

BA Festival of Science in York, 2007
The x-change, Monday 10 September



Speakers:

- **Dr Phil Jess**, University of St Andrews
- **Dr David Efird**, University of York
- **Professor Andrew Read**, University of Manchester
- **Professor John Copley**, University of Southampton
- **Dr Maggie Aderin-Pocock**, Science Innovation Ltd.
- **Dr Love Dalen**, Royal Holloway, University of London

Host: **Sue Nelson**

In this, the first x-change of the 2007 BA Festival of Science, the panellists and audience had the opportunity to discuss the science behind the perfect pint; the place of religion in contemporary scientific society; how recent developments in human genetics will affect ordinary members of society; the value of deep sea exploration; the importance of inspiration, drive and enthusiasm in building a career in space science; and what DNA analysis can tell us about extinct species. This exchange also incorporated hustings for the 2007 *perspectives* poster competition.

With the aid of a couple of pints of Guinness and a £1 coin, Irish scientist Phil Jess attempted to answer the question *how do you know when you have got the perfect pint?* With the aid of a second prop – a 'slinky' – this presentation simultaneously explored the nature of sound, material science, and Irish drinking culture. Dr Jess demonstrated how the bubbles in a freshly poured pint of Guinness disrupted sound waves and hence slowed the passage of sound through the glass. It is only once the pint has 'settled' and the bubbles have dispersed that sound passes normally through the glass and it is ready for drinking.

Discussing intelligent design and the explanation of observed order in the world, David Efird addressed such questions as *what is science? What is religion? What types of phenomenon and explanation belong in each category? Should religious explanations have a place in the science classroom?* In a heated debate, the audience touched on the separation between religion and state, the consensual nature of scientific knowledge and its perceived superiority over metaphysical explanation, and the contradictions between an infinitely complex world and the idea of God as a simple being.

On September 5th 2007, media attention focussed on the possibility of expanding the national police forensic DNA database to include all UK citizens and visitors to this country. Andrew Read addressed this issue and explained to the audience precisely what information the database currently contains and how this can be used for identifying those responsible for various crimes. Professor Read distinguished between the numerical information stored in the database – which can only be used to establish an identity match – and the storage of a DNA sample itself, which can be used for much more. In particular he noted the use of tests for the AMEL gene in criminal investigations. Describing this as a "sex test", he commented that when presented in genetic terms this test seemed highly controversial, whereas if described as a way of distinguishing between men and women it was considered much less so.

According to Dr John Copley, the 50% of our planet that is covered by water over 3 metres deep is "the biggest unexplored region on Earth". His interest lies in shrimps that thrive around deep sea volcanic vents which are natural laboratories for scientists. These sites are also mysterious places where the majority of animal species are previously unknown – a point he illustrated with a bag of sweets! In outlining the importance of deep sea exploration through its contribution to medicine, biofuel and even soft drinks, Dr Copley set out the cost of such ventures relative to other scientific and awareness raising programmes. Discussion touched on how you know when a species is 'new' and the short timescales in which organisms are able to adapt to extreme deep sea environments.

In the most inspirational talk of this x-change, Maggie Aderin-Pocock described her journey to become a rocket scientist and how this began with her childhood fascination with the stars, Sputnik and telescope making. She vividly described her early life in London, spent grinding the parabolic mirrors for her first reflector out of glass blocks while sitting in front of the TV, and how this led her into her undergraduate degree, PhD, and first job in the UK's MoD working on missile warning systems. This, and her managerial involvement in a project looking at novel landmine detectors, eventually led her to her current position with Astrium developing the latest – and next – generation of ESA satellites. In the spirit of the x-change Dr Aderin-Pocock left the audience with a provocative scenario: the problem of eviction should the next Celebrity Big Brother – which she apparently would be happy to participate in – take place on an Earth-orbiting space station.

In his presentation on genetic analysis of ancient DNA, Dr Love Dalen explored the extent to which the fossilised remains of different species can tell us about how populations of animals varied over long timescales. He discussed issues of population turnover and how bottlenecks arise in this natural process. This involves the consideration of not only climate change, but also the accuracy of current methods for establishing correspondence

between environmental changes and population shifts. Faced with the question of whether we will ever be able to bring a dinosaur back to life, Dr Love emphasised the realistic and important goal of tracking extinct populations over extended time frames.

This x-change event featured several of the BA Festival of Science 2007 *perspectives* poster competition entries. In pitching for the £750 first prize, each poster presenter had 2 minutes to entice the audience to see the posters, and persuade them to vote in their favour. All the posters - and the eventual winners, runners up and people's choice - can be viewed at www.the-ba.net/perspectives.

Bonnie Green