

THE FIRSTNESS OF THIRDNESS

Paul Ryan

For this issue of *The Anxious Prop*, we turn to both to the writings and techniques of Paul Ryan. Ryan's life-long work is of particular relevance for it is in large part dedicated to developing models of notation and performance in human relations and the natural environment.

We recently asked him about his current work, and where he would position Black Swans within it, particularly in terms of Alain Badiou's writings on models.

He responded: "I am trying to understand how Badiou uses Paul Cohen's mathematical notion of 'forcing.' My motivation here is that a clear understanding of 'forcing' might help me figure out whether and in what ways 'forcing' might be a viable way to introduce the practice of Threeing in human affairs. Regarding Black Swan Theory, Badiou would be a fecund resource for engaging the theory, if for no other reason than his integration of poetic, metaphoric thinking with philosophic concern. For myself, I would ground engagement with Black Swan Theory in [Charles S.] Peirce's 'firstness of thirdness.' Given our 'digital age,' I would want to understand the differences between Badiou and Peirce. Badiou builds from set theory, a theory friendly to digital devices. Badiou uses Cantor's transfinite sets as given and celebrates the non-oneness of multiplicity. Peirce critiques Cantor and works toward a diagrammatic, non-algebraic notion of topology. Although aware of multiplicity, Peirce celebrates continuity, a continuity that could give us a way to ground our lives in bioregions rather than continuing to 'live' in nation states under the digital count."

We incorporated Ryan's notational models into the development of this iteration of *The Anxious Prop*, which helped us work through the kinks of our collective process, especially with regard to the questions we want to raise about Black Swans, as metaphor and as topology. As such, hoping to trigger that curiosity further, we reprint a section of his "Introduction to the Earthscore Notation System for Orchestrating Perceptual Consensus about the Natural World." Enjoy Threeing. *Luis Berrios-Negron*

Video recording and playback, with its possibilities of time lapse and slow motion, enables us to understand natural patterns in a non-verbal way. Think of time lapse film studies of budding flowers and slow motion studies of insects. Watching these moving images, it is pos-

sible to understand the pattern presented in a single gestalt without rational inference using language. The moving image allows the natural event to occur in the mind like a fist in the hand. There is a spontaneous, intuitive appreciation of a pattern in nature. Peirce would call this

"the firstness of thirdness." This intuitive appreciation of natural patterns through perception is the fourth component of the Earthscore Notational System. It is important to understand how the firstness of thirdness relates to the categories of firstness, secondness and thirdness.

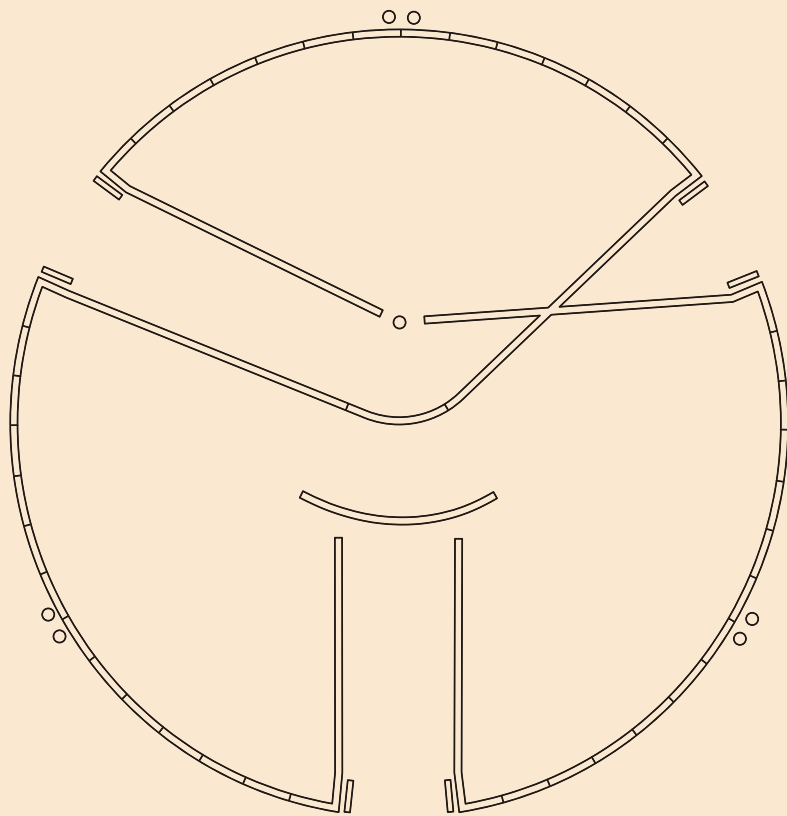
In Peirce's categories, firstness is not separated from secondness, nor is firstness separated from thirdness. There is a firstness of secondness. The "ouch" sounded by someone struck with a thrown rock is an instance of the firstness of secondness. The brute fact of the rock hitting the person is actually there, secondness. It is not constructed or determined by the person's feelings alone. Yet for the person a feeling attaches to the brute fact, a feeling evident in the involuntary cry.

Peirce provided as well for the firstness of thirdness, that is, the immediate perceptibility of law. Muybridge's famous photos of a running horse, done on a wager about whether the four hooves were ever all off the ground at the same time, is an instance of such firstness of thirdness. The firstness of thirdness in nature can also be understood in a formal way using the catastrophe theory of the topologist, Rene Thom (1975). Catastrophe theory is a qualitative method for modeling discontinuous phenomena. The theory models the states of nature as smooth surfaces of equilibrium. When the equilibrium is broken, catastrophe or discontinuity occurs. Thom has proven that in natural phenomena controlled by no more than four dimensions, there are only seven possible equilibrium surfaces, hence only seven possible discontinuous breaks, i.e., only seven elementary catastrophes. Thom named these seven as follows: fold, cusp, swallowtail, butterfly, hyperbolic umbilic, elliptic umbilic, and

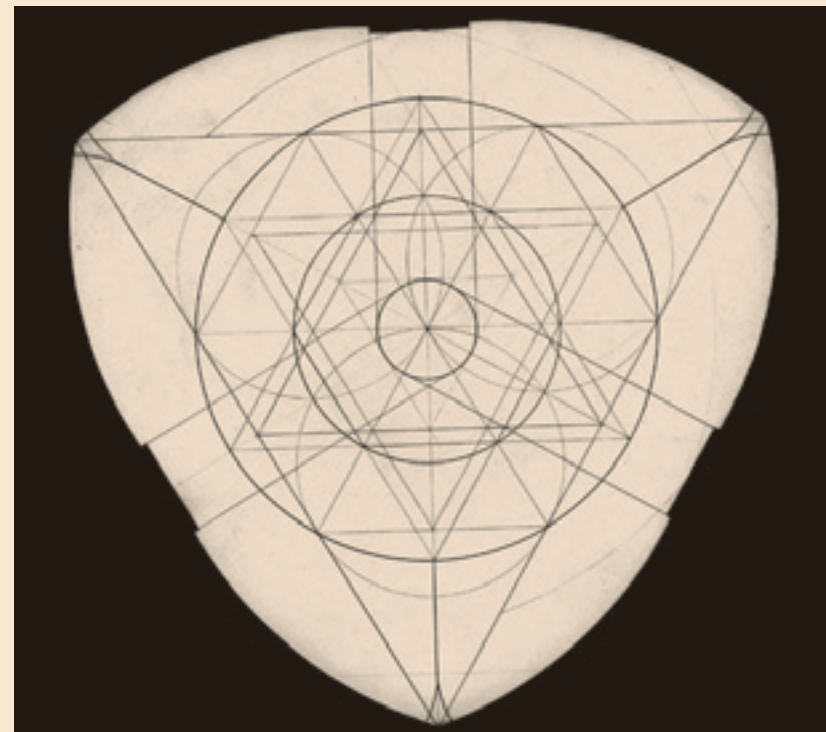
parabolic umbilic.

Catastrophe theory is to the medium of video what Euclidian geometry is to the medium of paper. Television and video monitor and record events (Cavell: 1982). Just as Euclidean geometry offers a formal understanding of geometric surfaces and solid objects, catastrophe theory provides a formal understanding of events or changes from states of equilibrium, i.e., discontinuous phenomena. Based on Euclidean Geometry, someone faced with tiling a wall knows with mathematical certitude that of all possible regular polygons (equalsided, two dimensional shapes) only three (hexagon, square, triangle) can fill the plane packed edge to edge. Based on catastrophe theory, someone observing nature with a video camera knows with mathematical certitude that there are only seven kinds of discontinuity possible in any natural phenomena controlled by four dimensions or less. Just as the continuous relational circuit constitutes the "staff" of the Earthscore Notational System, so these seven elementary models of discontinuity constitute the basic "notes" of the system. To suggest how these notes function in the Earthscore Notational System, I ask the reader to imagine a section of a stream in which there is a continuous flow of smooth water. The flow of water has four dimensions: length, width, depth, and rate of flow. Changes in these dimensions occur because of changes in the shape of the streambed and variations in the amount

of rainfall. Catastrophe theory can model how changes in these dimensions control changes in the way the water behaves. The models provide both a control surface for the changing dimensions and a behavioral surface for the discontinuous action of the water itself. For example, if the width of the streambed begins to narrow very gradually, suddenly a *fold* will appear in the water's shape. If both the rate of flow and the depth of the stream increases the water may jump into the air as if jumping over a *cusp*. If a twig catches the water as it comes down, you may get a droplet forming at the end of the twig before it falls to the next surface. In catastrophe theory such periodic droplet formation in-between surfaces would map on the *butterfly* model. The butterfly is a like a cusp except it has another surface half way between the upper and lower surfaces, a pocket, on which the droplet could form. The swallowtail and the three umbilical models function in a similar manner. Whatever way the four controlling dimensions change, there are only seven possible surfaces on which the corresponding changes in the behavior of the water can be mapped, only seven basic "figures of regulation" for the water's behavior. I should note in passing another way of modeling water flow which has developed recently called chaos theory (Gleick: 1987). Chaos theory is particularly useful in approaching turbulence, a domain in which catastrophe theory has not yet been very helpful. To my knowledge, the formal interrelationship of



Rug design by Michael Kalil for Threeing



Rug design by Paul Ryan for Relational Circuit

these two modeling systems has yet to be worked out, but in principle both could be integrated into the Earthscore Notational System.

In nature, the combinations of the basic seven catastrophes are multiple and not readily apparent. Yet the underlying structural stability of discontinuous phenomena in nature can be understood by careful observation. Each “event-pattern” can be understood in terms of its “chreod.” Chreod is a term taken from the Greek that means “necessary path”: “chre” meaning “necessary,” and “ode” meaning “path.” If any natural process is disturbed it will return to the pathway necessary for its structural stability, like a flooded river returns to its riverbed. These necessary pathways of nature, or chreods, can be rigorously modeled using the seven elementary catastrophes and variations on these seven (Casti 1988: 149ff).

In my own work as a video artist, I have repeatedly returned to moving water as the richest single source for developing a vocabulary of “chreods” in nature. Water takes so many different shapes such as billows, droplets, back curls, waves, fan-tails, and cascades. Each of these shapes exhibits a different pathway in which water can flow, a different chreod. In 1975, I spent the year recording over thirty-five

chreods on videotape at the waterfall in High Falls, New York. In 1983, I did a study of the Great Falls in Paterson which I edited into a tape with five sets of seven different kinds of chreods. In 1984,

I did a study of the coast of Cape Ann above Boston. In 1986, I crossed the Atlantic Ocean on a sixty-foot North Sea Trawler and videotaped over thirty hours of ocean waters. Currently, I am working on a video interpretation of nine different water ecologies in the Shawangunk Mountains at the edge of the Hudson Valley.

Building up a vocabulary of chreods can give us an articulate set of notes with which to score natural phenomena. Horseshoe crabs laying their eggs in Jamaica Bay is a natural process regulated by a chreod. The crabs only lay their eggs in the wet sand during the ebb tides created by the full moon in June. This assures maximum protection for the eggs from predator birds and land animals. The birthing activity takes place within a necessary figure of regulation. If you destroy that figure of regulation, that chreod—by stripping the beach of sand, for example—you have destroyed the natural process of birthing in that site.

To sum up this section on the firstness of thirdness, I am saying that the difficulty of discovering clear “notes” in the buzz-

ing, blooming confusion of nature can be resolved with systematic observation of an ecology by video teams trained in Threeing and schooled to identify the chreods of an ecosystem. The systematic observation of “everything” would insure that we did not miss anything significant. By identifying the chreods we can rigorously model the underlying structural stability of the various events in the ecosystem. We can then find out, through more observation and study, how these various chreods relate to each other. The syntax of interrelationships between these chreods would, in effect, constitute the “score” for the ensemble of recurring events that constitute that particular ecosystem. We would be eliciting the score from the ecosystem itself by careful observation. Once we know the score we can observe and monitor how the ecosystem actually performs or fails to perform in compliance with that score. Failure to comply would mean that we need to re-interpret our score and/or to correct any behavior of ours that is making the ecosystem incapable of performing according to its natural score.

