

γτιλβμ∩Duality on Wall Street

Eileen Lee talks to the quant's quant about his qualitative journey into quantitative finance



Emanuel Derman

He is the coauthor of the Black-Derman-Toy interest rate model and the Derman-Kani local volatility model. He led Goldman's gangbusting quant unit in the 1990s. His book *My Life as a Quant—Reflections on Physics and Finance* has become required reading for anyone who is hoping to enter, is already in, or is about to exit the industry.

Given all this (just for starters), is it any wonder that this writer should approach the subject with some trepidation? Yes, Emanuel Derman is renowned for his gentle civility even in the toughest spots, but ...

Fortunately, Derman is sympathetic to the interviewer's plight and remarks at the beginning of this chat that we probably shouldn't dwell too much on his background. As he

begins his qualitative analysis on the quantitative finance industry today, Derman is as eloquent as his writing suggests he will be, and betrays more than a hint of bashfulness as he confesses his love for writerly pursuits.

The first part of the interview took place during the spring of 2007, and we followed up on things again in January 2008.

What excites you about this business?

When I first got into the field of quantitative finance, it was a fairly unsophisticated or undeveloped business. And it's always exciting to get into something where you are one of the early people trying to explore it.

What also excited me was the possibility of combining the rigor and techniques of mathematics and

with the more quantitative aspect of options and the stock market, finding a middle ground between mathematics and intuition.

It's kind of nice to work in a field where you use classic scientific tools. You have to apply them in an area where they're not completely applicable and you have to exercise a lot of judgment in figuring out how to apply them sensibly. That middle ground of being qualitative and quantitative at the same time is kind of exciting.

It is not a young field the way it was 20 years ago. But there are still parts of it that are young—for example, hedge fund modeling is still in that state where there's no point in being too sophisticated. There's always some cutting-edge area that's still interesting. ➤



EMANUEL DERMAN

How do you feel about the way the quantitative finance industry is developing? What kinds of changes have you seen over the years?

It's getting very developed. When I started, there were almost no programs; you had to teach yourself. Now everybody wants a degree in financial engineering or a PhD in finance. It's much more sophisticated—a little too sophisticated—but it's

some problems in hedge funds which are still relatively simple because nobody has tackled them yet. But those opportunities have become rarer; you have to struggle to find them.

Traders are much more sophisticated than they used to be. Quants would do things and explain them to traders. Now many traders have PhDs and a very technical background.



unavoidable. The degree of sophistication is greater than the results justified. You can get too fancy about things that in the end you can't really know too much about.

I've been in this business 20 years. I don't want to say the problems were easier 20 years ago, but in a way problems *were* easier! It is always easier to make a first contribution as opposed to making a second or third contribution to the same field. The field has become more difficult. You have to more or less be a trained professional.

It's more fun if you move to a new area. For instance, there are

There's a better appreciation for quantitative technique now among traders, especially in equities. It didn't used to be that way. Our world has become much better for people trading quantitatively.

Is there anything that you miss from the old days?

It's nice to be an amateur. Now you've got to study a lot before you can tackle something. It's less exciting. You have to study much longer before you can get the excitement of making a contribution.

Is there anything in quantitative finance that you see as a cause for

concern? What would you like to see developing in the future?

I think people who depend on models should look very critically at the models they're using. There's a tendency in all of us, especially in financial economics, for people to build a model and take it very seriously. It is very hard to test models in finance, almost impossible, because people keep learning and adjusting and

industry does not pay more attention to this work.

Unfortunately there's not a very close connection between theory and experiment in this field, as there is in physics and chemistry and biology. Someone ought to create a tighter link between people who build models and people who look at data.

I think people who depend on models should look very critically at the models they're using. There's a tendency in all of us, especially in financial economics, for people to build a model and take it very seriously

because the economic environment keeps changing. People tend to use models a little unquestioningly.

Some very interesting work has been done by Gene Stanley and his collaborators at Boston University, who look empirically at the data for stock price distributions and discover all kinds of interesting irregularities. The standard model of Brownian motion doesn't agree with the real world. These guys, who coined the term *econophysics*, had a very careful look at the data. Everybody knows it doesn't agree with Brownian motion but they spell it out in great detail. It always amazes me that the finance

In 2004 you asked, "Has quantitative finance reached its limits?" So has it?

What people have been doing for the last 20 years is taking Black-Scholes and applying the same methodology to different areas, to currencies, to interest rates, to commodities, to energy. It's always the same paradigm over and over again; it's kind of reached its limit from a conceptual point of view.

On the other hand, the whole business of statistical arbitrage has opened up. I don't think that's reached its limits. Derivatives have, except in the case of dealing with incomplete markets, dealing with the way stock returns truly behave,

Emanuel Derman in a nutshell

Emanuel Derman entered the University of Capetown to study natural sciences at the age of 16 and later left South Africa for New York City to pursue his PhD in Physics at Columbia in 1966, all due to a 'bad case of acne', he claims in his autobiography *My Life as a Quant: Reflections on Physics and Finance*. Here is his life in a nutshell, after his dermatologist's nephew, himself a Columbia PhD, advised him to study abroad back in 1965.

Before Derman took on Wall Street, he was passionate about fundamental physics and dreamt of being another Einstein. "I wanted to spend my life focusing on the discovery of truths that would live forever," he said in his book. Spending most of his academic life bent on pursuing theoretical physics, Derman never guessed then that he would be working at an investment bank at age 40.

Derman spent seven years at Columbia University pursuing his PhD in Physics. He mentions his feelings of inadequacy and admiration for people who knew more than they were taught during his time there. In the physics department library of Columbia, in the spring of 1969, Derman first met his wife, Eva. He published his first paper in 1972, his thesis 'Tests for a Weak Neutral Current in $1\pm + N \rightarrow 1\pm$ Anything' was later published in the *Physical Review* in 1973.

After receiving his PhD, Derman took on a series of postdoctoral positions at the University of Pennsylvania in Philadelphia in September 1973, University of Oxford from 1975 to 1977. After his first child, Joshua was born in the UK in 1977, Derman returned to the United States for a postdoctoral position at Rockefeller University in New York and in 1979 a faculty position at the University of Colorado, Boulder.

In need of change, Derman left the academic world for AT&T's Bell Laboratories in 1980. For the five years that he was there, he "viewed AT&T as a job and a disappointing one at that." Nevertheless, this was where he had his first taste of programming and where he developed HEQS-Hierarchical Equation Solver, which is still on sale at Bell Labs' descendant - Lucent's website for \$89!

Wall Street first beckoned in late 1983 when Derman received calls from headhunters in New York City. After attending several interviews with Wall Street firms,

including Goldman Sachs and Salomon Brothers, he chose to work another year at Bell Labs.

By mid 1985, he felt ready for Wall Street and eventually began work at Goldman's Financial Strategies Group in December 1985. Derman was secretly pleased to report his "first taste of Wall Street brutality" to his wife, when his supervisor commented that if he was taking longer than expected, he should perhaps give the work to someone else. He later made his first significant contribution to Goldman by creating a new calculator for bond options in 1986.

Derman felt renewed at Goldman and would pore over textbooks while riding on the subway, excited to be learning stochastic calculus and using his head again. He later worked with Fischer Black and Bill Toy to develop the Black-Derman-Toy model of interest rates in 1986. He views Fischer Black as 'the most remarkable person' he met at Goldman.

Although Derman left Goldman for Salomon's Mortgage Research in 1988, privately and publicly he has nothing but praise for the former, but the latter was very much the opposite. The time he spent in Salomon was the "the worst I ever experienced," he commented in his book. "At Salomon, I thought, it was every man for himself and God against them all."

Derman later returned to Goldman Sachs in January 1990 to work in the Quantitative Strategies (QS) Group in the Equities Division. He jokingly but superstitiously interpreted his new phone number at his twenty-ninth floor office on Broadway, 901-0129, to mean he was number one of twenty-nine. He led the QS group for ten years before transferring to Firmwide Risk Management at Goldman in January 2000. In October that year, Derman was voted the Sungard IAFE Financial Engineer of the year, the first and only practitioner to receive this award.

After 16 years on Wall Street, Derman left Goldman for good in June 2002 and took up the position of professor and director of the financial engineering program at the Columbia University in the fall of 2003. He is also the Head of Risk at Prisma Capital Partners, a fund of funds, where he works about once a week.

and understanding how market prices are formed.

What would you say to someone trying to break into the field of quantitative finance?

First, get a good mathematics education, a good understanding of quantitative finance, whether you do it by yourself or take a master's program or even a PhD. If you want to trade, you don't really need a PhD. If you want to be a top class original modeler, then you do. However, there's room for everyone; you can be a risk

manager or a desk quant, or ...

You've got to have a good quantitative background to start with. Then a good understanding of finance and markets. Plus good intuition. Even in physics, you need good intuition. But in quantitative finance, the models are much less reliable. So you've got to have more common sense about what you expect to see. You can't just take the results of the models automatically, without questioning.


Find some area to work in. Many students try to look for jobs in specific

companies, but that's a bad way to do it. You don't want to say, "Oh, I want to work at Goldman/Merril/Morgan," which is what many students say. You want to say, "I want to work in this area" and be interested in a topic rather than where it's being done.

People tend to get hung up about where they want to go to school or which company they want to work for. They get too excited about picking a place rather than picking something they're interested in. Find something interesting and which you're capable of being passionate about.

Programming is important. Years ago people thought you could contribute to this business without doing the dirty work of programming. But you can't.

Remember we're in a multidisciplinary field. You have to know a mix of computers, markets, statistics, and mathematics. You may excel in one part or the other but you have to have a mix of all.

Don't rely on models too much. Markets do not work the way the universe or atoms or the solar system works. There's a much bigger gap 

EMANUEL DERMAN

between the model you build and the world in finance than there is in any natural science.

Isn't that contradictory since quantitative finance is about numbers?

You can produce as many numbers as you like; it doesn't mean they are right. You have to be very cynical and hardnosed. You can produce numbers and then ask how good are the assumptions, and how much should you trust them?

I'm talking about understanding that your numbers are not very accurate. You can calculate them to five significant figures, but it doesn't mean they're accurate to five significant figures.

You've talked about the necessity of having good intuition and not just relying on numbers. So is it possible to train or acquire good intuition?

You have to struggle. Every time you look at a model try to understand not just the mathematics, but where the results are coming from. I think every time you start to do a calculation in some model, you ought to first sit down and think about what results you're likely to see, and then check whether in fact it comes out that way.

If you can't figure what it's likely to look like, when you get the results you should try to see if there is some quantitative intuitive understanding of these results. Can I explain in a few words or a few sentences, rather than in pages and pages of mathematics?

You've got to explain verbally what's going on. Nobody trusts 100 pages of mathematics. You've got to understand, in a more qualitative, visceral way, what the mathematics is representing.

You can produce as many numbers as you like; it doesn't mean they are right. You have to be very cynical and hardnosed

If you had to sum up one essential criteria of being a quant, what would it be, other than having a PhD?

No, you don't have to have a PhD, but I think you've got to be very detail-oriented. You've got to be tenacious, willing to struggle for a long time. And you need common sense.

At the same time, you need to be a little sociable too because it's a field where you get results from talking to people, not from running experiments. You should be some mix of a scientist and a bit of a sociologist.

Do you think people are getting into this business now for the right reasons?

Some people are getting in because that's where the jobs (and money) are. Everybody has to make a living, and that's a good reason.

People are also excited by using mathematics and their training in another area. The markets of the whole world have suddenly opened. You see a big boom of people sensing opportunity, making a living and using what they know in new arenas.

What are you most proud of in your career?

Three things. Firstly, the models that I have worked on, the Black-Derman-Toy interest rates model and the local volatility model with Kani.

Also, being able to write reasonably well and communicatively about research and ideas without using too much mathematics, being articulate about it.

I'm also very proud of running the Quantitative Strategies Group in Goldman Sachs for ten years between 1990 and 2000.

There are people in this world who fall completely in the academic world and don't know much about the way the models are used. And there are people in business who don't care too much about academic stuff.

But I ran this group for ten years which had one leg in each of those camps. It was a very good and unique environment, half academic and yet practical at the same time. I'm most proud of that. It wasn't easy, believe me, both politically and intellectually.

Do you prefer academics or being in the business?

I prefer being in the business but I also like academia at this point. Business is more sociable. You interact with people about work. The whole firm is interested in what you're doing because it's relevant to their business.

Quantitative finance is finance, and finance is done by businesses. The real problems that you come across are in the business and not in university.

If you do physics, it makes sense for the laboratories to be in univer-

sity. In finance, the experimental arena is markets, companies, stocks, and people who do business. It's productive to interact with people in business to whom you're trying to explain some models.

Does it also keep you more up to date when you're in the business?

Sure, that's where all interesting problems come from.

Does it ever drive you crazy being in this business?

It doesn't drive me crazy, but you have to understand it's a different world from pure science. All sorts of things matter—how well you get along, how well you can explain yourself, how you come across, not just technically but socially, all sorts of things unrelated to the exact details of the work that you do. Maybe it matters more in this field because models don't work as well as they do in physics or chemistry. The capability to explain and persuade people that they're useful is important.

Is there anything specific that you are working on now?

I'm working on understanding the behavior of hedge funds—in particular, how much excess return you should expect for locking up your money in a hedge fund for several years. Plus I spend much time on teaching and administration.

What type of factors are you including in your analysis of expected hedge fund returns and which approaches are you using to model these?

I'm modeling the excess premium to be expected for lockups using a Discrete Markov Chain model for the evolution of hedge funds that considers hedge funds being in three states, Good, Sick, or Dead, and tries

to estimate the probabilities of the transitions between them.

Last year saw hedge fund returns slump quite drastically, in many cases underperforming stock indices. What is your perspective on this trend?

As more hedge funds pour into the sectors, it's likely that returns will go down.

What do you do when you're not cracking numbers?

I like to run and I like to read a lot, novels. I like to write. I want to write another book, but not a technical one. I've poked around it a little bit, but it's still early and a long way away.

After Subprime

This second section of the interview took place in January 2008, following on from the ubiquitous discussions on subprime.

In your opinion, what was the most significant event in 2007?

Of course, it was the subprime crisis. I don't think it's a big failure of modeling. Things like this happen every few years where people get very excited and see a chance to make a buck. There was an expansion of credit, and people took on loans they couldn't possibly repay. The rating agencies also had some conflicts of interest in a sense that they are paid by issuers who need the ratings. There was also the end of housing bubble. Things like that happen every few years — the savings and loan crisis in 1989–90, for example. People regulate them afterwards and then something else happens later. Everyone likes to close the barn door after the horse has unexpectedly bolted.

Do you think investors and banks saw it coming?

Goldman Sachs made a lot of money because they saw it coming. And some people may have deluded themselves into thinking that it wasn't coming or didn't care when it came, as long as it wasn't too soon.

What's your opinion on the losses made by the two funds at Goldman Sachs?

Goldman Sachs asset management is separated from the rest of the firm. The two funds that had troubles were in asset management, not investment banking or trading. One of the funds that lost money was quantitatively managed. It may have been an illiquidity cascade triggered by the subprime crisis. More return, more risk.

This had nothing to do with the part of Goldman that made money from foreseeing the drop in value in subprime collateralized obligations. Those are two separate things. The Goldman people that made money off the subprime crisis were proprietary traders for Goldman, whereas the folks who lost money on the two funds were managing clients' money.

Has the subprime crisis been directly affecting your work?

I work at the university and it has little effect, except that I'm trying to devote part of my course to that. I also work at a fund to funds, which is doing pretty well. Of course some of our hedge fund investments were affected, mostly briefly.

How was 2007 for you personally?

It was a good year. I've been busy with two things. One is running the master's in financial engineering program at the university, where we've been restructuring

the program. We've been trying to make the program more market-oriented. I try to set up the one-year professional master degree so that students understand how models are used and have a closer link to the market.

The second thing is I've been doing some research on lockups. I have a student working hedge fund price behavior, trying to build a model that's non-Brownian.

It has been interesting for me. I miss the investment world a little bit. Although I have one leg in it—I work one day a week—I still miss that. It's fun to be in a place where everybody has the same aim. But I like the mixture now, partly an academic life and partly an investment life.

Do you think you might dabble in the investment side of things more this year?

I don't know. I sometimes think about going back to the trading world or hedge fund world. It's tempting.

With most of your time spent in the academic world, how do you feel when you're reading or hearing about things in the finance world?

I spent two-and-a-half years at Goldman Sachs in risk management. I've got to say they do it very well. They're very smart—they look at risk from all angles. But I have a sense of déjà because every few years something happens. In 1987, there was the portfolio insurance crash; in 1998, there was Long Term Capital; 2000–01 was the Internet bubble; and now it's the subprime crisis.

Everyone behaves as though it's some unexpected catastrophe. It is, partly, but you have to expect these things to happen.

EMANUEL DERMAN



What's on Emanuel Derman's iPod?

"I was watching TV the other night and they're now using songs like 'All You Need is Love' to sell banking services. When I'm dependent on Chase for love it's going to be a black day."

Always quick to quote a song and sometimes point out their shortcomings, this is just one example from his blog. Here's what's on his iPod, just in case you're curious.

Symphony No. 3

Anton Bruckner

Baby did a bad bad thing

Chris Isaak

Razorblade

The Strokes

Start Wearing Purple

Gogol Bordello

Piano Concertos 2

Sergei Rachmaninoff

Lay Lady Lay

Bob Dylan

Come on Home

Franz Ferdinand

Symphonische Etuden in Form von Variationen op. 13

Ivo Pogorelich playing Schumann

How do you think it could have been prevented?

It's more complicated than that, but I suppose one possible way was by having stricter regulations on mortgage issuance.

When you say how it could have been prevented, there are a lot of "its" over there. There is the easy loan, collateralization for people who have a taste for different sorts of risk tranches etc. There are many "its," no singular one. But I think at the bottom of it was the easy credit. ➤

EMANUEL DERMAN

It didn't surprise me, but not because I was following the subprime mortgage market closely. It was because every few years, people tend to get excited about something different and then overdo it

Let's discuss your academic work.

I'm teaching two courses this semester and I organize a practitioners' seminar at Columbia every two weeks, but it's also open to the public. I'm always impressed because practitioners from midtown and investment banks attend. I'm

pleased and amazed at their enthusiasm for learning more; sometimes they are more enthusiastic than academics. They're hungry to learn because they can put it into practice, and because they are cut off from hearing academic talks. Everything they learn has a possibil-

ity of being put into practice and is directly related to their daily work.

That's the part I miss about being in the investment world, a kind of unity and a complementarity between what you work on and what people need and they're interested in. Your coworkers are inter-

ested in the research you do because they need to use it. Most of the time you don't work on things because they're merely interesting but because somebody can make use of it too. You get to talk to people who use it a lot and have conversations with them about it. It's like being a theoretical physicist and working closely with an experimentalist.

The world has changed. Five or six years ago, quants tended to be separated from traders. These days, more and more quants take positions and trade, especially in statistical arbitrage. It's easier for quants to move from what's perceived (but maybe isn't) a support role to a principal role.

EMANUEL DERMAN

What are some of the notable things that you have come across in your teaching?

Some of the students have an attitude different than I had when I was in graduate school. These students are doing a one-year master's degree and they want to get a job. Some of them think we owe them a job. They think if they are paying money to take a professional degree, they're entitled to find a job—although this sense of entitlement doesn't shock me as much as the occasional students who take stupid risks and cheat in very stupid ways.

This is a professional degree, and the students are all grown-ups in their twenties or thirties. I'm shocked that people take risks sometimes for very

small gains. I have written an article, "Make the Crime Fit the Punishment," on my website about two undergraduate students who cheated for minuscule to zero gain. They told me it was a "judgment call," but it's such bad judgment to even call it a judgment call.

Universities have changed. On the one hand, the advantages of being in a university are flexible schedules and being able to do exactly what you like. On the other hand, it's a little more isolated and colleagues interact less than in business life, where you are all paid to cooperate. And it's fun to cooperate.

What do you also find interesting about being an academic?

I think the most interesting thing is

trying to take complex models and give students an intuition about them. Not just giving them the mathematical solutions, but also trying to have them understand what the consequences of the model are. When I teach a course on the volatility smile, I try hard not just to solve the model, but also to give people some understanding on why the model has these properties and how it compares with reality. That's the big challenge—and not getting carried away by formalism.

The financial world is not like the physics world. The kind of models that people need are not models that drop down to a very low level. One needs models that don't get too far away from the variables that trad-

ers themselves use when they talk about their securities or positions. In physics, it pays to write down very abstract principles and derive consequences from them about the physical world. In finance, it doesn't always pay to drop down to such deep levels because there aren't such deep laws. You have to be sophisticated in a vulgar sort of way.

Can crises like subprime bring about a simplification of the markets?

I think the natural tendency is for products to get complicated for a while until greed dominates. Then there will be a drawback for a while. However, derivatives have changed the world. I don't think there's any getting away from it. People will



EMANUEL DERMAN

Science vs God

“There is an almost religious quality to the pursuit of physics that stems from its transcendent qualities. How does a planet know that it must obey Newton’s Laws, or an electron perceive that it must move according to the principles of quantum electrodynamics?.... It’s hard not to have a sense of wonder when you see that principles, imagination, and a little mathematics – in a word, the mind- can divine the behaviour of the universe. Short of genuine enlightenment, nothing but art comes closer to God,” Emanuel Derman expresses the sense of wonder in discovery in *“My Life as Quant”*.

Occasionally bringing up the topic of God in his book and his blog, Derman who aspired to be a theoretical physicist in his earlier years, believed that in physics, you’re playing against God. “He doesn’t change his laws very often. When you’ve checkmated Him, He’ll concede,” he said in his book.

“As a physicist, when you propose a model of Nature, you’re pretending you can guess the structure created by God. It sounds eminently plausible. Every physicist believes he has a small chance of doing so, or else he wouldn’t be in the field. Perhaps it’s possible because God Himself doesn’t pretend.”

Although Derman does not claim to be a believer, he is “against the evangelistic disbelievers like Dawkins who seem to think that because they are good scientists they have some expertise to inveigh against religion”. “Being a scien-

tist doesn’t give them any special expertise on whether there is or isn’t a god. I suppose I’m an anti-anti-believer.”

Richard Dawkins, an ethologist and evolutionary biologist, better known for his anti-god sentiments, published *The God Delusion* in 2006, where he not only denied God’s existence, but also claims that belief in God qualifies as a delusion.

Derman said this about him, “Dawkins might as well write a book about how the world would be better off if you could remove people’s urge for food or sexuality.”

The argument on whether science is in conflict or in harmony with religion is not a new one. Between the two World Wars, many scientists challenged the Big Bang Theory put forth by Georges Lemaitre, a Roman Catholic priest, claiming that the theory widely known today had imported religious concepts into physics.

Lemaitre would not be the first scientist who did not denounce God. Scientists who had made major discoveries such as Issac Newton, better known for his Laws of Motion, was apparently devoutly religious and had work on biblical numerology because he believed numbers was part of how one could understand God’s plan from the Bible. In the *Principia*, a three-volume work on mathematical principles of natural philosophy he published in 1687, he stated “The most beautiful system of the sun, planets, and comets, could only proceed from the counsel and dominion on an intelligent and powerful Being... Gravity explains the motions of the planets, but it cannot

explain who set the planets in motion. God governs all things and knows all that is or can be done.”

“God does not play dice”, a line made immortal by probably the world’s best known scientist, Albert Einstein, was also known to have said that “Science without religion is lame, religion without science is blind.”

Nevertheless, there will always be believers and nonbelievers. According to a survey conducted between 2005–2007 at The State University of New York, 60 percent of scientists in the US did not believe in God and surprisingly, those who did were mostly mathematicians. What was interesting was a 1966 survey also showed the same ratio of believers and non-believers.

Science and religion has always been a tricky issue, but could it be possible that a scientist or a physicist, who ponders how the world works on a daily basis, would be more likely to wonder who exactly created the world?

What is without question is the way scientists dedicate their lives to uncovering ever more answers, Derman compares his relentless pursuit of pure physics to being in a monastery, “If I can’t do pure physics... I’ll be damned if I do applied! If they expelled me from the monastery, I didn’t intend to worship God in the world. I would rather quit religion forever.”

Perhaps the relentless, single minded focused pursuit of anything is like a religion. If religion and God were entirely unrelated, religion being something created by people who seek to understand the world, is science then a religion?

always be trying to slice and dice to suit client needs. For every Walmart there’s an occasional Christian Lacroix. The whole financial world is increasingly about custom tailoring, about giving people what they think they want and what they think they need.

There’s a Rolling Stones song that goes “You can’t always get what you want, but if you try sometimes, you just might find, you get what you need.” This is the opposite: you can’t always get what you need, but sometimes you may get what you don’t really want.

Have you been able to devote any time to your writing?

I’m teaching this course on the volatility smile. I had a contract to write a book about this subject, but I didn’t sign it. There are a lot of good books on volatility smile. I’m not sure I want to do another one. Writing a book carefully, getting every single equation and reference right and all your data up to date, is a big job. What I’m going to do is take my notes, which are fairly polished at this point, and put them up on my Web site, so it’s an informal sort of book.

How about fiction writing?

I would like to do that. I was working on a novel but I’ve been very busy in the last year and I haven’t continued. I will get back to it. It’s going to be set in the financial world, but it’s not about finance and it’s not a mystery. Options serve as a metaphor for life.

It took me about a year and a half to write *My Life as a Quant*, although not continuously. I’m surprised I haven’t written something else; I always intended to.

Writing is much harder than one would think. What you have in your

head doesn’t always correspond with what comes out on paper. You get a shock when you look at what you’ve written, when it’s not what you imagine it to be. A lot of effort goes into matching what’s in your head with what comes out on paper.

What was also hard was finding the middle ground in revealing just enough interesting things without telling people everything about yourself. If you write a memoir, you want to say enough so you reveal something about the interesting and universal parts of your internal

EMANUEL DERMAN

life, but you don't want to say too much. I hope I got it more or less right.

Does your job filter into your personal life?

It's a big part of my life. I've always been somebody who takes my job seriously, maybe too seriously. Sometimes I don't allow myself to do the things I like until I've done the work I think I ought to do.

I once read an interview in the *New York Times* with some woman in Sweden. It was an article about the healthcare system in Scandinavia. There was a woman who was on disability, although it sounded like there wasn't that much wrong with her. She was taking yoga classes and she was seeing a psychiatrist, generally having a good time. She said in the article that her doctor said she must have no more "musts" in her life. It struck me that it was a luxury to have that attitude. I have a lot of "musts." One of them is trying to do a good job at work. I'm a bit of perfectionist. I like doing things well, so it prevents me from doing other things I like, such as writing, which I waited to do until a late point in life. I'd also like to run more too. But I don't think I've neglected anything from a cultural point of view because of work.

How does it feel when you are reading something that is written about you?

I suppose it's a little flattering. Sometimes I have a feeling of being repetitious. My opinions about all of these things are fairly formed already, so I sometimes

feel like I'm repeating myself. I'll be interviewed on a radio show next week. That's a bit scarier. I've done it once before for National Public Radio, but it was a short one. This one for "The Gabe Wisdom Show" on the West Coast is half an hour. You have to answer in real time; there's no editing.

Do you need any preparation before an interview?

These shows are mostly for the general public, but I've worked on fairly complicated problems. I find it difficult to answer when they ask, "How does it apply to our listeners? Why should they be interested in it?" I have a hard time answering that because most of our models are used by institutions and only slowly filters down to the lives of everyday people. If you have a good answer, let me know.

I think derivatives allow people to do what they like, which makes the market less volatile in the short run but then causes fairly large dislocations periodically, because of the ease of execution. People always argue about whether all of these innovations affect volatility. I think that it lowers volatility generally, and then leads to occasional massive disruptions. But that's the nature of the people who tend to get carried away, and derivatives allows them to get carried away in many arenas, with ease.

What are your plans for 2008?

More work on hedge fund evolution from a stochastic point of view. More writing. And, I'll be working on an article on model risks for a finance encyclopedia.



When the stakes are high...



Confidence in your equipment is key.

Ventures that succeed foresee dangers and plan for a whole raft of eventualities. Factoring in all the variables could be a mammoth task — it isn't, thanks to @RISK from Palisade. @RISK uses Monte Carlo Simulation in Excel to show all possible outcomes, enabling decision-makers to minimise uncertainty.

"Essential for Modern Managers"

"Provides a range of advanced features, such as sensitivity and scenario analysis, tornado diagrams, and parametric analysis... Tools such as @RISK are becoming essential for modern managers."

— Kiriakos Vlahos,
London Business School

- Identify opportunities and pitfalls
- Uncover the risks in your research, business, or activity
- Use historical data to describe uncertain factors
- Easy to use and navigate
- And much more!



For more information:

+44 1895 425050

sales@palisade-europe.com

Freephone:

UK 0800 783 5398

France 0800 90 80 32

Germany 0800 181 7449

Spain 900 93 8916

Download a FREE trial version of @RISK at

<http://www.palisade-europe.com?Wilmott>

For offers exclusive to Wilmott readers call +44 1895 425050 and quote "Wilmott."