# Changing research horizons

*At the Annual Conference in Blackpool* **VICKI BRUCE** *gave her Presidential Address on getting psychological research to the people who use it.*

IN this article I will argue that the UK Research Assessment Exercise, while useful in some respects, is in danger of limiting the wider dissemination and application of research findings. The British Psychological Society's principal Charter object is to 'promote the advancement and diffusion of a knowledge of psychology pure and applied and especially to promote the efficiency and usefulness of Members of the Society by setting up a high standard of professional education and knowledge'. The Society is in a unique position to ensure that good psychological research reaches all potential users and beneficiaries, and in the breathing space we have between the last RAE and whatever shape the next such exercise takes, I would urge that the Society develops this role within British psychology.

Research is the lifeblood of the academic psychologist. From time to time the academic's freedom to conduct curiosity-driven research appears threatened – whether financially, through lack of resources, or politically, through pressures to research some things but not others. During the 1990s the new, apparently utilitarian missions of the research councils appeared likely to drive all research down narrow channels aimed at wealth creation or – more liberally – the public good. Since the early 1990s, as public sector funding has been squeezed ever tighter, new money for research appears to have been given only for topics deemed important in terms of their potential for economic or social benefit. So-called blue-skies research, driven by curiosity and with no necessary or immediate application, is harder and harder to resource – even though everyone knows that some of society's most important inventions and discoveries were based on the products of just such intellectual curiosity (e.g. lasers, penicillin, and so forth).

Against this background the apparently traditional values of the RAE are rather welcome. The RAE is a mechanism by which the UK university funding councils can decide how to allocate research funding to university departments in a way that targets most resources to those departments judged best able to deploy the funding. The exercise funds research infrastructure on the basis of judged past research excellence. This infrastructure provides the capacity for high-quality research (through salaries of academic staff and technicians, and support through laboratories, libraries, equipment, etc.), which can then satisfy the needs of other funders – whether they seek basic, strategic or applied research. The infrastructure itself is funded on the basis of perceived excellence alone. The RAE is a peer-review exercise in which panels of disciplinary experts rate departments on a scale according to the proportion of their research judged to meet standards of international or national excellence.

I probably know as much about the RAE as anyone else in the country, having served on the psychology panel three times (twice as its chair), having twice been in charge of my university's submission to the exercise across all disciplines, and having served on the Scottish Higher Education Funding Council, which translates grades into funding formulas. Having – possibly uniquely – these different perspectives on the exercise makes me well aware of its limitations, and I will discuss these at length later.

But that is not to say that there are not many virtues. Universities, departments and individuals manage their research much better than they used to. British psychologists are now much more likely to target some of their work at top international journals, increasing the chances that UK work will reach the eyes (and eventually perhaps the textbooks) of American academics. Asking people about their publication strategy no longer elicits a blank stare, but an enthusiastic enunciation of the virtues of different journals in a specialist field. Most people, in most departments, understand that part of their salaries is paid out of 'R' funds, and that – if they wish to continue to research as well as to teach – they must contribute to the exercise by which this fund is generated.

The exercise itself has matured over successive versions. It no longer calls for publication counts (as it did in 1992), and there is a considered use of both panel members and external assessors to test claims about international excellence (using international peers) and relevance (via 'Users') or to assess quality of interdisciplinary work.

However, there are a number of problems too – not just with the exercise (in my view) but with the shift in behaviour that the exercise creates. Because the exercise assesses quality, there is a danger that we perpetuate a notion that publications aimed at academics are all that researchers should produce. While excellence should be valued above all – and publications in good-quality peer-reviewed outlets are a reasonable measure of quality – such publications alone will never suffice, since good research must have an impact upon something other than researchers in the same narrow field. It must make a difference.

The best psychological research should inform, amongst other things: the psychological curriculum, other disciplines, professional practice, the delivery of public services, and the design of human artefacts.

I will elaborate with some detailed examples from my own research area later in this article. But for now, consider how cognitive psychology at the MRC Applied Psychology Unit during the middle part of the last century affected our teaching of psychology (e.g. limited channel capacity and selective attention) and the design of UK postal codes (fitting neatly within the span of short-term memory). Consider how the best work in the currently hottest area of cognitive neuroscience has emerged from psychologists interacting with and influencing other varieties of brain scientist. Consider how the cognitive interview, developed by psychologists, has become common practice in police witness interviewing worldwide.

It is time to redress the imbalance that perceptions of the RAE may have created, and to underline that research must have impacts as well as excellence. Excellent basic research will develop theories that should find their way into textbooks, and excellent applicable research will actually be applied.

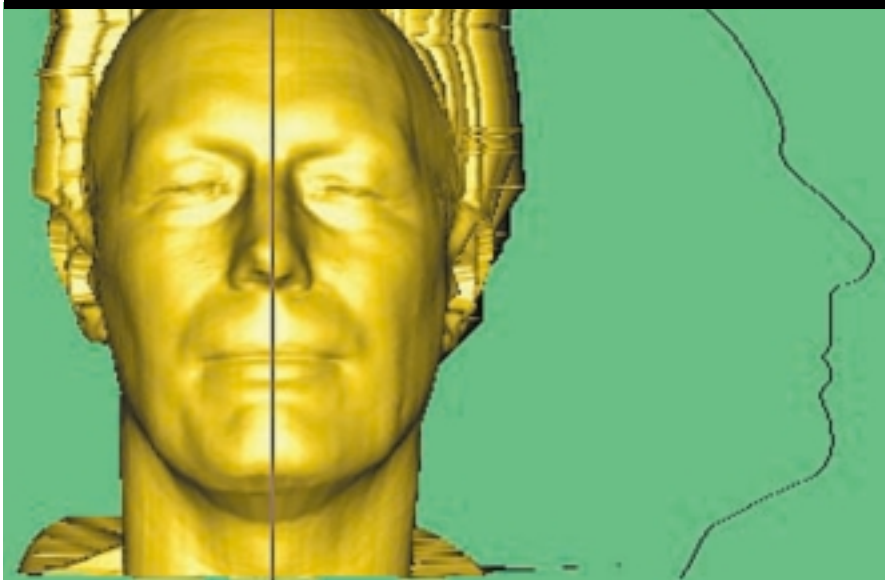
In my own career I have had great fun – and learned a lot – working beyond the boundaries of my regular academic activity. I think these activities have without exception enriched my 'regular' research in perception and cognition. I now turn to some examples of projects that – with due modesty – I think have made a difference to people other than those academic psychologists with whom I most readily interact.

## Changing the change

I have already used the MRC Applied Psychology Unit as an example of a place that generated excellent interactions between theory, application and everyday life. Some readers may not know that APU researchers (Pat Wright and others) were involved in the design of the 50p coin when it was first introduced at decimalisation. When I was a new lecturer at the University of Nottingham my then boss Ian Howarth was approached by the Royal Mint to conduct some similar investigations of a mystery coin (coin X). Ian wisely (for my career) suggested that I took on this project, and thus began a series of investigations into potential confusions between coin X (the £1 – of course!) and other current coinage. In conducting this research I adapted and extended the methods that had originally been developed at APU in work on the 50p. If you are interested in the details of this story, see Bruce (1989), or if you feel really keen Bruce *et al*. (1983), or Bruce & Hellawell (1988) for work on other coins.

The bottom line, however, is that as a result of our experiments the £1 coin is perceptibly thicker and heavier than it was planned to be. The additional thickness made all the difference in terms of the ease with which blind people – or others in difficult lighting – could discriminate this from other similar-sized coins by touch alone. This scientific work has probably made more of a difference to more people's lives than all my other research put together – yet the papers have the lowest citation counts of any of my work (one reason why citation counts are not necessarily the best measure of impact).

**FIGURE 1 Surface image of Alf Linney's face produced by his laser scanner; the line shows the measurement of the profile – the surface is built up from such measurements made around the full head (from Bruce & Young, 1998)**



## Changing faces

A second example of working beyond the normal boundaries arises through work with other disciplines. In the late 1980s we were anxious – for theoretical reasons – to be able to manipulate the 3D surface of a face, rather than just aspects of the 2D facial pattern. Mike Burton and I made contact with Alf Linney, a medical physicist working at University College London, who was developing methods to measure and display the facial surface through work with plastic surgeons. Figure 1 shows a marvellous image of Alf's own face, measured with the laser scanner he developed.

Alf's interests in human face perception and our own converged. He wanted to know how changes to the face surface affected how the face looked for both aesthetic and forensic reasons, while we wanted to know what use the human brain itself made of information about 3D surface structure when constructing internal representations of faces. This liaison between our groups led to collaborative publications that neither team alone would have produced (e.g. Bruce, Burton *et al*., 1993; Bruce, Coombes *et al*., 1993) and led on to other productive work at the interface between psychology, image processing and engineering (e.g. Hill *et al*., 1995).

## Changing the rules

A further interface arises when we attempt to use psychological research to change some aspect of practice or policy. In our current work we are trying to develop new graphics tools and techniques to help witnesses recall faces using computer composite systems.

This work with Hayley Ness, Peter Hancock and Charlie Frowd is conducted in partnership with Leslie Bowie from a local company, ABM, that develops and markets software for police investigations; and we are sharing the results with many users from police and other legal groups. In one strand of our work we have shown that it might be helpful for witnesses to develop composites in more than one viewpoint (Ness *et al*., 2002), and in another we have shown that better likenesses can result from merging composites produced by different independent witnesses into a combined (morphed) image (Bruce *et al*., 2002; see

Figure 2). These results are feeding in to the guidance given to investigating officers, police artists and composite operators about the construction and use of multiple composites.

The design of our experiments, and the nature of recommendations that can arise from such studies, requires an understanding of both legal and operator constraints that affect how witnesses can be questioned in practice. We have learned a great deal interacting with such professionals, and other psychologists with long-standing experience of such applicable research, and I believe our science has benefited from these perspectives.

## Bringing psychology to society

A final interface is between our discipline and the general public. There has been lots of recent emphasis on public understanding of science; spurred on by this, Andy Young and I (with help from many other contributors, including my colleague here Peter Hancock) developed an exhibition about the science of the face at the Scottish National Portrait Gallery in Edinburgh (see Bruce & Young, 1998; Young & Bruce, 1998). This later travelled from Edinburgh to Cardiff, Belfast (for the BPS conference in 1999) and Newcastle.

In our exhibition we used portraiture to illustrate what we understand about how we perceive and remember faces. The success of the exhibition was influenced immensely by the enthusiasm and creativity of the Keeper of the Scottish National Portrait Gallery, James Holloway, who encouraged us to make portraits themselves an integral feature of the scientific exhibition. To illustrate morphing, for example, Peter Hancock developed a series based around three portraits of Bonnie Prince Charlie (Figure 3).

Left to our own devices, Andy and I would undoubtedly have developed a self-contained exhibition to sit in the corner of an art gallery. But the input from the specialist on art, and his eye for what would appeal to the public, made the exhibition what it was. We'd never have had such fun (or such influence) publishing in the *Journal of Experimental Psychology*.

And this brings me again to the BPS and the unique possibilities for broad-based dissemination offered by the Society. The centenary slogan was 'Bringing psychology to society', and during 2001 the Society funded a series of public lectures (at all the major British academies for science and social science), exhibitions (in Parliament, at the Science Museum and the National Portrait Gallery in London), travelling stalls (e.g. a stand at the Royal Cornwall Show, a bus in Glasgow city centre), and many diverse publications and events (e.g. the supplement in *The Times*, and sponsored films in Leicester). Terrific efforts from staff and members underpinned all these activities. We could not regularly engage in such large-scale events – but let's not leave it for another 100 years to reach out in such diverse ways.

To conclude, good psychological research must impact upon potential students and their curriculum, on professional development, on public policy and on industry. Such impacts require broad dissemination through books, digests, exhibitions, videos and interactive media. Journal articles matter, of course; but journal articles alone are not enough. The RAE must measure the quality of research, but should also attempt systematically to examine and assess impacts (and I don't mean through citation analysis). While the current government policies emphasise the commercialisation of research, my own emphasis is on 'knowledge transfer' in the broadest sense. The British Psychological Society has a core object to promote and diffuse knowledge of psychology, and should be able to play a lead role in ensuring that high-quality psychological research impacts upon professional practice and public policy, the psychological curriculum and society.

FIGURE 2 **Four witness composite images of a single target female face, and their combination through morphing; the target is shown for comparison (bottom right) (from Bruce *et al.*, in press)**

FIGURE 3 **Morphing Bonnie Prince Charlie, produced by Peter Hancock from three original portraits at the Scottish National Portrait Gallery (shown on the diagonal top left to bottom right) (from Bruce & Young, 1998)**

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# Chair – Psychologist Policy Committee

## *Call for expressions of interest*

The Chair of the Psychologist Policy Committee, Dr Graham Powell, comes to the end of a three-year term of office next year at the Society's AGM. Although this term is renewable, this is a call for expressions of interest from other Society members who might wish to take on this role.

The PPC Chair is an observer on Council and a member of the Publications and Communications Board (PCB). The PPC meets three times a year at the London office, Council has three meetings a year in London, and the PCB has three meetings in London and one at Annual Conference.

The main role of the PPC is to be responsible to the PCB for all matters of policy development, maintenance and coordination regarding *The Psychologist*, and to support and monitor the performance of the editor in implementing these policies.

A job description for the post is available on request from the Society's office. If you want to discuss the post informally and in confidence, please contact the present Chair, Dr Graham Powell, by e-mail (POWELLlondon@compuserve.com).

If you wish to be considered for the post, a statement of interest form is available from Dawn Schubert in Leicester (e-mail: dawsch@bps.org.uk).

The deadline for the receipt of completed statement of interest forms is **Friday 10 January 2003**.