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*Love's labor lost (10/6/1993)*



The idea that there should be a gradual advance to a sudden and irreversible transition puzzled me for a long time. But I worked it out finally, and it did make sense. The picture of the volcanic crater — a dimple surrounded by a sort of lip in the dynamic landscape; once the state passes over it, a rapid collapse to thermodynamic equilibrium follows. The real puzzle is that the metastable state can be maintained for so long.

It is like running along the top of a wall. It may seem you can keep this up forever, but eventually you must wobble — teeter frantically for a moment — and then fall.

What makes it irreversible? the usual thing: the information is not lost, really, but it is dissipated among many — “many” meaning, large multiples of Avogadro’s number — degrees of freedom. And then all the King’s horses, and all the King’s men —

I remember a long, long walk on a December day, up the old mining road to the top of Nugget Hill, 8500 feet and ten below zero even before taking wind chill into account; I was wearing only a wide-brimmed hat, and my ears burned. Franny disappeared for an hour on the way down, but rejoined Zooey and me finally when we were nearly all the way home; she always had an uncanny sense of direction. Still I had been concerned, and greeted her with an immense sense of relief. — “Where were you, baby?” I asked. “I thought I’d lost you.”