

The x-change, Wednesday 10 September 2008

Speakers:

- **Martyn Poliakoff**, University of Nottingham
- **Peter Styring**, University of Sheffield
- **James Soper**, science communicator
- **Francis McGlone**, Unilever Research & Development
- **Hugo Spiers**, University College London



Host: **Sue Nelson**

Martyn Poliakoff (with award-winning hair!) spoke on the need to develop more 'green chemistry'- i.e. ways of producing chemicals that are more efficient and effective, meaning less waste. He used the example of bacteria that store excess energy in a plastic compound. By growing, feeding and then processing these we can produce renewable plastics that don't require the use of fossil fuels. These plastics have the added advantage that when they are thrown away, they are ideal bacteria food, so are easily bio-degradable. Martyn also mentioned the way that developing countries can make use of natural resources such as sunlight to power manufacturing processes (e.g. sun-dried starch).

He controversially suggested that china mugs actually require much more energy in construction and use (e.g. firing the clay and production of detergents to wash it) than polystyrene cups (1000 times more) and that students might be as well taking a bag of disposable cups to university, rather than one china mug that requires washing.

He was questioned on the ethics of using biomass to make plastics, and commented that whilst energy can be produced in alternative ways, if we want to have carbon-based chemicals such as plastics, we need to make them from carbon-containing substances- either fossil fuel or biomass.

Peter Styring joined us to discuss Delia Smith's carbon footprint. He'd noted that Delia's recent 'cheats' cookbook made heavy use of pre-prepared and frozen foods such as frozen mashed potato. He described a study he and his team had done that investigated the energy required to produce frozen mashed potato versus that required to produce fresh (700 times more). He also talked about how trials testing people's taste had discovered that they much preferred salt in the food – no matter how good the quality of the ingredients.

There was much banter in the audience over the question of whether Delia is a menace to society and a number of audience members rose up to argue passionately in Delia's favour, citing her earlier recipes such as fruitcake and roast pork as evidence of her positive contribution to the world. Others wondered if anyone really cared and wasn't it easier and more convenient anyway to use pre-prepared foods. Peter's reply to this was that he had discovered a 6-minute way to make mashed potato by microwaving before mashing.

James Soper wowed the audience with an amazing sample of his scientific circus act, which he has been performing as part of the schools program that runs alongside the Festival. He did various impressive juggling and balancing tricks, unicycled, and unicycled whilst juggling, got Sue to balance a feather on her nose, had some humorous banter with the audience and still managed to talk about scientific topics such as centre of gravity, and the effects of alcohol on reaction-time.

Francis McGlone, a neuroscientist at Unilever, explored some of the mechanisms behind 'pleasurable touch', and told the audience how nerve impulses from emotional touch were carried down the same fibres that transmit pain. While he works for a company better known for its work in other sensory products (smell/taste) he explained that because the senses modulate each other, his work is just part of building up a bigger picture on how we sense our environment, which commercial companies can use in the future to develop products.

Interesting points he mentioned were to do with the modulation of the senses – that if you dye the same sugar solution light or dark red, it will taste different depending on the colour intensity. Also, that sound can modulate touch – so if you play a sandpaper sound whilst stroking someone's hand, it will feel rougher than if they are hearing a 'smoother' noise... ..Could this be the secret of Barry White's success? Sue wondered.

Hugo Spiers is another neuroscientist who studies the brains of London cab drivers. He adapted a Sony computer game that was set in London to give an accurate driving simulation of the streets of London. This meant that his cabbie subjects could 'drive' and navigate around whilst inside an MRI scanner.

His work has shown that over time, London cab drivers develop a larger hippocampus – interestingly the same area that is enlarged in squirrels who are finding nuts! He noted that the drivers also didn't waste much mental energy thinking in advance about their route – they just point themselves in the right direction and drive. Although they don't forget how to get there, they do sometimes forget where they've been asked to go.

He also mentioned that women are better at finding things (they notice missing or added objects in sets better).

There was a comment from an audience member that all the cab drivers he knew were ex-scientists and he wondered if an analytical brain was best suited to assimilating 'the Knowledge' that taxi drivers have to learn. Hugo wasn't sure of this, but apparently London cab drivers earn lots more than scientists, so if true, it could be a lucrative career change for many of us!

Finally, winners of the *perspectives* competition were announced. Jennifer Hannant of Newcastle University won the People's Choice prize for her poster 'Making technology come alive'. Berenice Golding of the University of Huddersfield and Jamie Brown of the University of Cambridge won the two runner-up prizes for their posters 'Can women consent to egg-sharing?' and 'Learning secrets from autism'. The winner of the grand prize was Georgina Humphreys of Glasgow University with her poster 'Taking the bite out of malaria'.

Maria Hogan