

Dear Editor

We would like to comment on Nick Allum's piece, 'Surveying science' in the March 2009 issue of *People & Science*.

We agree with Nick that it is important to be clear about the strengths and limitations of different approaches. However, as the research team who conducted the Public Attitudes to Science Survey commissioned by the Department for Innovation, Universities and Skills and Research Councils UK, which Nick references, we feel that we must respond to his criticism of the methodology used in this and other recent surveys.

Two kinds of surveys

Broadly speaking, surveys can be divided into those which use probability methods and those that use quota methods. When choosing between the two there is a trade-off between cost and time on the one hand and accuracy on the other. Probability surveys allow the error introduced by using a sample (rather than interviewing everyone) to be measured statistically, while quota samples do not. However, the cost difference between the two approaches is very large – in the region of 30 to 50 per cent – and probability methods require much longer fieldwork. The public sector uses both methods extensively, while the private sector relies almost entirely on quota methods.

TNS Public Services, of which one of us is Managing Director, conducts large numbers of surveys using both approaches, and considers that where survey measurement needs to be very precise (for example to estimate the numbers of people who have been victims of crime), then probability methods are essential. However, where a survey is primarily concerned with attitudes, we would argue that quota methods are fit for

purpose and offer best value for public money.

The primary objective for any survey is to minimise error and bias, and to keep these constant through time on repeat waves. This is why we used a high quality quota design called Random Location. It selects small, relatively homogeneous areas, in which interviewers are required to achieve a set number of interviews with specific types of individuals. The small size of the area and the tightly set targets minimise the choice the interviewer has in selecting respondents, and ensure that the final sample is as representative of the population as possible.

Identifying attitudes

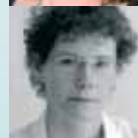
With respect to the attitude statements, their primary purpose was to allow us to use multivariate analysis techniques to identify major categories of attitudes towards science among the general population in Britain. While responses to some statements are used to illustrate the strength of feeling about a particular point, the main purpose of these statements is to look at the overall patterns of answers across the 56 statements. This is why each individual statement is either positive or negative and not balanced. Respondents are not forced to express views on subjects they have no opinions on. All questions offer a 'neither agree nor disagree' option – and on some statements reasonably large proportions of respondents take this option. The statements are based on a review of the literature on public attitudes to science over the last decade or so.

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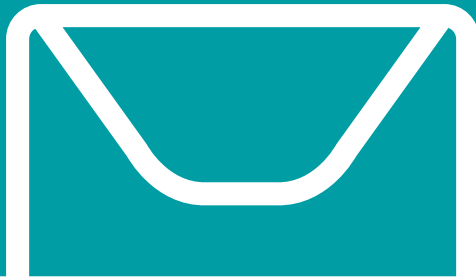
In the 2008 study, five attitude groups were identified: those 'confident' in science and its regulation; some 'sceptical enthusiasts' who were enthusiastic about science but sceptical about authority; those 'not confident' that science is well regulated; the 'distrustful' who are not interested in science and don't see it as beneficial; and the 'indifferent' who have limited understanding about science and aren't concerned about how science is controlled and regulated. The identification of this broad spectrum of attitudes suggests to us that the statements work well in teasing out subtleties in attitudes to science held by the British population.



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Dear Editor,

I like the new-look *People & Science*. Like its predecessor, it deals mainly with what you might call science and society – not so much the new scientific discoveries as the implications of those discoveries for society.

Is this what the public are most interested in, I wonder? Is it scientific discoveries or scientific controversies that engage the public most? I ask because this is being debated around the science curriculum for schools. There are those who favour an emphasis on 'how science works' and the societal implications of science as a core part of the curriculum, and those who think science in schools should concentrate on scientific knowledge and understanding, and leave the social implications until after the facts have been laid down. Where should the balance lie?

You can see one result of this controversy in the reaction of some (mainly independent) schools against the new science GCSEs and their move to the more traditional I-GCSEs (International GCSEs). Are the traditionalists right? – has the science curriculum moved too far away from fundamentals, towards the processes of science and 'science in society'? Or is what matters – as the content of *People & Science* suggests – the ability to judge whether an argument is based on sound scientific principles?

John Holman

Professor John Holman
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Dear Editor,

I don't like the new format. One of the main things I don't like about it is all the blurry images. In addition to the photos of the writers, please include proper photographs. In the old style magazine there was at least one clear photo to accompany most of the articles.

One of the better features was the Exchange on pp16-17.

Philip Bladon
Redditch
Worcestershire

Dear Editor,

I thought it was brilliant!

Penny Fidler

Director
The UK's Association for Science and Discovery Centres (formerly Ecsite-uk)
www.sciencecentres.org.uk

Dear Editor,

The new 'look and feel' – as they say – is great. Much more tempting to dive into, and much easier to find one's way around.

If I can make a two smallish points which others may or may not agree with. Firstly, please don't change to a coloured background for the final paragraphs of articles. More difficult to read, particularly for those of a certain age, and not always obvious that they are part of the text.

Secondly, don't be beguiled by designers into pretty covers for the sake of it. The cover illustration needs to say 'people' as well as 'science'.

Apart from that, congratulations all round.

Dr David Dickson
Director, SciDev.Net
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Dear Editor,

Gruesome facts and smelly explosions by themselves won't generate a passion for science in children. Young people need to see that science and engineering are human endeavours, done by real people working together in teams. The Next Generation project has the balance exactly right ('Engaging the next generation of scientists', *People & Science*, March 2009).

The project invites primary pupils to do hands-on experiments and exciting demonstrations with 'real' postdoctoral scientists from Imperial College. Then those primary pupils have to communicate what they've learned to their peers. In a single year, children aged 8 to 11 gave over 90 songs, talks, role-plays and poster presentations.

Key to the success of this project is the focus on developing communication skills. As adults, communicating science refreshes our passion for it. As children, communicating science develops our understanding, builds our confidence and ignites our interest for the future.

Any primary pupil interested in communicating science can become a Young Science Ambassador through the CREST Star Investigator scheme run by the British Science Association. Resources, tips and details about how to get involved are available on our website:

<http://www.tinyurl.com/ovo2gv>

Katherine Mathieson

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Freeze-Frame

David Walton could design his own igloo



There can be few in Britain who have not been reminded over the past few years of our history of Antarctic exploration. The centenaries of those pioneering expeditions have coincided with the rise of the importance of the polar regions in our modelling of global change so that scarcely a day passes without an icy article or photo to catch the eye. Often these have been classic photos from the Heroic Age, recalling those days only a hundred years ago when the Seventh Continent really was almost completely unknown.

The Scott Polar Research Institute (SPRI) in Cambridge was established by public subscription after the death of Captain Scott's party. It has come to house not only the world's largest polar library but also an enormous collection of photographs and other images from both polar regions. Over the last two years, with funding from the Joint Information Systems Committee, they have digitised over 20,000 of the images from eight Arctic and 13 Antarctic expeditions from 1845 to 1982. Many of the images have never been published before. They will be joined in due course by other expedition material including letters, diaries and scientific data.

Teaching material

Launched in March as Freeze-Frame,¹ the images are clearly an enormous resource for those interested in the poles and, with so many available, it would be easy to be overwhelmed. There are seven subject 'taster' galleries just to get you interested, but you can also search by keywords and even make up a set of photos as your own polar gallery. Most are in black and white and, amongst the serious material, include some zanier ones on expedition life.

SPRI have provided resources to accompany photos on seven major themes – expeditions, biographies, polar photography, survival in extreme environments, northern people,

changing Britain and the Heroic Age, and environmental change. Whilst there are still some glitches on these pages – for example, inadequate further reading suggestions and some hyperlinks that fail to work – they all provide very valuable teaching material.

No science

What is glaringly missing at present is a module on the science conducted by these expeditions, although there are photos of science being done in various other categories. There is also nothing on British government activities in the Antarctic, which have been continuous since 1944. The general impression from these pages is that they will continue to grow more useful as more images are posted and more resource subjects are written up.

The 22 biographies are brief but fascinating with Arctic whaling captains as well as expedition leaders like Byrd, Franklin, Fiennes, Scott and Shackleton. Whilst the institute can only put up what they have copyright permission for, one can but hope that images and supporting material will be found in due course for other important British explorers like James Clark Ross, John Ross, William Parry, Alexander Mackenzie, Hubert Wilkins and so on, as well as some of the many foreign explorers.

Survival

Especially interesting are the resource pages where the text comes alive with the linked photos. In the survival gallery, not only can you learn how clothing and transport have changed but also about the principles of diet, hypothermia, the evolution of transport types and how to design an igloo. And the succinct summaries of expeditions with photos will help many students with their essays. All the pages have icons for Facebook, MySpace and Twitter to allow you to copy and mail the bits you like.

It is an exciting new resource which can be mined in many different ways by geographers, scientists and all those simply interested in the polar regions. Keep looking to make sure you see all the new material that will be added in the next few years!

¹ <http://www.freezeframe.ac.uk/home/home>

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