Op-Ed on Hurricanes Kerry Emanuel Program in Atmospheres, Oceans, and Climate Massachusetts Institute of Technology

Almost 73 years ago, a major hurricane, variously named the Long Island Express or the Great New England Hurricane, slammed ashore on Long Island and Connecticut with no warning, killing more than 600 and doing more than 4 billion in damage in today's dollars. More than 93,000 families suffered major property loss, and as many as a quarter billion trees were uprooted in New England. As we endure Hurricane Irene today, it is worth contemplating the differences between then and now.

On the positive side, we have had many days to prepare for Irene, thanks to truly spectacular improvements in weather forecasting made possible by weather satellites, highly sophisticated weather prediction models, and teams of forecasters dedicated to predicting hurricanes. While we grumble about remaining inaccuracies in the exact track, timing, and intensity of hurricanes, we can hardly deny that we are far better off now than in 1938, when there was no warning at all.

Yet in other respects we are, sadly, more susceptible to hurricanes now than we were in 1938. Owing to decades of coastal development fueled by policies that provide cheap flood insurance, cap premiums in high-risk coastal zones, and provide federally funded disaster relief, there is far more in harm's way than there was seven decades ago. As in many other arenas, we respond more to economic incentives than to rational assessments of risk; our current problem stems from the radical decoupling of these two influences. It is estimated that were the Long Island Express to strike today, it would do more than \$45 billion in damages. When politics works to force many to subsidize the risks taken by a few, everyone suffers.

It would seem that our culture's relationship to Nature has evolved along with our economic susceptibility to natural disasters. Eighteenth and nineteenth century poets, philosophers, and artists had a deep sense of what they referred to as the "sublime", by which they meant "pleasure in seeing an overpowering or vast malignant object of great magnitude, one that could destroy the observer", as Schopenhauer put it; this was often expressed in their literature, music, and art. That term has fallen into disuse as technology increasingly insulates us from natural forces, or so we like to think. In 1945, Admiral William F. Halsey sailed the U.S. Third Fleet directly into the center of a vicious typhoon, perhaps under the illusion that his latest steel ships could withstand any force of Nature. His loss of 790 men and three ships was far greater than he ever sustained from his human enemy. Today, Halsey's sentiments are echoed in every overconfident expression in technology or mindless disregard of forecasters' warnings, from "My house has withstood hurricanes before and it will weather this one too" to some politicians' assertions that we have nothing to fear from climate change.

This has been a bad year for natural disasters, from the devastating tornado outbreaks of the spring to the terrible drought and wildfires in the southwest to the strongest earthquake in the east in over a century. As we confront the spectacle of this latest hurricane, we might take the time to reflect on our relationship with nature in general. Perhaps it is time to bring back the idea of the sublime.