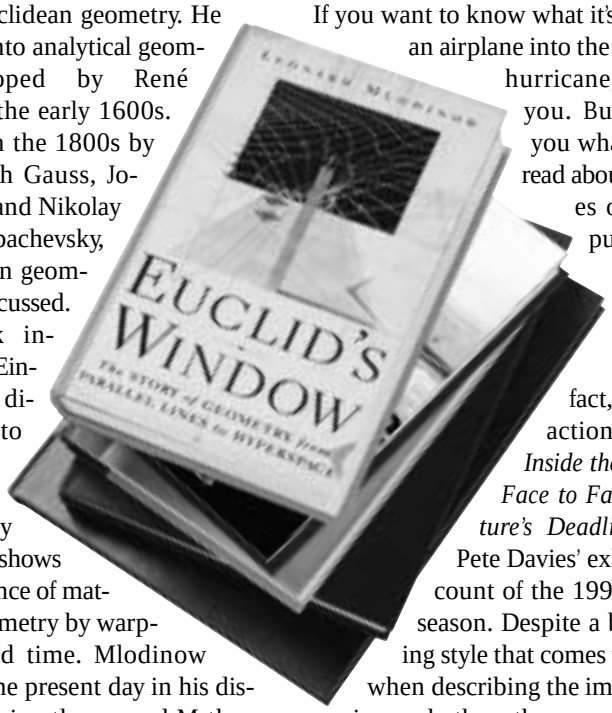
Euclid's Window: The Story of Geometry from Parallel Lines to Hyperspace

By Leonard Mlodinow
Free Press, 2001

THIS IS AN EXCELLENT NARRATION of five diverse principles that define geometry's history. Mlodinow begins in the ancient world with examples in Euclidean geometry. He then moves into analytical geometry, developed by René Descartes in the early 1600s. Discovered in the 1800s by Carl Friedrich Gauss, Johann Bolyai, and Nikolay Ivonovich Lobachevsky, non-Euclidean geometry is also discussed.



The book includes Albert Einstein's fourth dimension to space-time, discovered in the early 1900s, which shows that the presence of matter affects geometry by warping space and time. Mlodinow brings us to the present day in his discussions of string theory and M-theory, which suggest that space and time don't actually exist but are approximations of complex occurrences.

Here, basic properties of space determine the laws of nature and the properties of matter and energy that constitute our universe. Developed in the latter half of the 20th century, string theory suggests that there are extra dimensions of space too small to be observed by experimentation. Mlodinow introduces Edward Witten, a leading contributor to string theory and 1990 winner of a Fields medal (the mathematical equivalent of a Nobel Prize).

— Don Sondergeld

Inside the Hurricane: Face to Face with Nature's Deadliest Storms
By Pete Davies
Henry Holt and Company, 2000

If you want to know what it's like to ride an airplane into the eyewall of a hurricane, I can't tell you. But I can tell you what it's like to read about it: stretches of boredom punctuated by moments of intense excitement. That, in fact, was my reaction to a lot of *Inside the Hurricane: Face to Face with Nature's Deadliest Storms*, Pete Davies' exhaustive account of the 1999 hurricane season. Despite a breezy writing style that comes vividly alive when describing the impact of hurricanes, both on the ground and in the air, Davies' devotion to detail weighs down his narrative. He constantly crosses over the line that separates interesting from more than you'll ever want to know.

It was interesting, for instance, to read Davies' account of his first pass through the eye of Hurricane Bret: "It soared up to a clearly delineated rim, and within that lay a blazing, spotless hole of sunlit blue sky. Below, patches of sea boiling in a seething mayhem of broken water. It wasn't a perfect eye—very few are—and patchy drifts of cloud were just beginning to fill in the base as Bret, fading a hint past its peak, began to weaken near shore. But it was God's stadium nonetheless, an almighty bowl of tranquility surrounded by epically vast stands of wind-packed white cloud climbing all about us, unbroken, smoothly towering taller than mountains. The sea writhed beneath it, spume-streaked, and the sky stared down blank and empty above."

It was much less interesting to read Davies' real-time transcription of cockpit conversations as pilots and scientists from the federal Hurricane Research Division debate where to release their dropsondes (devices that measure wind speed and direction, moisture content, temperature, and barometric pressure) or their airborne expendable bathythermographs, which fall to the ocean on miniature parachutes and measure water temperature at various depths.

Davies seasons his narrative with accounts of the (somewhat checkered) history of hurricane prediction and the development of computer modeling, how hurricanes came to be named, and descriptions of the many scientific experiments that scientists are undertaking to increase their knowledge about these massive storms. I imagine actuaries will particularly enjoy Davies' descriptions of how scientists have progressed from statistical regression models (more specifically, statistical synoptic and statistical dynamic models) to numerical models in their attempt to predict the path a particular storm will take.

But, and actuaries will appreciate this as well, hurricane forecasters still don't always get it right: "Unlike statistical models, which have long, deep memories packed with every storm there ever was, numerical models think each hurricane's

the first hurricane they've ever seen every time you feed them a new one. Consequently, all numerical models can sometimes do something moderately or even wildly unrealistic. Given a glitch in the data or a dodgy dose of physics, in the real world a hurricane can be bearing down on a densely populated coastline, while in cyberspace a model can decide that it's ceased to exist."

Davies is a witty writer who takes great delight in poking fun at the sometimes hysterical reaction of the media to the threat of catastrophic weather: "Early Saturday morning, the eye (of Hurricane Dennis) was abeam of Miami; outer rainbands skimmed a whisker away from West Palm Beach. The Weather Channel became excited and, sponsored as they are by Home Depot, started to film people buying plywood. Reporters were posted on Daytona Beach, on Tybee Island off Savannah, on Folly Beach by Charleston, and on Wrightsville Beach up at Wilmington. For days to come, these unfortunates would be obliged to report hourly that the surf was up."

But, as Davies shows in his description of the fury and devastation that Hurricane Mitch brought to Honduras in 1998, fear is a reasonable reaction. And he makes a convincing case that we have as much to fear from a hurricane's rain as from its winds. "In one appalling calamity, the center of the Casita volcano near the border filled with water and collapsed, sending waves of sodden earth the height of multistory buildings down the broken mountainside, obliterating all the villages on the lower slopes in their path. It was, said one survivor, 'a terrible, towering wall that just fell out of the clouds.' In that one location at least 2,000 lost their lives, perhaps twice as many; no one will ever know for sure, as the bodies lie deep beneath new plains of mud many square miles in extent."

For those who have a particular fascination with hurricanes, Davies' book will be compelling reading. For the rest of us, whose interest is perhaps more seasonal, less would have been more.

— Linda Mallon