Earthquakes may be the cleanest and most direct example of a self-organized critical phenomenon in nature. Most of the time the crust of the earth is at rest, in periods of stasis. Every now and then the apparent tranquillity is interrupted by bursts of intermittent, sometimes violent, activity. There are a few very large earthquakes and many more smaller earthquakes. The small earthquakes do not affect us at all, so scientific efforts have been directed toward trying to predict the few large catastrophic ones. Scientists have taken a very direct approach, formulating individual theories, or explanations, for individual earthquakes or earthquake zones; there has not been much effort directed toward a general understanding of the earthquake phenomenon.

The geophysics community is very conservative. For instance, the theory of plate tectonics as a general explanation for the shifting of crustal plates that creates earthquakes was put forward in *The Origin of Continents and Oceans* by the German meteorologist Alfred Wegener in 1912, but not even found worthy of discussion until the late 1960s. Among its obvious
appealing features, it explains the similar shape and geological composition of the west coast of Africa and the east coast of South America.

Don’t get me wrong. I have the deepest respect for the type of science where you put on your rubber boots and walk out into the field to collect data about specific events. Such science provides the bread and butter for all scientific enterprise. I just wish there was a more open-minded attitude toward attempts to view things in a larger context.

I once raised this issue among a group, not of geophysicists, but of cosmologists at a high table dinner at the Churchill College in Cambridge. “Why is it that you guys are so conservative in your views, in the face of the almost complete lack of understanding of what is going on in your field?” I asked. The answer was as simple as it was surprising. “If we don’t accept some common picture of the universe, however unsupported by the facts, there would be nothing to bind us together as a scientific community. Since it is unlikely that any picture that we use will be falsified in our lifetime, one theory is as good as any other.” The explanation was social, not scientific.

Explanations for earthquakes typically relate the earthquakes to specific ruptures of specific faults or fault segments. This might be reasonable, but then, of course, one has to explain the fault pattern independently. Analogously, our sand man may correctly conclude that the origin of sand slides is toppling sand, but that does not provide any insight into the properties of large slides. The fact that earthquakes are caused by ruptures at or near faults does not in itself explain the remarkable Gutenberg-Richter law.

Scientists are poor at making earthquake predictions, and not for lack of effort. All kinds of phenomena in nature have been viewed as precursors of large earthquakes, such as the behavior of animals, the variations in the ground water level, and the occurrence of minor earthquakes. The latter approach, trying to recognize earthquake patterns preceding major quakes, seems, at least in principle, plausible. However, there has been no success. In particular, there have been claims that earthquakes are periodic at some locations, but the statistics were never based on more than two to four intervals. Notably, it appeared that in the Park Field earthquake region in California there was a periodicity of approximately 20 years. Some years ago a major and expensive project was set up to study the next earthquake. The last event in