

MIND AND NATURE

A Necessary Unity

Gregory Bateson

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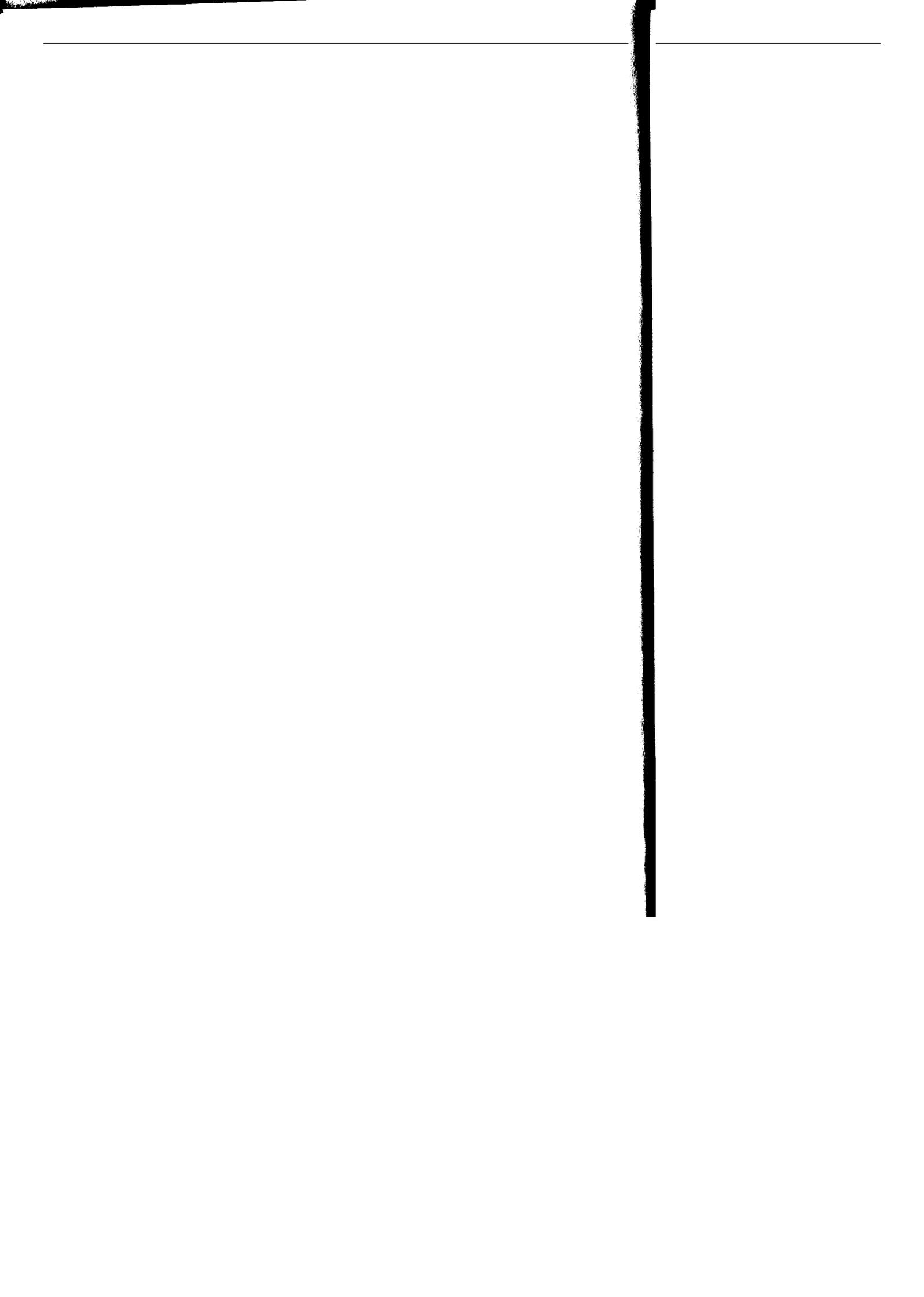
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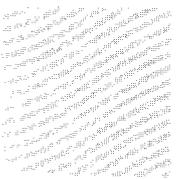


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ACKNOWLEDGMENTS

The work and thought leading to this book have spread over many years, and my debts go back to include all that were acknowledged in the preface to my previous book, *Steps to an Ecology of Mind*. But I have tried to write to be understandable to those who have not read *Steps* and therefore shall acknowledge here only debts contracted since *Steps* was published.

Even so, recent favors have been many. In something like chronological order, I have to thank first the fellowship of the University of California at Santa Cruz and especially my friends in Kresge College: Mary Diaz, Robert Edgar, Carter Wilson, Carol Proudfoot, and the secretariat.

And then I have to thank the Lindisfarne Association, whose scholar in residence I was for six months of the writing of this book. Bill Irwin Thompson, Michael Katz, Nina Hagen, and Chris and Diane Bamford were hosts who combined generosity with brains. Without them, there would have been no book.

Similarly, in the last stages of writing the book and following severe medical adventures, Esalen Institute took me in as guest, permitting me to combine writing with convalescence. I have to thank Janet Lederman, Julian Silverman, Michael Murphy, Richard Price, and many others. Both at Esalen and at Lindisfarne, my debt is really to the total community.

Early in 1978, I underwent major surgery and was warned that time might be short. In this emergency, Stewart Brand and the Point Foundation came to my aid. Stewart made it possible for my daughter Mary Catherine to come from Tehran and spend a month with me in California working on the manuscript. Her employer in Iran, the Reza Shah Kabir University, generously gave her a professional leave. The first five chapters of the book owe much to her clarifying criticism and sheer hard work. I also thank Stewart for publishing parts of the manuscript in *Co-evolution Quarterly* and for permitting republication here.

Two students of mine have been active and constructive critics, Rodney Donaldson and David Lipset; many others, by listening, have helped me to hear when I was talking nonsense.

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My secretary, Judith Van Slooten, did much of the drudgery and helped compile the index, and many others at Lindisfarne and Esalen and along the way have helped.

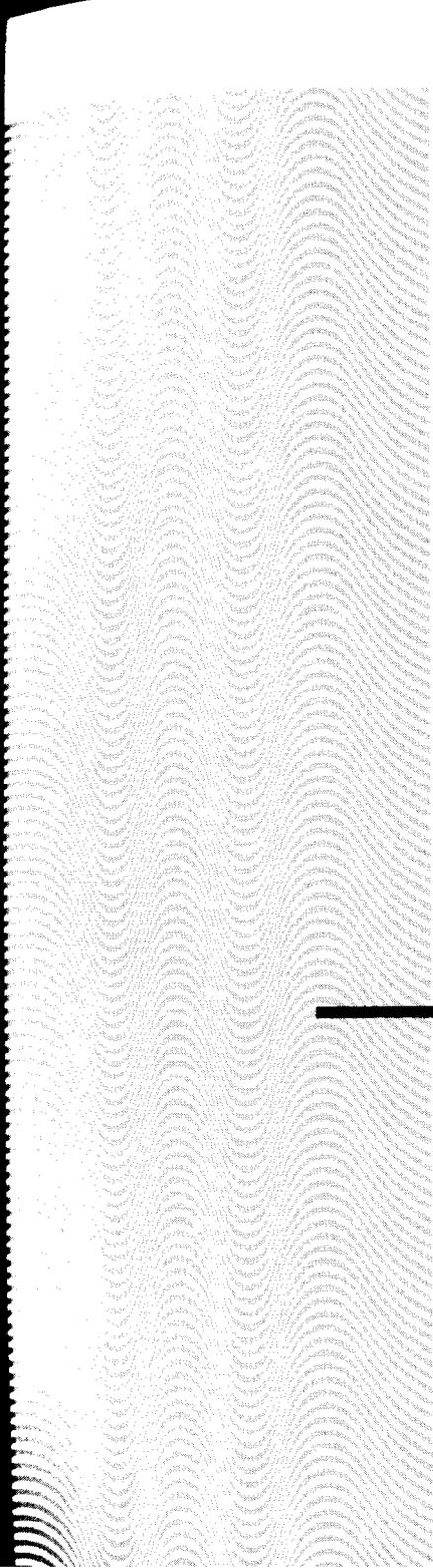
Finally, my wife, Lois, stood by, criticized and appreciated, and bore patiently with my varying excitements and depressions as the ideas came and went.

GREGORY BATESON was born in 1904, the son of William Bateson, a leading British biologist and a pioneering geneticist. Resisting family pressures to follow in his father's footsteps, he completed his degree in anthropology instead of the natural sciences, and left England to do field work in New Guinea. It was on his second trip there, in 1936, that he met his fellow anthropologist Margaret Mead, whom he later married; their only child, Mary Catherine Bateson, is also an anthropologist. Bateson and Mead were divorced in 1950, but they continued to collaborate professionally and maintained their friendship until Mead's death in 1978.

In the years to follow, Bateson became a visiting professor of anthropology at Harvard (1947); was appointed research associate at the Langley Porter Neuropsychiatric Institute in San Francisco; worked as Ethnologist at the Palo Alto Veterans Administration Hospital (where he developed the double-bind theory of schizophrenia and formulated a new theory of learning). He worked with dolphins at the Oceanographic Institute in Hawaii and taught at the University of Hawaii. In 1972 he joined the faculty of the University of California at Santa Cruz.

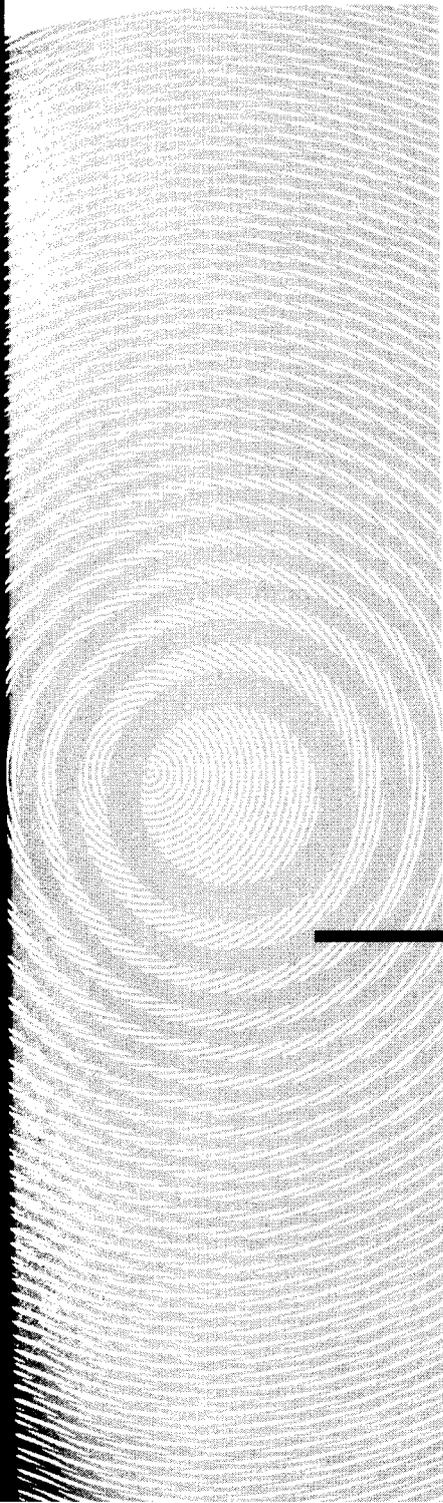
The author of *Naven* and *Steps to an Ecology of Mind*, and co-author of *Balinese Character*, Gregory Bateson has markedly influenced an entire generation of social scientists, including the British psychiatrist R. D. Laing—and he is considered one of the “fathers” of the family therapy movement. Appointed by Governor Jerry Brown as a member of the Board of Regents of the University of California in 1976, he now lives in Ben Lomond, California, with his wife, Lois, and daughter, Nora.





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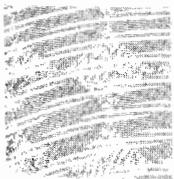
I

INTRODUCTION*

* A large part of this chapter was delivered as a lecture at the Cathedral of Saint John the Divine in New York on November 17, 1977.

Plotinus the Platonist proves by means of the blossoms and leaves that from the Supreme God, whose beauty is invisible and ineffable, Providence reaches down to the things of earth here below. He points out that these frail and mortal objects could not be endowed with a beauty so immaculate and so exquisitely wrought, did they not issue from the Divinity which endlessly pervades with its invisible and unchanging beauty all things.

—SAINT AUGUSTINE, *The City of God*



In June 1977, I thought I had the beginnings of two books. One I called *The Evolutionary Idea* and the other *Every Schoolboy Knows*.^{*} The first was to be an attempt to reexamine the theories of biological evolution in the light of cybernetics and information theory. But as I began to write that book, I found it difficult to write with a real audience in mind who, I could hope, would understand the formal and therefore simple presuppositions of what I was saying. It became monstrously evident that schooling in this country and in England and, I suppose, in the entire Occident was so careful to avoid all crucial issues that I would have to write a second book to explain what seemed to me

^{*}A favorite phrase of Lord Macaulay's. He is credited with, "Every schoolboy knows who imprisoned Montezuma, and who strangled Atahualpa."

elementary ideas relevant to evolution and to almost any other biological or social thinking—to daily life and to the eating of breakfast. Official education was telling people almost nothing of the nature of all those things on the seashores and in the redwood forests, in the deserts and the plains. Even grown-up persons with children of their own cannot give a reasonable account of concepts such as entropy, sacrament, syntax, number, quantity, pattern, linear relation, name, class, relevance, energy, redundancy, force, probability, parts, whole, information, tautology, homology, mass (either Newtonian or Christian), explanation, description, rule of dimensions, logical type, metaphor, topology, and so on. What are butterflies? What are starfish? What are beauty and ugliness?

It seemed to me that the writing out of some of these very elementary ideas could be entitled, with a little irony, "*Every Schoolboy Knows.*"

But as I sat in Lindisfarne working on these two manuscripts, sometimes adding a piece to one and sometimes a piece to the other, the two gradually came together, and the product of that coming together was what I think is called a *Platonic* view.* It seemed to me that in "*Schoolboy*," I was laying down very elementary ideas about *epistemology* (see Glossary), that is, about *how we can know anything*. In the pronoun *we*, I of course included the starfish and the redwood forest, the segmenting egg, and the Senate of the United States.

And in the *anything* which these creatures variously know, I included "how to grow into five-way symmetry," "how to survive a forest fire," "how to grow and still stay the same shape," "how to learn," "how to write a constitution," "how to invent and drive a car," "how to count to seven," and so on. Marvelous creatures with almost miraculous knowledges and skills.

Above all, I included "how to evolve," because it seemed to me that both evolution and learning must fit the same formal regularities or so-called laws. I was, you see, starting to use the ideas of "*Schoolboy*" to

* Plato's most famous discovery concerned the "reality" of ideas. We commonly think that a dinner plate is "real" but that its circularity is "only an idea." But Plato noted, first, that the plate is not truly circular and, second, that the world can be perceived to contain a very large number of objects which simulate, approximate, or strive after "circularity." He therefore asserted that "circularity" is *ideal* (the adjective derived from *idea*) and that such ideal components of the universe are the real explanatory basis for its forms and structure. For him, as for William Blake and many others, that "Corporeal Universe" which our newspapers consider "real" was some sort of spin-off from the truly real, namely the forms and ideas. In the beginning was the idea.

reflect, not upon our own knowing, but upon that *wider knowing* which is the glue holding together the starfishes and sea anemones and redwood forests and human committees.

My two manuscripts were becoming a single book because there is a single knowing which characterizes evolution as well as *aggregates* of humans, even though committees and nations may seem stupid to two-legged geniuses like you and me.

I was transcending that line which is sometimes supposed to enclose the human being. In other words, as I was writing, mind became, for me, a reflection of large parts and many parts of the natural world outside the thinker.

On the whole, it was not the crudest, the simplest, the most animalistic and primitive aspects of the human species that were reflected in the natural phenomena. It was, rather, the more complex, the aesthetic, the intricate, and the elegant aspects of people that reflected nature. It was not my greed, my purposiveness, my so-called "animal," so-called "instincts," and so forth that I was recognizing on the other side of that mirror, over there in "nature." Rather, I was seeing there the roots of human symmetry, beauty and ugliness, aesthetics, the human being's very aliveness and little bit of wisdom. His wisdom, his bodily grace, and even his habit of making beautiful objects are just as "animal" as his cruelty. After all, the very word "animal" means "endowed with mind or spirit (*animus*)."

Against this background, those theories of man that start from the most animalistic and maladapted psychology turn out to be improbable first premises from which to approach the psalmist's question: "Lord, What is man?"

I never could accept the first step of the Genesis story: "In the beginning the earth was without form and void." That primary *tabula rasa* would have set a formidable problem in thermodynamics for the next billion years. Perhaps the earth never was any more a *tabula rasa* than is, a human zygote—a fertilized egg.

It began to seem that the old-fashioned and still-established ideas about epistemology, especially human epistemology, were a reflection of an obsolete physics and contrasted in a curious way with the little we seem to know about living things. It was as if members of the species, man, were supposed to be totally unique and totally material-

istic against the background of a living universe which was generalized (rather than unique) and spiritual (rather than materialistic).

There seems to be something like a Gresham's law of cultural evolution according to which the oversimplified ideas will always displace the sophisticated and the vulgar and hateful will always displace the beautiful. And yet the beautiful persists.

It began to seem as if organized matter—and I know nothing about unorganized matter, if there be any—in even such a simple set of relations as exists in a steam engine with a governor was wise and sophisticated compared with the picture of human spirit that orthodox materialism and a large part of orthodox religion currently drew.

The germ of these ideas had been in my mind since I was a boy. But let me start from two contexts in which these thoughts began to insist on utterance: In the 1950s, I had two teaching tasks. I was teaching psychiatric residents at a Veterans Administration mental hospital in Palo Alto and young beatniks in the California School of Fine Arts in San Francisco. I want to tell you how those two courses commenced, how I approached those two contrasting audiences. If you put these two first lectures side by side, you will see what I am trying to say.

To the psychiatrists, I presented a challenge in the shape of a small exam paper, telling them that by the end of the course they should understand the questions in it. Question 1 asked for brief definitions of (a) "sacrament" and (b) "entropy."

The young psychiatrists in the 1950s were, in general, unable to answer *either* question. Today, a few more could begin to talk about entropy (see Glossary). And I suppose there are still some Christians who could say what a sacrament is?

I was offering my class the core notions of 2,500 years of thought about religion and science. I felt that if they were going to be doctors (medical doctors) of the human soul, they should at least have a foot on each side of the ancient arguments. They should be familiar with the central ideas of both religion and science.

For the art students, I was more direct. It was a small group of about ten to fifteen students, and I knew that I would be walking into an atmosphere of skepticism bordering on hostility. When I entered it

was clear that I was expected to be an incarnation of the devil, who would argue for the common sense of atomic warfare and pesticides. In those days (and even today?), science was believed to be "value-free" and not guided by "emotions."

I was prepared for that. I had two paper bags, and the first of these I opened, producing a freshly cooked crab, which I placed on the table. I then challenged the class somewhat as follows: "I want you to produce arguments which will convince me that this object is the remains of a living thing. You may imagine, if you will, that you are Martians and that on Mars you are familiar with living things, being indeed yourselves alive. But, of course, you have never seen crabs or lobsters. A number of objects like this, many of them fragmentary, have arrived, perhaps by meteor. You are to inspect them and arrive at the conclusion that they are the remains of living things. How would you arrive at that conclusion?"

Of course, the question set for the psychiatrists was the *same question* as that which I set for the artists: Is there a biological species of entropy?

Both questions concerned the underlying notion of a dividing line between the world of the living (where *distinctions* are drawn and *difference* can be a cause) and the world of nonliving billiard balls and galaxies (where forces and impacts are the "causes" of events). These are the two worlds that Jung (following the Gnostics) calls *creatura* (the living) and *pleroma* (the nonliving).^{*} I was asking: What is the difference between the physical world of pleroma, where forces and impacts provide sufficient basis of explanation, and the *creatura*, where nothing can be understood until *differences* and *distinctions* are invoked?

In my life, I have put the descriptions of sticks and stones and billiard balls and galaxies in one box, the pleroma, and have left them alone. In the other box, I put living things: crabs, people, problems of beauty, and problems of difference. The contents of the second box are the subject of this book.

I was griping recently about the shortcomings of occidental education. It was in a letter to my fellow regents of the University of California, and the following phrase crept into my letter:

^{*}C. G. Jung, *Septem Sermones ad Mortuos* (London: Stuart & Watkins, 1967).

"Break the pattern which connects the items of learning and you necessarily destroy all quality."

I offer you the phrase *the pattern which connects* as a synonym, another possible title for this book.

The pattern which connects. Why do schools teach almost nothing of the pattern which connects? Is it that teachers know that they carry the kiss of death which will turn to tastelessness whatever they touch and therefore they are wisely unwilling to touch or teach anything of real-life importance? Or is it that they carry the kiss of death *because* they dare not teach anything of real-life importance? What's wrong with them?

What pattern connects the crab to the lobster and the orchid to the primrose and all the four of them to me? And me to you? And all the six of us to the amoeba in one direction and to the back-ward schizophrenic in another?

I want to tell you why I have been a biologist all my life, what it is that I have been trying to study. What thoughts can I share regarding the total biological world in which we live and have our being? How is it put together?

What now must be said is difficult, appears to be quite *empty*, and is of very great and deep importance to you and to me. At this historic juncture, I believe it to be important to the survival of the whole biosphere, which you know is threatened.

What is the pattern which connects all the living creatures?

Let me go back to my crab and my class of beatniks. I was very lucky to be teaching people who were not scientists and the bias of whose minds was even antiscientific. All untrained as they were, their bias was aesthetic. I would define that word, for the moment, by saying that they were *not* like Peter Bly, the character of whom Wordsworth sang

*A primrose by the river's brim
A yellow primrose was to him;
And it was nothing more.*

Rather, they would meet the primrose with *recognition* and *empathy*. By *aesthetic*, I mean responsive to *the pattern which connects*. So you see, I was

lucky. Perhaps by coincidence, I faced them with what was (though I knew it not) an aesthetic question: *How are you related to this creature? What pattern connects you to it?*

By putting them on an imaginary planet, "Mars," I stripped them of all thought of lobsters, amoebas, cabbages, and so on and forced the diagnosis of life back into identification with living self: "You carry the bench marks, the criteria, with which you could look at the crab to find that it, too, carries the same marks." My question was much more sophisticated than I knew.

So they looked at the crab. And first of all, they came up with the observation that it is *symmetrical*; that is, the right side resembles the left.

"Very good. You mean it's *composed*, like a painting?" (No response.)

Then they observed that one claw was bigger than the other. So it was *not* symmetrical.

I suggested that if a number of these objects had come by meteor, they would find that in almost all specimens it was the same side (right or left) that carried the bigger claw. (No response. "What's Bateson getting at?")

Going back to symmetry, somebody said that "*yes, one claw is bigger than the other. but both claws are made of the same parts.*"

Ah! What a beautiful and noble statement that is, how the speaker politely flung into the trash can the idea that *size* could be of primary or profound importance and went after the *pattern which connects*. He discarded an asymmetry in size in favor of a deeper symmetry in formal relations.

Yes, indeed, the two claws are characterized (ugly word) by embodying *similar relations between parts*. Never quantities, always shapes, forms, and relations. This was, indeed, something that characterized the crab as a member of *creatura*, a living thing.

Later, it appeared that not only are the two claws built on the same "ground plan," (i.e., upon corresponding sets of relations between corresponding parts) but that these relations between corresponding parts extend down the series of the walking legs. We could recognize in every leg pieces that corresponded to the pieces in the claw.

And in your own body, of course, the same sort of thing is true.

Humerus in the upper arm corresponds to femur in the thigh, and radius-ulna corresponds to tibia-fibula; the carpals in the wrist correspond to tarsals in the foot; fingers correspond to toes.

The anatomy of the crab is repetitive and rhythmical. It is, like music, repetitive with modulation. Indeed, the direction from head toward tail corresponds to a sequence in time: In embryology, the head is older than the tail. A flow of information is possible, from front to rear.

Professional biologists talk about phylogenetic *homology* (see Glossary) for that *class* of facts of which one example is the formal resemblance between my limb bones and those of a horse. Another example is the formal resemblance between the appendages of a crab and those of a lobster.

That is one class of facts. Another (somehow similar?) class of facts is what they call *serial homology*. One example is the rhythmic repetition with change from appendage to appendage down the length of the beast (crab or man); another (perhaps not quite comparable because of the difference in relation to time) would be the bilateral symmetry of the man or crab.*

Let me start again. The parts of a crab are connected by various patterns of bilateral symmetry, of serial homology, and so on. Let us call these patterns *within* the individual growing crab *first-order connections*. But now we look at crab and lobster and we again find connection by pattern. Call it *second-order connection*, or phylogenetic homology.

Now we look at man or horse and find that, here again, we can see symmetries and serial homologies. When we look at the two together, we find the same cross-species sharing of pattern with a difference (phylogenetic homology). And, of course, we also find the same discarding of magnitudes in favor of shapes, patterns, and relations. In

* In the serial case it is easy to imagine that each anterior segment may give information to the next segment which is developing immediately behind it. Such information might determine orientation, size, and even shape of the new segment. After all, the anterior is also antecedent in time and could be the quasi-logical antecedent or model for its successor. The relation between anterior and posterior would then be asymmetrical and complementary. It is conceivable and even expectable that the symmetrical relation between right and left is doubly asymmetrical, i.e., that each has some complementary control over the development of the other. The pair would then constitute a circuit of *reciprocal* control. It is surprising that we have almost no knowledge of the vast system of communication which must surely exist to control growth and differentiation.

other words, as this distribution of formal resemblances is spelled out, it turns out that gross anatomy exhibits three levels or logical types of descriptive propositions:

1. The parts of any member of *Creatura* are to be compared with other parts of the same individual to give first-order connections.
2. Crabs are to be compared with lobsters or men with horses to find similar relations between parts (i.e., to give second-order connections).
3. The *comparison* between crabs and lobsters is to be compared with the comparison between man and horse to provide third-order connections.

We have constructed a ladder of how to think about—about what? Oh, yes, the pattern which connects.

My central thesis can now be approached in words: The *pattern which connects is a metapattern*. It is a pattern of patterns. It is that metapattern which defines the vast generalization that, indeed, *it is patterns which connect*.

I warned some pages back that we would encounter emptiness, and indeed it is so. Mind is empty; it is no-thing. It exists only in its ideas, and these again are no-things. Only the ideas are immanent, embodied in their examples. And the examples are, again, no-things. The claw, *as an example*, is not the *Ding an sich*; it is precisely *not* the "*thing in itself*." Rather, it is what mind makes of it, namely, an *example* of something or other.

Let me go back to the classroom of young artists.

You will recall that I had *two* paper bags. In one of them was the crab. In the other I had a beautiful large conch shell. By what token, I asked them, could they know that the spiral shell had been part of a living thing?

When she was about seven, somebody gave my daughter Cathy a cat's-eye mounted as a ring. She was wearing it, and I asked her what it was. She said it was a cat's-eye.

I said, "But what *is* it?"

"Well, I know it's not the eye of a cat. I guess it's some sort of stone."

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