

former managing editor of the European edition of *The Wall Street Journal*, on a book on economics.

The most important thing I have done is to combine something esoteric with a practical issue that affects many people. In this spirit, the stock market is one of the most attractive things imaginable. Stock-market data is abundant so I can check everything. Financial markets are very influential and I want to be part of this field now that it is maturing.

In your book, you challenge Alan Greenspan, chairman of the Federal Reserve, and other financiers to set aside \$20 million for fundamental research into market dynamics. Why do you feel this is necessary?

There is a problem that is specific to financial markets. In most fields of research, when someone makes an important finding, they publish it. In the case of prices, they set up a firm and sell advice about their discovery. If they can make money from it, they will. So the research into market dynamics is a closed field.

Another reason is that the research carried out so far has proved ineffective

because so many fixes and twiddles are added to a theory until it works. That leaves you with a theory that is out of shape. You don't know which is more important – the thing you started with or all the fixes and twiddles. The level of theory in finance has been disappointing.

Do better theories really matter, though?

Financial risks are much underestimated. The effects of wrong business decisions are global. Nobody takes realistic measurements of risk and we should. I think we should take a strongly conservative attitude towards evaluating risks. I have lived all my life skating on thin ice, which does make you conservative. I've met stockbrokers who say that they are perfectly happy that they have judged the financial risks correctly in 95 per cent of their cases. They wonder why they should bother about a few cases that turned out wrong. Well, those are the ones that matter most – such as the Russian market crash of 1998.

I would like scientists, engineers and the whole of society to understand

the true meaning of statistics. People have generally been indoctrinated to believe that the world is simpler than it is. I'd like people to understand the difference between what I call mild randomness and wild randomness. Mild randomness is the thing that everyone thinks about where things go up and down a little bit in the financial market. Wild randomness is where one bad event in the stockmarket wipes out a long period of favourable events.

Do you think Greenspan and his colleagues will listen to you?

I don't know. A fair number of people with comparable influence are extremely favourable to my ideas.

Your work has covered many areas. Would you describe yourself as a pure or an applied mathematician?

A mathematical scientist. It's the official name of my chair at Yale and it was chosen with care. It is deliberately ambiguous. In a different era, I would have called myself a natural philosopher. All my life, I have enjoyed the reputation of being someone who disrupted prevailing ideas. Now that I'm in my 80th year, I can play on my age and provoke people even more.

Is that a benefit of being an elder statesman of science?

Elder statesmen of science don't produce new results: they only comment on other people's results. I am still active in research.

What are you working on now?

My work is more varied than at any other point in my life. I am still carrying out research in pure mathematics. And I am working on an idea that I had several years ago on negative dimensions.

What are they?

Negative dimensions are a way of measuring how empty something is. In mathematics, only one set is called empty. It contains nothing whatsoever. But I argued that some sets are emptier than others in a certain useful way. It is an idea that almost everyone greets with great suspicion, thinking I've gone soft in the brain in my old age. Then I explain it and people realise it is obvious. Now I'm developing the idea fully with a colleague. I have high hopes

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