

The x-change, Wednesday 9th September, 2009

Speakers:

Professor Frank Close, University of Oxford

Professor Dulcie Mulholland, University of Surrey

Dr. Stefan Fafinski and Dr. Emily Finch, Brunel University

Dr Simon Singh, Science Journalist and Author

Professor Jon Zarnecki, Open University

Host: Sue Nelson



The penultimate evening of the x-change was a medley of science topics; from particle physics, plant medicine, and human behaviour, to journalism and planetary science. The finale of the event included the announcement of the *perspectives* runners up and overall winner.

Self-publicising his new book 'antimatter' in the form of a suave and trendy t-shirt, Professor Frank Close began the evening's event. He briefly guided us through the ins and outs of antimatter and explained to the non-physicists among us that antimatter is composed of the antiparticles of normal physical matter, such as the anti-electron – the positron. He then moved to the controversial subject of Dan Brown's 2000 novel, *Angels & Demons*, whose plot included the use of antimatter as a weapon of mass destruction. Professor Close criticised the novel and said antimatter could not be used as a weapon as it is very difficult to contain the antiparticles as any contact with normal particles causes the annihilation of both. That and it would take billions of years to synthesise the quantities of antimatter described in the novel. Needless to say, after a quick poll of the audience, less than a handful raised their hands to say they had read the book or seen the film (at least none were prepared to admit it).

A member of tonight's somewhat subdued audience asked if antimatter could solve the world's energy problems. Professor Close explained that as well as the problem of containing the antimatter, it costs as much energy to make as it does to use it, so 'no' was the answer. A final question, before Professor Close stepped down, "How *did* you make publishing history with a book about nothing??" laughter and a pondering silence ensued.

Bringing us back down to earth with an enthusiastic talk about plant species and their use in medicine was Professor Dulcie Mulholland. She began with traditional plants and the one our mother's warned us about, Foxglove, which contains the poison 'digitalis'. In the 1600s an elderly lady first used the plant to cure congestive heart failure and amazingly it is still being used today.

Back to the present, Professor Mulholland's recent work has included studying plant species in Africa and Madagascar, which she reported contain unique chemical compounds and are of the most interest to her. She admitted that although she does the chemistry, it is her botanist sidekick who gathers the various species for her.

A curious member of the audience asked how many of the plant species found actually have any herbal remedy properties. Professor Mulholland replied with a staggering statistic; every 1 in 100,000 actually works but there are still many rainforest species yet to be looked at (which should keep the Professor busy!)

Then, from honest plants to dishonest people, an ongoing international, online survey known as 'the Honesty Lab' looks at people's perceptions of honesty. Two criminal lawyers from Brunel, who are heading the survey, Dr Stefan Fafinski and Dr Emily Finch explained what it is designed to do. The Honesty Lab survey was designed to explore people's perceptions of honesty and debate the existence of a "common standard" of honesty (that much of the legal system is based upon) producing a very wide range of interesting and sometimes surprising results.

The question in everyone's mind at this point was, "How do you know if the people taking the survey are telling the truth?" Dr Finch explained that they do not but they hope that people will be honest.

The Honesty Lab website also gives people a chance to type their confessions onto the site, anonymously, for everyone to see (which provides some excellent reading). Dr Finch and Dr Fafinski asked the audience if they would hand a five pound note in to a police station if they found it on the floor. Astonishingly only two older gentlemen said they would hand it in. Results from the survey are already showing that women are more likely to think something is dishonest but men are more likely to convict someone for their dishonesty.

Next to take to the stage was (the man with the quiff) Dr Simon Singh, whose lecture on Sunday entitled 'Why journalists love stupid equations' was not only humorous but brought to light the problems scientists and science journalists face with the increase in use of these equations. Dr Singh believes when non-science journalists and their PR agencies approach a mathematician or a scientist, asking them to make up equations, it is giving the wrong impression about science. He says it gives the notion that science can come up with whatever result you want it to. With the rise of so many made up equations, such as, the best day to start Christmas shopping and the perfect penalty kick, real research is being undermined.

Dr Singh turned to the subject of libel. He reported that costs arising from an English libel case are 10 times higher than Ireland's and 140 times higher than the average EU country. Dr Singh recently criticised chiropractic treatment of children who are suffering with things such as asthma, colic and ear infections, saying there was no evidence to support the treatment. He commented that he had hoped that someone from the British Chiropractic Association would defend their position but instead they sued him for libel. His court case is October 14th. He urged us to sign up on senseaboutscience.org to help increase the chances of policymakers revising our libel laws.

The final speaker of the night took us back up into the atmosphere and space. Professor John Zarnecki has been involved in various space missions

during his 30 plus years carrying out space research. This evening he focused on Titan, Saturn's largest satellite and one of the only satellites to have its own atmosphere. Professor Zarnecki says that the satellite is similar to planet Earth but with liquid methane for water and ice for rocks. Interestingly, Titan also displays organic chemistry; the building blocks for life.

A member of the audience enquired about Titan's atmosphere and what is keeping it there. Professor Zarnecki commented that it was a balance between gravity and Titan's cold temperatures but that no one really knows where Titan's atmosphere comes from.

Professor Zarnecki told us how he never thought he would be involved in another mission to explore Titan again but recent developments with NASA mean that his services will be needed again! His latest plan, named 'Time' (Titan Mare Explorer), is to work with NASA to fire a probe up to Titan in the hope it lands in one of its seas allowing more investigation of the satellite's meteorology and atmospheric properties.

Announced at the end of this x-change were the runners up and winner of the *perspectives* competition. In no particular order: Adam Elliston with 'Fuel from waste', Susannah Fleming with '...or meningitis?', Christopher Jones with 'The feud in the field', Bethan Lowder with 'Globalisation & the farming industry' and Penelope Mason with 'Ageing: no escape?' The overall winner, with a poster in the form of a large Heinz Beans label describing the stereotype of dementia, entitled 'What's in a label?' was Gemma Webster from the University of Dundee. Congratulations to all!