Volume 17 Number 1
Spring 2004

The Skeptic

Death and the Microtubules

Also in this issue:

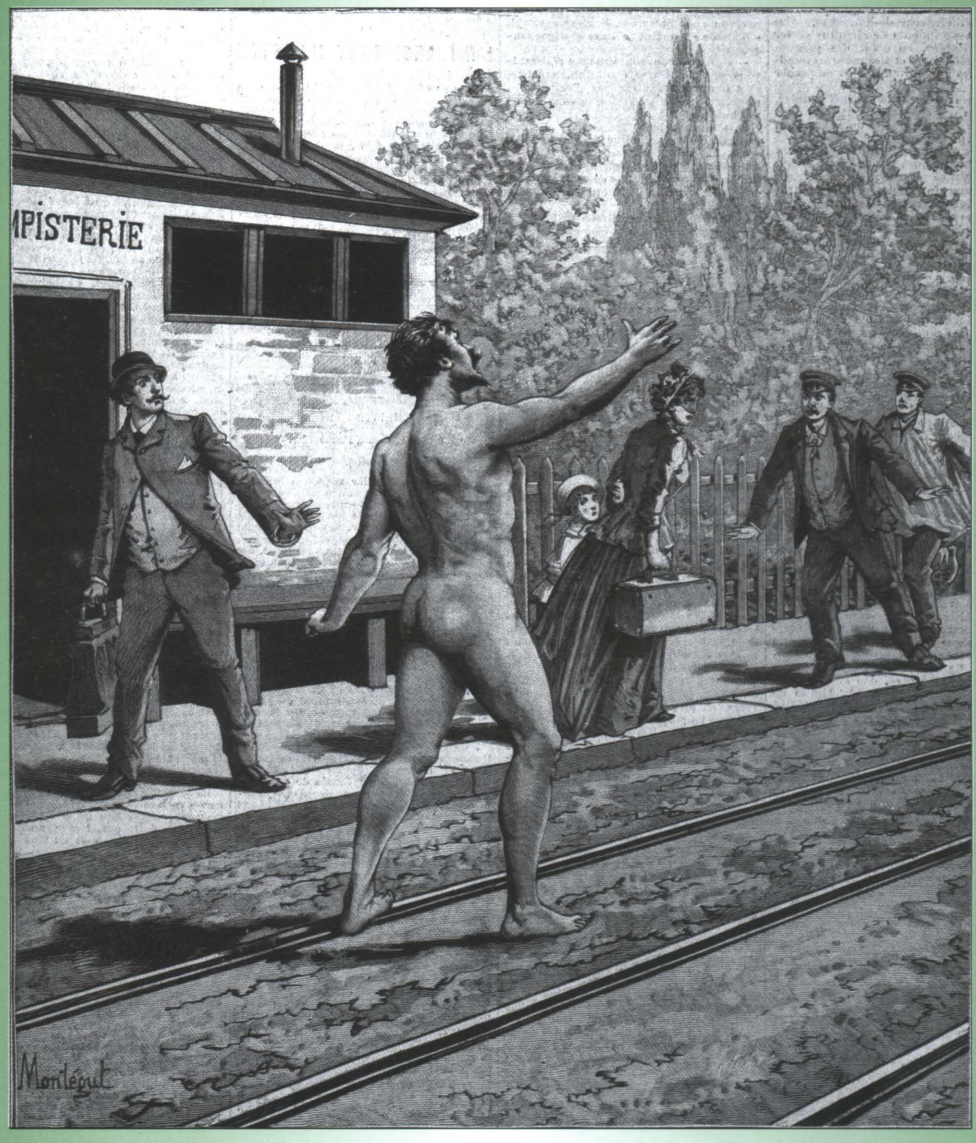
The Remarkable Healing of Dr. Mary Self

The Mosaic of Memory

Plus:

News. Book Reviews. Comment. Humour

Hilary Evans' Paranormal Picture Gallery



UNSUITABLE BEHAVIOUR

Monsieur G, a businessman from Lyon, is on his way to Paris when suddenly he forgets who he is and what he is doing. He strips off his clothes, leaves the train at the next station, and starts to run naked down the line until officials stop him.

Stripping off one's clothes is a recurrent feature of exceptional behaviour, and is generally supposed to symbolise a wish to quit one's present lifestyle, family, work and so on. Perhaps Monsieur G is on his way to a business meeting he dreads, and his subconscious takes this way of evading the rendezvous.

[Engraving by Montegut in 'L'Intransigeant' 26.11.1891]

Hilary Evans is co-proprietor of the Mary Evans Picture Library, 59 Tranquil Vale, London SE3 OBS.

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Editorial

Julia Nunn and Chris French

HELLO AND WELCOME to issue number 17.1 of *The Skeptic*. Sadly, the media continues to misrepresent scientists, which no doubt contributes to the low esteem in which scientists are viewed by much of the general public. You would be forgiven for thinking that the combination of being a sceptic and an experienced broadcaster would mean that being interviewed about Near-Death Experiences (NDEs) would enable Susan Blackmore to shine. Unfortunately, as her article *Death and the Microtubules* shows, Blackmore was hoodwinked, despite her clarity regarding the relevant concepts. But in this issue we are able to give her the opportunity to explain how it happened, present her argument as intended, and *en route*, provide a very readable account of some aspects of consciousness and the problems of linking different levels of explanation in physics.

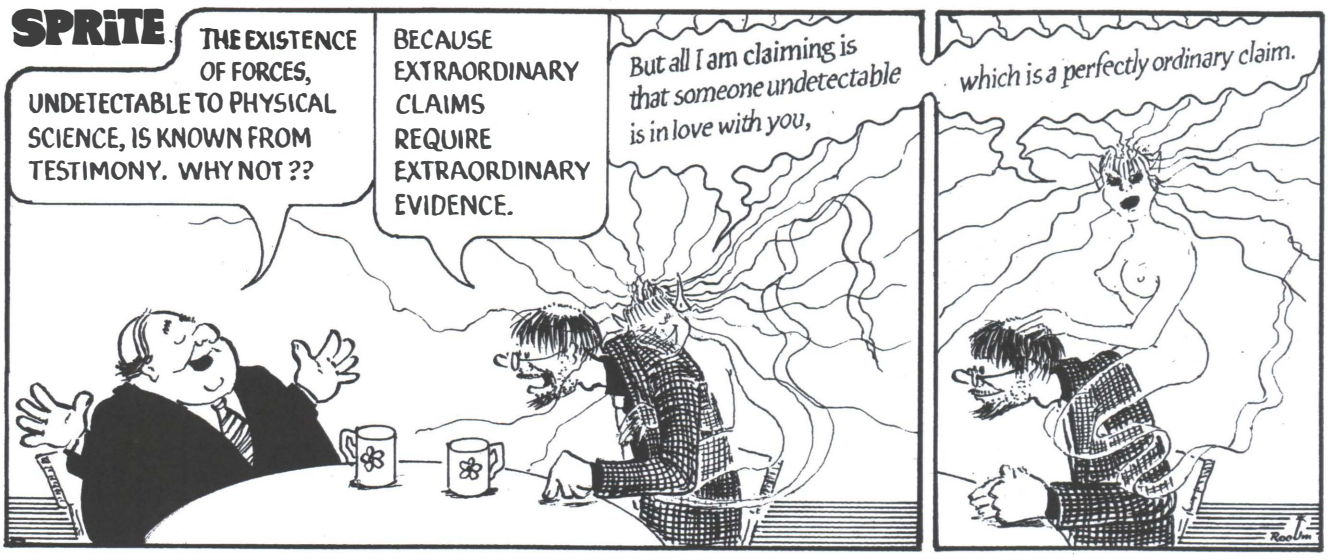
Our Chris French is no stranger to the media himself, and in our second major article *The Mosaic of Memory*, French describes a talk he gave on the reliability of memory (or, rather, what he *remembers* of the talk he gave). Although most of us accept that we forget things, the idea that we actually falsely construct some of our memories, without being aware of doing so, may be much more disturbing. The early high-profile examples of this phenomenon, seized upon by the media, were the cases of alleged recovered memories of childhood sexual abuse, which are now largely believed to be the result of some therapists planting false memories for events that never happened at all. But French also describes the more mundane ways in which false memories can arise, concerning everyday occurrences with spouses and friends. This is important, because it is easy to dismiss the uncomfortable idea that we have false memories if they only occur in rare situations, but much harder to do so if it can be shown that they also happen in quotidian circumstances. Perhaps we would be more willing to accept the idea that our memories are sometimes distorted, even when convinced they are correct, if the reportage of this topic didn't focus quite so much on alleged sex crimes.

And incidentally, as a scientist, French was asked to keep his talk "at least 95% fact free" ...

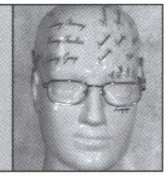
In our third article, Peter May questions the remarkable healing of Dr Mary Self, a psychiatrist, who tragically suffered a series of tumours but miraculously survived the last, when her prognosis seemed at its most bleak. According to the book she co-wrote, Dr Self believed it was a miracle that this last tumour disappeared completely. But closer examination revealed inconsistencies surrounding the medical findings that May tried to clarify using the correct channels. When thwarted, a TV programme went ahead regardless, which – you must have guessed by now – failed to be clear about the crucial medical facts. It's enough to make you want to watch only soap operas!

Elsewhere, as promised, Mike Heap presents coverage from The 11th European Skeptics Congress held in London in late 2003, and as always, we have our regular columnists, plus the letters, cartoons, and review sections.

With best wishes until the next issue, Julia and Chris



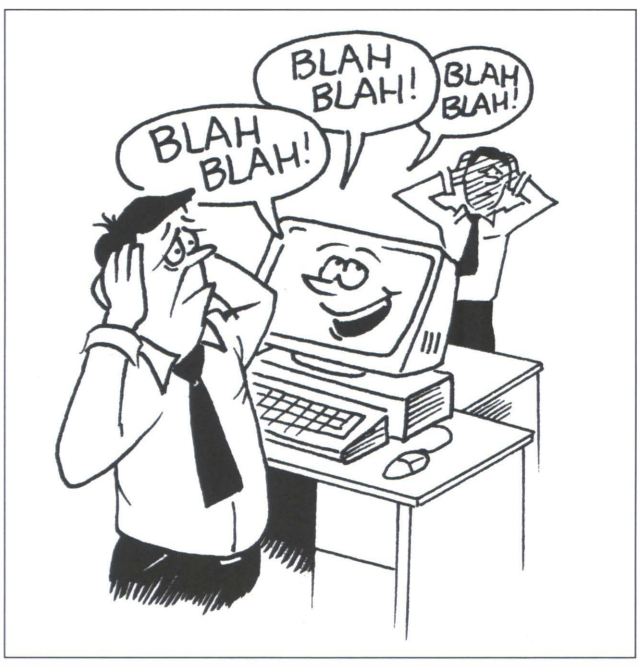
Hits and Misses



Drowning in exabytes

It's not enough for the US to account for about a quarter of the world's energy consumption while holding only about two percent of the population, but it is even further ahead in the information business. According to the 'How Much Information' report, updated for 2003 by the School of Information Management and Systems at the University of California at Berkeley, the US produced about 40% of the world's new stored information in 2002, including 33% of the world's new printed information, 30% of the world's new films, 40% of the new information stored on optical media, and about 50% of the information stored on magnetic media. Note that magnetic media (like hard drives) account for about 92% of this stored information. The study estimates that the amount of new information stored on these four media about doubled between 1999 and 2003. If this goes on, it won't be people the Earth drowns in, it will be information. About 17.3 exabytes of the stuff was transmitted electronically last year. (In case you didn't know, one exabyte = 2^{60} bytes = 221,152,921,504,606,846,976 bytes.) For the sake of comparison, the report estimates all the words ever spoken by human beings at 5 exabytes.

The study makes no attempt to quantify the relative value of the information stored in these different media, so we don't get to find out how much of that is pseudoscience. They say it's new information, but unless they've been listening to all those phone calls, how can they possibly know? But if you believed them when they said that computers would do away with the need for paper you'll be happy to know that paper use as a storage medium was up by about 36% between 1999 and 2002.



Trust no one

Did you know that hotel key cards contain your personal information? A thief could take the card, run it through a reader, and steal your credit card. Actually, that's not true. But it makes a good Internet-borne conspiracy-type rumour. So do the claims that the CIA killed JFK, MI5 killed the Princess of Wales, aliens are living among us, and the US government knew about the September 11 attacks well in advance and chose to do nothing because they wanted the oil. The truth, as they say, is just no fun.

Plus, it's still putting its boots on while those lies skid around the globe like demented quarks. The last of those theories – the one about the September 11 attacks – surfaced in the mainstream media recently, when former environment minister Michael Meacher espoused it publicly in *The Guardian*. Cue for *The Times*, not ordinarily known for shunning conspiracy theories that might sell a few papers, to discuss What's Happening to Us and get in a few digs at the competition. What's happening, essentially, is that the more uncertain we feel the more we believe that The Powers That Be are plotting against us. In the case of folks like Diana, JFK, and Elvis, these figures are so much larger than life to so many people that a significant percentage simply can't believe that they were taken out by something as ordinary as a drunk driver, an assassin, and a heart and/or drug problem.

The real problem, of course, is that there really are conspiracies in the world. It's not paranoia if they really are out to get you.

For debunking of conspiracy theories specifically, see *www.truthorfiction.com*; for debunking of a broader variety of urban legends, see *www.snopes.com*.

With her head tucked underneath her arm ...

There are good sceptical theories and bad sceptical theories, we know this. Bad sceptical theories dismiss people's experiences; good sceptical theories try to take account of and explain them. Increasingly, this is an important point; we should be looking at people's emotional reactions as interpretations that may be mistaken but may also have real causes that, if understood, can help us understand why so many people believe so strongly.

The University of Hertfordshire's Richard Wiseman recently did a nice study in the good sceptical line by sending a load of people to wander around Hampton Court Palace, the supposed home of the ghost of Cath-

erine Howard, Henry VIII's fifth wife, with floormaps and pencils and getting them to note how they felt at various points along the way. The team also took readings of lighting, temperature, smell, and magnetic fields, and compared the sets of data. Sudden changes in lighting and air currents, for example, increased the likelihood that someone would report a haunting. The conclusion: that people's brains are responding to environmental cues.

High on Delphi

According to the *Scientific American*, the Oracle of Delphi's visions have more to do with her breathing than her intuition. The oracle chamber was sited above intersecting fault lines in petrochemical-rich layers through which seeped ethane and ethylene gases. She was, in short, likely to have been in a narcotic state when she gave advice and uttered her dire warnings. In Plutarch's description, the chamber smelled sweet – as ethylene in fact does. Ethylene fumes also produce trances, euphoria, out-of-body sensations, and amnesia among test patients. It is known to have caused spasms and death – which was also the fate of some of the oracles.

It's an interesting theory – and another of those cases where we may learn more from accepting the descriptions observers give than by dismissing them, as well as another of those 'trust no-one' cases.

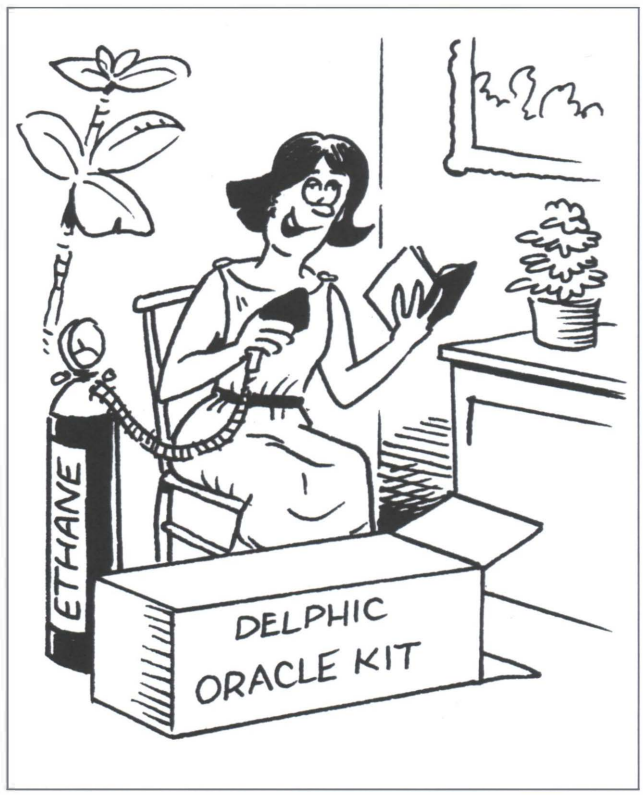
Breast implants: the return

In late 2003, an advisory panel to the US Food and Drug Administration voted to lift the ban on silicone implants, which was brought in a decade earlier when a number of women and their lawyers claimed that the implants had made the women ill. There was a lot of what you might call consequential damage. The lawyers won a record $4.25 billion settlement against the implant manufacturers, causing the bankruptcy of Dow Corning. Marcia Angell, then executive editor of the *New England Journal of Medicine* and now teaching at Harvard Medical School, wrote first a scathing editorial on the FDA's decision and then a book, *Science on Trial*, which contended that there was no evidence backing the claim that the implants harmed the women. Angell was in turn raked over the coals by everyone except the manufacturers. Studies of breast implants, however, have shown they do not cause the damage claimed.

Angell recently told the *Boston Globe* that she blamed the whole mess on the adversarial nature of courtroom battles. Lawyers seeking to prove a case look for the most extreme viewpoints they can. Science, however, is best served by moderation and careful thought. Let us hope the Daubert rules that require expert witnesses to cite well-accepted research and techniques will help in future. But there are plenty of other issues – mobile phone health scares, genetically engineered foods, MMR vaccines – where the science is at least somewhat at odds with the popular reaction.

Lightning strikes twice

Looking likely to join the ranks of strange stories about movies – you know, like the old saw that playing Superman is bad luck for anyone who does it – is the new film



The Passion of Christ. Two people connected with the production, actor Jim Caviezel and assistant director Jan Michelini, have been struck by lightning while they were on a shoot in a remote location in Italy. OK, here's the fun part: Caviezel plays Jesus, and they were only a few hours from Rome. Michelini in fact has been hit twice in this production. See this movie at your peril.

Let there be light

It's not often the local press run stories debunking stories of the paranormal (or the national press either), but the *Richmond Informer* recently published the news that two local residents had shown that pictures the *Informer* ran in April of a purported UFO in Richmond Park were a hoax. Two giveaways. First, the original claimants said the ball of light they'd seen and photographed was moving, but close examination of the pictures showed that it was in the exactly the same place in all of them. Second, the investigators were able to create near-identical images using Photoshop.

Thanks to this issue's clippings contributors: **Rachel Carthy, Sid Rodrigues, Steuart Campbell, Tom Ruffles, Ernest Jackson, the Wizard's Star List, *Skeptic News*, Phil McKerracher.** *The Skeptic* would like to remind clippings contributors to use the magazine's current address, listed on p. 3, rather than the old PO Box address, which has been phased out.

Skeptic at large . . .

Wendy M Grossman

Full circle

There was a great moment at the London Skeptical Congress in September (organized by the Association for Skeptical Enquiry and the European Council of Skeptical Organizations) when a bunch of us were going around a table introducing ourselves and I discovered that the two people diagonally across from me were the Irish Skeptics. We have Irish Skeptics!

It was wonderful to me because (what seems like) way back in 1987 when I founded this magazine, I was living in Dublin and Peter O'Hara (who did a lot of work helping get the magazine out during its first two years) and I organised a few public meetings in Dublin's Buswell's Hotel. The magazine was called *The British & Irish Skeptic* in those days (as a temporary title until we could come up with something better), and it was cranked out on a photocopier that ritually broke down in the middle of printing every single issue. And now here it is, 2003, and the Irish Skeptics are a real group having regular meetings. In, sometimes, Buswell's Hotel. It will be interesting to see how they develop. It sounds as though they're being welcomed a lot more than we were; somewhere I have a 1987 article about us describing us as party poopers.

There was a moment at the congress when I understood how those reporters felt. Now, I like to think I'm a rational sort of person. Calm. Willing to assess evidence. Not unduly insistent upon believing things that have little evidence to back them up. I think you'll agree that's all reasonable.

This does not, however, mean that I want to see everything I read in *The New Yorker* as a child washed away in a cloud of we-have-better-evidence-now. I am speaking of Dylan Evans's presentation on the placebo effect. I first encountered the placebo effect when I was ten or eleven, in an article written by the medical writer Berton Roueche. His stories combined medical detail with the techniques of detective stories. Long before Oliver Sachs, Roueche investigated strange medical phenomena and wrote up the results in his *Annals of Medicine* column. (In one story, the doctor/detective was one of my father's two closest friends, which is why we had many copies of Roueche's books scattered around the house.)

Why did 11 men turn blue (cyanosis)? Why did one man turn orange (a surfeit of tomatoes and carrots)? What was wrong with the woman who seemed perfectly normal but who found that whenever she tried to walk the floor rolled and pitched as though she were on board ship in a force-9 gale (labyrinthitis)? And why did telling some people they were being given remedies for what ailed them cure them even though the remedies were nothing more potent than sugar pills?

On reflection, some of the stories Roueche told about the placebo effect seemed pretty outrageous, even to me as a child. The person, for example, who was said to have developed burns on the skin along her arm when she was told that the room temperature rod being drawn along her arm was red-hot. That seems pretty outlandish, I've got to say, and the kind of thing that someone would produce who wanted to prove that mind could overpower matter.

And now along comes Evans to say – in his book *The Belief Effect* (out in paperback in January 2004 as *Placebo: Mind Over Matter*), which I'd missed, and at our Congress – that a lot of what passes for fact about the placebo effect is medical folklore, and very little of it based on empirical evidence. He cited in particular Henry Beecher's influential 1955 study, which seems to be the source of the commonly used figure of 30% for effectiveness of placebos. Beecher strongly advocated using placebo-controlled clinical trials. But, says Evans, since we do not also include a no-treatment group in such trials, we actually have little data on how strong the placebo effect is, if it exists.

Evans himself argued that the placebo effect is present in a limited set of circumstances: pain, inflammation, depression, anxiety. He does not believe there is any reason to believe placebos can help recovery from most medical conditions, including cancer.

To me, this makes sense. A number of conditions – those listed, but also allergic reactions such as asthma – are exacerbated by fear and anxiety. Is it so unlikely that panicked patients with real conditions, told that they are being given remedies, will get at least somewhat better simply because they believe they are being helped? If part of what's ailing you is fear, comforting that fear should improve things. If I were researching the placebo effect, I would want to test this particular line of thought. Because, when you really think about it, unless you believe in magic or think that mind can overpower matter, most likely placebos are not going to have a lot of effect on physical conditions. You wouldn't expect sugar pills to do much for broken bones, would you? Beyond maybe relieving a bit of the pain?

One of the most alarming things, Evans said, was the way he started his research: by calling up a load of GPs and asking them if they would be surprised if it turned out that placeobs could cure cancer. Virtually all said no.

Wendy M Grossman is founder and former editor (twice) of *The Skeptic*, and author of *From Anarchy to Power: the Net Comes of Age*. Wendy M Grossman also writes for *Scientific American*. Her web site is at *http://www.pelicancrossing.net*.

Death and the Microtubules

Susan Blackmore shows that even experienced interviewees can be hoodwinked.

I NEVER SHOULD have said yes. I'd promised myself I wouldn't do any more 'rent-a-sceptic' slots, and here I was appearing on one of the worst ever TV shows on near-death experiences (NDEs). So how did it happen?

The producer, Kate Broome, told me that *The Day I Died* would take the science seriously, that there would be a searching exploration of the whole topic of consciousness, and that this programme would be entirely different from its predecessors. So I believed her. She and her BBC team came to my house and we did a very interesting and enjoyable interview. We covered not only the physiology of NDEs, but theories of consciousness, the reasons why quantum theories of consciousness fail, the nature of self and why NDEs might be genuinely mystical experiences without being evidence for life after death.

Then I saw the advance advertising: "NDEs used to be the domain of parapsychology, but now research by some scientists and medics is daring to suggest the impossible – that NDEs are evidence that the mind can live on after the brain has stopped functioning...". Different from its predecessors? Hardly. Popular? Of course. This is what every previous NDE programme has claimed, and this is what most people already believe.

In the end, as anyone who watched the programme will know, *The Day I Died* was just an updated version of all the myriad shows that have gone before. Some of the new cases were excellent, and the interviews with people who had experienced NDEs were fascinating, but the science was not. Peter Fenwick and Sam Parnia described their recent research and their belief that it proves the independence of mind. Rent-a-sceptic said her usual pieces about tunnels, lights and how they are constructed in the dying brain (they could have cut them from interviews I did ten years ago instead of carefully extricating them from what I wanted to say this time).

Finally they got to consciousness. With clever computer graphics and 'Horizonesque' hype they explained that brave scientists, going against the reductionist grain, can now explain the power of the mind to transcend death. It all comes down to quantum coherence in the microtubules. And to make sure the viewer knows that this is 'real science' the ponderous voice-over declared "Their theory is based on a well established field of science; the laws of general relativity, as discovered by Einstein."

This was where my fury erupted. As I wrote to the producer afterwards "it is dishonest to present a completely unworkable and mysterious theory as though it were real science, and to dress it up in the trappings of real science, as you did with Hameroff's theory. It may be true that you 'were very clear to point out that is not proven', but pointing out that it is not proven is not the same as pointing out that it (a) does not make sense, (b) does not fit with lots of reliable evidence about the brain, and (c) is rejected utterly by most scientists and philosophers who know about it." And there is no way they could claim ignorance as I had explained, in the interview, the many problems with the theory.

So, in case you are wondering, why can't quantum coherence in the microtubules explain consciousness and the NDE?

It is dishonest to present a completely unworkable and mysterious theory as though it were real science, and to dress it up in the trappings of real science

The theory first appeared in *The Emperor's New Mind* by mathematician, Sir Roger Penrose (Penrose, 1989). Penrose argues that when mathematicians have conscious insights they are not doing ordinary computations such as might be carried out by a computer or a neural network. Instead they must be capable of handling non-computable functions. He accepts that our brains are completely controlled by physics of some kind but, he claims, it needs to be an entirely new kind of physics.

Penrose explains that there are two levels of explanation in physics; the familiar classical level used to describe large-scale objects, and the quantum level used to describe very small things. The trouble starts when you move from one to the other. At the quantum level superposed states are possible; that is, two possibilities can exist at the same time, but at the classical level either one or other must be the case. So when we make an observation at the classical level, the superposed states have to collapse into one or other possibility; a process known as the collapse of the wave function. Penrose argues that all conventional interpretations of the collapse of the wave function are only approximations, and instead proposes his own theory of 'Objective Reduction'. This new process is gravitational but non-local in nature. This means that it can potentially link things in

widely separated areas, making large-scale 'quantum coherence' possible. Although this can only happen when the system is isolated from the rest of the environment, Penrose suggests that this might happen inside the brain – but where?

It was the American anaesthesiologist, Stuart Hameroff, who suggested that the answer might lie in structures called microtubules. He had come across evidence (subsequently found to be invalid) linking microtubules to the abolition of consciousness in anaesthesia. He reasoned that microtubules might therefore be necessary for consciousness. This was the idea that gave rise to the Penrose-Hameroff theory explained so enthusiastically in *The Day I Died.*

Microtubules are, as their name suggests, tiny tube-like proteins. Hameroff & Penrose (1996) proposed that their shape and the spiral structure of their walls might mean that quantum effects within them could be kept reasonably isolated from the outside, making quantum coherence possible. But why is this relevant to consciousness? Hameroff argues that the real problems for understanding consciousness include the unitary sense of self, free will, and the effects of anaesthesia, as well as non-algorithmic, intuitive processing. All these, he claims, can be explained by quantum coherence in the microtubules. Non-locality can bring about the unity of consciousness, quantum indeterminacy accounts for free will (see Dennett (2003) for reasons why it cannot), and non-algorithmic processing, or quantum computing, is done by quantum superposition. As for NDEs, on *The Day I Died*, Hameroff explains that when the brain stops functioning, the information in the microtubules is not lost. Rather it leaks out into the universe at large and then continues to hang together by quantum coherence. This, he claims, can explain how the conscious self can be experienced as hovering above the body.

So how good is this explanation? We can begin with consciousness itself, which is conventionally equated with subjective experience. The 'Hard Problem' of consciousness (Chalmers, 1996) is to explain how *subjective* experience can arise from (or perhaps *be*) the *objective* activity of brain cells. Penrose & Hameroff's theory has nothing whatever to say about this. If quantum computing does occur in the brain this would be very important, but it only adds another layer of complexity to the way the brain works. So we must still ask "How does subjective experience arise from objective reduction in the microtubules?" The strange effects entailed in quantum processes do not, of themselves, have anything to say about the *experience* of light or space or pain or colour or time.

One of the strengths of the theory is supposed to be that it accounts for the unitary sense of self, but nothing in the theory explains how to get from interacting quantum effects to the feeling that 'I' am a continuing self who makes decisions and lives my life. Also, as we have seen, the theory requires that the quantum process is isolated from the rest of the environment, but a hovering self during an NDE would not be.

Several commentators have pointed out these, and many other problems. Many conclude that the theory just replaces one mystery (subjective experience) with another (quantum coherence in the microtubules?). Even people renowned for their unconventional thinking have rejected it outright, such as computer engineer and futurist, Ray Kurzweil (Kurzweil ,1999). But the most devastating critique is made by philosophers Rick Grush and Patricia Churchland. They take Penrose's argument step by step, and demolish each one.

Does the near-death experience prove that the mind can live on after the brain has stopped functioning?

An obvious problem is that microtubules are not specialised structures confined to brains: they occur in almost all cells of the body, in both animals and plants, and are involved in supporting the cell's structure, in cell division, and in transporting organelles within the cell. It is true that some anaesthetics affect microtubules, but many others do not, even though they obliterate consciousness. Also drugs are known that damage the structure of microtubules but appear to have no effect on consciousness, and there is no evidence that microtubules are implicated in other major changes in consciousness, such as sleep-wake cycles.

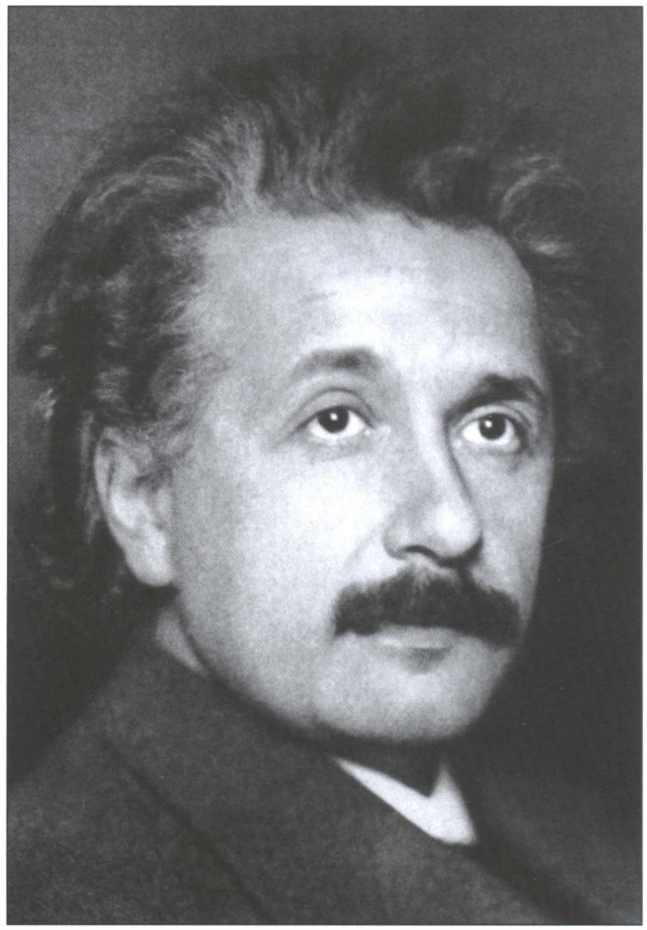
Concerning the physics, Grush & Churchland argue that microtubules cannot provide the conditions of purity and isolation required by Penrose's theory, nor could effects be transmitted from one microtubule to another, as is required for explaining the unity of consciousness in the way Penrose requires. In addition the theory provides no explanation of how the quantum effects could interact with effects at the level of neurons, neurotransmitters, and neuromodulators, when the microtubules are supposed to be isolated

from their environment.

Grush & Churchland (1995) conclude that "... the argument consists of merest possibility piled upon merest possibility teetering upon a tippy foundation of 'might-be-for-all-we-know's ... we judge it to be completely unconvincing and probably false." (p. 12). Churchland (1998) puts it even more strongly: "Quantum coherence in the microtubules is about as explanatorily powerful as pixie dust in the synapses." (p. 121).

They also ask why such a flimsy theory has proved so popular. Perhaps, they suggest, it is because some people find the idea of explaining consciousness by neuronal activity somehow degrading or scary, whereas 'explaining' it by quantum effects retains some of the mystery.

Whatever the reason, the TV show proved equally palatable, and if the producers' aim was popularity, then they certainly succeeded. Most viewers want to believe in life after death and they like to see 'evidence' that confirms their traditional dualism. I accused the producers of making a dishonest programme and misleading viewers, accusations they strongly denied. Kate Broome replied that "I think we tried to at least suggest that there are other ways of looking at this subject other than in a reductionist way". Yes, they did. It's just that every previous programme on NDEs has done exactly the same, giving viewers the answers they want rather than trying to find out the truth. Although we may never get to see it on TV, the real science of NDEs is much more exciting than quantum coherence in the microtubules.



A theory of consciousness based upon Einstein's theory of general relativity?

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Dr Susan Blackmore is a former psychology lecturer and researcher, and now a full-time writer, lecturer and broadcaster. Her books include *The Meme Machine* (OUP, 1999) and *Consciousness* (Hodder & Stoughton, 2003).

SKEPTICS IN THE PUB

Speakers: TBA

Skeptics in the Pub is an evening held once a month (in a pub, strangely enough) for anybody who has an interest in, or is sceptical about, the paranormal. Each month an invited speaker gives a talk on their chosen specialisation. The talk is followed by an informal discussion in a relaxed and friendly pub atmosphere. You can find out more about the meetings on The Skeptic website: *http://www.skeptic.org.uk/pub.* This includes directions and maps to the Old Kings Head pub in Borough, where we meet. Alternatively, please contact Nick Pullar: 07740 450 950, *nickp@coleridge.co.uk.* The meeting begins at 7:30 pm and there is a suggested donation of £2.00.

Skeptical Stats

1. Number of members of Cambridge's Ghost Club: **280**

2. Cost of *The Spirit of Diana* DVD, a series of live séances conducted by Craig and Jane Hamilton-Parker: **£11.99**

3. Amount of air a breatharian needs a day to replace food: **1,000 pounds**

4. Cost of a 1999 mission to Mars that crashed because contractor Lockheed Martin had made its calculations using Imperial instead of metric measurements: **$125 million**

5. Average number of mistakes a driver makes every two miles: **1**

6. Percentage by which human DNA differs from that of chimpanzees and bonobos: **1.6%**

7. Year when Lord Haddington predicts crop circles will cease: **2012**

8. Year in which the Vinland map of America, forged by a Jesuit priest 70 years ago, was supposed to have been drawn: **1440**

9. Estimated annual value of wildlife crime: **more than £5 billion**

10. Average number of items from endangered species, both plants and animals, seized per day: **570**

11. Number of colours needed to colour a map drawn on a torus: **a maximum of 7**

12. Estimated percentage of the population that is allergic to peanuts: **2%**

13. Number of people who have died in crowd disasters since 1990: **over 2000**

14. Number of graphologists hired by the National Art Collections Fund to examine the last letter written by Mary, Queen of Scots (the conclusion: her mind was tortured): **1**

15. Number of questions each month in the Australian Skeptics' online Dr Bob's quiz: **6**

16. Estimated number of Americans who have been victims of identity theft in the last five years: **27.5 million**

17. Number of times a single holidaymaker claimed on insurance for having his appendix removed: **9**

18. Number of test subjects used by Halifax Bank of Scotland for voice-stress testing security software in a three-month trial beginning September 2003: **300 to 400**

19. Date of World Angel Day (Los Angeles): **4 October 2003**

20. Date of World Angel Day (London): **28 September 2003**

21. Number of children an October 2003 National Public Radio survey found had actually died of poisoned candy handed out on Halloween: **0**

22. Year by which two physiologists writing in *Nature* in 1992 predicted the gap between men's and women's running times for the marathon would close: **1998**

23. Year by which the same two physiologists predicted the gap between men and women would close over shorter distances: **early in the 21st century**

24. Average number of major sporting events per day, worldwide, that sports marketing company IMG is involved in: **9**

25. Percentage of US households that own shares in mutual funds: **50%**

Sources:

1 *The Times Magazine*; **2** http://www.psychics.co.uk/shop/spiritofdiana.html; **3** Wiley Brooks, http://www.gettingit.com/article/344; **4** *Business Week*; **5** *New Yorker*; **6** *Financial Times*; **7** *Daily Telegraph*; **8** *Sunday Times*; **9, 10** Interpol, *The Guardian*; **11** *Scientific American*; **12** *Scientific American*; **13** *The Sunday Telegraph*; **14** *The Times*; **15** http://www.skeptics.com.au/features/quiz/quiz.htm; **16** Federal Trade Commission; **17** Association of British Insurers; **18** BBC; **19, 20** Diana Cooper School of Angels and Ascension; **21** National Public Radio; **22, 23** http://homepage.ntlworld.com/david.winship/op2003.htm; **24** IMG (www.imgworld.com); **25** CNBC

Both Hits & Misses and Skeptical Stats depend heavily on reader contributions of clippings, story leads, and odd statistics. Please send contributions to news@skeptic.org.uk or via post to the address on the masthead (p. 3). For this issue, thanks to Tom Ruffles, Ernest Jackson, Steuart Campbell, Rachel Carthy, and Jock Cramb.

Skeptical Stats is compiled by **Wendy M Grossman.**

The Mosaic of Memory

Chris French considers the nature of memory.

ON SATURDAY, 25 January 2003, a play was presented at the Gulbenkian Studio theatre in Newcastle. The play, written by Josephine Fagan and entitled *Paper, Scissors, Stone,* explored the relationship between events and memories, interpretation and belief, true and false realities. The production was funded by the SciArt Initiative that supports collaboration between artists and scientists, awarded to Professor Pam Briggs and director and designer Neil Murray. I was invited to lead an interactive discussion on the nature of memory following the performance. I reproduce here, more or less verbatim, my introductory talk.

My talk was preceded by a brief introduction by Neil Murray in which he provided another example of a false memory from his own experience. He recalled how many years ago he and his wife had been on a train when they realised they were sharing a carriage with Paula Yates. Murray had tried to pretend that he was unimpressed at being in the presence of this celebrity, but his wife quickly struck up a conversation with Yates on the nature of motherhood. Murray distinctly recalled the fact that Yates had been embroidering a pair of jeans as she chatted. Over subsequent years, Murray had recalled this mildly interesting anecdote on several occasions. One evening, he was at a dinner with his wife sitting a few places away from him when he overheard her retelling the tale of her encounter with Yates. "But you didn't mention the jeans she was embroidering," he commented. "What are you talking about?" his wife replied. "Don't you remember?" he retorted. "She was embroidering those fantastic jeans? How could you forget them?" His wife's response caused him considerable consternation: "She wasn't embroidering anything – and, in any case, how would you know? You weren't even there!" Clearly, either Murray or his wife has a false memory for an event that they both insist they can clearly remember. My own comments follow.

I'd like to thank Neil for his introduction and I intend to follow his lead by illustrating the way memory works – and doesn't work – by mainly relying upon anecdotes. Neil wanted this brief talk to be (and I quote) "engaging and not at all like a science lecture … not too stuffed with facts". As a scientist, I obviously took *very* slight umbrage at the notion that a science lecture couldn't be engaging – but I guess I know what he meant. I will attempt to keep this talk at least 95% "fact free". But please take it as read that what I will say about memory is supported by a wealth of experimental evidence.

Textbooks often begin their discussion of memory with the rather obvious observation that memory does not work like a video camera. At first glance, it might strike you that it would be better if it did. Imagine if you could just press the right mental button and be treated to an exact mental replay of events you had witnessed in the past – wouldn't that be fantastic? Well, yes and no. One can think of several situations where it would be advantageous – settling arguments between Neil and his wife, for example. But I only have to think about the disorganised state of our video collection at home to realise some obvious problems. How on earth would you ever find the memory that you wanted?

But the problem isn't just one of locating the right bit of mental footage. Unlike material recorded on videotape, memories can and do change over time. A memory is more like a dynamic mosaic than a series of static unchanging frames recorded by a video camera. The very first time that you try to recall an event, even a recent one like getting to the theatre tonight, you will engage in a constructive process – you will literally build that memory from different types of bits and pieces. Some of those bits and pieces will correspond to more or less accurate memory traces laid down at the time you witnessed the event, but even then you may not put them together properly. Furthermore, the mosaic that you build will be influenced by things that happened to you before the event in question, that led you to have particular expectations and a particular way of viewing the world. It will also be influenced by your current view of the world and of yourself. There will also be a general tendency to fill in any gaps in such a way that the whole 'makes sense'.

A memory is more like a dynamic mosaic than a series of static unchanging frames recorded by a video camera

In general, we do not remember the surface details of events at all well; we remember the gist. We automatically extract the important essence of events and forget the superficial and transitory packaging. This is both the great strength and the great weakness of the way our memories work. It is a strength because we don't process and store all of the minutiae of life. We pay attention to the important stuff and forget the rest. Why lay down in memory a complete verbatim record of every conversation you ever had, every song you've ever heard? But the weakness is that sometimes we do need that level of detail and it will probably elude us. Or, worse still, we may confidently believe that a memory we hold is a true reflection of an event when in fact it may be distorted beyond recognition.

There are only a few areas where the accuracy of our memories is so important that we make any attempt to assess it. Examples include forensic psychology – it appears that we are probably far more impressed by eyewitness testimony to crimes than we should be. Anoth-

er area where it becomes important is my own speciality, which I call 'anomalistic psychology' for want of a better description – the psychology of unusual experiences and beliefs. Just how accurate are eyewitness reports of UFOs, ghosts and the Loch Ness monster? Or even alien abductions? And of course there's always the settling of marital arguments, as we've seen.

Most of the research on eyewitness testimony has been driven by the need to understand factors affecting the reliability of reports from witnesses to crimes. It is now generally accepted that such reports can often be wildly inaccurate, leading to gross miscarriages of justice. The circumstances surrounding crimes are often precisely those that will lead to poor recall. The event is unexpected, often over in seconds, and sometimes extremely frightening. Or it may be that the police need details of events that preceded a crime – events which no-one at the time realised would be that important. One obvious reason that we may fail to remember things accurately is simply that we failed to pay attention to the right details at the time. Typically, we pay attention to the information that is relevant to our goals at the time – and it can sometimes be amazing what we miss!

I can illustrate this with a true story of a visit to an estate agent that I made with my wife, when we were looking to move house about ten years ago. As we left the estate agent's office, having looked at details of various houses, I said to my wife, who is also a psychologist, "That was very strange. It reminded me of a psychology experiment." She was rather confused by this and asked me what I meant. I said "You mean you didn't see it?" "See what?" she said. I told her to look through the estate agent's window to see if she could see anything a little bit unusual. She did – and could not believe that she had failed to spot a full-size stuffed bison that for some unknown reason was on display in the office! This nicely illustrates the fact that people may vary in terms of what information they encode at any particular moment. My wife was very focused on house buying – what price, where, how many bedrooms – my mind was perhaps not so fully focussed on the important task in hand.

Many marital disagreements are based upon the realisation that one's own memory is far superior to that of one's spouse.

Recent research into what is known as 'change blindness' provides another illustration of our inattention to aspects of our surroundings. In a typical study, people queuing at a library issue desk are handed a form to fill in by the librarian. At one point in the interaction, the librarian disappears from view, as though retrieving a dropped piece of paper, but another completely different person emerges in their place. Around half of the participants simply do not notice the change.

A huge amount of experimental evidence, in addition to our everyday experience, shows us that our

memories are poor if we haven't paid attention in the first place. No big surprise there. But what about those situations where it's really important that we pay attention and get things right? Even here, our memory can play cruel tricks. Donald Thomson, a psychologist in Australia, was arrested by the police and forced to take part in a police line-up. He assumed he was being harassed in response to his strong views on the unreliability of such line-ups. Things got very serious, however, when he was identified by a very distraught woman and told that he was being charged with rape. It transpired that the rape had taken place with the television on in the room at the time of the attack. The program being shown was a live debate on the reliability of identity parades, featuring both Thomson and the Assistant Commissioner of Police. The victim had unintentionally based her description of the rapist on Thomson who was on television at the time. Fortunately, he had a large number of viewers to provide him with a watertight alibi.

I told her to look through the estate agent's window to see if she could see anything a little bit unusual. She did – and could not believe that she had failed to spot a full-size stuffed bison that for some unknown reason was on display in the office

There are, of course, those vivid memories that we just *know* are right. One example is so-called flashbulb memories. We can all remember with perfect accuracy where we were, what we were doing, who we were with, when we heard about the attack of September 11th – can't we? There seems to be something about such moments that burns the details into our very brains cells. I can still remember, for example, hearing the news of John F Kennedy's assassination. I was only 7 years old at the time, so when I heard the newsflash on TV, it didn't mean that much to me. But I remember ambling into the kitchen to tell my mum and dad about it anyway. It was from their reaction that I realised that this was news of stupendous importance. I used this example of a flashbulb memory in my lectures for years in my adult life and on one occasion happened to mention this to my mother. She told me that it just didn't happen that way at all. We were not at home and it was not me that broke the news. Interestingly, I had been the victim of a false memory that put me right at the heart of the action! Again, experimental evidence has shown that flashbulb memories –frequently held with great conviction – are often just plain wrong. American students recorded details of how they heard the news of the Challenger disaster the morning after it happened – who they were with, what they were doing, and so on. A couple of years later, many of them had completely different recollections of that event.

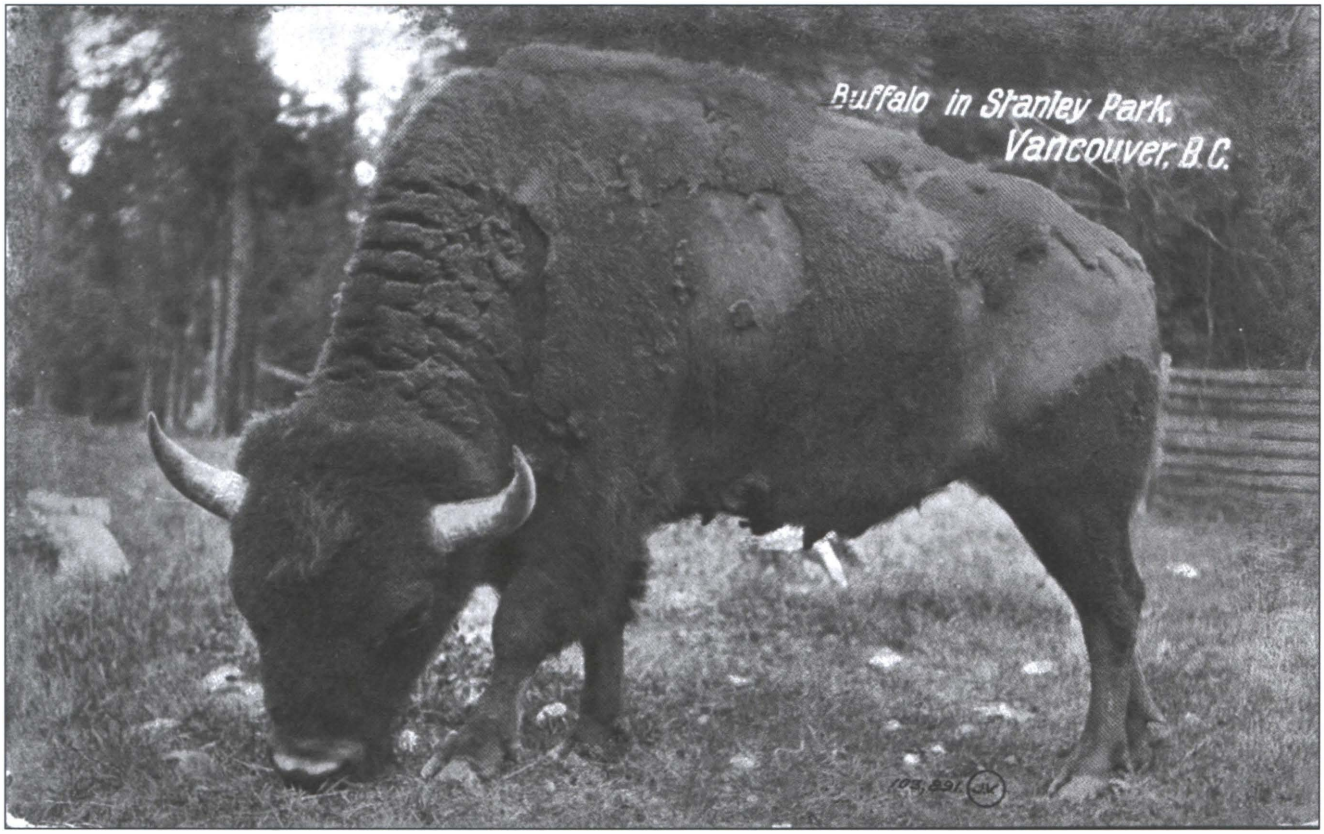
It appears that when we try to recall something, the mosaic memory we bring to consciousness consists of memory traces of the original event plus other memory traces, perhaps relating to other similar events or even to daydreams or fantasies. Gaps in memory will sometimes be effortlessly and automatically filled in to produce our recollection – and we will often have no way of knowing which bits we can trust and which we cannot. Sometimes we may be fooled into thinking that something really happened when in fact we only imagined or even dreamt it. Our ability to distinguish between memories for events that really happened and those memories that are internally generated is known as *reality monitoring*. An everyday example is trying to decide whether you really did lock the backdoor or just *thought about* it. At the other extreme is psychotic breakdown in which the sufferer is totally unable to distinguish between mental events and events out there in the real world.

Although psychologists have long recognised that firsthand accounts of witnessed events were unreliable, it is only within the last decade or so that research has been directed at the possibility that people may sometimes have rich and detailed memories for events that they have never actually witnessed at all. The main reason for this explosion of research into false memories was the sudden increase in cases of alleged recovered memories of childhood sexual abuse, especially in the USA. Typically in such cases, adults would enter psychotherapy suffering from a variety of common psychological problems such as depression, low self-esteem, or insomnia. As part of their psychotherapy they would engage in mental exercises, such as hypnotic regression and guided visualisation, intended to unlock any repressed memories of traumatic childhood events thought to be causing their problems. Many thousands of people who had entered therapy with no conscious memories of being abused as children became convinced that their now-aged parents had indeed inflicted terrible suffering upon them decades earlier. In some cases, these allegations included claims of satanic ritualised abuse, involving human sacrifice, cannibalism, sexual torture, and forced abortions. Many of these cases went to court and led to convictions even though the cases rested entirely upon verbal testimony. Families were torn apart in the most brutal way imaginable.

Experimental psychologists tended to doubt the accuracy of the memories recovered *via* hypnosis and related techniques. A huge amount of experimental evidence shows quite convincingly that hypnotic regression does not provide a magic key to unlock the unconscious mind, forcing it to reveal its hidden memories. Instead, the hypnotic regression procedure is such

that it provides a context in which individuals often produce an account mixing fantasy with pre-existing knowledge and expectations – and then believe with total conviction that the account reflects events that really took place. Indeed, experimental psychologists have expressed doubts about the very concept of repression itself. The idea that the unconscious mind can somehow automatically take over and hide away memories for traumatic events is not supported by any convincing experimental evidence, although there are many accounts of what appears to be repression occurring outside the laboratory.

happened to Elizabeth Loftus herself. Loftus's mother had died by committing suicide. She had drowned herself in a swimming pool, but Loftus had never actually seen her mother's body – or so she thought. Many years later, and long after Loftus had established her reputation as the leading psychologist in false memory research and one of the main critics of the concept of repression, she was attending a family get-together when one of her uncles insisted that she had in fact seen her mother's body. He said that Loftus was the person who had found the body floating face down in the pool. An image of her mother's lifeless body immediately filled



Might you fail to spot a bison in an estate agent's office?

In the early days of the controversy, those who believed that recovered memories were largely accurate would sometimes object that, although memory for peripheral details of a witnessed event might be distorted, there was little evidence that people were prone to false memories for episodes that had never actually occurred at all. Things have moved on since then, thanks to the pioneering work of Elizabeth Loftus, among others. We now know that it is alarmingly easy to plant false memories in a sizeable minority of the population using well-established experimental techniques. It has been shown, for example, that hypnotic regression is not the only way to induce false memories. Simply getting people to imagine events that did not actually take place is often sufficient to lead people to believe that they did witness or take part in the events in question.

The difficulties of deciding whether a memory reflects a real event or not is illustrated by something that

Loftus's mind. She was flabbergasted – for years, she had questioned the notion that the mind just locks away memories that are too ghastly to face. But it appeared she had done just that. Over the next few days, her memory of that terrible sequence of events become clearer and more detailed as she dwelt upon this horrible revelation. And then she called her brother to tell him – and he said the uncle was wrong, Loftus had not found the body! This was confirmed by other family members. Far from experiencing a recovered memory, Loftus had been the victim of a false memory. I should, however, point out that I only think I've recounted that story accurately, as I couldn't find the book where I read it when I wrote this talk – so maybe the whole thing is a false memory on my part?

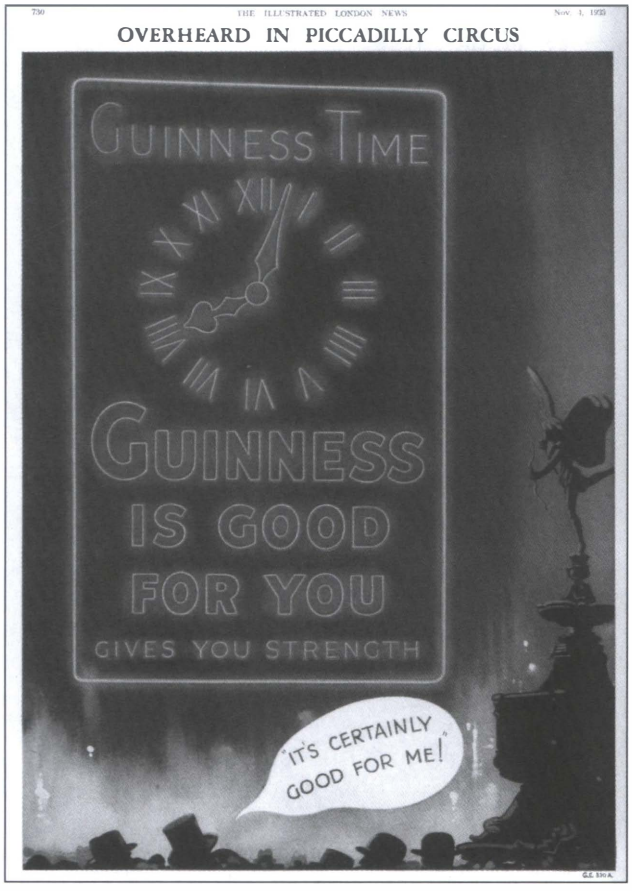
The events portrayed so well in the play show all too realistically how our views of things can change over time. Initially, the brother and sister are viewed benignly

– although one or two aspects of their lives are generally thought to be a little odd. But over time this view gradually changes, and with it the very memories that provide the evidence for those views. Each of the villagers make small contributions to the changing story, but the cumulative effect is like the sea eroding a rock. The final 'truth' explains everything – all the pieces of the jigsaw fit. Except, of course, that from our privileged viewpoint, we can see that this accepted 'truth' is far from historically accurate. There can be no doubt that the stories we tell ourselves and believe to be true, on both the individual level and on the societal level, are often just as fictitious.

Many thousands of people who had entered therapy with no conscious memories of being abused as children became convinced that their now-aged parents had indeed inflicted terrible suffering upon them decades earlier

For now, I'd like to finish with a somewhat more light-hearted practical demonstration of how our memory can play tricks. No doubt you would expect that you would remember a simple stimulus accurately if you had been exposed to that stimulus literally thousands of times during your life, especially if it was something a little bit odd and unexpected? Could all of those wearing a watch please have a look at it to see if the numbers are represented by Roman numerals. Without looking at your watches again, I'd like all those of you with the numbers represented by Roman numerals on your watch to raise your hand. Again, *without looking at your watches*, I am going to ask those people a question. How is the number '4' represented on your watch? If you think that it is 'IV', lower your arm. If you think it is 'IIII', keep your hand up. If you think it is something else altogether, lower your arm. Now you can all look at your watches again. I suspect that it's only the people with their arms still raised who have got the right answer. Are there people here who have just looked at their watches and noticed for the first time ever that the four is represented as 'IIII? And how many hundreds of times have you looked at your watch and

The frailty of memory undermines the reliability of identity parades.



After a few pints of Guinness, who cares how the four is represented?

never noticed that the four is represented in this unusual way? Almost everywhere else, four is represented as 'IV' in Roman numerals, but on the vast majority of clocks and watches it is represented as 'IIII'. But we often see what we expect to see and remember what we thought we saw.

My wife, Anne Richards, and I carried out a little study based upon this. We showed people a clock with Roman numerals on it – our kitchen clock as a matter of fact! Some people were told to draw the clock from memory, others to copy it while in full view. Those who copied it tended to represent correctly the four as 'IIII'; those drawing from memory misremembered the four as 'IV' in line with their general expectations for Roman numerals. We argued that people rarely notice this 'oddity' in everyday life because you don't need to pay attention to the numerals themselves to tell the time – only their relative position is important. As I said earlier, sometimes our memories will be inaccurate simply because we didn't pay attention to certain details at the time.

But even here there's an interesting postscript to the story. When we wrote up this paper for the *British Journal of Psychology* over 10 years ago, we included an account of how this odd aspect of clocks first came to our attention. Please indulge me while I briefly quote from the paper:

> "*The inspiration for this study was supplied by an incident involving the first author (CCF) and the second author's daughter, Lucy Richards, a couple of years ago, when the child was aged about eight. In the course of visiting her grandparents, Lucy's attention was caught by the Roman numerals upon a clock face in the room. The conversation then proceeded something like this:*
>
> *Lucy: On the clock, why does 'V' come after 'II-II'?*
>
> *CCF (without looking up): It doesn't say 'IIII'. It says 'IV' for four.*
>
> *Lucy: It doesn't. Look.*
>
> *CCF (looking at clock): Incredible! You'd think clock-makers of all people would know Roman numerals! But this is how it should be. (Shows his wristwatch.) Would you believe it, they've got it wrong here as well!*"

My wife agrees that this is more or less how it happened – except she insists that the conversation was between her and Lucy, not me and Lucy!

So we're back, more or less, to where we started …

Chris French is Head of the Anomalistic Psychology Research Unit at Goldsmiths College, University of London and co-editor of *The Skeptic*. He admits to having a lousy memory but is baffled when fellow psychologists claim that their memories are infallible.

From Medicine To Miracle

Peter May questions the remarkable healing of Dr Mary Self.

PUBLIC INTEREST IN 'healing' knows no bounds. The alternative medicine industry is vastly prosperous, and the range of therapeutic absurdities is endless. Respectable members of the medical profession, who have at least a working familiarity with the issues of medical science, all too easily become caught up in it. Already this year a GP has been disciplined by the General Medical Council for determining a homeopathic therapy for a child with gastroenteritis, using a suspended crystal as a dowsing instrument. The hint of redness in the child's hair provided extra evidence that phosphorus was the appropriate element to use (or not use, if it is diluted out of existence!). The fact that there is no credible scientific evidence for homeopathy, crystal therapy or dowsing seemed irrelevant to the practitioner, who was herself suspended by the GMC in an attempt to rid the medical profession of madness.

As a psychiatrist, she tells her story with the authority of someone who understands scientific medicine. She is young, attractive, medical – and cured

For all the magic, few of these alternative therapies hold out any hope of miraculous cure. Miracles are largely the preserve of the religious, and particularly the Christians. There have been few famous miracle workers in history. Most of those found outside the pages of the Bible owe their inspiration to those inside the Bible, the most notable, of course, being Christ himself. For many people, the word 'miracle' is itself a shorthand for 'the type of extraordinary healings that Jesus did'.

The pages of the Gospels describe numerous miraculous cures. They share a number of features in common. They were generally speaking instantaneous events, usually happening at a word of command. The physical illnesses described were incurable then and now, e.g. congenital blindness, a fixed curvature of the spine, a wasted and paralysed hand, deaf-mutism, even death itself. They were not the sort of psychosomatic conditions that commonly respond to alternative medicines. The healings were reported to have been complete and lasting. There is no suggestion that they were remitting diseases that recovered for only a limited period of time. Finally, of course, no other effective treatment was on offer.

While it may be difficult to define a miracle, certain characteristics, i.e. instantaneous, at a word of command; complete; cures of incurable diseases that could not spontaneously remit and where no other effective treatment was given, at least help us to describe a miracle, so that we might know one, if ever we saw one!

Why might we expect to see one? Well, considerable numbers of people claim they are happening all over the world today. They include intelligent people and even some members of the medical profession. Stories of such events have great appeal and spread like wildfire, especially if they have some sort of medical testimony to support them.

Examination of such stories, however, is less than straightforward. It is not easy to gain permission from the patient to have access to their confidential, medical data. In many parts of the world, there are no medical data to be obtained. Furthermore, if one story is exposed for being less than it is cracked up to be, ten other stories are immediately put forward to fill the void. Only a hardened cynic, it seems, could reject the flood of so many apparently compelling tales!

Finding a way through this avalanche requires an effective strategy. I believe I have found one. Instead of asking for examples, I invite whoever is making the claims to produce their *best* case. This is very telling. Immediately the great mass of healings can be put to one side. Rather than the investigator having the temerity to identify the most remarkable cases, healers can use all their knowledge and experience to select the best. The case to be examined is the case the healer (or claimer) puts forward. An improvement on this approach is to ask for their *three* best cases, so that no one can claim that an unfortunate choice has invalidated the inquiry.

To present a selection of three best cases is a challenge indeed. However, to the extent that these healers believe their own propaganda, they are likely to respond positively. Many healers have already published their selection in a 'best selling' book promoting their activity. Others are selected by the media, and promoted in newspapers and on television. For an investigation to take place, the subjects must of course give their signed consent for their medical records to be seen by others. To withhold such consent, of course, does nothing for their credibility.

Consider the recent story of Dr Mary Self recounted in a book of which she is a co-author (Self & Chaytor, 2001). On any level, it is one of the most impressive miracle stories of recent years. As a psychiatrist, she tells her story with the authority of someone who understands scientific medicine. She is young, attractive, medical – and cured.

As a teenager, Mary developed a rare tumour of her

leg. Its nature was not well understood. It is now, some 20 years later, thought to have been a rare tumour called a mesenchymal chondrosarcoma. It was clear at the time of onset that the therapeutic options were very limited; an above-knee amputation held out the best hope of a cure. Showing considerable perseverance, Mary picked herself up from this dreadful blow and went on to study medicine.

Seventeen years later, when she might reasonably have thought she was long since cured of her disease, she was devastated to find she had a recurrence in the form of a secondary tumour in her lung. Against the odds, this was successfully removed by surgery. The histology of the tumour matched with the original and led to a careful revision of the histological diagnosis of both leg and lung tumours.

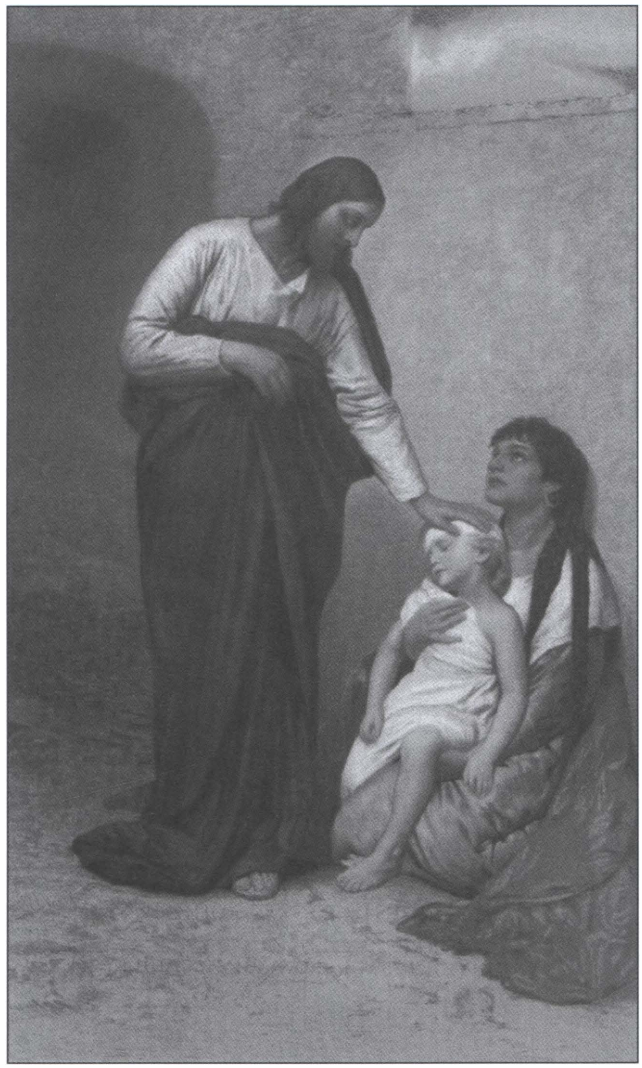
By now, Mary was married, had two young children and was training to become a psychiatrist. The emotional tension of her story is palpable! Within a year of her lung surgery, she now developed pain in her pelvis. CAT and isotope scanning revealed a shadow on her pelvic bone, which her doctors assumed was a further metastasis. Her prognosis was bleak. A former Catholic, and now a Baptist, Dr Self sought prayer from her many friends and contacts.

Further investigations were arranged to follow the course of this 'shadow' and help clarify decisions as to whether any further treatment should be attempted. Subsequent scanning, however, showed that the shadow had actually decreased in size! Over the next few months, it had disappeared completely. An estimated 10,000 people around the world had been encouraged to pray for her healing. Their prayers, it seems, were answered in an astonishing way, though not, it should be said, in the instantaneous manner of the New Testament miracles.

According to her book, written jointly with a tabloid journalist, Dr Self told her surgeon that she believed it was a miracle. He replied, "I will buy that." He is quoted on the dust cover as saying, "I have been a consultant for 11 years and have not seen a case like it." But what did he mean? Did he really think this was a miracle of the type reported in the Gospels, or was he saying he was lost for an adequate explanation and shared her great joy in being free of disease? In the confidential environment of a consulting room, where the doctor tries to sit alongside his patient in friendship and support, many a doctor has used words that should not be taken outside of that context. What did he really think?

The book does not report his further comments. However, the book's co-author, Rod Chaytor, wrote a double-page feature article about the healing of Mary Self in the *Daily Mirror* (Chaytor, 1999). There he recorded the surgeon as saying: "She is saying it is a miracle. I am saying it is unexplained. It is important to say we do not have proof this was a metastasis in the pelvis. Everyone assumed it was on the basis of the scans."

A biopsy had in fact been performed. The book describes the anguish associated with this, and the build up to the meeting with her surgeon when she would be told the result (p. 239). In the emotion of it, the reader is left to believe it was malignant. She states for instance, "It has been confirmed three times now" (p. 240). However, the text of the book fails to offer a clear statement to this effect from the surgeon. In the *Daily Mirror* article, however, Mr Chaytor reported that the biopsy did *not* confirm a metastasis and that the specialist believed the scans "weren't completely consistent" with a secondary. Why did he not include these statements in the book? Can the answer be that they undermine the whole story? What has Mary Self been healed of? It seems that we do not know.



Do modern claims of healing match up to those ascribed to Jesus?

I was invited by BBCTV to comment on her case. I accepted on the condition that Dr Self gave me written permission to clarify these details with her surgeon. It was thought that I was being unnecessarily fussy to insist on signed consent. However, previous investigations of miracle claims, that did not produce the desired results, have led to threats of High Court action against me and complaints to the General Medical Council. Nothing short of a signed statement of con-

sent from Dr Self would induce me to contact her surgeon and, I trust, nothing less would be required for him to speak candidly with me. Time and again, I have learned that there is no substitute for having direct access to the medical evidence when investigating such claims and that can only be done with secured permission. However, despite three requests, and numerous reassurances from the BBC, it became apparent that she would not agree and the interview was cancelled.

It seems to me that if the person claiming to be healed is not prepared to let the story be properly investigated, they should not be prepared to publicise it either. There seems to me no moral justification for them to both 'have their cake and eat it'.

It seems to me that if the person claiming to be healed is not prepared to let the story be properly investigated, they should not be prepared to publicise it either

Notwithstanding this, the programme went ahead (*Heaven and Earth*, shown on BBC1, 5 January 2003). It was introduced not only as a story "which has no rational explanation" but also as a miracle claim, which has "the physical proof to back it up". The televised account was inevitably abbreviated, but in so doing compressed and confused separate events. Dr Self spoke of her amputation and said, "seventeen years later my cancer relapsed." This was quite true, and a proven secondary was successfully removed from her lung. This, however, was not mentioned apart from the fact that she had to embark on further treatment. What we were told instead is that the tumour in her leg was followed 17 years later by a 'tumour' in her pelvis. The surgeon confirmed that her doctors feared the worst but did not embark on further treatment. However, they were astonished to find that this new shadow on her pelvis gradually disappeared. There was no mention of the fact that an attempt was made to biopsy it or that the biopsy did not confirm a malignancy. Nor was there any comment to suggest that its appearance was in any way atypical. Whether or not it looked like a tumour, 'physical proof', it seems, was not established.

Her story is certainly unusual. As Prof Chris French said in the television programme, spontaneous remissions of proven tumours do happen, although they are extremely rare events. Interestingly, some types of tumour are more likely to remit than others. Not enough is known about this particular cancer to say just how unlikely it would be. Unlike Christ's miracles, remissions are always gradual. Since her rare tumour has already raised its ugly head after so many years in the form of a lung secondary, no-one can confidently say she is now cured. Whether the shadow in her pelvis was also a tumour remains unproven.

Can prayer cure cancer?

The book itself makes tiresome reading. It describes the endless roller-coaster ride of her emotions, with overwhelming despair, rather than faith, exhausting the reader at every set back. Most disappointing was the failure, both in the book and on television, to be clear and straightforward about the crucial, medical details of this story.

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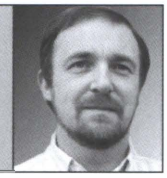
This article originally appeared in a shorter form in *Triple Helix*, the Journal of the Christian Medical Fellowship, and is reproduced here with permission.

Peter May is a General Practitioner in Southampton. He is a committed Christian and a member of the General Synod of the Church of England.

Rhyme and Reason

Steve Donnelly



Electromagnetic Protection

DID YOU REALISE that computers, mobile phones, televisions and other electrical devices all create alternating fields of magnetic energy that upset your brain and nervous system and destabilise your electromagnetic field? Of course, this may not immediately have any effect on your body but over a period of time, particularly when your bioelectric aura is weakened from stress and nutritional deficiencies, believe me, my sceptical friend, you are in BIG trouble. What happens, you see, is that these nasty energies enter the body through your acupuncture points and "flow through your piezo-electric connective tissue" to have a distinctly adverse effect on every cell of your body. Personally, I was ignorant of all this until I, thankfully, happened upon the web pages of the BioEnergy Fields Foundation (see http://www.bioenergyfields.org/index.asp?secid=5&subsecid=0). I'm glad I have never had acupuncture treatment because, presumably, the evil energies would penetrate more easily through the little holes. Fortunately, I now know that if I can keep my biovibration field in good nick – i.e. coherent and having a full frequency spectrum – then it will effectively block all this electromagnetic contamination and, all importantly, will not "transact with the anticoherent pool of environmental fields". And believe me, there is nothing worse than an embarassingly transactional, anticoherent biofield!

But, as Cherie Blair well knows, help is at hand through a large range of hi-tech but aesthetically pleasing devices available from prices ranging from under £30 to almost £2, 000. For instance, the Bioelectric Shield (see http://www.toolsforwellness.com/eb007.html) will act as an "energy balancer and energetic 'mirror,' reinforcing your body's natural energy field while also helping you cope with the energy overload and stress of daily life". This involves the careful arrangement of precision-cut quartz crystals and other minerals to stabilize your energy field. Although 'several systematic programs of kinesiological and meridian testing have confirmed a 100% - 400% boost in measures of energetic well-being' in users of this device, if, like me you have a PDA, a mobile telephone, a laptop, and live in a house with mains electricity, the Bioelectric Shield may not be sufficient. In fact you may have to go to a higher level of spirituality to get the protection that you need.

The Wheel of Life medallion (see http://www.crystalawareness.com/wheeloflife) is "possibly the most powerful source of usable healing life energy available. There is no electrical circuitry, no magnets, simply metal and precious stones. It uses sacred geometry to create a flow of life force energy that can protect and heal." Furthermore, as far as the stresses on the immune system caused by electromagnetic energies are concerned, "exhaustive tests with kinesiology, biofeedback machines, and kirlian photography show that 90% of these stresses are countered by the forces operating within the Wheel of Life". The only problem with the Wheel of Life might be the invocation regularly needed to activate it. I'm sure that I could explain away the fact that I was wearing an attractive crystal pendant to my academic colleagues as a whim of fashion, but standing in my laboratory chanting (three times) "I invoke the Light of God within. I am a clear and perfect channel. Light is my Guide" could make some problems for me – although it might be easier for colleagues involved in photonics research.

So it looks as though the device for me will have to be the Teslar watch (seehttp://www.bioenergyfields.org/index.asp?secid=5&subsecid=0), which has the advantage of being discreet (just a normal-looking wristwatch, with a number of different designs). It is also an active device which oscillates between 7 and 9 Hz, with an average of about 8 Hz which is apparently close to the Schumann Resonance, "the magnetic field resonance that the earth emits". This miracle of microelectronics collapses the fields due to the electronics of the watch itself and these collapsed fields cancel out "the harmful 'static' caused by Electromagnetic Fields (EMF) and Extremely Low Frequencies (ELF), which has been demonstrated by EAV testing and Fast Fourier EEG analysis". Sounds good to me.

So I will finish here and head into town to see if I can find a Teslar watch anywhere on the high street. This will then put me in exactly the right frame of mind to go back to my hi-fi dealer and follow the advice in the back of the manual that came with a hi-fi amp that I have recently bought. It suggests that it is possible to obtain improved performance of the amplifier by substituting the provided mains cable with a specially developed high quality alternative. This allows "the component's power transformer to draw current more easily from the mains supply and enhances its overall performance". I wonder if there is an accompanying invocation?

Steve Donnelly is a physics professor at the University of Salford.

Philosopher's Corner

Julian Baggini

I WAS AT a book launch ...

Before I go any further, let me correct any false impression that might be given by this opening sentence. Book launches and other literary functions may sound glamorous. But in reality, they are demeaning, sordid little affairs. The problem is that everyone officially meets under the name of sociability. But whenever you start talking to someone new, you are immediately aware that all parties are asking themselves the question: "Is this person worth my time?" It's all about networking and rubbing shoulders with the literati. When people find themselves chewing the cud with other second-rate writers and publicists' assistants instead, it becomes something of a chore. By the end of the evening, you feel defiled. The dissonance between surface affability and what people are really thinking becomes intolerable.

But anyway, I was at a book launch, and found myself with two others who were passing the time in the hope of moving on to a more powerful or famed huddle soon. I asked one whom I had met a few times before, the author of one moderately successful though well received book, what he was up to now. (Small talk is small talk, wherever you go.) To protect his identity, the details of his answer have been changed.

"I'm writing a book on the nature of celebrity," he said.

"There have been quite a few of those recently, haven't there?" I commented, rather tactlessly.

"Yes," he said, fixing me with a serious stare, "But this one is really going to be the best."

Stunned by his bold assertion, I muttered something to the effect that I didn't think I could ever have the same kind of confidence in what I was writing. The third member of our group, the author of one very successful though moderately received book, chipped in.

"No, no, I agree. You've got to believe that what you're writing is going to be the best. Otherwise, what's the point?"

Fast forward a couple of years and I'm interviewing the world famous philosopher Slavoj Žižek. He begins by giving me his new book, a collection of interviews with him, calling it "a silly thing". Later, he refers to something he has written before "in I don't know which of my books, there are too many". Then again, he says towards the end of our conversation, "I'm crazy. I write too much." His self-deprecation contrasts sharply with the self-confidence that the young writers at the book launch thought necessary. Yet he has written more than both will probably ever do combined, and to great international acclaim.

If these stories only revealed the quirks of writers, they would not be very interesting. But I think they reflect more general truths about the scepticism we have towards ourselves, or lack of it.

Consider first that the young writers, each with one book under their belts, were both men. I'm afraid to have to admit that the male sex does seem to have a problem with self-esteem and ego. We seem to find it very hard to cope with the reality that we're neither total failures nor gods. Men seem generally either to think themselves great or to collapse into a self-pitying heap of self-loathing.

Of course, the usual qualifications apply. After all, I didn't agree with the other two writers and last time I looked, I was a man. This is no more than a tendency and it is also true of many women. Nonetheless, I do think it was no coincidence that the conversation at the book launch involved only men.

One other consideration is age. These youngish male writers were at the start of their writing careers. The beginning of anything, be it a romance, job or just a concert, is the time for high hopes. Time and experience, however, provide sobering reality checks. Once you've written a few books and seen that they're not masterpieces, it becomes harder to believe that the *magnum opus* will come. In the same way, experience knocks naive optimism out of us in other aspects of our lives.

Nevertheless, age and sex are not really good enough excuses. After all, we're not talking about teenage boys here, but grown men. We ought to be able to overcome these limitations. If we claim to have a properly sceptical attitude to the outside world, we must also apply that attitude to ourselves. It is just inconsistent to use different standards when judging the beliefs of others.

More practically, I disagree with the view that you need to think yourself great in order to do good work. On the contrary, to improve at anything we must be constantly aware of our failings, while at the same time using this awareness as something to learn from, not as a stick to beat ourselves with.

And so if you ask me whether any of the books I have written are great, my answer to you is no. I hope they are all worth reading for some purpose or another. But the next one is not going to be better unless I confront their failings and admit that my failure to win the Whitbread or Nobel prize is not a travesty.

As for the next one, of course ... well, we live in hope.

Julian Baggini is editor of *The Philosophers' Magazine (www.philosophers.co.uk)* and author of *Making Sense: Philosophy Behind the Headlines* (Oxford University Press). See *www.julianbaggini.com*.

ASKE News

From the chairman of the Association for Skeptical Enquiry, Michael Heap

IT MAY SEEM that I have been writing interminably about the 11th European Skeptics Congress. In fact, this is the first contribution that I have penned since the congress itself. I am therefore able to report that the feedback from those attending has been unreservedly positive and many have commented on the very strong programme of presentations. I myself was most impressed by the speakers and their talks and I express my thanks to all concerned. The main disappointment was the lower than expected attendance from members of sceptical societies from the Continent. (The peak attendance was around 115 people.) Also, although we publicised the congress widely and issued press releases, and although a number of journalists attended, the congress did not, to my knowledge, receive any significant coverage in the media. However, I believe that ASKE's profile has been raised; at least I can say that since the congress I have received more than the usual number of enquiries from reporters and journalists who are covering topics about paranormal and unusual claims. (Incidentally, I have the impression that the terms 'sceptic' and 'scepticism' are more often used these days, almost automatically, in articles and programmes on paranormal topics and I see this as a good thing, although I know that others are unhappy with this kind of labelling.)

Just a few transcripts of some talks plus all of the abstracts should be appearing on the ECSO website *(www.ecso.org)*. If you want the congress abstracts you can also email me.

The Future of ASKE

In his address to the congress, Professor Paul Kurtz called for "a New Enlightenment" and the establishment of more "Centres of Inquiry" in Europe (there is already one at Rossdorf, Germany). It is no secret that the Americans are able and motivated to do things in a big way, and indeed we can point to other countries that have national sceptical organisations that have an impressive membership, branches, and an extensive programme of activities and that are active in public debates on practices and policies of relevance to scepticism. My impression is that in the UK, our attitudes and ways of doing things tend not to favour this kind of mass organisational approach, except when there is very strong public feeling about a well-defined issue (e.g. conservation or animal welfare). Otherwise, the club or village ethos (small disparate groups of enthusiasts that wax and wane according to level of commitment) tends to prevail; or perhaps the spotlight falls on a small number of individuals whom, correctly or otherwise, are perceived by the public as representing themselves. Chris French and Richard Wiseman are notable examples from academia and, from the world of magic, we have Ian Rowland and Alistair Cook. (Alistair Cook recently featured in a series of programmes on Channel 5 in which he demonstrated how self-styled psychics performed their tricks.) Derren Brown occupies a somewhat ambiguous position, particularly since he recently shot himself in the foot, or not, as the case may be. Of course, the grand daddy of them all is Randi, but he comes with a large organisation. Also, in the UK I do not witness sufficient collective concern about sceptical issues that generates the kind of organisational or institutionalised approach that characterises some other countries.

So is there a place for ASKE? Yes, but one that, while useful, is probably not going to be on a grand scale. With the congress out of the way, I am hoping that more time can be devoted to the expansion of our membership and our activities (among which is our quarterly newsletter which has not appeared for some time). Perhaps in time it will be possible to organise our own conference.

The European Council of Skeptical Organisations (ECSO)

The ECSO Board held a meeting at the congress. Among the business discussed was the venue of the 12th Congress. This will be in Belgium in 2005. ECSO was also pleased to accept the application for affiliation by the newly formed Irish Skeptics Society. This is a very active group run by Paul O'Donaghue and Nóirín Buckley from Dublin. They have agreed to consider organising the 13th Congress in Dublin in 2007.

ECSO also organises a symposium in the years that alternate with the congress, the last one being in Rossdorf in 2002. I understand that the 5th World Skeptics Congress is to be held in Padua, Italy, in 2004, although I have seen no announcement of this at the time of writing. If so, it is likely that the symposium will be held during the World Congress. It is being mooted that the 2006 World Congress is to be held in Beijing in 2006.

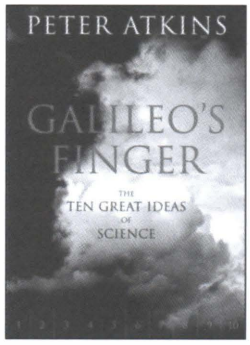
Michael Heap is the Chairman of ASKE and a clinical and forensic psychologist in Sheffield. ASKE email address = *general@aske.org.uk*
ASKE website = *http://www.aske.org*

Reviews

TOP TEN SCIENCE

Galileo's Finger: The Ten Great Ideas of Science
By Peter Atkins
Oxford University Press 2003, £20.00,
ISBN 0-19 860664-8

Richard Dawkins, quoted on the back cover, says Atkins should get a Nobel Prize for literature. The ten great ideas of the title are Evolution, DNA, Energy, Entropy, Atoms, Symmetry, Quanta, Cosmology, Space-time, and Arithmetic.



With no yetis, UFOs, Satanism, ESP or levitating monks, this is not reading intended for sceptics, but it is reading for intelligent adults. Well-illustrated and with maths limited to what you should remember from freshman college, it is written in a conversational tone with flashes of wit: "Aristotle, ever magnificently intellectually fertile and magnificently wrong as usual ...", or, on the various definitions of 'species', "According to this view, a species is an isolated island of vigorous reproductive activity, not unlike Mykonos in mid-summer."

And just one more example, please, to disprove one reviewer's claim that the author has no sense of humour: "No mammal reproduces asexually, despite biblical assertions to the contrary." The author shares my great admiration for Richard Feynman and quotes him as the heading for the chapter on quanta: "If anyone claims to know what the quantum theory is all about, they haven't understood it."

Don't try to speed-read this book, but read and cherish one chapter at a time, in any order. Why "Galileo's Finger"? You will have to read the prologue to find out. Hint: an actual finger of Galileo's right hand is preserved in Venice and is illustrated in the frontispiece.

Frank Chambers

DEADLY DETAILS

Immortal Remains: the evidence for life after death
By Stephen E Braude
Rowman & Littlefield, 2003, [no price indicated]
ISBN 0-7425-1472-2

"Rascals! Would you live for ever?", Frederick the Great reproached his dilatory guards. No doubt all readers of *The Skeptic* look forward cheerfully to *post mortem* oblivion, but in case some of you conserve some atavistic doubts as to whether that is your destiny, here is Stephen Braude offering an alternative scenario.

It is not necessarily a convincing one. Even though he has chosen to present only a handful of the most challenging cases, each is ambiguous in its conclusions. Even when the apparition of a deceased accountant returns to his son and reveals the error which clouded his reputation, this could be explained by psi, or super-psi, or something which, however improbable, at least allows us to duck out of accepting survival as the only way it could have happened.

Braude is at least as skeptical as any of his readers is likely to be. He allows himself to be persuaded by the evidence only when he has analysed it in detail – often mind-numbing detail. Though he writes clearly and directly, his book is heavy going simply because he invites you to accompany him, step by careful step, through the complexities of cases where nothing need be what it seems to be and no-one's word can be trusted.

I doubt if it could be done better. He knows about mediumship, he knows about reincarnation, he knows about possession and dissociation, and he knows that all these subject areas are minefields for the unwary. But he knows, too, that they may also be gold fields, rich in information about ourselves, the way our minds work. And – who knows ? – whether you and I will live for ever.

Hilary Evans

A DIVERSE DELIGHT

Are Universes Thicker than Blackberries? Discourses on Gödel, Magic Hexagrams, Little Red Riding Hood, and other Mathematical and Pseudoscientific Topics
By Martin Gardner
W. W. Norton & Company, $25.95, ISBN 0-393-05742-9

Some of us cut our sceptics' teeth on Martin Gardner's *Facts and Fallacies in the Name of Science.* Originally published some fifty years ago, it was a review of pseudoscience in all its many varieties, glories and irrationalities. Now, some 65 to 75 books later, we have another collection of amusing and insightful short essays by the same author. Like several earlier volumes it is a collection of articles Gardner published in the American *The Skeptical Inquirer*, of book reviews and other essays from hither and yon.

The subtitle provides a good view of the wide variety of topics taken up by the author. The 31 pieces are

divided into sections on Science, Mathematics, Religion, Literature, and Moonshine. The author himself admits "the categories ... are somewhat arbitrary." (p. xi) To call the book a miscellaneous collection is not to belittle it. Where else could you learn about a religion, Oahspe, which lasted from 1882 until 1918, and was part of the extensive spiritualist movement?

The title story, located in the science section, examines the multiverse idea. A new universe comes into existence every time a quantum uncertainty is solved. Schrödinger's Cat both lives and dies, each in a new universe. Which means there exists a practical infinity of very similar worlds. Gardner makes it clear he cannot for a moment believe this cosmology, and marvels "at the low state to which today's philosophy of science has fallen" (p. 9). At the other extreme, under Moonshine, the author disposes of the farce of "Facilitated Communication," "Distant Healing," "Therapeutic Touch," "Primal Scream Therapy," and other humbug. The book is a fun read that will fill a long evening.

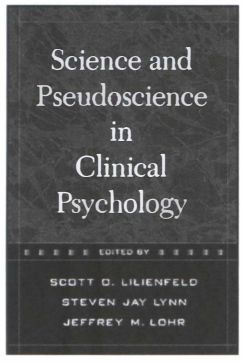
Wolf Roder

LAND OF SNAKE OIL

Science and Pseudoscience in Clinical Psychology
by Scott O. Lilienfeld, Steven Jay Lynn, Jeffrey M. Lohr (Editors)
Guilford Press, 2003, £31.95, ISBN 1572308281

This is a US product, so "clinical psychology" covers all kinds of psychotherapy. It is a round-up of recent research on speculative conditions and controversial treatments, and even clinicians' ability to learn from experience (they're not very good at it).

Some of the research may be familiar, but it is good to have it all in one place. And it can't be repeated too often that Americans don't spontaneously claim to be 127 different people, or to have been abused by Satanists or abducted by aliens. These ideas arise in therapy after months, sometimes years, of hypnosis, suggestion and leading questions. One vulnerable client produced 4,500 alter egos; others claimed to share their skull with "Mr Spock, Teenage Mutant Ninja Turtles, lobsters, chickens, gorillas, tigers, unicorns, God, the bride of Satan, and the rock star Madonna."



So much for dodgy diagnoses; wait till we get to the New Age therapies. The list of unsupported assumptions behind these includes extraterrestrials, magic and past lives, but also dogmas beloved of North London media folk such as "abuse experienced in early childhood is the root cause of all psychological and emotional problems", "catharsis brings cure" and "the treatment technique does all the 'hard work' . . . change occurs 'naturally' . . . "

Now we come to controversial treatments for accepted conditions such as post-traumatic stress disorder. Among others the authors compare EMDR (Eye Movement Desensitization and Reprocessing – you follow the therapist's wagging finger with your eyes) and Critical Incident Stress Debriefing (group counselling soon after a traumatic event). Common sense suggests that EMDR is unlikely to be effective, and it isn't – but neither is debriefing.

By this time the reader should be getting the message that common sense can't be relied on, that all psychologists should be educated in research methods, and that all treatments should be examined. This is a fascinating read, a reminder that America is the land of snake oil salesmen and that reasonable theories believed by all right-thinking people may be snake oil too.

Lucy Fisher

BULLDOG BREED

Love and Eugenics in the Late Nineteenth Century
by Angelique Richardson
Oxford University Press, £45, ISBN 0198187009

Nowadays eugenics is a dirty word, calling to mind Nazi experiments and compulsory sterilisation. But a hundred years ago it was a hotly debated topic. There was great concern over perceived racial degeneration in Britain, particularly the prevalence of hereditary diseases and the ill-health and poor physique of large slum families. Eugenicists argued that selective breeding was the answer to both problems. If only the healthiest people bred, the race would improve.

Some commentators argued that any woman wishing to marry should choose the husband most likely to give her healthy children, disregarding such complicating factors as love and sexual attraction. Having as many healthy babies as possible was seen as a woman's duty and destiny. *Fin de siècle* feminist writers such as Mona Caird, George Egerton and Sarah Grand took up this debate, exploring the eugenics question in short stories, novels and journalism.

Richardson's book examines these women's work, exploring ways in which the eugenics debate informed wider debates on the role of women and the nature of marriage. Some of the issues have uncomfortable resonances with today's arguments about genetic screening and 'designer babies'. Are we as different from the Victorians as we would like to think?

Chris Willis

Reviews are edited by **Paul Taylor**. To join our book reviews team, please email: *reviews@skeptic.org.uk* – stating your interests and any relevant experience.

LETTERS

Mendel: ahead of his time?

The Skeptic 16.2 (p. 9) mentions Mendel as one who did 'that sort of thing', namely announce something on the ground of belief, expecting to fill in the details later.

No doubt this refers to the myth that Mendel fiddled his data, first circulated by R A Fisher in 1936. Mendel knew of course what he was looking for, namely the striking regularities in numbers of hybrids, and he explicitly mentioned the motivation for his research.

Mendel did several experiments, and they extended over many years. His 1866 article is the outline of the text of a lecture he gave describing the results. Many details of his research protocol were left out.

Mendel's experiments started with examining about 15,000 peas for two traits. The results fitted the theoretical 1:3 ratio nicely, but not so much that there is reason to suspect any improper methods. There is a chance of about 15 percent that the data would be so nice or nicer. Of course you are free to believe that prior knowledge of the expected results may have pushed this result a little into the direction of the theoretical ratio, but the numbers aren't any indication of this.

In the second series of experiments (that relied on characteristics of plants that grew up from such peas) the 1:3 ratio seems too nice to suppose proper blind experimentation. However, Mendel had a whole autumn and winter to ponder the results, and could easily have guessed what was going on (a view already espoused by Fisher). It is not unreasonable to suppose that he initially grew about 600 plants of each hybrid, and when the ratios were not exactly 1:3 he just grew another batch, one or two years later. He actually said that he had done such a thing in one case. Such an optional stopping procedure wouldn't count as a good design nowadays, but you can't call it improper in 1866. If we assume optional stopping, the results aren't too striking. This was pointed out by the mathematician B L van der Waerden in 1968.

For other aspects noted by Fisher, similar remarks can be made: subtle errors or unmentioned details of the design may account for most.

In Mendel's last tests the numbers fit the expectations too closely. But these tests are rather complicated. For example Mendel classified 90 plants into four groups of size 20, 23, 25, 22, where 22.5 per group was expected. That's rather close to the expectation, and there were three more experiments of that kind that showed such a good fit.

In some experiments the plants were classified on the basis of the number of different kinds of seed they produced. Now some plants produce very few seeds. So whatever you do (exclude those plants, include them, do extra tests), you are going to make mistakes. Doing it correctly requires extremely rigid protocols to exclude any prejudices. So all we can say is that some of Mendel's numbers do warrant closer inspection, and that this inspection makes it plausible that they were due to subtle design errors.

Ridiculing someone for not being a century ahead of time in statistical and experimental techniques isn't fair. But the details of the above mentioned analysis appeared between 1966 and 1976, so what can be said of authors, like Broad and Wade in 1982 and countless others, like the 'Hits and Misses' author, who parrot the famous Fisher and each other, without quoting exonerating books and journals?

Jan Willem Nienhuys, Waalre, Netherlands

Only conjectures

Further to Steve Stewart-Williams's *Life from Non-Life* article (*The Skeptic* 16.2), the Penguin Dictionary of Biology includes a very condensed, but 1,500 words long, summary of current conjectures about the origin of life. But they are only conjectures.

As Steve says, it is reasonable to believe that the life we know developed through a natural process. It seems equally reasonable to suppose that life in general develops through natural processes. But all the organisms currently available for study are descendants of a single ancestor, which was already highly developed. There are too few data to form a scientific theory.

The Beagle 2 expedition, to search for evidence of life on Mars, makes assumptions about the chemistry of life that are good for life on Earth, but that may be mistaken for life in general.

Donald Roum, London

The impossible and the improbable

Wendy Grossman (*Skeptic at large ...*, *The Skeptic*, 16.2) revealed Sir Arthur Conan Doyle's penchant for the paranormal while writing stories about a deeply rational detective, and she headed it with a (slightly inaccurate) quotation of part of a declaration Doyle gave to Holmes about truth. The full statement, which I have pinned to my wall, reads: "When you have eliminated the impossible, whatever remains, *however improbable* [Doyle's italics], must be the truth" (*The Sign of Four*, 1890, ch. 6). I have it pinned up because I occasionally puzzle over its meaning and ask myself whether or not it is justified. Apart from the philosophical problem of truth (Pilate asked Jesus a relevant question about that), there is the problem of

deciding between the impossible and the improbable. Did Doyle think it easy? He was sure that an impossible spirit world existed. In fact, the distinction is subjective, not, as the statement implies, objective. Modern science obeys an older dictum, of which Doyle/Holmes should have been aware – Occam's Razor (in explaining something, make the fewest assumptions). What Holmes should have told Watson is that, when a few simple assumptions fail to explain a mystery, keep adding one more, *however improbable*, until a rational explanation emerges.

Steuart Campbell, Edinburgh

NLP: Not so bad?

Martin Parkinson's *A Brief Introduction to Neuro-Linguistic Programming* (*The Skeptic*, 16.3), was rather kinder than I had expected and certainly milder than the *www.skeptic.com* treatment. Yet I still feel the need to respond to some of the assertions.

I accept that the extraordinary claims made by some 'NLPers' usually lack evidence other than anecdotal, and that NLP certainly has the potential to be used exploitatively.

I see NLP as one of the reactions to behaviourism, a science that was overly wary of subjective experience and so arrogant it could torture people and call it therapy. NLP got caught up in the counter-culture of the sixties and seventies but soon became rather commercial and prone to hyperbole. Many of the founders had academic credentials but later on NLP was often presented simplistically. Understanding NLP's intellectual history and rationale has become more optional as it has sought bigger audiences. Like many other movements, there are also skeletons in NLP's cupboard that most followers know nothing about.

Like all good learners and adaptive cultures NLP has indeed acquired a lot of what Martin calls "dodges, tricks and tips". I have learned similar things from reading *The Skeptic* over the last 10 years. The problem that I see is not that people are given NLP 'toolkits'; rather, it is being given too much confidence in their ability to use the tools well. The training is often too shallow for people to understand why a technique may not be appropriate or when it needs to be adapted.

While sometimes called a science, any NLPer with even a small knowledge of scientific principles would deny this. Yet for me NLP remains a fascinating and at times useful way of gaining insights into how an individual experiences the world. When these insights are studied, care needs to be taken to accommodate the NLP emphasis on the subjective. By way of analogy, don't count on a standard hypnotic induction tape being as successful as hypnotic inductions tailored to individual subjects.

Why does Martin expect "coherence" from NLP when it is not a science? Even some 'hard' sciences go through stages of being riven and confusing to outsiders. NLP has big internal disputes and with no obvious central authority these indeed have ended up in courtrooms. But the disputes are not just about legal ownership, but also over which approach or exponent is 'wrong'.

Martin claims that NLP "has nothing to do with neurology or neurolinguistics" and the Editorial adds that it "has very little to do with neurology, linguistics and computer programming."

Let's start with the linguistics. One part of NLP that was derived from linguistics is the 'Meta Model', a set of questions for deeper understanding of an individual's verbal models of the world, or for challenging sloppy thinking, including overgeneralizations. The two first books on NLP (both cited in Martin's article) contain the Meta Model, diagrams of deep linguistic structures, lists of linguistic presuppositions and name 25 books on transformational grammar. Martin claims that the tie-in with transformational grammar is unconvincing, but even if that were true, it does not mean that NLP has "very little" to do with linguistics. Linguistics pre-dates transformational grammar. Alfred Korzybski, a linguist, first used 'neurolinguistic' in 1936 and it features in his 1941 book, *Science & Sanity*. The founders of NLP acknowledge Korzybski's influence. I think NLP has as much right to use this term as others who, perhaps, do not so readily credit Korzybski? I would be interested to know the date of the earliest peer-reviewed paper by an academic that uses the term neurolinguistic.

Nerve systems are fundamental to learning and the 'neuro' in NLP refers to the capacity of individuals to make new associations. 'Neuro' is used to convey that the whole body, not just the brain, is involved in learning. Conventional academic psychologists use terms like the 'neurology of learning'.

Martin writes that the P part of NLP, programming, is "a piece of science fiction fluff…". I regret the adoption of the name NLP and especially the way in which it might suggest that changing human behaviour is analogous to computer programming. However, my reading of an early explanation for the name NLP finds nothing sinister. Robert Dilts and three other founders of NLP wrote, " 'Neuro' … stands for the fundamental tenet that all behaviour is the result of neurological processes. 'Linguistic' … indicates the neural processes are represented, ordered and sequenced into models and strategies through language and communication systems. 'Programming' refers to the process of organizing the components of systems … to achieve specific outcomes". Is Neuro-Linguistic Programming as a term that much worse than, say, cognitive behavioural therapy? Given the past misuse of electric shocks by behaviourists some might prefer NLP.

Paul Burns, Wembley

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