Note from North America
"Strange Behavior"
--Paul Alper--

"[T]he surnames of prize takers and honorable-mention recipients included Alterman, Levin, Perelman and Tsemekhman. This was worse than just four Jewish boys; this was four *obviously* Jewish boys."
--Page 63, of *Perfect Rigor: A Genius and the Mathematical Breakthrough of the Century* by Masha Gessen [Houghton Mifflin Harcourt, 2009].

Pity poor Alexander Spivak. Anti-Semitism was rife in the Soviet Union and this fifteen year-old math whiz "was suddenly bumped off the list" for the 1982 International Mathematical Olympiad "in favor of an ethnic Ukrainian." Spivak was an ethnic Russian and *not* Jewish but according to Gessen, his "Jewish-sounding last name" was enough to do him in. Grigory Perelman has an even more "Jewish-sounding last name" but he was too good at math to be affected by anti-Semitism. Not only was he a mathematical genius but part of his survival under communism was that despite the ubiquitous anti-Semitism in his country, "he was truly uninterested in anything that was not mathematics."

The lay public generally views mathematicians as weird ducks but Perelman would be considered world class, right up there with Newton who was obsessed with the Book of Revelations and with changing lead into gold. Or Kurt Gödel who proved the famous incompleteness theorem, a pessimistic result which more or less says there are mathematical conjectures we will never know whether they are true or false--and that means that even elementary arithmetic is suspect. According to http://en.wikipedia.org/wiki/Kurt_G%C3%B6del, "He had an obsessive fear of being poisoned; he wouldn't eat unless his wife, Adele, tasted his food for him. Late in 1977, Adele was hospitalized for six months and could not taste Gödel's food anymore. In her absence, he refused to eat, eventually starving himself to death. He weighed 65 pounds" when he died.

Or Paul Erdős who, according to http://en.wikipedia.org/wiki/Paul_Erd%C5%91s, "published more papers than any other mathematician in history, working with hundreds of collaborators." He lived on coffee and amphetamines, perennially traveling the world with one suitcase looking for collaborators to solve what he deemed to be important mathematical problems. So prolific and important was Erdős that he became a symbol of mathematical status. If you wrote a paper with him, your Erdős number would be "1" and if you wrote a paper with someone who wrote a paper with Erdős your Erdős number would be "2" and so on; Erdős's number in this counting scheme is "0."

Andrew Wiles solved perhaps the most famous *historical* problem in mathematics, the so-called Fermat's Last Theorem which dates from 1637. Compared to Newton, Gödel, and Erdős, Wiles is humdrum normality itself even if he worked on the proof for seven years and thereby lost contact with his wife and their three girls. The theorem states that no three positive integers a, b, and c can satisfy the equation $a^n + b^n = c^n$ for any integer value of n greater than two. The problem is famous because of the tantalizing remark of Fermat:

“I have discovered a truly marvelous demonstration of this proposition that this margin is too narrow to contain."

Fermat was a clever amateur mathematician and most likely proved it for n = 4, erroneously thinking his technique would work for all values of n.

What makes the publicity about Wiles’ success even more incomprehensible to non-mathematicians is that it already had been shown that if there were an n that satisfied the relationship, that n would have to be greater than an exceedingly large number. Moreover, there is absolutely no practical value to knowing everything stops at n = 2.

Perelman’s problem may have more consequence than Wiles’ but it would take a great deal of mathematical knowledge to appreciate that. Perelman is credited with solving the so-called Poincaré conjecture first put forward in 1904. Because we are now in the realm of topology where a tea cup is equivalent to a bagel, ordinary mortals may find it difficult to unravel a Wikipedia statement of the Poincaré conjecture: “that any closed three-dimensional manifold where any loop can be contracted to a point, is really just a three-dimensional sphere.” You would need to know that a manifold is a mathematical space that on a small enough scale resembles the Euclidean space of a specific dimension, called the dimension of the manifold. Somehow or other, knowing that the conjecture is true, tells us--that is, it tells cosmologists--the shape of the universe. Masha Gessen and others deem it the mathematical breakthrough of the century, but then again his proof emerged only as the century began.

What is easier for the general public to appreciate is Perelman’s eccentric and, as you will see, very un-American behavior. Not just his lack of interest in sex, his closeness to his mother or the phenomenal length of his fingernails. He not only turned down offers from the most prodigious U.S. universities which proffered him instant tenure with no annoying teaching obligations but in addition, he refused the Fields Medal which is the mathematics version of the Nobel Prize. On top of that, he said no to $1 million for having won the Millennium Prize of the Clay Mathematics Institute. Lastly, before he was 40, he completely washed his hands of mathematics.

Gessen is a gifted writer, bilingual in English and Russian, has some knowledge of mathematics and like Perelman, is a Russian Jew. Despite those attributes, she “did not have extended interviews with Perelman. In fact, I had no conversations with him at all. By the time I started working on this project, he had cut off communication with all journalists and most people.” She does discuss the interview of Perelman by Sylvia Nasar and David Gruber which is part of their lengthy *New Yorker* article entitled “Manifold Destiny”--a clever pun, if there ever was one--and subtitled “A legendary problem and the battle over who solved it,” http://www.newyorker.com/archive/2006/08/28/060828fa_fact2. The battle revolved on who should get the credit for having solved the Poincaré conjecture. A prominent and brilliant Chinese topologist, who was angling for even greater glory, felt his students deserved the lion share of the laurels. This lead to Perelman saying, “I can’t say I am outraged. Other people do worse. Of course, there are many mathematicians who are more or less honest. But almost all of them are conformists. They are more or less honest, but they tolerate those who are not honest.”

The $1 million that Perelman refused to even consider accepting may be a great deal of money for a mathematician but is chump change for a football coach. Mack

Brown at the University of Texas just had his annual "compensation" increased to $5 million from $3 million; the Faculty Council at the university deemed the raise "unseemly and inappropriate" given the belt tightening on campus. Faculty layoffs, staff hiring freezes and tuition increases pertain to the rest of the campus; academics after all, are strictly second fiddle to what is important. A former professional football player put it succinctly: "Hundreds of thousands of people don't show up to watch you teach."

In addition to those hundreds of thousands, untold numbers want to buy T-shirts, mugs, jerseys and other mementos of their favorite university team. The AP said that Ohio State University "topped a record $9 million in athletics-related merchandise sales twice in the past few years." The overseer of Ohio State's licensing department said, "the more popular you are, the more chance there is for infringement" of the trademark. He added, "There's a variety of ways to pursue infringement of your trademark: cease-and-desist letters, court orders, criminal actions (complaints). We utilize all of these depending on our situation." Distinguishing United States higher education from corporate America gets tougher all the time.

The old figure of merit in the higher education game was whether the president made more than the football coach. Stevens Institute of Technology in Hoboken, N.J. has no football team so its president, by default, had a higher take-home pay. Too high said the attorney general of New Jersey. From http://www.nytimes.com/2009/12/22/education/22stevens.html?_r=1, "The institute's trustees tripled Dr. Raveché's salary over a decade, to $1.1 million last year, higher than presidential salaries at Harvard, M.I.T and Princeton, and, the lawsuit says, Stevens used multiple sets of books to hide its deteriorating financial condition." That is in addition to "plundering the endowment and receiving $1.8 million in illegal low-interest loans for vacation homes, with half of them later forgiven." A lawsuit was eventually settled and "Dr. Raveché will be paid his salary…for a year after he leaves office July 1… under the terms of his contract, Dr. Raveché will be compensated as a consultant through June 2014."

Now back to sports and big bucks. The Texas Tech University football coach was fired just in time to save the university a lot of money. The *Houston Chronicle* reports, "At issue is whether Texas Tech will owe Leach any of the remaining money on his five-year, $12.7 million contract signed in February after negotiations that were at times fractious. According to terms of his contract, Leach was due an $800,000 bonus on Dec. 31 (today) if he were still Tech's head coach. He also was to be paid $400,000 for each year left on the contract if terminated. But because it says Leach was fired with cause, the university does not believe it owes Leach $1.6 million for the remaining four years of the deal." What did Leach do to annoy the administration? He is "alleged to have ordered Adam James placed under guard inside dark, confined rooms on two occasions after the player said he had been told by a doctor that he could not practice because he had suffered a concussion." Unfortunately for Leach, Adam James is the son of Craig James, a broadcaster for ESPN who naturally had a bully pulpit by virtue of his broadcast connections.

Making a connection between economics and behavior is a hot topic as can be seen from several recently published books:

1. *Predictably Irrational: The Hidden Forces That Shape Our Decisions* by Dan Ariely [Harper Collins, 2009].

2. *Nudge: Improving Decisions About Health, Wealth and Happiness* by Richard H. Thaler and Cass R. Sunstein [Yale University Press, 2008].
The connection between economics and behavior, as the authors emphasize, is often non-existent. Economics Nobel laureate Daniel Kahneman put it this way:

> "Standard economics is mostly a mathematical discipline. It makes assumptions, and one routinely made is that economic agents are rational. Behavioral economics is simply economics without the rationality assumption. Economists find it very difficult to give up the assumption, but some do, and often find they can get to a richer and more realistic model of how people behave."

Ariely enjoys concocting experiments to demonstrate the irrationality. For example, he finds that satisfaction with a product depends on the price paid for the product--for example Bayer aspirin vs. the identical generic. Or, the enticing but utterly misleading "Free gift" will alter a decision. Reviewers loved his book. Nonetheless, there are serious shortcomings:

A. He invariably gives the average value of one group (e.g., satisfaction of Bayer aspirin users) compared to the other group (e.g., satisfaction of generic aspirin users) but he almost never indicates the variability. Averages alone are meaningless.
B. Almost never does he state how many subjects are involved in each arm of a study.
C. Almost all of his samples are convenient ones, rather than random samples.
D. Almost all of his samples are MIT students but his implicit inference is to the world at large.
E. His examples of predictable irrationality appear unfailingly successful leading me to suspect a "file-drawer" issue--experiments which showed nothing in particular or the negative of what he theorizes, are put aside and not counted.

Thaler and Sunstein are, in their words, *libertarian paternalists*. They would like to nudge but not force people in the direction of informed decision making; "choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives." To them, "a nudge is any factor that significantly alters the behavior of Humans [most of us], even though it would be ignored by Econs [a relatively small minority]." In their opinion, an area of American life that needs nudging is the so-called "default option" when it comes to choosing a health insurance plan, a retirement plan, a type of mortgage, anything to do with bank accounts or a software installation. Econs often are able to navigate the terrain but Humans tend to erroneously choose the default option because of inertia and ignorance.

Their book is better written but suffers from much of the same defects as Ariely's. Moreover, inasmuch as they are libertarians, they freely--indeed one is tempted to say snottily--denigrate government's role and competence in favor of private enterprise with its beloved market mechanism for straightening out matters even if an occasional slight nudge from enlightened libertarian paternalists is required.

Perelman grew up in the Soviet Union where a libertarian, paternalistic or not, was hard to come by. From all indications, he most likely is oblivious to health insurance

plans, retirement plans, mortgages, bank accounts, software installation or default options. To coin a term, Perelman's behavior and purist outlook is beyond *nudgability*.