career story:

Actuarial Researcher

In school, **Shane Whelan** loved science and had ambitions to become a physicist. But, although he has fulfilled his ambition of doing research, it is in actuarial science rather than physics. He tells Helen Joyce how the switch happened.

After taking his Leaving Certificate (A-level equivalent) in 1981 Whelan was accepted into the mathematical sciences course at University College Dublin. The course covered maths, physics and a little statistics—although, surprisingly given his later choice of career, he says he didn't enjoy the statistics much.

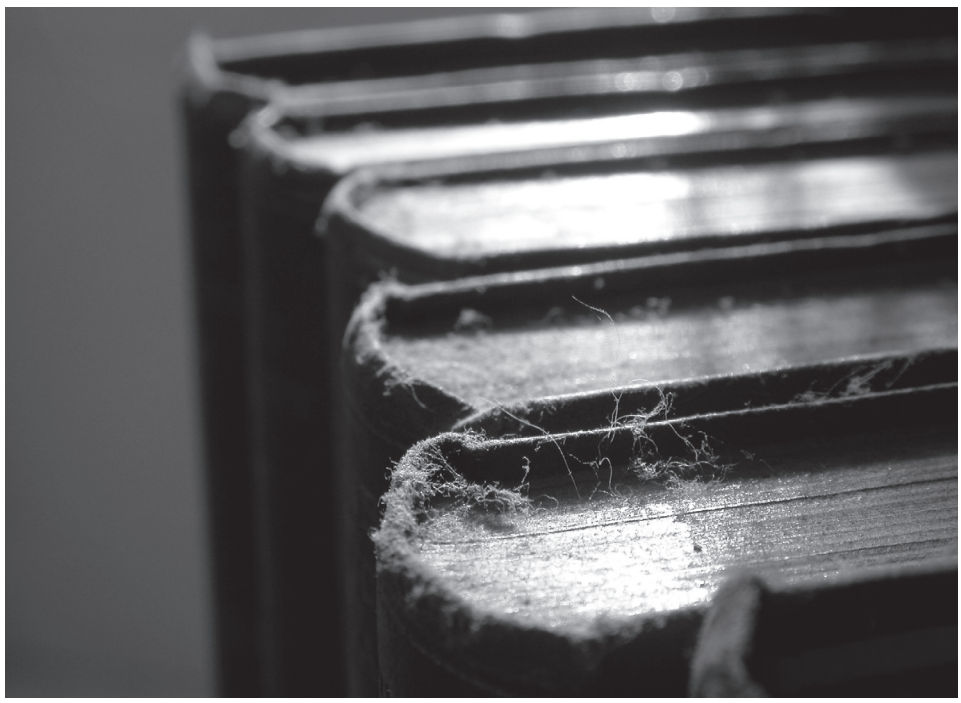
Why did he choose that particular course? "Because I was the next Einstein! Or so I thought when I began. I had read Banesh Hoffman's biography of Einstein when I was 13 or 14 and that gave focus to my early intellectual ambitions. For the following 6 years I was completely certain about my career path, my part in the great scientific quest. Looking back, it strikes me that my decision was never really challenged but actually reinforced by the positive cultural attitude to science then. This seems to have changed: Sorcha, my 7-year-old daughter, rejected a pair of sunglasses the other day on the grounds that they made her look like a scientist!

"In the first year of university my preference shifted to maths when I was exposed to its rigour. I was immensely enthusiastic in the beginning of the degree, winning the university prize in mathematics and active in the mathematical society, but my enthusiasm petered out as the mathematics became more abstract, with the

result that come my final year I was reading more Jane Austen, philosophy and the logical foundations of maths than sticking to my coursework."

More exams, please

"I wasn't very disciplined during my degree," says Whelan, "and I wasn't interested in doing postgraduate study, but yet I wasn't finished with formal learning. I was going to go out into the world to earn enough money to be independent, but I wanted a job requiring further study." He was vaguely aware that, if you were good at maths, actuarial science was a good career, and he also knew that it would involve plenty of further study. But he knew little more than that. "I left university a lot less certain of my career than when I had entered it, and more or less strayed into being an actuary. It was a ridiculously structure-less way to make a very important decision." Yet he now feels it was one of the best decisions he ever made.



"... dusty old volumes ..."

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At that time, the usual way into the actuarial profession in Ireland was straight from school, but he sent off letters to all the potential actuarial employers he could find and was eventually offered a position with the Dublin branch of Duncan C. Fraser, an old British firm of actuaries. "I got a job from Brian Reddin—he was the chief partner here in Dublin—in a very informal interview in a pub. Fortunately he didn't hold my having a degree against me, though he thought it a handicap—too much theoretical thinking and a lack of problem-solving."

Whelan started work with Duncan C. Fraser in 1985 and spent most of his time working on court cases, providing actuarial evidence for the loss of earnings in injury and fatal cases. "This work involved sitting down with the case papers, ascertaining the loss, working through the tax calculations, and then capitalising that loss for the rest of their lives. It was very hands-on, doing the calculations and report, and making a case that would hold up in court. There was no or little abstraction; it was very directly and obviously useful, which I liked.

"In the early years—the first 4 years anyway—I was comfortable in the traditional actuarial world. I was very well tutored by senior actuaries and thrived in the friendly and collegiate atmosphere. You get a great sense of progress from year to year, because you're climbing up the ladder of the exams. I never really had a career plan—my career plan in the early years was simply to get more exams. But about 4 years in, I got an offer I couldn't refuse, so I moved from a classic actuarial consultancy environment into an investment company."

Investment analysis

In December 1989 he left what had become, through a merger, Mercer Fraser, and moved to New Ireland Investment Management. This was not a standard move for an actuary to make, but he was following in the footsteps of another ex-Mercer Fraser actuary, Pramit Ghose, and it was through him that Whelan was invited in. At this point he was only two-thirds of the way through his actuarial exams and, although his new employer still supported him, the move did hold him back from progressing through the rest quickly.

However, he has no regrets. "It was a wonderful experience. I was working close to the fund managers; to begin with I would do the performance analysis, write the investment reports to the clients, draft business presentations. But there was always a possibility of getting onto the desk—becoming a fund manager. That was what I eventually did: I became an investment analyst, and then a fund manager."

Despite the stereotype, Whelan did not find this new work overly stressful, and he says there was never any danger of burning out. "That might be true in the pit, where the minute-by-minute intra-day dealers scream at one another. But in pension and life fund management, remember, we're essentially trying to forecast the evolution of the economy over years."

The work involved forecasting how economies and industries are going, how inflation is changing, the supply and demand of debt instruments, making a judgement on whether they are going to go up or down in the future, and then buying or selling. "Investment is a game," he says, "and like any game a lot of ego comes into it. You size up your competitors and you say: I'm brighter than they are, I work harder and know more, and I'll demonstrate that edge through better performance. That competitiveness attracted me. Of course, it was just kindergarten stuff compared to the competitiveness of academia!"

The attraction lasted. In January 1996 Whelan moved again, this time to the investment division of Friends Provident, where his former colleague Pramit Ghose was now heading the investment division. In essence it was the same job he had been doing at New Ireland Investment Management but in a smaller investment group, "but we later grew and made it into a separate investment company, which was very successful. I started there with £700

million under management—which is small; when I left there was £3.5 billion."

Although Whelan had found the work of a fund manager interesting, he always felt himself to be an actuary at heart with a keen interest in advancing actuarial science. "The problems in actuarial science—like many areas of statistics—have an immediate urgency, and insights, however partial, have direct applicability. This motivates me. But this front-line problem-solving entails grappling with reality in all its complexity and consequently any model has a short life span. I have evolved from that 13-year-old would-be Einstein, fixated on absolutes, into someone who appreciates any useful insights, however transitory."

A little light recreation for an academic

Still more study

After Whelan had finished his actuarial exams, he was looking for further challenges. A PhD seemed the obvious next step. "I started doing a PhD at the end of 1996, at Heriot-Watt University in Scotland, with David Wilkie and Stan Zachary. I would fly over occasionally for some light supervision, but, like the actuarial exams, it was primarily isolated self-motivated learning. I did research into the Irish capital markets and completed my thesis in 2003, so it took 7 years. I was working full-time all the time, except for a brief period, which I took off with the support of the company and the actuarial profession. The profession, both in Ireland and the UK, was extraordinarily supportive of my research and gave me many opportunities to present my work.

"The Irish stock market is one of the oldest in the world. It started in 1799 and has operated continuously since, including through one of the world's worst famines and both World Wars. It's got an extraordinary database, which was completely overlooked until recently. An odd thing about markets is that, despite their importance, there's very little empirical research into them using long-term data. How can you study the price formation process without gathering the data?

"So the first thing I did was trace the history of stock returns on the Irish market. The Stock Exchange here put their ledgers in the National Archives: dusty old volumes showing every price change of every security, every day, ever traded on the Irish stock market since the records started in 1801.

"Data mining is a real issue in studying markets, so a new data source is like gold dust. What's really interesting is that there are quite complex empirical regularities discovered in asset price formation that hold true in equity, bond, cash, currency and commodity markets and appear to hold irrespective of the time interval over which prices are sampled. Despite this, modelling even such fundamental concepts as market risk [the standard deviation of returns] is still elusive—returns from markets are demonstrably non-stationary, yet pretty much all applied models are stationary. The Irish database captures the very beginning of the markets, so we can trace how the prices and their statistical characteristics change, and get some clue as to how markets develop."

Into the ivory tower

Whelan had decided to work for a PhD in part because he had in the back of his mind the possibility of a move to academia. The department he currently works in (University College Dublin, where he studied as an undergraduate) was created in 1986, and in 1991 the then head of department, Professor Philip Boland, set up an undergraduate course in actuarial science. So when, in 2001, a lectureship was advertised at the department, Whelan applied and got the job.

"There seems to be an inverse relationship between the general utility of a piece of research and the price society puts on it—perhaps an instance of the free-rider problem identified by economists. My work was at one end of the utility spectrum for long enough."

In autumn 2004 he was made head of department, at the same time as the department's name was changed from the Department of Statistics to the Department of Statistics and Actuarial Science. The actuarial science degree course is very high profile, with among the highest entry requirements of any university course in Ireland. Most of the students go on to actuarial careers, and the demand is greater than the 35 students who graduate each year, so the department has just set up a one-year postgraduate qualification that allows students with numerate degrees to convert to actuarial science.

After so many years in business, some things about academia seem strange. "You have professors and senior researchers doing the administration. As an actuarial consultant, I filled out a timesheet with every 15 minutes to record my work and bill the client—and we were always reminded never to be found in front of a photocopier: the client does not pay actuarial rates for photocopying. Then I come here and see the most senior people queuing up to photocopy!"

But there are plus sides—as Whelan says wryly, "doing the photocopying is a break!" In particular, he enjoys the academic freedom: "I'm changing my research focus from the stock markets to mortality forecasting. This is the great freedom of tenure—I am my own client and always set myself interesting problems."

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