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 Berríos-Negrón*

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 possible 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, eliptic 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