

# From the British Association

The theme of this year's British Association Festival of Science (University of Leicester, 9–13 September) was 'Science and the quality of life'.

JON SUTTON reports.

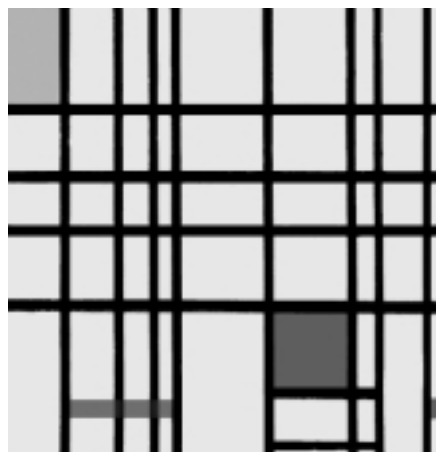
## Picturing the golden ratio

**N**EXT time you're hanging pictures or looking through a viewfinder, think of the ratio 8:13. This 'golden ratio' pops up everywhere in art and nature, and people seem to like it: painters place key parts such as the eyes eight thirteenthths of the distance up or along their canvas, even the logarithmic spirals of seashells are based on the magic number.

In his Presidential Address, Chris McManus (University College London) demonstrated the way that he and others before him have experimented with this

golden ratio. After concluding his work on the ideal geometry of angels (they should be spherical, apparently), the 19th-century German scientist Gustav Theodor Fechner moved to testing the golden ratio by presenting subjects with 10 squares and rectangles of varying shapes. No one chose the 'golden ratio' rectangle as their least favourite, and it beat the lot for 36 per cent of people. In paired comparisons McManus found that Fechner was right, although there was individual variation in preference and the golden ratio was not so much the most preferred as the least disliked.

McManus moved on to seeing if sixth formers could tell a fake from a real Piet Mondrian, a Dutch artist who made use of the golden ratio. They did indeed perform better than expected by chance. Mondrian was doing something right: experimental analysis and computer manipulation is only just getting to the bottom of what.



Getting something right

## Artistic personality – not so tortured...

**T**HE image of the tortured, eccentric 'artistic personality' may be exaggerated. Andrew Steptoe (UCL) claims that it stems from a 'saliency heuristic', in that two co-occurring rare events (in this case creative talent and madness) are seen as causally linked. He also suggests that spells of mania could actually increase chances of recognition in a competitive world, or that other mental health problems could be a result of artistic success rather than a cause.

Indeed, creativity can be a blessing; for example, playing a musical instrument has a positive effect on educational achievement, cognitive abilities, social development and identification with school, according to Alexandra Lamont (University of Keele).

## WISEMAN SPEAKS

**A**S a Reader in the Public Understanding of Psychology, Richard Wiseman (University of Hertfordshire) is a fitting recipient of the British Association's Joseph Lister Award, given to scientists with a talent for communicating with a non-scientific audience. Judging by how his intriguing demonstrations and slick one-liners captivated this crowd, it's richly deserved.

There were several genuinely surprising moments in his talk – not something you can often claim. Could those tiles on that floor really be the same shade? (See [www.bcs.mit.edu/people/adelson/checkershadow\\_illusion.html](http://www.bcs.mit.edu/people/adelson/checkershadow_illusion.html)) And if you haven't seen Richard's demonstration of inattention blindness, I won't spoil it for you. But it did raise the interesting question of what happens when scientific research is hypothesis driven. What are we missing because we are not looking for it?

Wiseman demonstrated how simple psychological mechanisms underlie classic magic tricks. The 'French coin drop' is all down to where the magician directs your attention, and 'psychic abilities' rely on population stereotypes (from an array of four symbols we like the second from the left, particularly if it's a star) and 'multiple outs' (a different way of revealing the magician was correct, for each possible option).

In a live demonstration of lie detection a volunteer managed to fool the polygraph, the voice stress analyser, and pretty much everyone in the audience. Wiseman explained that our poor lie-detection abilities are due to a mismatch between how we expect liars to behave and how they actually do. They generally won't sweat, shift around or avoid eye contact: instead we should look for 'over-controllers', speaking in short sentences. Wiseman's best tip was for spotting who's only pretending to laugh at your jokes at a party: look for the non-fakeable lines at the side of the eyes. A depressing experience, he claimed. But not tonight.

# A touchy subject, I feel

**L**OOKING at a part of your body improves your sense of touch at that place. And there is more activity in the area of the brain that deals with touch (the somatosensory cortex) when you are looking at the area being touched compared with being touched and looking at anything else.

Marisa Taylor-Clarke (a research assistant at the Institute of Cognitive Neuroscience, UCL) asked participants to lightly touch the forearm of a partner with the tips of two pens. The experiment started with the pens about 7cm apart and both touching the skin at the same time, then randomly switching between one or both pens while moving them closer together. The separation between the pens at the point where it becomes difficult to tell the difference between one and two touches is called the two-point discrimination threshold – a basic measure of how good our sense of touch is.

In the four conditions people could either see their forearm, a magnified view of it, a neutral object that appeared to be in the same location, or darkness.

DAVE ROBERTS

## Finding the discrimination threshold

Critically, they never actually saw themselves being tapped, only the area of skin that was going to be tapped. But the separation between the pens at which people began to have difficulty telling the difference between one and two was much smaller when they could see their forearm, and smaller again in the magnified view condition.

So if you want to enhance a pleasurable sensation, look at the part of your body being touched. If the touch sensation is unpleasant (e.g. you are

having an injection), look away. There are also implications for rehabilitation therapy for stroke patients.

Every year more than 100,000 people in England and Wales suffer their first stroke, with severe loss of skin sensation. Taylor-Clarke now plans to investigate how long after seeing your skin the sense of touch is improved, whether the body part needs to be your own, and whether visual imagery could enhance the sense of touch in people who have lost their eyesight.

## IN BRIEF

Almost all infants under four months of age occasionally fail to point their eyes correctly at some targets, and so for a few seconds look as if they have a squint (strabismus). Patricia Riddell (University of Reading) found that this happened more when the infant had one eye covered, or when they looked from a near object to a far object and not from far to near. The results suggest that it is a primary failure in sensory development (motion detection) rather than poor control of the eye muscles, which results in strabismus.

John Stein (University of Oxford) has found that performance on tasks measuring how well people can hear sound frequency changes (warbling tones) and how sensitive they are to moving visual targets accounts for nearly two thirds of the individual differences in reading ability. He suggests this is down to differences in the performance of magnocellular neurones, and that this can be enhanced through dietary supplements, eye patches and coloured filters.

In a national evaluation of aggression replacement training with violent offenders, Clive Hollin (University of Leicester) found that the reconviction rate for the 113 who completed the course was half that of the 40 who didn't. The two-year test will be critical.

People who try to censor music that they think causes young people to kill themselves may just be adding to the problem. Adrian North (University of Leicester: see [www.le.ac.uk/psychology/acn5/acn.html](http://www.le.ac.uk/psychology/acn5/acn.html)) found that undergraduates who were told a song's ambiguous lyrics were 'life affirming' subsequently tended to describe it as such.

## GRAPPLING WITH GRAPHICS

**T**HE 'screenreaders' that blind people often use with their computers fall silent when they get to a graph. Mike Burton (University of Glasgow) has been investigating how to give blind people access to these rich sources of information (see [www.dcs.gla.ac.uk/~rayu/about.shtml](http://www.dcs.gla.ac.uk/~rayu/about.shtml)).

His experiments have used virtual reality techniques to give haptic and auditory interfaces. Touch is natural, fast, and good for building and exploring a mental picture of 3D objects. Burton demonstrated experiments with the Logitech WingMan mouse, which can be programmed to respond to lines with a change in friction on the mat or a virtual groove, and with a 'Phantom' device, which explores space through changing resistance on a stylus. Both methods were shown to replicate patterns of difficulty seen in sighted people (for example a bias towards thinking lines were sloping downwards).

Burton pointed out that blind people are still some way off being able to 'feel' virtual 3D objects with both hands: the present 'one-point interface' is a little like exploring a lecture theatre with a pencil. There is also an information/price trade-off; but the fact that blind people were more accurate when using the mouse – over £19,000 cheaper than the Phantom device – bodes well for relatively low-tech solutions to this complex problem.