Paradigm shifts in science seldom involve logic, rational discourse, higher-resolution data, or more accurate calculations. But suppose these ideas had come first and had become entrenched in the literature. Suppose that they reflected conventional wisdom. The two paradigms, essentially opposite in every respect, would be treated differently in these Looking Glass Worlds. The defenders of an entrenched paradigm literally do not understand the language and concepts of the invading paradigm. There is an asymmetry in the way new ideas and conventional wisdom are treated—the standards are very much higher for the new ideas. There is also an asymmetry in understanding. The Old Guard is not familiar with the new language, while the invaders know the old ideas very well and have found them wanting. The inability to communicate and to compare paradigms is called incommensurability by the philosophers of science; this is probably more important than the concept of falsifiability, which is always in the eye of the beholder.

The older readers of this column will remember when our professors ridiculed continental drift, extraterrestrial theories of extinctions, catastrophic floods, and magma oceans; we believed in uniformitarianism, tectogenes, vertical tectonics, and the static-mantle geosynclinal theory. We laugh at the old ideas of fixed continents, but we readily bought into the idea of fixed islands and tubes to the core.

When do not question today’s conventional wisdom, we do so our peril—it too may look crazy to future generations.

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