
WHAT DO YOU DO FOR A LIVING?
MATHEMATICS
I WAS NEVER ANY GOOD AT MATHEMATICS
OH WELL, IT'S NOT UNUSUAL. WHAT DO YOU DO?
I'M A POET
AH, THERE YOU ARE. I NEVER COULD UNDERSTAND POETRY
PEASANT!

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So what do you do ..

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By **Matthew Reisz**

In social situations, topologists and biophysicists alike find that their enthusiasm for their discipline is not always infectious. Matthew Reisz reports

Whenever one meets a stranger at a party, the inevitable question eventually comes up: "And what do you do?" For many people, it's the moment they've been waiting for. Delighted to be able to talk about themselves and their work, or to show off their impressive job title, they grab the chance to leap in.

There is obviously often an element of exaggeration or image management. A phrase such as "I'm a self-made businessman" may conceal the fact that one got rich selling something as unglamorous as sewage equipment or bulls' semen. But very few people - apart from pimps, tax inspectors and arms manufacturers - attract horror or disgust when they reveal what they do.

It is here that one can only pity the poor academic, and particularly those in the sciences.

For Mark Grant, a topologist who works at the University of Edinburgh, even the simple words "I'm a mathematician" tend to make people "impressed, disgusted or horrified".

"People have their prejudices about maths from school. Some are interested - which is what you fear the most."

Even trying to give the baldest idea of topology is pretty challenging. Grant sometimes falls back on the classic definition, "A topologist is someone who can't tell the difference between a teacup and a doughnut" or even, if he's feeling particularly provocative or irritable, simply "Teacup equals doughnut." You can also try the alternative name for the discipline, "rubber-sheet geometry", though that can get confusing if it's misheard as "rubbishy geometry".

It is in the nature of their subject, says Grant, that mathematicians "have a taste for the abstract and prefer it to real-world things", though this can puzzle or even upset other people.

While he is personally motivated by "finding things he can solve or finds beautiful" and doesn't have the interest or expertise to pursue any of the potential applications of his work to robotics, it is often useful to steer the conversation in that direction.

This can lead to some pretty daft questions, he says - along the lines of "Do you have any robots around the house?" - but at least it provides a basis for further communication.

The poet W.H. Auden hated to get into casual conversations when he was travelling and experimented with different fictional professions when strangers asked him about his job. He eventually discovered by trial and error that "medieval historian" was the most effective conversation-stopper.

Those working in string theory or econometrics no doubt genuinely believe their subjects are more interesting than the weather, celebrity gossip, "what I did on my holidays" and the other staples of everyday social chit-chat. But is there any way of talking about such subjects without emptying the room around you?

There are several options, say scientists who have faced such situations. One is saying what you really do and watching people's eyes glaze over. Another is deliberately dumbing down or jazzing up one's research, which can leave one feeling slightly fraudulent. And the third is to make desperate efforts to change the subject.

The last is the solution adopted by one of Grant's colleagues. "Quite often," he says, "I've been known to say 'I'm a mathematician ... but I'm a musician too' - which is true, but it sounds a bit weak and pleady."

When he meets women who "don't change the subject, which is unquestionably preferable, and ask 'What type of maths do you do?' I say 'I specialise in addition, but I'm hoping to move on to multiplication soon.' Usually I'll get a mild laugh or

an equally sarcastic comment about their profession and we can move on to eminently more interesting subjects."

Ian Stewart, who works at the Mathematics Institute, University of Warwick, has had similar experiences.

"About 20 years ago someone at a party asked me what I did," he recalls.

"I said, 'Mathematician.'

"She said 'Oh' and went silent."

Stewart's way around this impasse was to "point out that mathematicians travel a lot", which sounds like a pretty implausible generalisation (where is the statistical evidence?), but it proved a useful diversion since "she perked up and we talked about travel".

One of Britain's leading popular writers on maths, Stewart used to believe that the profession had managed to throw off its negative image.

"About ten years ago it seemed as though the battle was being won," he says.

"The usual party response to admitting to being a mathematician was often 'What do you think about chaos theory?' or 'What do you think about fractals?' But the widespread dumbing-down of TV science programmes since then seems to have reversed the trend, and we're back to 'I was never any good at maths at school'.

"The real problem is that the public, on the whole, don't know what real maths is or what mathematicians do. Their only direct contact was at school. What they don't realise (mainly because no one has told them) is that what they did at school isn't really representative of real maths as a profession. It's a bit like 'I'm a composer' getting the response, 'Oh, I could never learn to play the scale of C on my recorder when I was at school.'?"

The social lives of mathematicians, in other words, can be seriously damaged by other people's bad memories of quadratic equations.

Other subjects can present similar challenges. Nick Read, professor of fungal cell biology at the University of Edinburgh, has lost count of the number of times that colleagues at parties have used the same old gag: "May I introduce you to Nick Read? He's a fun guy - he studies mushrooms!"

So how does he recover from this unpromising start? What usually follows, he says, is a discussion about edible and sometimes magic mushrooms.

"If the discussion continues, I tend to direct it towards the importance of fungi in our lives - human and crop diseases, symbiotic relationships with plants, biotechnology and so on - throwing in various anecdotes along the way, for example that most people with Aids die from fungal infections or that the largest organism on the planet is a fungus.

"I usually wait until I get asked before telling them about my teaching or my research interests in understanding how fungi grow and how fungal diseases are initiated."

Does it sometimes get annoying to have to "sell" his field to people who basically aren't interested?

Not at all, says Read. "I don't have any problems 'jazzing up' my subject to other people. I have to do it all the time with undergraduate students during teaching to get them interested and sucked into what I am passionate about scientifically."

Nonetheless, it is clearly a delicate balancing act to talk about a highly technical topic with passion and enthusiasm without alienating fellow revellers. Those without particular social skills are often wise to stick to safer party environments, where no one can spring the dreaded "What do you do?" question on them.

For those who are bold enough to get away with it, on the other hand, introductions can offer opportunities to play with images and identities.

"I'm not ashamed of being a scientist," says Rivka Isaacson, senior scientist at the Imperial College Drug Discovery Faculty.

"Sometimes it is fun to baffle people and use words you know they won't understand. Other times I explain myself in a very accessible way with loads of analogies and they say, 'Oh wow, it's so nice to meet a scientist who can couch things in normal terms,'?" she adds.

"One of my aims in life is to dispel the geeky image of scientists - despite the fact that there really are loads of geeky scientists - because I know many more scientists who are extremely well-rounded than arts people.

"If I make people guess my job, they always say art/media/journalism, which makes me glad," Isaacson says. She admits, however, that "it is probably the pink hair that does it".

That such issues are of more than casual concern to her is evident from the novel she has been working on, "all based on truth", where similar questions are prominent. Isaacson's heroine is a biophysicist, Kathryn Rich, whose "latest book is entitled Synchrotron Radiation for Dummies".

"A common characteristic among scientists," the fictional biophysicist reflects, "is their reluctance to admit the nature of their profession.

"I myself have claimed a large variety of alternative occupations when I've thought I could get away with it. I once met a biophysicist who, in an attempt to impress girls at parties, claims to be one of those Red Adair-type firemen who fearlessly tackle oil fires.

"My own wishful fantasies tend less toward the heroic, having professed in my time to be an academic in various of the arts, a dry-cleaner, a dental receptionist and a childminder, among other things. When embroiled in brief encounters such as those with seat neighbours on aeroplanes I've been known to give chapter and verse on my imaginary PhD thesis, Blood Is Thicker than Water: The Influence of Sibling Rivalry on the Novels of Margaret Drabble and A.S. Byatt, a pet interest of mine, which sounds infinitely more glamorous than the title of my real thesis, Biophysical Studies of Amyloidosis.

"Whence stemmeth this disinclination to identify with what is, after all, a noble enough profession that has produced many a breakthrough in its time? Fear of being thought nerd-like, horror of having one's brain-power overestimated, dread of introducing a conversation-stopper? I'd certainly answer yes to all of the above," says Isaacson's heroine.

There are times when it is easier to be an accountant or a dentist than an academic.