

Seed Interview: James Simons

The billionaire hedge fund manager discusses the impact of mathematics on his former life in academia and his new one in finance.

by JOSHUA ROEBKE • Posted September 19, 2006 04:01 AM

James Simons is sometimes referred to as 'Elvis' within hedge fund circles. He's the king, and you always know when he's left the building.

If you haven't heard of him, it's because he deliberately maintains a low profile. In Simon's business, secrecy is the key to abiding success. But, when rumors spread in 2005 that he was starting a new \$100 billion hedge fund, people outside of his field also began to take notice of him.

Before becoming one of the top money managers in the world, Simons was a decorated mathematician. His work was primarily in geometry, peripherally related to the [Poincare conjecture](#), which Grisha Perelman recently won a Fields Medal for solving. Simons' work on differential geometry, which he did in collaboration with S. S. Chern, has proved useful to string theorists.

Simons is also a generous philanthropist. He has donated significantly to math education, universities, and plans to give over \$130 million in the next few years to the study of the genetic basis of autism. He also recently gave \$13 million to keep the Relativistic Heavy Ion Collider at Brookhaven National Laboratory running when the Department of Energy announced a funding shortfall this past year.

In early September, I visited his rather spartan offices to talk to him about math, business, and his philanthropy.



Jim Simons, businessman and founder of Math for America Credit: AP Photo/Jason DeCrow

When did you first get interested in math? Was there a singular moment, like [Einstein and his compass](#), that turned you on to math?

I was always interested in math, even when I was a very little kid. I don't know what compass moment Einstein had, but there was rarely a doubt in my mind that I would do anything except mathematics. There was a brief period I thought I might like to be a Rabbi, but it fortunately came and went. When I went to MIT, that's all I wanted to study, and that's basically all I did study, except I took some literature courses which I enjoyed, but basically I just wanted to learn math and prove theorems. I liked to prove theorems.

How do you select people for your company?

We look for people who have demonstrated the ability to do first-class research. We are not a teaching organization. We are a research organization. We hire people to make mathematical models of the markets in which we invest. We look for people who have had success, typically academically, although some people come out of an industrial laboratory like IBM or Bell Labs. Most come out of academia. They've had three to

Putting His Money Where His Math Is

James Simons has a considerable amount of money. He's the head of the top-performing hedge fund in the world, Renaissance Technologies Corporation, which he started after leaving a successful academic career in mathematics. More compelling than Simon's acquisition of wealth is what he chooses to do with it. Rather than collecting art or jets like many of his Wall Street peers, the former mathematician is donating substantial quantities of cash and time to basic science and math education....

five years, written a few papers, and already have some kind of reputation. First and foremost, we look for people capable of doing good science, on the research side, or they are excellent computer scientists in architecting good programs. We have very high standards and it works. Our business is wonderful as a result.

Is there a difference between people with math backgrounds and science backgrounds who work for you?

Yes, but we need both in our business. Some of the work is purely mathematical, like designing better ways to develop algorithms of one sort or another, or to maximize some utility function. Some of the work is really scientific. It's looking at a lot of data and really looking for what underlies that data. In that sense, it is kind of like astronomy. You look at a lot of data from up in the sky, you bring it down, and it's quite dirty and you have to clean it to get rid of outliers or one thing or another. Then you hope you can analyze that data in a way that makes sense of whatever hypothesis or set of hypotheses you may have about what you are looking at. That's a big piece of what we do. There we hire people who are experimental physicists or astronomers.

How scientific is it? Do you actually use models from science?

The approach is scientific. Scientific sophistication is important. Do we directly apply the [Navier-Stokes equation](#)? No. [Brownian Motion](#) is something that has a better chance of being applied. Brownian motion is a way of looking at data and ordering random activity, or activity that looks random. Models like that, and approaches like that are very useful. Some stuff comes out of math and physics, especially math where various optimization techniques are used. It's more the sense and sophistication of doing science. We use very rigorous statistical approaches to determine what we think is underlying a phenomenon and really do explain that part of it. But it's not like proving theorems.

How much of your success is pure luck and how much is the math, science, and minds?

Let's suppose you have a coin that is 70/30 heads. Well, if you get to bet heads, you are going to win 7 times out of 10. Three times out ten you are going to lose, and that's bad luck. So you need a measure of good luck to avoid a long run of tails when you have a 70/30 coin that's heads. At a certain point the luck evens out. Of course there's luck in our business, but so far we've had a nice edge.

Do you stay up to date with the mathematics community or the research you support?

I don't keep up with all the research we support. How could I? Sometimes it's not math, it's physics or whatever. I certainly haven't kept up with my own field adequately. I pay a little bit of attention, but not much depth anymore. I tinker around. Sometimes something comes out of it, most of the time it doesn't, but I like the tinkering. I'm tinkering around with something right now that might get somewhere. In fact, I think it will. But, if you really get into it, it's consuming. So it's difficult to run a business and be so consumed with another passion. On the other hand, I'll retire in a few years, and I suppose I'll get re-consumed.

Have you ever regretted leaving math? Do you ever think you could have done something huge? When you won the [Veblen Prize](#), you received it the same year as legendary mathematician [William Thurston](#).

First of all, I was in the same category as Thurston merely because he and I stood together on a stage. That did not necessarily make me his intellectual peer. Second of all, some of the work that I did has ended up being very useful in physics and mathematics. The work I did with Chern and Cheeger. I had my little impact on the field, and I am quite happy about that. Do I regret it? No. I miss certain aspects of it. I miss the more relaxed tone of things, the constant intellectual stimulation of just being with very bright people all the time. Now we have a lot of very bright people in our company, so I get some of that. Academics has its charms, but it doesn't have enough charms that I regret leaving that field. I'm happy with the decision I made. Everything is to some extent a compromise. Not everything can be perfect.

Do you ever get asked to explain [Chern-Simons theory](#)?

All the time, by potential investors.

Ever get any of it across to them?

Never. I don't even try.

What do you think of the physicists taking your theories and using them?

I think it's wonderful. Are you kidding? It's always nice to see your work picked up by someone else and carried on.

You were on CNN—do you have any desire to be more public for your programs?

I was on [Lou Dobbs](#) for about a microsecond. He was doing a piece on teaching, and they interviewed a number of folks. But I've never been on TV in any meaningful way. And I don't really have a desire for that. There's a wonderful quote in *Animal Farm*. The source of all wisdom in that book is Benjamin the donkey. He observes at one point that "God gave me a tail to keep off the flies. But I'd rather of had no tail and no flies." So, that's kind of the way I feel about publicity.

What do you think about [Grisha Perelman turning down the Fields Medal](#)?

Well the articles said he was the first person to do it, but I don't think he was. I think [Grothendieck](#) turned it down, maybe 30 years ago or so [Editor's note: Grothendieck did in fact boycott his Fields Medal to protest the Soviet military incursions in Eastern Europe in 1966].

I met [Perelman]. In fact, he came and had lunch in our offices on Long Island, and I had some sense of the course of that work. I think it's wonderful. He did a great job. Hamilton had started in a certain direction, which seemed like a very rational and reasonable direction. Thurston did his big piece, showing how everything could fit together. And then Perelman did his. Turning the medal down, well, I wouldn't have done it. I never turn down anything.

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