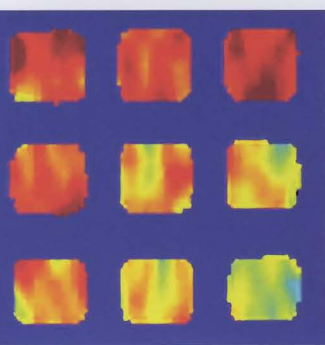
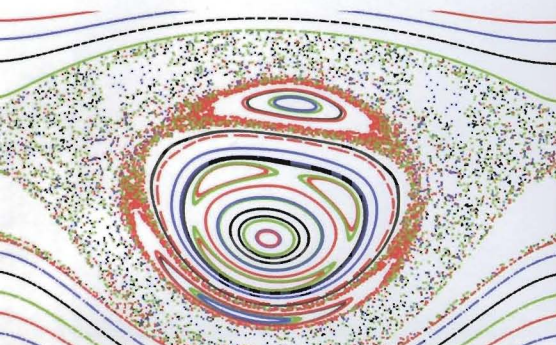


# the Hertz FOUNDATION

*freedom to innovate*



*The Hertz Foundation builds America's capacity for innovation by nurturing remarkable applied scientists and engineers who show the most promise to change the world.*

## News and Observations

*John F. Holzrichter, President*



As we begin the fall season, change is underway at the Hertz Foundation. When the Hertz Board of Directors meets in October, a new chairperson will be selected and five new talented Board members will bring their expertise and commitment to our team.

As the newsletter indicates, this will be an exciting year with a Hertz Fellow piloting the space shuttle and others developing and demonstrating their great innovative ideas. We look forward to their involvement in the 3rd biennial gathering of Fellows and Friends at the March 2009 Symposium. This year, sixteen Hertz Graduate Fellowships were awarded to students who possess rare talents that will drive innovation, enhance our nation's competitiveness, and find solutions to the critical challenges we face. With the shaky economy and low investment returns, we need your assistance more than ever so we can continue supporting Fellows who can improve the science and technology leadership in the USA, and to continue building our network among alumni, in-school Fellows, and supporters.

Thank you for your support and perspectives. In future issues, we will feature comments from Board members, alumni, and student Fellows so you can become better acquainted with Hertz leadership and its family.

[www.hertzfoundation.org](http://www.hertzfoundation.org)

## The Mother of Invention

*Astro Teller*



Over the course of the eight months since Dr. David Andre and I started Cerebellum Capital, I have been asked the same questions dozens of times. "You're both Hertz Fellows. Why would you be working in the finance area? Is money all you care about? Why don't you work on a hard science problem instead?" In my opinion, the answer is simple: the greatest advances in science and engineering come in the context of solving extremely difficult problems whose solutions really matter.

Before becoming an entrepreneur, my background (and Dr. Andre's) was in the field of statistical machine learning. If you went looking for the ultimate needle-in-a-haystack/moving-target problem for statistical machine learning, you would find it in the most complex system in the world, one written in the language of numbers: the public markets. We intend to give great returns to our investors and the limited partners of our fund, of course. But we are doing that by building a self-improving trading system with the main goal of predicting the future using the oceans of data now publicly available on the Internet.

There is, to put it mildly, no "off-the-shelf" architecture in computer science that could support such a soup-to-nuts learning system. The design and refinement of this architecture both stimulate the technical team at Cerebellum Capital and serve as a significant competitive advance for our fund. A learning system that can predict the future using data from the Internet would hardly be limited in its applications to the field of finance; when described that generally, the problem could hardly be more difficult and the pressures to stretch the boundaries of what is currently thought possible could hardly be stronger. (As an interesting aside, other Hertz Fellows, including Radu Mihaescu recently at Convexus and J. Doayne Farmer ten years ago at the Prediction Company, have also worked hard and had real scientific as well as financial success in this area.)

The point is not just that finance holds as many legitimate scientific problems as areas like aerospace or material sciences, but that innovative technologies emerge wherever there are hard, important problems to be solved. If you find any exceptionally challenging problem whose solution would have dramatic impact on the world, you can dive in unafraid. The scientific questions and new technology opportunities will find you.

*Astro Teller is a Hertz Alumni Fellow 1999 with a PhD in computer science from Carnegie Mellon University. He is co-founder and CEO of Cerebellum Capital and co-founder and Chairman of BodyMedia, Inc.*