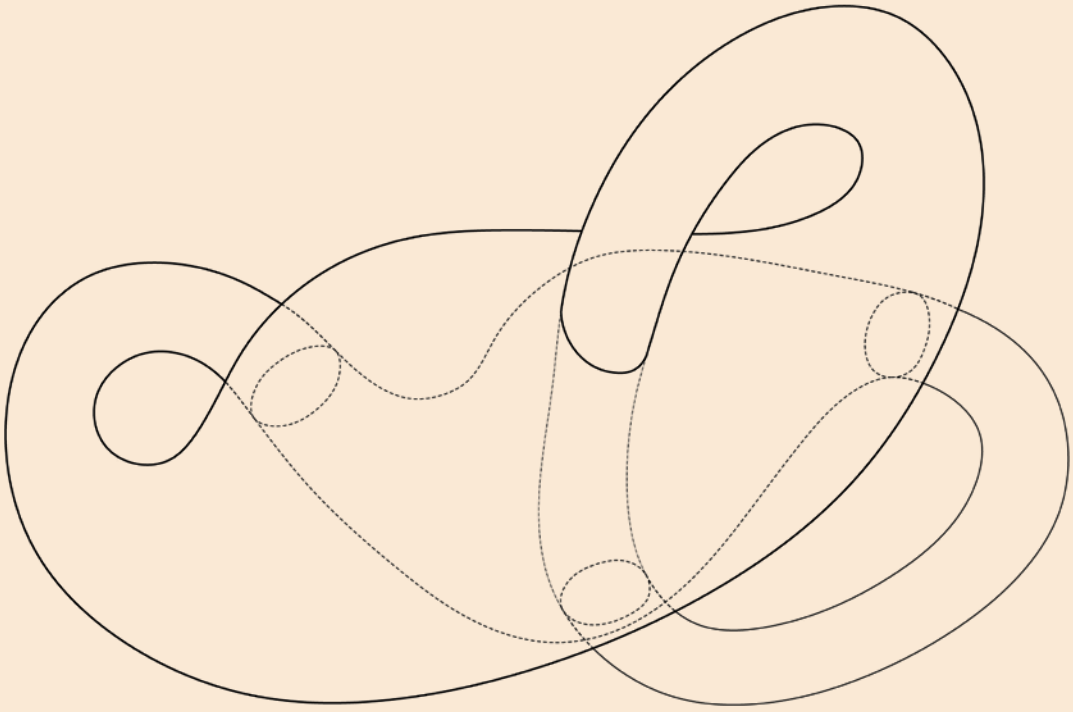
these two modeling systems has yet to be worked out, but in principle both could be integrated into the Earthscore Notational System.

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, fantails, 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 buzzing, 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 reinterpret our score and/or to correct any behavior of ours that is making the ecosystem incapable of performing according to its natural score.



Paul Ryan, The Relational Circuit, 1971