomena as art, religion, dream, and the like, is necessarily pathogenic and destructive of life; its virulence springs specifically from the circumstance that life depends upon interlocking circuits of contingency, while consciousness can only see such short arcs as human purpose may direct.

The social scene is nowadays characterized by the existence of a large number of self-maximizing entities which, in law, have something like the status of 'persons'— trusts, companies, political parties, unions, commercial and financial agencies, nations, and the like. In biological fact, these entities are precisely *not* persons and are not even aggregates of whole persons. They are aggregates of parts of persons.

They say that power corrupts; but this, I suspect, is nonsense. What is true is that the *idea* of power corrupts.

(My father, the geneticist William Bateson, used to read us passages of the Bible at breakfast— lest we grow up to be empty-headed atheists.)

In no system which shows mental characteristics can any part have unilateral control over the whole. In other words, the mental characteristics of the system are immanent, not in some part, but in the system as a whole.

The first *Whole Earth* publication to break out Bateson's *Steps to an Ecology of Mind* was the *Whole Earth Epilog* of September 1974.

Part II. Form and Pattern in Anthropology:
"Style, Grace, and Information in Primitive Art"

Part V. Epistemology and Ecology: "Effects of Conscious Purpose on Human Adaptation"

Part VI. Crisis in the Ecology of Mind:
"Pathologies of Epistemology"

Part III. Form and Pathology in Relationship:
"The Cybernetics of 'Self': A Theory of Alcoholism"

But what about "me"? Suppose I am a blind man, and I use a stick. I go tap, tap, tap. Where do I start? Is my mental system bounded at the handle of the stick? Is it bounded by my skin? Does it start halfway up the stick? Does it start at the tip of the stick? But these are nonsense questions. The stick is a pathway along which transforms of difference are being transmitted. The way to delineate the system is to draw the limiting line in such a way that you do not cut any of these pathways in ways which leave things inexplicable. If what you are trying to explain is a given piece of behavior, such as the locomotion of the blind man, then, for this purpose, you will need the street, the stick, the man; the street, the stick, and so on, round and round.

•

If you put God outside and set him vis-a-vis his creation and if you have the idea that you are created in his image, you will logically and naturally see yourself as outside and against the things around you. And as you arrogate all mind to yourself, you will see the world around you as mindless and therefore not entitled to moral or ethical consideration. The environment will seem to be yours to exploit. Your survival unit will be you and your folks or conspecifics against the environment of other social units, other races and the brutes and vegetables.

If this is your estimate of your relation to nature and you have an advanced technology, your likelihood of survival will be that of a snowball in hell. You will die either of the toxic by-products of your own hate, or simply, of over-population and overgrazing. The raw materials of the world are finite.

•

When you narrow down your epistemology and act on the premise 'What interests me is me, or my organization, or my species,' you chop off consideration of other loops of the loop structure. You decide that you want to get rid of the by-products of human life and that Lake Erie will be a good place to put them. You forget that the ecological system called Lake Erie is a part of your wider ecological system—and that if Lake Erie is driven insane, its insanity is incorporated in the larger system of your thought and experience.

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Part V. Epistemology and Ecology: "Form, Substance, and Difference"

Part VI. Crisis in the Ecology of Mind: "Pathologies of Epistemology"

We have been building up a view of how the Cybernetic Countercultures brought a coherent set of physiological, biological, and ecological approaches to issues of cognitive and communication operation.

We can bring this radical consensus into focus with a brief glance at Heinz von Foerster's *CoEvolution Quarterly* review of Brand's *II Cybernetic Frontiers*. To garner a sympathetic review of his own book within his own magazine, Brand reached out to the affable and very quotable Heinz.

Two Cybernetic Frontiers

Stewart Brand, the mover of the Whole Earth Catalog, Epilog, and now its CoEvolution succeeded in making two apparently different ends meet. In II Cybernetic Frontiers he puts between the same covers the Taoistic reflections of a sage and the fanatic life of burns. The sage is Gregory Bateson (Steps to an Ecology of Mind) who would despise being put into a disciplinary bag; the burns are computer burns whose bag is clearly moonlighting on the large computer networks that grow steadily over the United States and begin to extend their tentacles over the entire globe. Brand visited both, the sage and the burns, sipping tea with the former, munching doughnuts with the latter, talking softly, but mostly listening and watching in his unobtrusive, obtrusive way, being "stranger and friend" to his informants at the cybernetic frontiers. The harvest of Brand's explorations are the two major articles in this book which is (on the first page) dedicated to the Difference and (on the last page) to the Bond – because the difference is the Bond.

After a Prologue, II Cybernetic Frontiers opens with his conversations with Gregory Bateson: "Both Sides of the Necessary Paradox", followed by an Epilog I which is, in fact, a "synolog" connecting the first piece to the second piece, "Fanatic Life and Symbolic Death Among the Computer Burns", and closes with an Epilog (II).

Indeed, in these two pieces the difference is complete, hence their inseparable bond. Bateson in his late-sixties, with deep roots woven into the complexity of a rich cultural context; the Burns in their mid-twenties sending out their rootlets in all directions, creating a cultural context for each other; the Bateson-dialogue appeared in Harper's, the Burns-story in The Rolling Stone: these are the counterpoints of this composition.

The Bateson-Brand dialogue on the Necessary Paradox inverts itself to expose the paradox of necessity. Necessities are tautological by necessity, hence they say nothing. To say something it is necessary to transcend necessity: this is the logical root of the necessary paradox.

How can this be told to the readers of Harper's "... such that our reader shall be thereby squeezed up a level of abstraction . . ."? Bateson doubts that it can be done. The difficulty, he knows "It's linear thinking: you've got to find an identifiable cause for an identifiable effect. And the argument cannot spread backward the way cholera spreads forwards. When you get them spreading both ways, then you can begin thinking about circuits – indeed circuits become inevitable." And he knows also Wittgenstein's diagnosis "The belief in causality is the superstition," which he paraphrases: "This is, I think, the insanity of . . . Twentieth Century Occident." But Brand, one generation younger, knows differently. He knows his Burns and their knowledge of the

absurdity of necessity, and gently coaxes Bateson into talking of transcendence: Lao-Tse's Tao (you ask a Taoist – "What do we do?" and he would say: "Follow the Way", and that's all he would say); Zenon's Paradox (each half of the paradox proposes the other); Caen's sensible non-sense (a man without God is like a fish without a bicycle); Bateson's Double Bind (the loving Jewish mother gives her son two ties; he puts one on to please her, She: "I see you didn't like the other one."); McCullach's Hierarchy of Values (there is no sumnum bonum: when chosen in pairs, A may be preferred over B; B over C, and C over A); and, of course, Wiener's Cybernetics (in order to act one must see; in order to see one must act).

To know more about cybernetics from a man who helped in giving birth to this baby a quarter century ago was one of Brand's motivations to see Bateson in the first place. He recalled Bateson's statement in Steps to an Ecology of Mind: "I think that cybernetics is the biggest bite out of the fruit of the Tree of Knowledge that mankind has taken in the last 2000 years. But most of such bites out of the apple have proved to be rather indigestible – usually for cybernetic reasons."

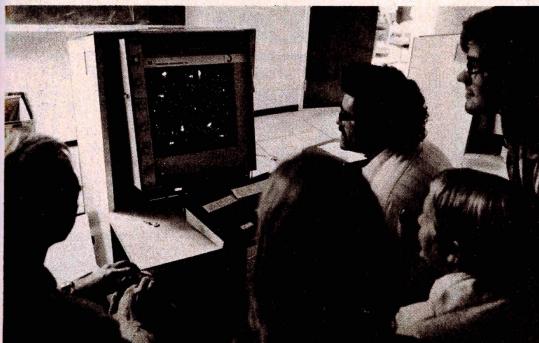
And Bateson explains: "The whole thinking that goes with the words 'input' and 'output' is monstrously bad. It draws a line across the systemic structure. Here there's input and there's output, and it's me against the universe at once, the moment you draw that line. This actually throws away the whole cybernetic background for cybernetics, you know. The engineers have decided it is engineering. All they have to do, you see, is to cut off the circuit so that you have an 'input' on one end and an 'output' on the other, and those two never join up in the environment. The input-output literature is very large, it's highly skilled engineering and all the rest of it, but it ignores the philosophy of the feedback.

But these were the ill begotten fruits of first-generation cybernetics: the cybernetics of observed systems. With a Bateson, a Brand, the Computer Burns, we have moved into the next generation: the cybernetics of observing systems. This is to be outside of a system to be inside; and inside to be outside. This is to be a Mobiüs Strip on a Klein Bottle; this is to transcend. This may be meditation, or laughter or play.

– Heinz Von Foerster

II Cybernetic Frontiers

Stewart Brand
1974; 95pp.
\$2.00 postpaid
from:
Random House, Inc.
457 Hahn Road
Westminster, MD 21157
or Whole Earth



Ralph Gorin, nearest the display tube, warms up Spacewar contestants. Rocket controls are visible on knee of player at left – four buttons: one for thrust, one for torpedoes, one each for turn to the left and to the right.

Heinz von Foerster in *CoEvolution Quarterly* 5 (Summer 1975) reviewing Stewart Brand's article on Gregory Bateson's work as a "cybernetic frontier":

"To know more about cybernetics from a man who helped in giving birth to this baby a quarter century ago was one of Brand's motivations to see Bateson in the first place. He recalled Bateson's statement in *Steps to an Ecology of Mind*: 'I think that cybernetics is the biggest bite out of the fruit of the Tree of Knowledge that mankind has taken in the last 2000 years. But most of such bites out of the apple have proved to be rather indigestible - usually for cybernetic reasons.'"

[*Steps* (1972): 476]

Immediately after citing Brand citing Bateson's bracing Biblical image for cybernetics from *Steps to an Ecology of Mind*, von Foerster singles out a passage from Brand's interview with Bateson that offers to explain to some extent why the fruit of cybernetics is so often hard to digest. Here Bateson disparages the ingrained linear logic of the mainstream engineering mentality that loosely parrots cybernetic idioms while watering down their more profound revelations—especially regarding autonomy, or self-referential operation, what Bateson may have in mind by "the philosophy of the feedback."

Two Cybernetic Frontiers

Stewart Brand, the mover of the Whole Earth Catalog, Epilog, and now its CoEvolution succeeded in making two apparently different ends meet. In II Cybernetic Frontiers he uses the same name as the Taoistic reflections of a sage and the fanatic life of burns. The sage is Gregory Bateson (*Steps to an Ecology of Mind*) who would despise being put into a disciplinary bag; the burns are computer burns whose bay of fires is more like the burning of the sage's *burns* that grow steadily over the United States and begin to extend their tentacles over the entire globe. Brand visited both, the sage and the burns, sipping tea with the former, munching doughnuts with the latter, and in both cases, listening and watching in his unobtrusive, obtrusive way, being "stranger and friend" to his informants at the cybernetic frontiers. The heart of Brand's explorations are the two major articles in this book, one (on the first page) dedicated to the Difference and (on the last page) to the Bond—because

After a Prologue, II Cybernetic Frontiers opens with his conversations with Gregory Bateson: "Both Sides of the Necessary Paradox", followed by Epilog I which is, in fact, a synthesis of the two sides of the paradox. Then, to the second piece, "Futuric Life and Symbolic Death Among the Computer Burns", and close with an Epilog (II).

Indeed, in these two pieces the difference is complete, with their inseparable bond. Bateson in his late-sixties, with deep roots woven into the complexity of a rich cultural context: the bond is in the middle of the difference. Having been scattered in all directions, creating a cultural context for each other, the Bateson dialogue appeared in Harper's, the Burns story in The Rolling Stone: these are the counterparts of this composition.

The Burns-Brand dialogue on the Necessary Paradox inverts itself to express the paradox of necessity: Necessities are tautological by necessity, hence there is nothing. To say something it is necessary to transcend necessity: this is the logical root of the necessary paradox.

How can this be told to the readers of Harper's? . . . such that our reader shall thereby squeezed up a level of abstraction. . . . Bateson thinks it can be done. The difficulty, he knows, "It's like this thing: you've got to find an identifiable cause for an identifiable effect. And the argument cannot spread backward the way cholera spreads forward. When you get them spreading both ways, then you can't identify a cause for an effect—it's like the weather is inevitable." And he knows also Wittgenstein's diagnosis: "The belief in causality is the superstition," which he paraphrases: "This is, I think, the insanity of . . . Twentieth Century Occidentalism." But Brand, one generation younger, knows differently. He knows his Burns and their knowledge of the

ability of necessity, and gentlly coaxes Bateson into talking of his independence. So does Taoist Teacher Tzu-Tzu: "What do we do?" and he would say: "Follow the Way"; and that's all he would say); Zenon's Paradox (each half of the paradox proves the other); Canto's sensible nonsense (so that the God of the Gaps is not God); and Bateson's Double Bind (the loving Jewish mother gives her son two ties; he puts one on to please her. She: "I see you didn't like the other one."); McCulloch's Hierarchy of Values (this is the hierarchy of values that the computer burns may be preferred over B; B over C, and C over A); and, of course, Wiener's Cybernetics (in order to act one must see; in order to see one must act).

To know more about cybernetics from a man who helped in bringing birth to this baby a century ago, turn to the Brand's motivation of Bateson in his first pieces. He recalled Bateson's statement in Steps to an Ecology of Mind: "I think that cybernetics is the biggest bite out of the fruit of the Tree of Knowledge that mankind has taken in the last 2000 years." But most of such bite, he says, have proved to be rather indigestible—usually for cybernetic reasons."

And Bateson explains: "The whole thinking that goes with the words 'input' and 'output' is monstrously bad. It draws a line through the universe so that when you draw that line you draw that line. This actually throws away the whole cybernetic background for cybernetics, you know. The engineers have drawn it is engineering. All they have to do is to take a line off of that line so that you have an 'input' on one end and an 'output' on the other, and those two never join up in the environment. The input-output theory is very good if it's a highly skilled engineer and all the rest of it. But it ignores the problem of the feedback.

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—Heinz Von Foerster

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Ralph Gorby, nearing victory in a world Spacewar competition. Rocket controls are visible on knee of player at left—four buttons: one for thrust, one for torpedoes, one each for turn to the left and to the right.

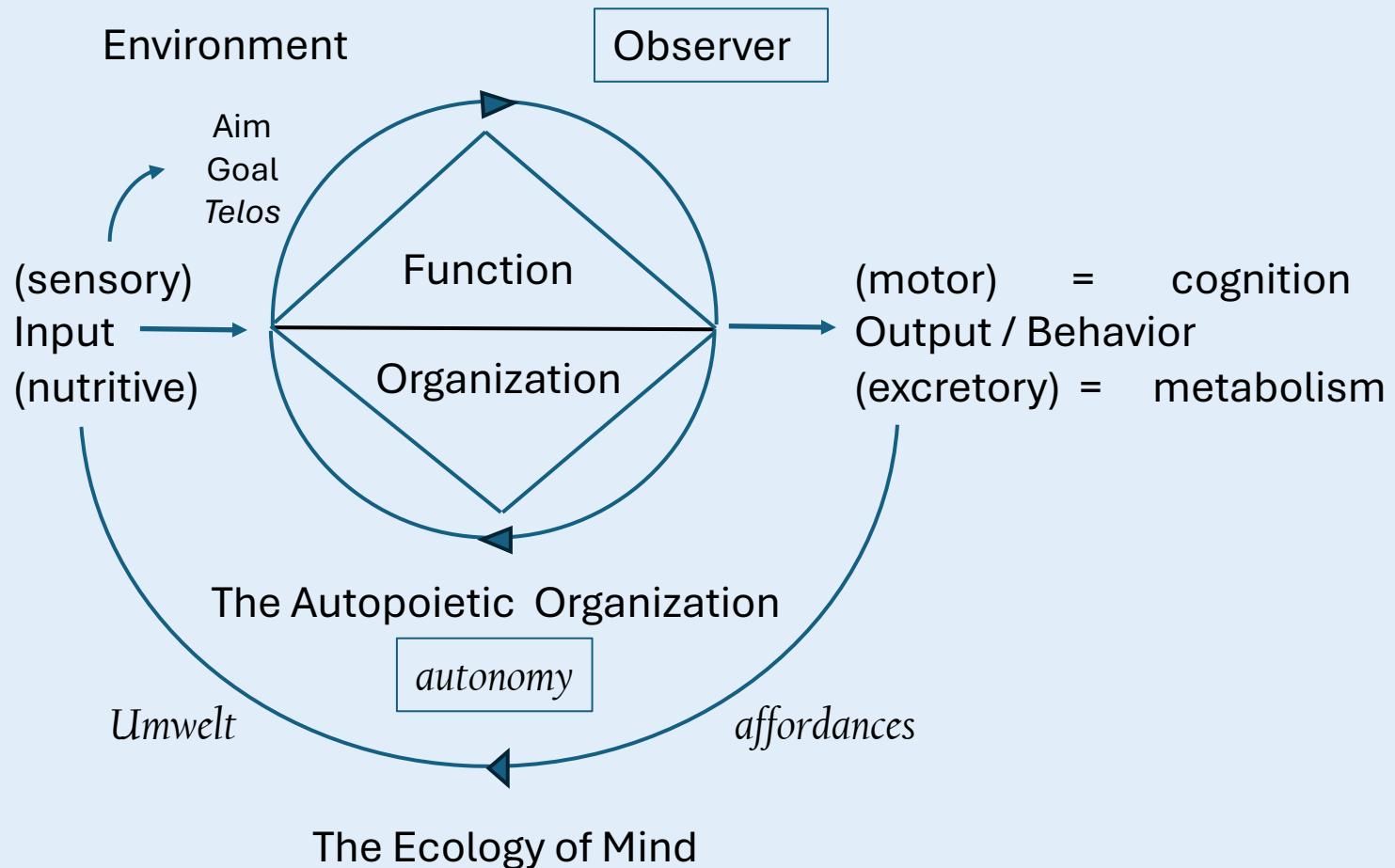
Box 428, Sausalito, California 94965

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"The whole thinking that goes with the words 'input' and 'output' is monstrously bad. It draws a line across the systemic structure. *Here* there's input and *there's* output, and it's me against the universe at once, the moment you draw that line. This actually throws away the whole cybernetic background for cybernetics, you know. . . . The input-output literature is very large, it's highly skilled engineering and all the rest of it, but it ignores the philosophy of the feedback."

(*II Cybernetic Frontiers*, 28)

“the philosophy of the feedback”



—back to “Form, Substance, and Difference”:

In principle, if you want to explain or understand anything in human behavior, you are always dealing with total circuits, completed circuits. This is the elementary cybernetic thought.

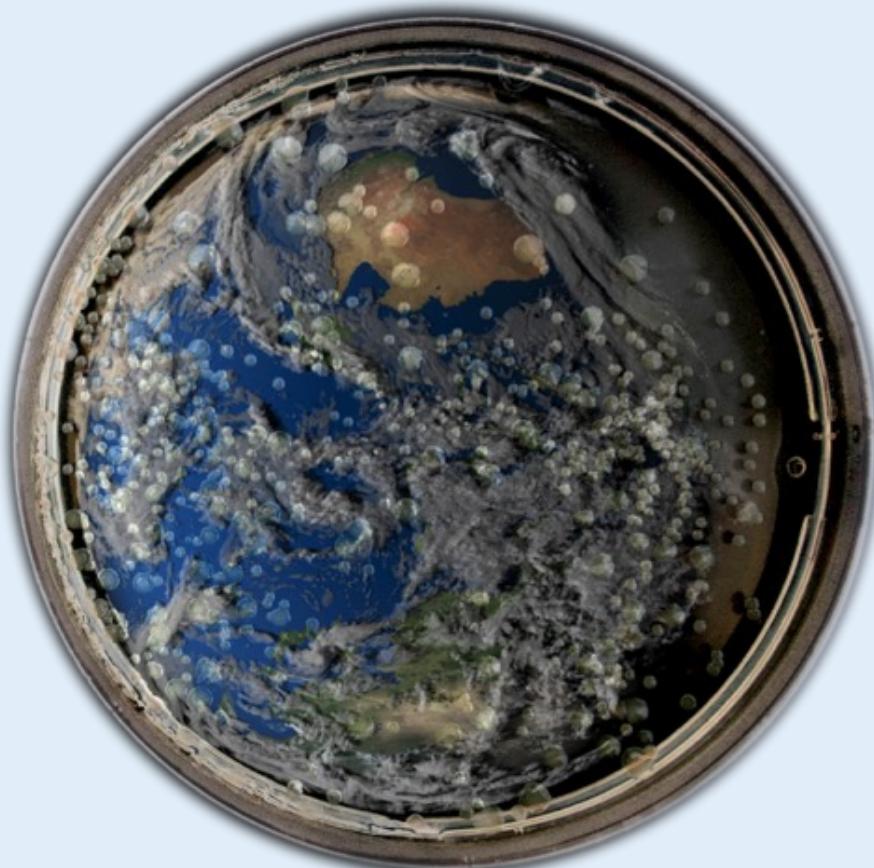
The elementary cybernetic system with its messages in circuit is, in fact, the simplest unit of **mind**; and the transform of a difference traveling in a circuit is the elementary **idea**.



—There is a consistent remainder of mentalistic terminology in Bateson. To *get him right* one must rethink these terms *cybernetically*, in terms of their embeddedness in worldly contexts, ecological circuits. Essentially, Bateson’s ecological *mind* is synonymous with Maturana and Varela’s *cognition* once one allows that organic sensibility to be distributed throughout the biosphere.



We get a picture, then, of mind as synonymous with cybernetic system—the relevant total information-processing, trial-and-error [that is, feedback] completing unit. And we know that within Mind in the widest sense there will be a hierarchy of sub-systems, any one of which we can call an individual mind.

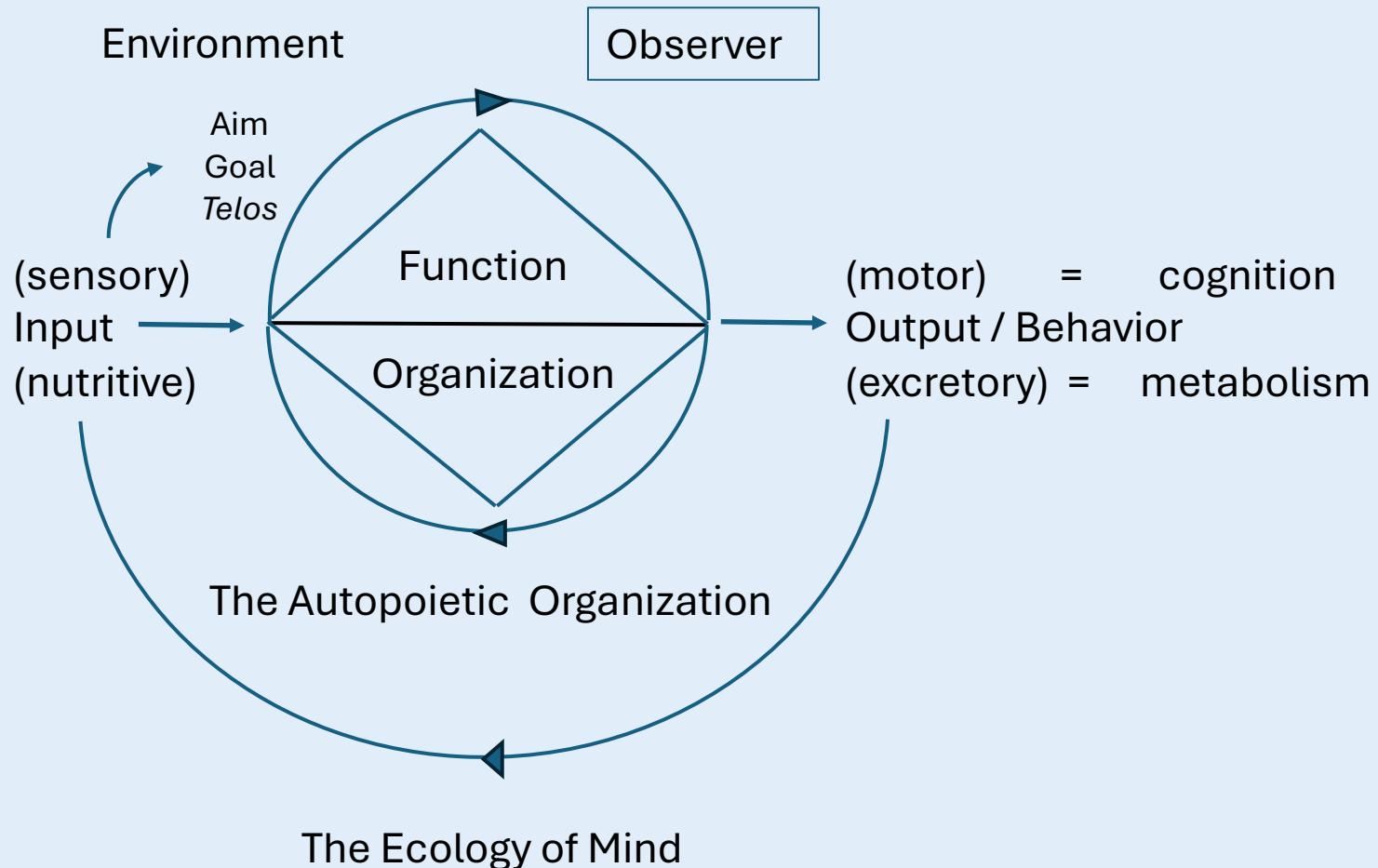




. . . I now localize something which I am calling "Mind" immanent in the large biological system—the ecosystem. Or, if I draw the system boundaries at a different level, then mind is immanent in the total evolutionary structure. If this identity between mental and evolutionary units is broadly right, then we face a number of shifts in our thinking.

The cybernetic epistemology which I have offered you would suggest a new approach. The individual mind is immanent but not only in the body. It is immanent also in the pathways and messages outside the body; and there is a larger Mind of which the individual mind is only a sub-system. This larger Mind is comparable to God and is perhaps what some people mean by "God," but it is still immanent in the total interconnected social system and planetary ecology.

“the philosophy of the feedback”



The Cybernetic Countercultures put forward organic systems theories that observe recursive form, the paradoxically synchronic circularity that undermines the diachronic linear ideology of mainstream control theory. One gets there, as Bateson himself suggests, self-referentially, by considering “**the whole cybernetic background for cybernetics.**” This could be von Foerster’s “cybernetics of cybernetics” by another route. Viewed from here, factoring different points of observation into the total picture of possible descriptions is no facile metaphysical gesture. Rather, it calls out and insists on the embodiment of cognitive systems, their embeddedness in fundamentally organic affordances. It is these renovations of biological systems thinking, I would submit, that have taken the biggest “bite out of the fruit of the Tree of Knowledge” at the heart of the cybernetic revelation.