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Memoirs of a physicist on Wall Street

By Stefan Stern
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Not many WallStreet veterans could write: "Visiting clients in Madrid, I dropped into the Thyssen museum, where I stumbled across several [Arthur] Dove paintings . . . in The Hague, too, after a Euronext options conference, I saw early Mondrian paintings of lilies that were influenced by [Rudolf] Steiner".

There are few "gentlemen bankers" left these days. Nor is there much room in the great financial houses for anything that smacks of the amateur spirit. That is why Emanuel Derman's memoirs are so compelling. As a physicist with a PhD from Columbia University, New York, he was not exactly a natural born trader when he joined Goldman Sachs in 1985. He had spent most of the preceding 20 years in education and research.

But Derman got in at the ground floor of financial engineering, or quantitative finance, and spent two decades exploring the almost infinite potential (and complexity) of derivative products and sophisticated risk management. Now back in academia, Derman has reflected on his experiences of the past 40 years.

He begins his story in 1966, when he arrived in New York city from South Africa as a bewildered, rather lonely 20 year old. Derman's first degree in physics was from Cape Town university, but he had come to Columbia determined to make his name. "I dreamed of being another Einstein," he confesses. "I wanted to spend my life focusing on the discovery of truths that would live forever."

It took several years for Derman to accept that this ambition would not be realised. Pure physics had room at the top for only a handful of people. He struggled for years in a series of insecure post-doctoral positions. "In much the same way, by a process [that] option theo rists call time decay," he writes, "financial stock options lose their potential as they approach their own expiration."

Derman's wry humour and sense of irony are apparent throughout the book. "If you didn't mind wasting the best years of your youth," he says, "graduate student life at Columbia was paradise." These qualities, allied to his many and varied literary and cultural references, reveal him as a multi-layered personality. In spite of his later eminence on The Street in the 1980s and 1990s, this is no crude Big Swinging Dick.

And he is not lying about wasting his youth. In 1969, when so many young people of his generation were heading off to hang out at Woodstock, Derman admits: "I spent the summer of 1969 at a particle physics summer school at Brookhaven National Laboratories in Upton, Long Island."

Eventually Derman abandoned pure physics for the - to him - less noble pursuit of applied physics, spending five years at AT&T's Bell Laboratories in New Jersey. This chapter, entitled "In the Penal Colony" - a reference to a Kafka short story of the same name - is a tale of corporate woe. The business world, while better paid than academia, seemed to offer even less satisfaction and excitement.

Derman says he learnt almost nothing about business or finance at AT&T, but he did learn to program and generally master the new generation of computers that were beginning to appear in the early 1980s. When the headhunter's call finally took him to Goldman Sachs's financial strategies group in December 1985, it came as an immense relief.

Derman was charged with developing the famous Black-Scholes option pricing model so it could be applied to bonds, an urgent task in the more volatile markets of the post oil shock world. Fischer Black, one of the original model's authors, worked at Goldman and became a mentor and inspiration to Derman. Black, he writes, "was genuinely in love with the idea of equilibrium." Derman was eventually to become co-author of the Black-Derman-Toy model, which priced bond options.

In total, Derman spent 16 years at Goldman, with one unhappy year at Salomon

Brothers sandwiched in between. The former academic was not immune to the usual Wall Street temptation of leveraging a better deal at another firm. Nine months after September 11 2001, Derman left Goldman to return to Columbia, where he now leads the programme in financial engineering.

Derman was one of the heroes of risk management in the 1990s, constantly pushing at the boundaries of what was possible, coming up with ever more sophisticated and ingenious structures. And yet a sober scepticism, learned the hard way all those years ago in university libraries, underpins his world view.

He is sardonic about his work: "The capacity to wreak destruction with your models provides the ultimate respectability," he says. "Many of the Long Term Capital Management protagonists are back in business."

Now teaching again full time, Derman has grown even more sceptical. "A decade of speaking with traders and theorists has made me wonder what 'correct' means," he writes. "The more I look at the conflict between markets and theories, the more that limitations of models in the financial and human world become apparent to me."