

Prerequisites to Batesonian Epistemology

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{Text in **12 point bold** is a direct quote from Bateson's work. Text is 12 point normal are my own comments or summaries.}

Relational Universe

... while I can know nothing about any individual thing by itself, I *can* know something about *relations between things*. If I say the table is "hard," I am going beyond what my experience will testify. What I know is that the... relationship between the table and some sense organ or instrument has a special character... It is always the relationship between things that is the referent of all valid propositions. It is a man-made notion that "hardness" is immanent in one end of a binary relationship.

It is suggestive that the mathematicians are content to accept the idea that relationships *between* propositions can be self-evident, while they are unwilling to grant this status to the propositions themselves... And that position is precisely parallel to my own. (Bateson & Bateson, *Angels Fear: Toward and Epistemology of the Sacred*, 1987, pp. 157, 158.)

{Comment: Bateson argues that it is invalid to apply an adjective (such as "dependent") to a single (decontextualized) human and that "A" is dependent in relation to be "B" would be more proper.}

Relationship is not internal to the single person. It is nonsense to talk about "dependency" or "aggressiveness" or "pride," and so on. All such words have their roots in what happens between persons, not in something-or-other inside a person. (*Mind and Nature*, p. 124.)

The Pattern Which Connects

"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 ameoba in one direction and the backward schizophrenic in another?" *Mind & Nature: A Necessary Unity*, Chapter I)

"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*, 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 other words, as this distribution of formal resemblances is spelled out, it turns out that gross anatomy exhibits three levels of 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.

(E.g., Symmetry, Serial Homology)

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).

(E.g., Phylogenetic Homology)

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.”

Mind & Nature: A Necessary Unity Chapter I)

Stories

There is the story of the man who asked his computer, “Do you compute that you will ever think like a human being?” And the computer translated this into whatever its language was... And the computer worked on the question; then finally produced the answer. The man ran to get the answer on a piece of paper. The piece of paper had on printed on it, quote, “That reminds me of a story.” This is a very serious matter, and undoubtedly true, that the way in which human beings think, certainly the way I think is in terms of stories... Now what is a story? It is a **metaphor**. (from a transcription of a tape of an informal lecture, “*Butterflies and Metaphors*,” given at Esalen Institute)

...if the world be connected, if I am fundamentally right in what I am saying, then thinking in terms of stories must be shared by all mind or minds, whether ours or those of redwood forests and sea anemones.

...the sequence of the building up of the sea anemone, its embryology, must somehow be made up of the stuff of stories.

And behind that, again, the evolutionary process whereby the sea anemone like you and like me, came to be—that process too, must be the stuff of stories

What is a story
that it may connect the A's and B's,
its parts?

And is it true that the general fact that parts are connected in this way
is at the very heart of being alive?

I offer you the notion...
of *pattern through time*.

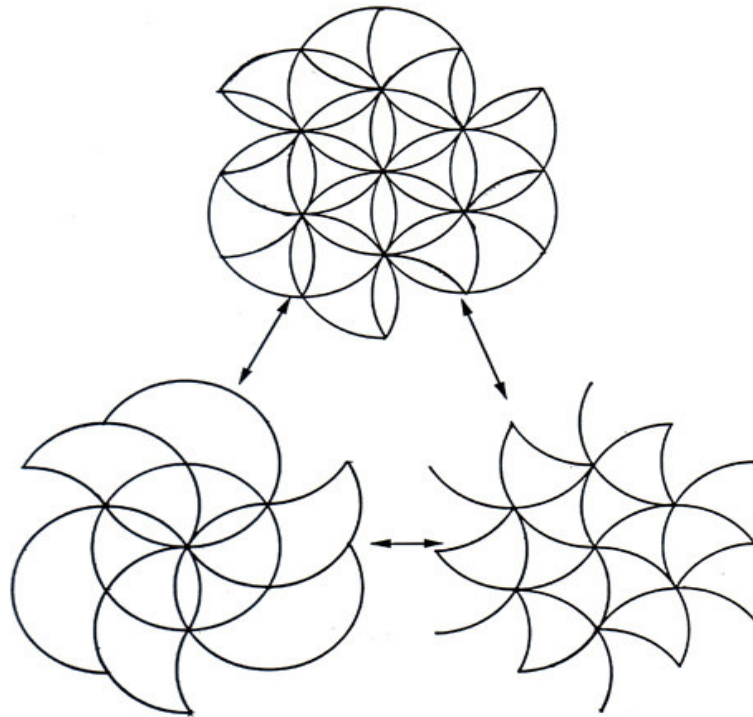
(*Mind & Nature: A Necessary Unity*, p. 12, 13)

{Comment: Pattern evolving through time is a pretty good description of a dynamic system.}

Multiple (Double) Description

Consider the case of binocular vision. I compared what could be seen with one eye with what could be seen with two eyes and noted that in this comparison the two-eyed method of seen disclosed an extra dimension called *depth*. (Mind & Nature: A Necessary Unity, p. 81.)

{Comment: Knowledge emerges from the relationship from two Descriptions. Example: Binocular Vision.}



Circle Dance

Explanation

(as one form of Double Description)

{Comment: Explanation, or Theory, is a special case of Double Description where the first description is "data," either verbal field notes, measurements or other "descriptions," and the second description is a formal model.}

Description. A pure description would include all the facts (i.e., all the effective differences) immanent in the phenomena to be described but would indicate no kind of connection among these phenomena that might make them more understandable.

Tautology. The simplest tautology is "If P is true, then P is true." A more complex tautology

would be "If Q follows from P, then Q follows from P." From there, you can build up into whatever complexity you like. ... to such elaborate structures as the geometry of Euclid, where "If the axioms and postulates are true, then Pythagoras' theorem is true." Another example would be the axioms, definitions, postulates, and theorems of Von Neumann's Theory of Games... Indeed, Von Neumann, in his famous book, expressly points out the differences between his tautological world and the more complex world of human relations. All that is claimed is that if the axioms be such and such and the postulates such and such, then the theorems will be so and so. In others words, all that the tautology affords is *connections between propositions*. The creator of the tautology stakes his reputation on the validity of these connections.

Explanation. Now, an explanation is a mapping of the pieces of a description onto a tautology, and an explanation becomes acceptable to the degree that you are willing and able to accept the links of the tautology. (quotes from: *Mind and Nature*, Chapter III, "Multiple Versions of the World," p. 76)

{Comment: Explanation is a special case of double description: It emerges in the relationship between the data (descriptions of phenomena of interest) and the tautology. It is what *emerges* when we put data (descriptions) in relationship to the relational structure of a tautology that seem to be so valuable for humans.}

Two Logics

Two Logics	
Logic of Logic	Abduction: Logic of Metaphor (Dreams, Poetry)
Humans die	Humans die
Socrates is Human	Grass dies
Socrates will die	Humans are Grass

The Logic of Metaphor maps sets of relations from one realm to another realm
 Generating Tautologies is in the Logic of Logic

Mapping Description to Tautology is the Logic of Metaphor (Dream)

Example. Sets data in human research are mapped to sets of relations in computational theory. The proposal of Human Information Processing Explanations of cognitive data is that the sets of relations found in formal computational theory map to the sets of relations in human cognition.

A General Epistemological Approach

The question, "What am I trying to discover?" is not as unanswerable as the mystics would have us believe. From the manner of the search we can thereby read what sort of discovery the search may thereby reach... The manner of the search is plain to me and might be called method of double or multiple comparison (description). (*Mind and Nature*, Chapter III, "Multiple Versions of the World," p. 81.)

Abduction: We can look at the anatomy of a frog and then look around to find other instances

of the same abstract relations recurring in other creatures, including, in this case, ourselves. This lateral extension of abstract components of description is called abduction, and I hope the reader may see it with a fresh eye. The very possibility of abduction is a little uncanny, and the phenomenon is enormously more widespread than he or she might, at first thought, have supposed.

Metaphor, dream, parable, allegory, the whole of art, the whole of science, the whole of religion, the whole of poetry, totemism... the organization of facts in comparative anatomy-all these are instances of abduction, within the human mental sphere.

{Comment: Integrate: Relational Universe, The Pattern Which Connects, Stories, Multiple Descriptions, Explanation, Abduction}...

That Reminds Me of a Story...

“Allegory”

By Gregory Bateson

May 12, 1979 At The Hermitage

The following article was originally published in the *CoEvolution Quarterly*, Spring 1979, pp. 44-46.

There was once a beautiful lady, whose habit it was to sleep on disused railroad tracks.

In that same country there lived also a brutal surveyor who ran the trains up and down the tracks. He was at heart an explorer and therefore was particularly attracted by those branches of the railroad system where no trains had passed within living memory. These were precisely those tracks where the lady delighted to slumber.

So it happened over and over again that she would be disturbed in her sleep and compelled to retreat hastily while a powerful and smelly engine dashed over the very place she had been happily resting.

Every time this happened there was a falling out between the lady and the gentleman. He maintained that she was an old-fashioned, trivial, and superstitious thing. She, in return, would spit out insults in a quite unladylike manner saying that he was indeed a thing, subhuman, and nothing but a small boy interested only in silly noisy toys.

And so it went on. For about two thousand years she would always be finding new and unexplored parts of the railroad system upon which to sleep and he always choosing those very branches of the tracks for the exercise of his monstrous vehicles.

He asserted that it was his right - and even duty - to map the railroad system and that the *whole* system was entirely his - especially the unexplored parts of it. He argued that the system was a single, entirely logical-causal network of tracks.

She averred that the tracks were designed for the rest and peace of the human soul and cared nothing for his dreams of causality and logic.

He mapped every detail of the tracks along which he ran his engines. She continually found other parts of the system not yet mapped.

One day the engineer carelessly left one of his maps beside the track and the lady found it.

Gingerly, holding it only with the tips of her fingers, she picked it up. She handled it as if it had been left there by the devil.

It was curiosity that led her to open the map, unwilling to see what it might contain and therefore not really looking at its details. Looking at this from a distance through half-shut eyes, she was surprised to find that thus half-seen, the document was in itself beautiful.

At the next confrontation between herself and the engineer she said without thinking, 'And you don't even know that your own maps are beautiful.'

At this the surveyor was amazed. He gruffly replied that he was not interested in *that*.

She said to herself 'Ah, then there is something in the universe in which he is not interested. That something belongs to me.'

'For ever,' she said.

After they parted, each considered what had been said. The surveyor was forced to agree that indeed the beauty of his maps and correspondingly the beauty of the railroad tracks were not within his province. She, on the other hand, was delighted and hugged to herself the secret knowledge that he would never invade what she most valued - the elegance and symmetry of the total system. Not its details but its foundations.

At their next meeting he asked whether she was still interested in the so-called beauty of the maps. When she rather defensively replied in the affirmative, he said in an offhand manner that he had perhaps something to show her.

He then confessed that while she slept upon the railroad tracks he had come quietly and had made a careful drawing of her body. It was this drawing that he wanted to show her.

He unfolded and placed side by side before her his map of the railroad tracks and his drawing. He said it was 'scientifically interesting' that the map and the drawing appeared to resemble each other in many 'formal' characteristics. He specially wanted her to see this strange resemblance between the two documents.

She briefly dismissed the matter. She said she had always known *that*. But, saying this, she looked away and smiled.

Grace

Aldous Huxley used to say that the central problem for humanity is the quest for grace. This word he used in what he thought was the sense in which it is used in the New Testament. He explained the word, however, in his own terms. He argued—like Walt Whitman—that the communication and behavior of animals has a naiveté, a simplicity, which man has lost. Man's behavior is corrupted by deceit—even self-deceit—by purpose, and by self-consciousness. As Aldous saw the matter, man has lost the "grace" which animals still have...

I argue that art is a part of man's quest for grace; sometimes his ecstasy in partial success, sometimes his rage and agony at failure.

I argue also that there are many species of grace within the major genus; and also that there are many kinds of failure and frustration and departure from grace. No doubt each culture has its characteristic species of grace toward which its artists strive, and its own species of failure.

Some cultures may foster a negative approach to this difficult integration, an avoidance of complexity by crass preference either for total consciousness or total unconsciousness. Their art is unlikely to be "great".

I shall argue that the problem of grace is fundamentally a problem of integration and that what is to be integrated is the diverse parts of the mind—especially those multiple levels of which one extreme is called "consciousness" and the other the "unconsciousness." For the attainment of grace, the reasons of the heart must be integrated with the reasons of the reason. (*Steps to an ecology of mind*, p. 128, 129)

The Sacred

What is it that men and women hold sacred?...

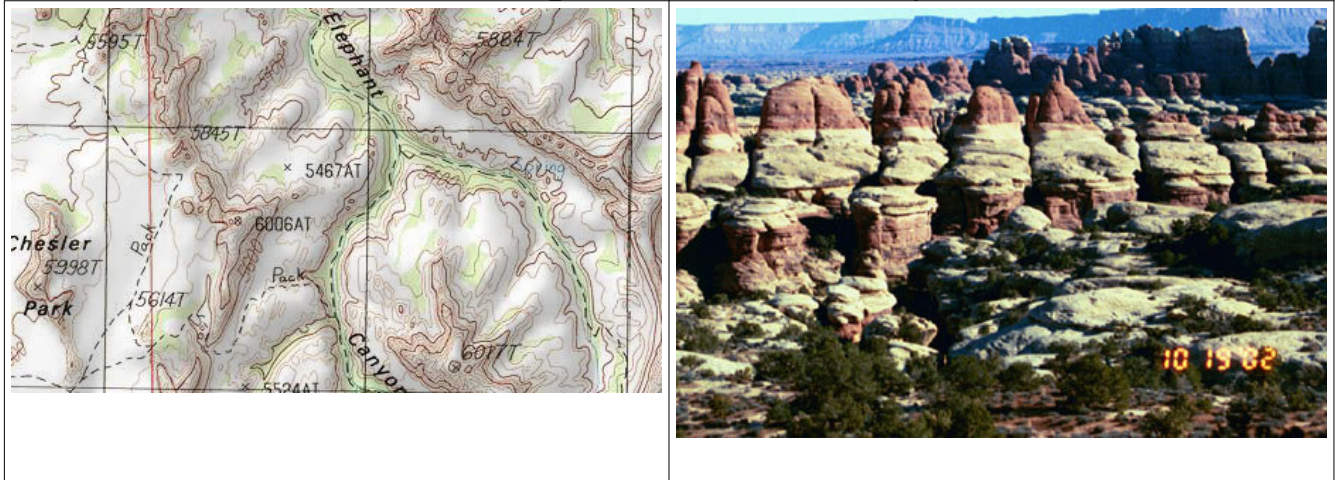
What does it mean to hold something sacred?

And why does it matter? (Gregory Bateson & Mary Catherine Bateson, *Angels Fear: Toward an epistemology of the sacred*, p. 81)

Appendix A

Epistemological Essentials That I have Left Out in this Talk...
Because I've spoken of these issues before at this conference

The Map is not the Territory



News of Difference: Difference gets onto Maps

We can now say—or at any rate, can begin to say—what we think a mind is. ...consider what is the unit of mind. Let us go back to the map and the territory and ask: "What is it in the territory that gets onto the map?" We know that the territory [itself] does not get onto the map... What gets onto the map, in fact, is *difference*, be it a difference in altitude, a difference in vegetation, a difference in population structure, a difference in surface, or whatever. Differences are things that get onto maps. (*Steps to an ecology of mind*, p. 457)

Differences that Make A Difference. {Comment: Not all differences in the territory make a difference in the a particular nervous system. The pressure waves produced by a dog whistle, for example, are (pressure) differences that make a difference in dog neurology but not in human neurology.}

...a difference that makes a difference. Such a difference, as it travels and undergoes successive transformation in a circuit [e. g., a nervous system], is an elementary idea. (*Steps to an ecology of mind*, p. 315)

Criteria of Mental Process

- (1) Mind is an aggregate of interacting parts or components.
- (2) The interaction between parts of mind is triggered by difference.
- (3) Mental process requires collateral energy.
- (4) Mental process requires circular (or more complex) chains of determination.

(5) In mental process the effects of difference are to be regarded as transforms (i.e., coded versions) of the difference which preceded them.

(6) The description and classification of these processes of transformation discloses a hierarchy of logical types immanent in the phenomena.

I shall argue that the phenomena which we call thought, evolution, ecology, life, learning occur only in systems that satisfy these criteria.

(Bateson, 1979, pp. 85, 86)

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Appendix B
A few more important prerequisites
that won't fit into twenty minutes

Double Binds

Double binds in species extinction (Bread and Butterflies)

Double binds in mental dysfunction (Pavlov's Dog)

Double binds in creativity and Level III Learning (Bateson's Porpoise)

Paradox

A Hierarchy of (Emergent) Levels Immanent in Life

Paradox and Double Bind only occur if levels are not sorted properly

Levels of Learning (Steps, p. 279ff)

Learning I (conditioning)

Learning II

learning to learn, personal identity and character,

rule learning, grammar, math, musical forms

Learning III

evolutionary leaps,

paradigm shifts,

New language, New math, New Musical forms

Resolving the contraries, paradoxes, & double binds of the personal identities learned at Level II