



Exploring mathematics: a powerful tool

Mathematical modelling for real

Carmen Pryce:

The designed world is highly mathematical. Look around any modern city and you can see the evidence often towering into the sky. Here in Hong Kong space is so scarce that the inhabitants have been forced to build upwards. Hong Kong. Some of the world's tallest buildings are put up using one of the world's oldest scaffolding techniques. But how does bamboo scaffolding do its job without falling down? If ever there was a case for modelling, this is it. Constructing bamboo scaffolding is a skill which has to be taught. The techniques have been developed from mathematical knowledge and here the underlying mathematics tends to be very visible. By contrast with the workings of the designed world, you'll see how maths is being used to help understand the natural world. We'll be looking at three different aspects of the natural world where mathematical modelling is being applied. One of these, and by far the biggest, is the problem of modelling the seasonal behaviour of the Antarctic ice cap. A university lecturer whose work takes him to the South Pole is Colin Fox. I met up with him at the University of Auckland. Here students are taught a range of mathematical skills, including the art of mathematical modelling.

Colin Fox:

When we teach mathematical modelling to the undergraduates there's no set of rules that we can tell them as such and, in fact, one of the points that we try and emphasise is that there is no strict set of rules about mathematical modelling. It's about using judgement and it's about making assumptions that are reasonable.