

Biotopology 1972

by Warren Brodey

The following are excerpts from 1) a manuscript/letter recently received from Warren Brodey on the topology of klein form systems and 2) a transcription of the audio portion of a two-hour video tape made by Andy Mann and Darcy Umstedter in which Warren relates klein form systems to biotemes (biological optimizing systems) and contrasts these with mechy max (mechanical maximizing systems) which he thinks predominates in the mismanagement of the earth's ecology in ignorance or disregard of context [the extent to which all things (systems) are related].

TOPOLOGY is a non-metric elastic geometry. It is concerned with transformation of shapes and properties such as nearness, inside and outside. (Paul Ryan, *Radical Software* 3).

Compare the kind of space people are in who ask "Do you follow my line of reasoning?" and the space of those who ask, "Can you get into the space I am in?"

"Can you get into the space I am in" means asking the other people to loop through your style, your information arrangements, your habits, your epistemology, your language, and how you deal with the unanticipated.

Infolding: Imagine working through into depths with the help of a media that provides instantaneous feedback and thereby allows infolding with time, memory, energy, relation, no longer in the image of print. "Do you follow my line of reasoning?"

I am not a TV freak. I am a person engaged with a group in synthesizing actual plastic materials that use the *ecothink* in their working. The going is slow but the space is now clear in my head. We taped a discussion—each of us trying to catch what we thought had meaning. I might catch your face when you registered surprise at what your hands had just built. On the next infolding we would discuss what you expected and your surprise. We would use the TV to penetrate in depth the experience even as it happened and to penetrate the experience of the experience—the meta experience.

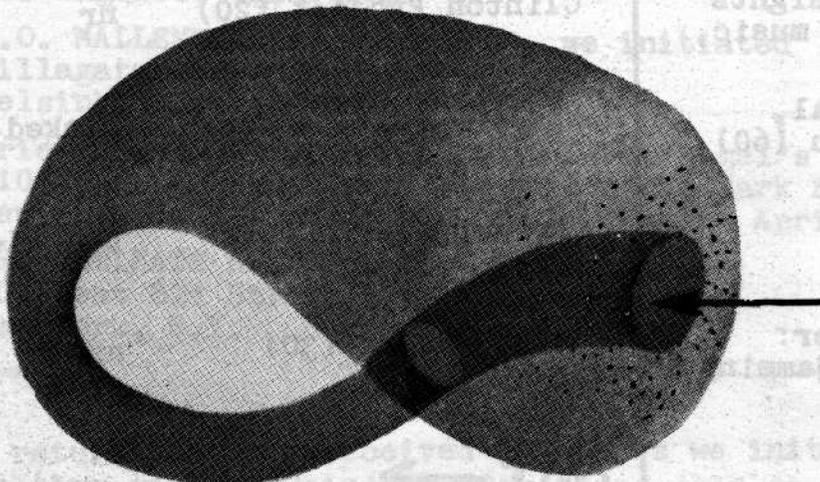
Paul talked about this in the last issue of *Radical Software*:

Taping something new with yourself is a part uncontained
To replay the tape for yourself is to contain it in your perceptual system
Taping yourself playing with the replay is to contain both on a new tape
To replay for oneself tape of self with tape of self is to contain that process in a new dimension
Parts left out of that process are parts uncontained
All of this is mapable on computer graphic terminals!

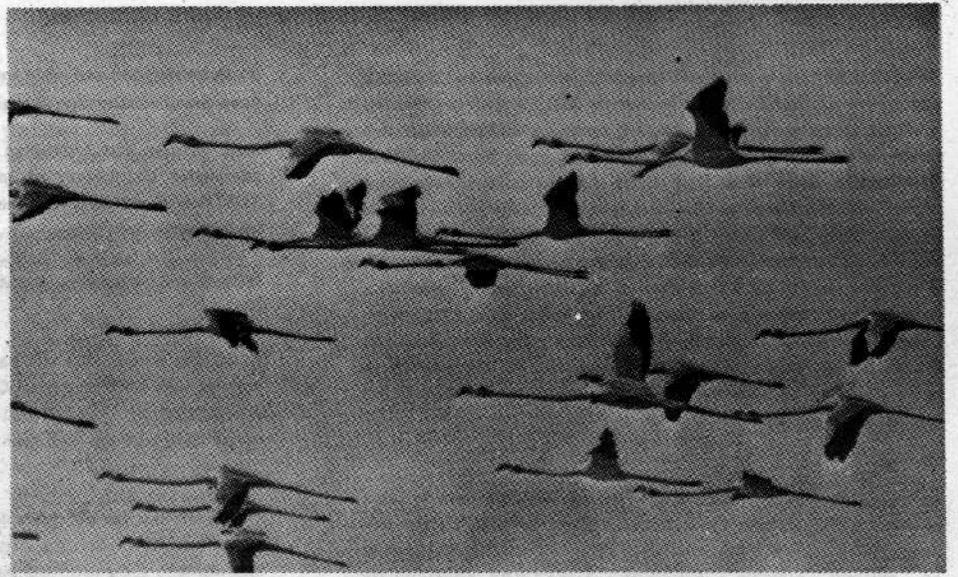
Infolding as it is described by many creators of *Radical Software* is really a radical, a powerful, a timely, and a materially significant happening. It takes us into a new space. Some of the readers, particularly Paul, would look at the tape we were making if this were an infolding session and show me my stubbornness in not seeing what they were telling me a year ago or more. But our group has been working in the same space with different media in hand—a responsive touch media instead of a visual one. Our child has asked for its launching. It is a frail being, almost unborn.

Now I would like you to take the trip into our space . . .
Do you anticipate enough value in this trip to sacrifice a sock of a stocking . . . for the sake of finding a way to stream through our new space? Do you? If you do peel off a stocking and move with me.

We can make a simple, soft klein bottle or klein form, and it will provide us with a simplex with which to synthesize complex structures which are "lively"—like living structures.



Klein form: no inside, no outside



First, cut the toe out of a stocking, stretch hose is better. Cut a slit near the knee; make it about the diameter of the toe. Fold the stocking over back on itself; put the toe in through the slit. Pull the toe free edge through (but not all the way through) til the free edge at the toe and thigh are adjacent. Now get a needle and thread. Sew the slit to the stocking coming through it. Sew the toe free edge to the thigh free edge. (See diagram of klein form)

Reach down the double tube. Your hand will go down the contained tube (what was the toe) through the slit to where it is uncontained and then around into the containing space between the toe and the thigh of the garment.

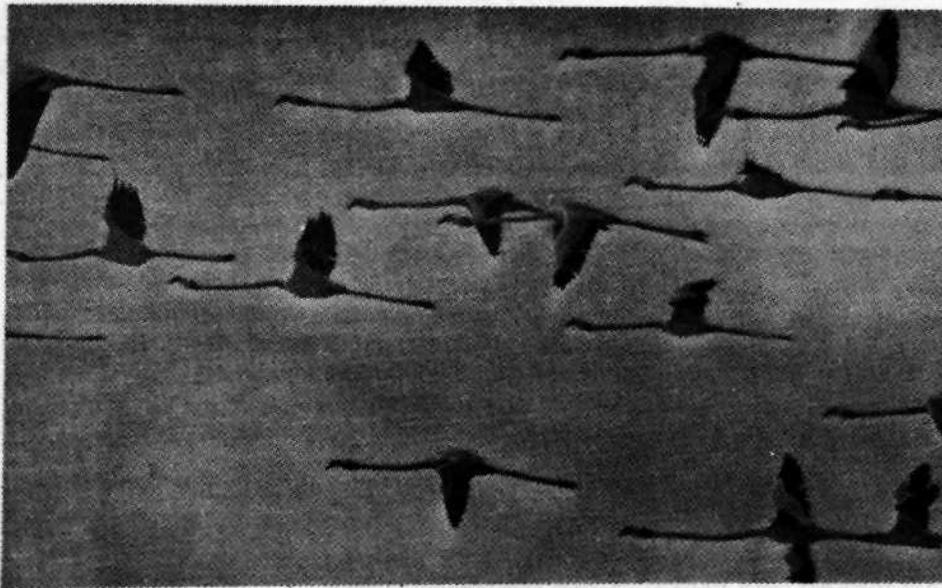
We are in very different territory.

In the past you started out with points; points went to lines; lines swept a surface in two dimensional forms. When you went to three dimensional forms the first form was a sphere, because that's the simplest; then from a sphere [you can make a hole in a sphere and stretch the sphere out (as far as topology is concerned, you're allowed to stretch everything)] you went to a donut; a donut to be a donut had to have a hole in the middle, and you could stretch it as much as you wanted but it still had a hole in it.

The klein form is different. There's no inside; there's no outside. Instead you have a contained tube and an uncontained tube, a contained hole and an uncontained hole from which you can make interlocking klein forms in a chain . . . Any part of the form can touch, contact, communicate with, flow with any other part, and the parts, the whole, in time flow through each other in a way the donut and sphere cannot. We have a quality of continuousness in the form and at the same time intracontainment or infolding; we have intrinsic to the form identifiable relationships that are not diadic (inside, outside) but are always at least triadic (context). There is no central governance or cooperative communication. There is enormous variation—the basic structure is so informationally rich that no two systems are sufficiently similar to value a same "thing" at the same time—indeed there are no "things" except as special cases.

The beauty about the klein form is that for the first time you are not captured by spheres or donuts. You can talk about a jet of air that goes up through the part of the klein form that is in contact with the external environment (where it is uncontained) and then becomes contained within itself and continues. For the first time you have a form which allows you to talk about something contained within itself . . . if I put my hand on my knee it forms a kind of hole where the "outside" is in complete contact with the arm and where the energy from my hand goes back through my body and *alters* what happens "outside" again as it passes from within my body down through my shoulder . . . I start to have a loop which is partly uncontained that is, really senses that which is outside itself, and partly contained, that is, it senses itself within itself. It is a form that begins to have the capacity to know about its own behavior as it behaves "outside," that is, in simple connection with the environment, and as it behaves "inside," as informational representation to the environment within itself.

Paul spoke of how the kleinworm has a capacity for anticipation and we find that anticipation has meaning only if we are considering a time-form geometry, a geometry of relations rather than things (no longer Newtonian geometry but an Einsteinian time-space form, a form that does not define time but is time that is by definition) . . . ("Taping something new with yourself is a part uncontained. To replay the tape for yourself is to contain it in your perceptual system . . .") When you model with a klein form you have to change your head around, because for the first time you can talk about time as influencing behavior. Consider the klein forms as being able to breathe. Let us say it is made of material with local energy that allows it to expand and contract. Image waves of contraction flowing in this material. The part that loops out into the environment—the unanticipated context—recurs through itself comparing the return with the rhythmic response on adjacent recursions. It changes its waveform to better maintain its intentional behavior. It is permeated by context. It has no walls. Yet it uses its structural infolding for maintaining itself changing in a sufficiently regular way to find new relations.



In biological systems rhythms pass through themselves interfering, augmenting, amplifying by setting resonant rhythms going which soak up energy which would otherwise be lost to relevant work. Rhythms that are more intracontained will tend to null out rhythms that are not convergent or that cannot find energies at the time they are needed . . .

To put it another way: Let's say you have a colony of birds and this colony of birds is in a mountain valley almost filling up the mountain valley, and the birds behave in the colony in a particular way that allows them to propagate so there are many more birds. The colony then becomes crowded, and individual birds start to behave in a crowded way; the colony is then changed. The way the colony changes influences the way the birds change. The way the birds change influences the way the colony changes, but the birds change and the colony's change are not simple additions; the colony is not made up of a million birds, nor is a bird made up of a colony, because there now starts to be *in time* an interaction, an active dynamic interaction between the single unit and the mass unit. The dynamic is not simply dividing the mass into the units. All of our theory and governmentology has been that the individual is simply a member of the class called mass. Now, however, we start to move to what the interaction is between the individual and the mass in a way that takes in the context which is beyond either the individual or the mass, that is, that which is contained around that totality; so we have always a system of three at least. You always have a context.

In the past all of our logic in all of our theory, in all of our ways of thinking, has been bound up with systems of two, systems basically true and false. But we know now that there's no such thing as high holy eternal noon, the time when all things are pure, because *things are always changing, because time always exists*. The Klein form helps you get your head into a space where time starts to exist and where things are constantly in dynamic motion with a different kind of dynamic relationship than you get if you're talking about spheres. The concern used to be: how do you get the mass contained in the single member; how do you get the class contained in a member of the class. You could talk about how members made up the class but you could never talk about how the class made up the members; you were never able to talk about it with any geometric representation. But now people can talk about this in terms of triadic logic (the man who taught me what I know is Warren McCulloch, and Warren was searching for triadic logic in asking questions about things); that is, how do you set up a contextual logic so that your experiments aren't for the purpose of destroying context. Usually experiments are done so as to eliminate context . . . Now, if you eliminate context you're then into what I call *mechy max* systems. Mechy max systems are mechanical maximizing systems which operate by Newtonian physics, which operate like a clock with its clockworks. This is what Buckminster Fuller was talking about. There is for the clock a winder which is the energy source and there is the energy sync which is the fact that the hands of the clock go around; between the source and the sync are a number of levers of various sorts: wheels, ratchets, the great clumpers and the like, but *the output never effects the input*; there is always infinite source and infinite sync, infinite beginning and infinite end, and we find now that this is no longer a reasonable way to think. Now Bucky talks about spaceship earth and how man has to take it over, and I say bullshit, because man doesn't want to take anything over, because man is a part of the universe but he is not controller of the universe. Once you start to think that you must take it over it becomes like a Japanese garden. A Japanese garden is a garden that is arranged for man's purposes and basically has none of the mystery, none of the uncertainty . . . (literally I have talked with people from NASA, people who are high up in government who think of our taking over the whole earth, artificial climate, artificial creation of environments . . . of mechy max coming in, destroying the environment, and then recreating it . . .

The thing that you learn when you start to play the game of building biological systems (what I call *biological optimizing systems* or *bioptemes*) is that there is a context which man has nothing to do with and is not in any way in control of. There's no way to recreate biological systems, because in the recreation you do what you did with hybrid corn; you make a better corn except that all the corn is exactly the same as the next; if any disease comes along it wipes out everything. There's no flexibility; *man-made ecology is of necessity a low variety system because it only contains that variety which man can conceive of. An ecological system is a high variety system* . . . We're making "toys" which help us to think about ecology. In these biological systems that we're trying to create, however, we

don't have control of the total system—we don't have control of the tools that we've built. "They" have a life of their own which is insensitive to the life that forms around them; each one is different from the next and if some part doesn't work it doesn't stop operating.

However, in a mechy max system, which is a clockwork, if one wheel stops turning the whole thing, because it's like a simple chain, and there's a weakest link, stops. If you have a densely interconnected system within itself where all the parts are connected with all the other parts, then all these parts are less densely connected with that which is outside which is the context; no two systems, then, are alike, and if any part dies, which it will, inevitably (because in some ways you try to make them as improperly, as inaccurately, as sloppily as you're able) . . . if any part dies then the thing just has a different way of going about its behaviors—it may not have the same behaviors, it may not have the same purposes, it may not achieve the same purposes, it may have different purposes . . . but death has occurred naturally and in one clump which leaves a hole, and that hole is taken up by the regeneration and evolution of other species which fill the hole.

In mechy max systems there are no holes because everything is as uniform as possible.

I started out as a physician and with mechy max biology, the biology of low information systems, the biology of vision: you see something, but you're not aware of the *effect* of your seeing; you smell something and you're not aware of the *effect* of your smelling; you hear something and you're not aware of the *effect* of your hearing—your hearing is not active (you're not aware of its activity though actually it is active), but with touch and the sensuous world you start to get into if you touch something, then you touch it, it touches you; you move it, it moves you; you change it, it changes you, and it's happening simultaneously. You are no longer in the world of weak interconnection—when you're into densely connected systems you're into everything that happens effecting everything else that happens; when you're talking about densely interconnected systems you're talking always about *effect*. . . . In eastern philosophy you talk about breathing out as well as breathing in; in western philosophy you talk about breathing in—everything is in; everything is need, everything is desire. And *effect*, breathing out and the sense of breathing, the whole sense of rhythming is something that eastern philosophy brings us close to. Western philosophy is the world of things . . .

In mechy max systems, low variety systems, you have as I said toys which operate like clockwork. There are carnivore mechy max's that eat people and eat animals—military machines of all sorts; and there are herbivore mechy max's—the tractors and the cranes and the giant earth movers which eat up all the greenery and spit out lines of sugar cane, of corn, fields of cultivated plants that are domesticated plants. You have a whole field of one kind like a whole group of people of one kind. The herbivores also stack up mud into houses and into new apartment buildings and they proliferate more mechy max within this: washing machines, heaters; the mechy max have gradually been taking over the people and we have what we call plastic people, mechy max people. Biological systems become like Newtonian machines. People become like Newtonian machines. Their logic is like that.

photo: J. Sibert



Now the way this happened mostly is by the omnivores: the omnivores eat the herbivores, eat the carnivores. The omnivores are mostly made out of paper, out of form: they are called Internal Revenue Service, Social Security, health insurance, health center, mental health center. They are places where people are conditioned to act in mechy max ways; they are places where plants are conditioned so they will all be exactly the same as each other. Simplification in the mechy max style occurs by reducing the information to as low a level as possible by reducing the consequences of the environment as much as possible. The clock is so set up that the metals all counterbalance each other so that the heat changes will not effect the movement of the wheels and is not context or environment sensitive in any respect, that is, to reduce context sensitive. Biological systems operate quite to the contrary. Whatever happens, they have within them the capacity to cope so the animal is not taught, or he is not genetically made up to deal with a particular streaming of water; he's brought up to cope in such a way as to loop again the behavior of that which is outside himself, and go back and reconsider what was outside himself in terms of his behavior, and recycle his own behavior through himself altering it in such a way so as to maintain survival, or to evolve survival so as to relate to the external world.

Biological systems are not all made the same. People may seem in many ways more like each other than they are like monkeys or rabbits, but every person has entirely different characteristics from the next, except that these differences coalesce or converge each in its own recipe to mate people who are somewhat similar. Inherently though there are enormous differences between people. Some of that difference is not obvious. Some of the flexibility in any natural system is not apparent because it's not being used. It's stored, like with wild wheat. Wild wheat looks like wheat but all the different kinds of wild wheat have a different genetic structure, more different than wheat that's been carefully selected like the wheat we see in mechy max books—*quality controlled*. Everyone knows exactly what kind of wheat they're going to get. In real wild systems there is enormous flexibility because many different kinds of components mix in such a way that the mixture is convergent towards a product or towards a creature which is sort of naturally similar—the manifest behavior and rhythms and identity is similar, but what makes it up is different. The wildness is not used and is non-apparent, but if something happens to the environment the wild potential still allows changes to occur because the flexibility is there available. A kind of wild system has a capacity for maintaining itself that a domesticated system does not.

In the mechy max system you try to maximize particular behavior, simplistic behavior so as to accomplish the one simple purpose which may be for instance to scrape up earth; scraping up earth in such a way so as to destroy all of the green things; all of the worms and ants; the earth boring mechy max truck or scraping thing doesn't pay any attention to what it picks up. It tries to plant but it always replants in such a way as to destroy the variety: a meadow is not like a grassy lawn. There were meadows, meadows had bushes, the bushes lived by trees, and all of these, each part, was related to all other parts, and if anything came along, a big wind came along, it might destroy some of the trees but the bushes and the small trees would grow up again and if some grass eating thing came along, well, there are other forms of grass, but now you build lawns.

One cannot talk about genetics, Gregory Bateson's point, in terms of classes of animals and creatures. You can't talk about the genetics of deer or the evolution of deer. You have to talk about the evolution or genetics of deer in relation to grass and the evolution of plants. You can't separate the evolution of one particular aspect of life from another because when you think biologically then the whole world becomes interconnected and everything effects everything else, and everything contains everything else, and even beyond the world if you want to be spiritual about it, so that all things are in contact with everything else.

We are trying to develop a language of becoming; not a language of explaining which is what science has done, but a language of describing becoming which is what ecology's about, and not even explaining becoming, since everyone has within them the sense of the whole world in all of its parts. Our intuitive sense of becoming can be very rich provided we give up the mythology of the mechy max.

We're developing systems now that operate by touch, so if you touch them you intervene in their loops. They are not paying attention to you. They're paying attention to that you've interfered with their usual mode of operation. To reestablish their mode of operations they have to behave in particular ways that allow them to continue to exist in their style which is very different from their sensing you. They don't sense you as you, as a plant doesn't sense a tree as a tree. It senses that it has more shade and it must grow in a different way to find its sun. The other plant, the tree, in a way presses upon it; it becomes environment to it just as we are environment to each other and for the first time we can now talk about humans as environments to the rest of the world, or humans as environments to animals—we don't think of ourselves as the center of the world anymore; we're just environment, and there are many environments.

Mechy max organizations are doomed at this point because they're not capable of managing the high information level that people want and need in order to survive. We have to accept that we are continuous with biological systems and have never been otherwise. In biological systems control is explicit. The mechy max myth is government control of the people and the government is a set of forms (I'm not talking about human people—they lost control of the government); the government is a mechy max system like a great earth moving device that now moves people about like a big clock that has all sorts of ratchets and all the people have to fit into ratchet position; literally in government the positions you have are not related to the people—they're related to the positions

in the forms and forms do not have power. People have power, so power to the people is a joke because the people already have the power, but they haven't exercised it. . . .

Fuller is trying to reprogram the mechy max system to make it work better and my statement goes this way—the system is self-destructing now and the myth that the mechy max have power must now be destructed rather quickly among people. It's this attitude, that the mechy max have ultimate power, that the big machines have ultimate power, that has put us where we have been eating up all sorts of garbage, the machines put out in order to keep the system going . . . so we eat chicklets . . .

I went through the stores and through the city recently (I've been living and working in the country lately and getting along on very little money) and looked at the whole city in terms of the destruct that's going on because all the products that are made are really just a bi-product of tally—the mechy max omnivores is a paper system and its single purpose is tally; tally is money; money is just keeping tally; mechy max operates by keeping tally; the game has been how you maintain the tally as gross national product for example, population rate for example, interest rates for example—these are all tally forms, banking, insurance . . . all parasitic operations are tally systems of the mechy max—the money system. This is not wealth. Wealth is the capacity of any organism to obtain that which is necessary for its own survival, and more than that to obtain that which is necessary to optimize its evolution and to maintain a kind of evolutionary stability that allows everything the whole world over to continue to prosper in a way that's healthy. . . .

I'm not talking about getting rid of all mechy max, however; (man's controlling nature was perfectly fine as long as he didn't have too much influence; it is just that the proliferation of the mechy max has become so enormous that the destruct not only of the mechy max but of the total earth is now possible); we are talking about biological optimizing systems. A maximum is where you try and get more and more and more; it grows and grows and grows; the bigger it is the better it is. If you don't think of optimal size, schooling is to pour more and more into your head and you no longer think of optimal pouring into your head in relationship to experience. There are optimal positions where you would have some mechy max but they wouldn't have grown like a cancer. Cancers kill their host and after a while the cancer dies because the person who has the cancer dies. Well the mechy max at this point, the industrial system, the tally system, is like cancer. It is now proceeding to kill its host which is the earth. . . .

Up until now we haven't had anything to take the place of the mechy max mythology. We haven't had a sense of living systems, biological systems, being a totality; that the earth is a biological system; that the rocks are biological systems; that they're alive; that everything is alive but there are some things that seem much less alive: those are the rocks, the air. We must talk about these as special cases of living things which man basically has very little connection with because they're so different from man and he hardly comprehends their aliveness just as we don't comprehend really the aliveness of crickets. We comprehend better the aliveness of mice because mice are more like us—they're mammals; we don't comprehend reptiles; we don't comprehend birds as well as we do monkeys, because the metaphor of any biological system is itself, because it is *self-referent* and *self-organizing* . . . We were talking about the klein form; about effects at a distance returning to be infolded. That is, any biological system makes noise—it does things which are sort of trial and error and which don't get anywhere; that are fairly random. Those things which are random by definition don't persist; those things which converge into a behavior help to maintain the particular "thing" that has been going through trial and error behavior. If these converge, then the resultant behavior persists and we don't call it random anymore. Randomness or noise is the trial and error of biological systems.



Mechy max people proceed by considering things in a modular form—houses are ticky tack all like each other—or in uniform form. That is, all the ocean is like all the rest of the ocean. It's possible to dump atomic waste into the ocean because you know it will be diluted by the total ocean—but this does not occur. Atomic waste that's been dumped moves around in *clumps* in the ocean. It maintains its integrity; it stays together. The fish are alive. They concentrate the mercury and the mercury goes up the food chain and gets concentrated. Atomic waste gets concentrated. The world is of clumps and all the clumps are different—clumps of people are just different kinds of people.

The idea of clumps is very important because part of the mechy max mythology is that things start off as uniform and then develop into highly differentiated sets. This is not so. Everything starts out as highly differentiated from the outset though there are holes, discontinuities, which may be invaded by one set or another. Life processes operate against things becoming uniform and operate towards things becoming more highly differentiated.

One of the most fascinating problems is what happens when there is no leadership. In our cells there is no leader, but mechy max thinks of genetics as a great leadership system (as if genetics operates separately from what happens in the womb—what the mother ate, what kind of life she was leading).

You must start out with the fact that there are clumps. (Only God could organize from zero with everything uniform—that was in the mind of the religious people who organized from zero . . . it's interesting he organized in seven days, in rhythms.) . . .

Let's say you have a group of people together who are not together because there is a leader, but *are* a leaderless group. After a while they'll organize so that they get jobs done and sometimes they'll organize without a leader; sometimes they'll have a leader for a particular function—sometimes for a day or a month; all of this is different depending on the different kinds of people who happen to be in that group, so there's a natural type of organization that happens among a group of people, but it's not uniform. The rules are not the same across many cultures. Each culture has its own style. You don't start with randomness. Randomness and infinity are mechy max terms. Randomness as a continuous state can only be created with great difficulty; it's a mathematical state which doesn't occur in nature at all. What happens in nature is you get things grouping together in clumps which behave over time in such a way as they may continue to exist as a group . . .

. . . and these clumps can only come in contact with those things which are physically adjacent or that are informationally adjacent or rhythmically adjacent. If you have two systems which have similar rhythms and if the rhythms are slightly different they'll start to rhythm together . . . to form simpler rhythms. There may be many different kinds of instruments but the rhythms tend to group in clumps. If you think of our communication process then those things which have similar rhythms are able to speak to each other; those which are very different rhythms are not able to speak to each other. So there are different communications that occur between elements of a system which are of different rhythms . . . There's a certain kind of self-organization that occurs with a rock group making music together, or with two people making love. You may start when you're making love a new rhythm, but whether it'll catch on depends on where your partner's at and whether it's a random rhythm that has meaning and catches other random rhythms. What may start out as noise—that which does not have meaning, that which is not information, that which does not produce change—because at that point you're in transition, may be a rhythm your partner picks up on and plays back, and plays back again until a new rhythm is organized. You've gone through the transition into a new rhythm. What was noise becomes information, because it *did* have effect, it was that change which produced an effect. Rhythms tend to

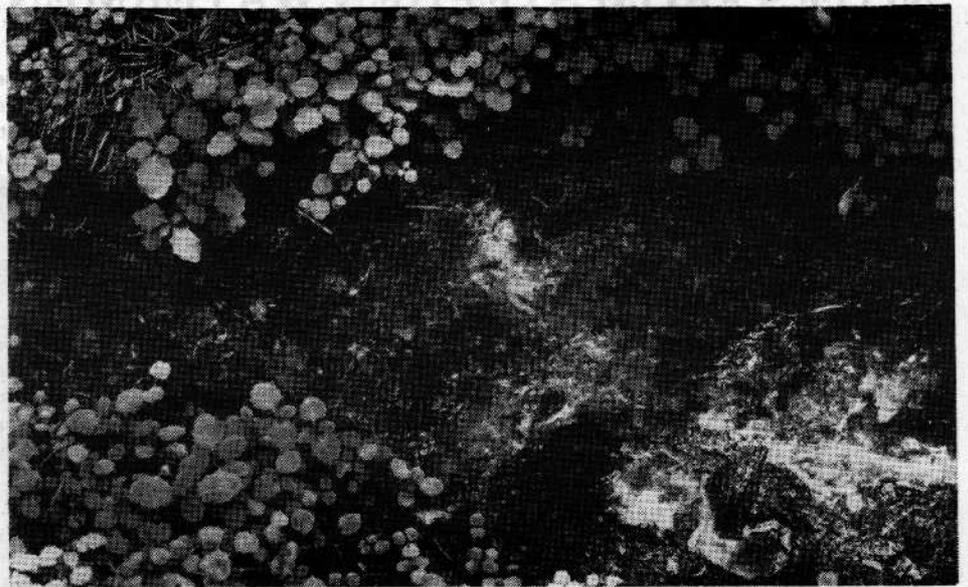


Photo: J. Sibert

organize so that that which is relatively random and meaningless drops out, and that which was meaningless may be the very thing that sets off the next transition.

I have moved finally into the space which I call *eco-space*. Eco-space is self-referencing such that the existence of time and space and size and materials and energy are all in constant rhythmic motion so there is no way to repeat behavior. Eco-space is triadic. Eco-space is recursive. It is not a place of beginnings and endings, of inputs and outputs discreet from each other. Eco-space is auto-correlating . . . self-organizing . . . I have moved into rhythms, ecological rhythms. *The thing that's most constant when you're talking about nature and biology is rhythms and time things*; that's where the most important information lies, information being denied by in large by science. In our kleinform sponge there can be many currents and rhythms looping themselves and each other, spreading and flowing like a meadow or forest or like the living sponge in the sea, or the sea as a sponge: a current of water moves swiftly between two coral heads; it hits a back flow and is turned back, like the stocking looping outside then across through the flow jetting intra-contained through its own streaming. It intervenes in its own becoming. Dive into the water and surface through the bubbles you made and dive again. Wind back through yourself a tape of yourself talking and behaving so that you can relate to yourself as you will be when you watch the tape, then infold again.

A topology that uses rhythms intermingling and flowing around and through each other would let us build walls secondarily, rather than as categorical dividers. TV networks do not have walls . . . Swim in its currents, feel them, where the activity of the space changes abruptly, sediment—slower changing stuff—is laid down. The slow rhythm—a “now” memory, infolds and gives context to faster events which in turn give the slow rhythm meaning.

Scuba swimming deep in the ocean one can feel the eddys and rhythms of fluid filling the holes which one would have called cells. Coral reefs grow in slow time—slow rhythms wearing volcanic rivulets into bridges of sponge, volcanic bubbles and the sea twisting and turning *rhythms* the sand into ripples—and these ripples and sand spits *rhythm* the sea and the growing of coral and the wearing of rock—and all these are rhythms. Swimming below one knows one's own rhythms and the rhythms of breathing and blood and that nothing is still. Putting one's face mask close to the ripples of sand one can watch the grains flowing. But to sense that flow of slow things like sand, or equipment or hard wired programming—the flow of these walls, we must change our rhythm and swim in their time and size grain. Ten year interval time; equipment distribution size.

Time lapse in 10 year intervals. Focus for large size objects. “Now” is a 10 year duration.

Infolded time lapse taping will show the rapid change of events ordinarily called unchangeable. Time taping can be tailored to find patterns. When I was with Bateson in Hawaii we both longed for a series of time lapse shots of Honolulu showing the cancerously money producing developments destroying the cities' survival environment. Month by month one can see the cancer growing. Day by day it is hidden. By changing time grain of the taping appropriately, complex rhythms are simplified. Then one can feel the repetitiousness and code the kind of information/materials/energy flow that follows one to glue into our new biotopology conceptions.

But here I must leave off. If you have followed me into this space you may lead me through the enormous holes I see all around me filling them with energy/information/materials/time which as it resonates, converges or dies, or provides the surprises which may evolve the means of survival.

We must leave the old space. There is no life there.

A 1 hour tape from which the above transcription was made is available. See inside back cover for tape offering.
Special credit and thanks from Warren to Paul, Gregory Bateson, Avery Johnson, Lita Osmundsen, Judy Johnson, Frank Gillette, Beryl and many others. . . .

See article by Avery Johnson entitled *Infolding Paul Ryan*.

