

# 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.

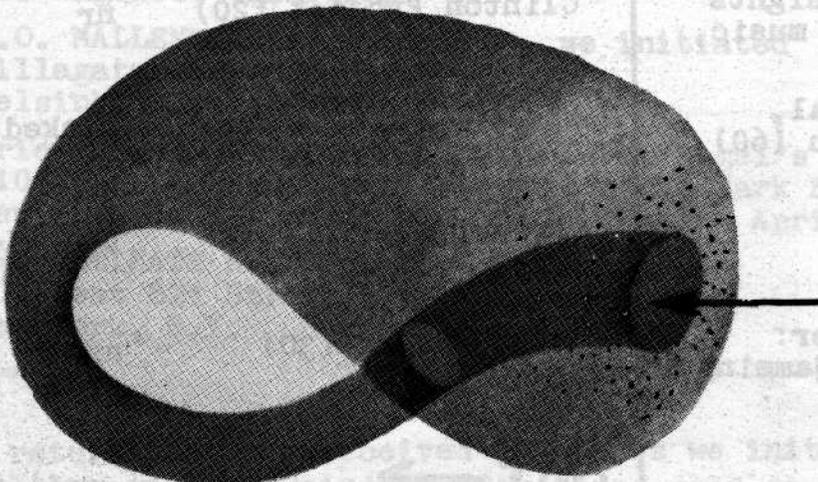
Paul talked about this in the last issue of *Radical Software*:

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!

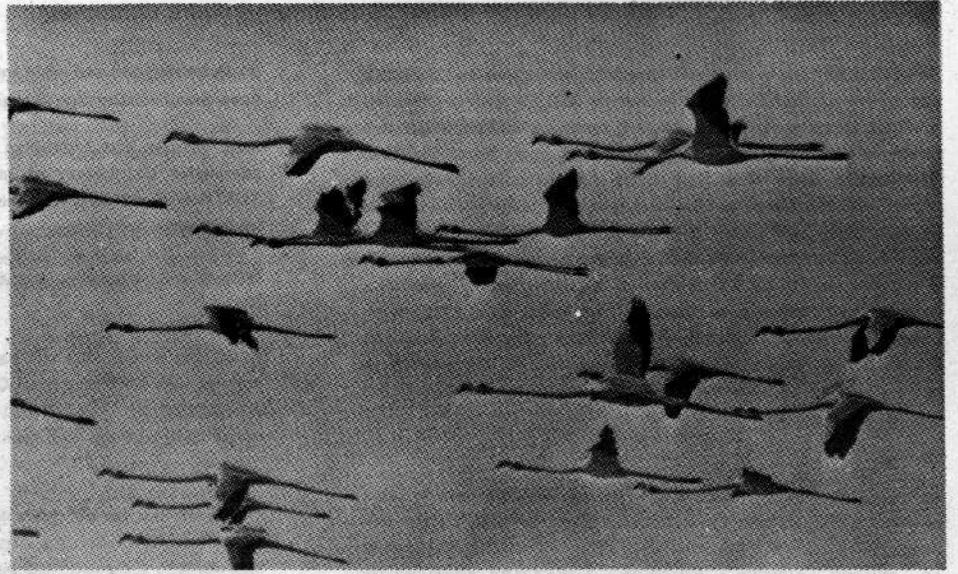
Infolding as it is described by many creators of *Radical Software* is really a radical, a powerful, a timely, and a materially significant happening. It takes us into a new space. Some of the readers, particularly Paul, would look at the tape we were making if this were an infolding session and show 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.