Steve Novella’s BS detector

+ KEN HARVEY
SensaSlim
the TGA & Me

LEO IGWE
Interview
Skeptical Groups in Australia

Australian Skeptics Inc – Eran Segev
www.skeptics.com.au
PO Box 20, Beecroft, NSW 2119
Tel: 02 8094 1894; Mob: 0432 713 195; Fax: (02) 8088 4735
president@skeptics.com.au
Sydney Skeptics in the Pub – 6pm first Thursday of each month at the Mezz Bar, Coronation Hotel, Park St in the city (meeting upstairs)
Dinner meetings are held on a regular basis.
Annual Skeptics Convention: November 19 - Bookings online or contact nsw@skeptics.com.au NOTE: May be booked out

Hunter Skeptics Inc – John Turner
Tel: (02) 4959 6286 johnafturner@westnet.com.au
Meetings are held upstairs at The Cricketers Arms Hotel, Cooks Hill (Newcastle) on the first Monday of each even-numbered month, commencing 7.00pm, with a guest speaker on an interesting topic. Visitors welcome. For further information visit our website www.hunterskeptics.com.au or contact the secretary at: kevin.mcdonald379@bigpond.com

Australian Skeptics (Vic) Inc – Terry Kelly
GPO Box 5166, Melbourne VIC 3001
Tel: 1 800 666 996 vic@skeptics.com.au
Skeptics’ Café – Third Monday of every month, with guest speaker. La Notte, 140 Lygon St. Meal from 6pm, speaker at 8pm sharp.

Borderline Skeptics Inc – Russell Kelly
PO Box 17, Mitta Mitta, Victoria 3701
Tel: (02) 6072 3632 skeptics@wombatgully.com.au
Meetings are held quarterly on second Tuesday at Albury/Wodonga on pre-announced dates and venues.

Gold Coast Skeptics – Lilian Derrick
PO Box 8348, GCMC Bundall, QLD 9726
Tel: (07) 5593 1882; Fax: (07) 5593 2776
lderrick@bigpond.net.au
Contact Lilian to find out news of more events.

Queensland Skeptics Association Inc – Bob Bruce
PO Box 3480, Norman Park QLD 4170
Tel: (07) 3255 0499 Mob: 0419 778 308 qskeptic@uq.net.au
Hear Bob on 4BC Paranormal Panel - 9-10pm Tuesdays
Meeting with guest speaker on the last Monday of every month at the Red Brick Hotel, 81 Annerley Road, South Brisbane. Dinner from 6pm, speaker at 7.30pm.

Canberra Skeptics – Michael O’Rourke & Pierre Le Count
PO Box 555, Civic Square ACT 2608
http://www.canberraskeptics.org.au Tel: 0417 253 044
mail@canberraskeptics.org.au (general inquiries), arthwollipot@gmail.com (Canberra Skeptics in the Pub).
Monthly talks usually take place on the 13th of each month at the Innovations Theatre at the ANU. Dates and topics are subject to change. Canberra Skeptics in the Pub gather at 1pm on the third Sunday of each month at King O’Malley’s Pub in Civic. For up-to-date details, visit our web site at: www.meetup.com/SocialSkepticsCanberra/

Skeptics SA – Laurie Eddie
52B Miller St Unley, SA 5061
Tel: (08) 8272 5881 laurieeddie@adam.com.au
Thinking and Drinking - Skeptics in the Pub, on the third Friday of every month. Contact nigeldk@adam.com.au www.meetup.com/Thinking-and-Drinking-Skeptics-in-the-Pub/calendar/10205558 or http://tinyurl.com/loqdrt

WA Skeptics – Dr John Happs
PO Box 466, Subiaco, WA 6904
Tel: (08) 9448 8458 info@undeceivingourselves.com
All meetings start at 7:30 pm at Grace Vaughan House, 227 Stubbs Terrace, Shenton Park
Further details of all our meetings and speakers are on our website at www.undeceivingourselves.com

Australian Skeptics in Tasmania – Leyon Parker
PO Box 582, North Hobart TAS 7002
Tel: 03 6238 2834 BH, 0418 128713 parkerley@yahoo.com.au
Skeptics in the Pub – 2nd Monday each month, 6.30pm, Ball and Chain restaurant, Salamanca Place, Hobart

Darwin Skeptics – Brian de Kretser
Tel: (08) 8927 4533 brer23@swiftdsl.com.au
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A common dilemma facing Skeptics is how to present information to the public, and especially to those who might be leaning toward belief in unproven and disproven concepts. Whether its belief in UFOs and psychics, cults or homeopathy, there is a duty and desire of Skeptics to inform people, however ‘dickishly’ – of the scientifically-based evidence regarding any suspect practice or belief system.

Finding such information should not be that difficult. Searching the net will give a plethora of sources and documents that will fill the purpose. It will also bring up a plethora of less-than-scientific comments and articles, some of which are ill informed, some of which are stupid and some of which are downright dangerous.

We modestly pride ourselves on the information in this journal. As editor, I’ve always aimed to have a spread of information in each issue covering different topics and often disparate styles. You need only look at a selection of articles in this issue to see what I mean.

The interview with Leo Igwe looks at activism and witchcraft in Africa, tinged with a view on international influence and cooperation between Skeptical groups. The short piece by Elliot Birch of the Young Australian Skeptics looks at the use of social media by Skeptics (and not without a sense of humour on the history and the limitations on past methods of communication.) And Prof Ian Gust gives what is, in my opinion, an excellent overview of the background and issues with vaccination and the anti-vaccination movement.

The inclusion of this last article needs a little more comment, I believe. To man of our readers, what Ian is saying may be well understood. The history of vaccination, the troubles with side effects, and the dangers of the anti-vaxers are known to them, in no small amounts. But, as above, what we do need is information we can give to others, those who are not so familiar with the topic, and need a good and simple exposition on it. Ian’s article is just that – it may very well have much information of interest to Skeptics, but it also makes an excellent hand-out that can be used to give the ‘target market’ an overview of all the major issues that that might not be available elsewhere. Brochures on this subject handed out in doctors’ surgeries are very useful, but often limited to the technical issues in a fairly formal way. Ian’s article, again to me, is a great supplement to that – it is easy reading, and it covers the issues in enough depth to serve any reader in the general public.

The various Skeptic groups website have much of this sort of information. But I think we need more.

Too often Skeptics are accused of preaching to the converted. But our outreach to the public is often limited to the opportunities that present themselves – press, radio and TV interviews and invited articles. In these, those who take part try to present a reasoned and reasonable argument, but it’s not always easy.

As a recent example, on a Seven Network Sunrise program, Peter Bowditch, well-known Ratbag and former president of Australian Skeptics, and Bill Chalker (probably the most reasonable and approachable person in the UFO believer field in Australia), were given about a minute each to respond to some plainly ridiculous UFO claims. Both Peter and Bill were understandably peeved.

Those sorts of opportunities are often annoying and unproductive. A waste of time. Therefore it is important for us to present factual and to a certain extent detailed information in a more proactive way. It should not preach, it should not demean, but it should be readily there in response to any query that might arise.

- Tim Mendham, editor
Around the traps... health

Spinal manipulators – one in, one out

Two alternative health practitioners – one a leading chiropractor who had publically taken a stance against vaccination, and another calling himself a ‘spino-migrainologist’ - faced tribunals by official bodies recently, with the result that the case against the anti-vaxer was dismissed and the other spinal manipulator was deregistered for three years.

Nimrod Weiner runs Newtown Community Chiropractic in Sydney and is a board member of the NSW branch of the Chiropractors’ Association of Australia (he was previously listed as vice-president). He was accused of promoting anti-vaccination messages via his website and during public seminars. (See a report on one of his seminars by Skeptics vice-president Rachael Dunlop in The Skeptic, 31:1, p16.)

The Australian Doctor magazine published a recording of a seminar, and an article by Paul Smith referred to some of Weiner’s comments, such as SIDS was “in many cases, vaccination death”, some vaccines included “a scraping” of aborted human foetuses, a claim that homeopathic vaccines were a safer option than conventional ones, and a page on his website entitled “Vaccinations: 18 reasons to Just Say No”. These claims raised a storm, even among the chiropractic profession.

Australian Doctor quoted Phillip Donato, chair of the Chiropractic Board of Australia, who said that chiropractors had a duty under the profession’s code of conduct to provide up-to-date, evidence-based information.

“It appeared at the very least [Weiner] is misinformed and may be providing misleading information to the public,” Donato urged people to make formal complaints over any concerns they might have.

A complaint by Melbourne spinal surgeon Dr John Cunningham went before the Chiropractic Council of NSW in May, but the council dismissed the claim that Weiner was guilty of false advertising or that he was exploiting the public’s ignorance of medical research.

In a letter to Cunningham, the council said it had “considered that Dr Weiner was entitled to put his opinion forward and that this was not in breach of the code”.

Cunningham told Australian Doctor: “If these are Mr Weiner’s personal opinions, then he’s entitled to them. But he’s meant to be a registered health professional. I’m bewildered by the council’s decision.”

Meanwhile, a qualified GP who treated patients suffering depression and panic attacks with a controversial spinal manipulation technique failed in his bid to have a three-year suspension overturned.

Again according to Australian Doctor, Richard Gorman told the Medical Tribunal of NSW that “conventional general practice is inferior, incompetent and involves the lowest common denominator. … It is my sincere opinion that orthodox medical practitioners potentially injure patients at every consultation. This is because they do not recognise, as a result of inferior training, the existence of the traumatic cervical spine syndrome.”

In one instance, Gorman used the technique on a 25-year-old patient with developmental delay, depression and suicidal tendencies. He was accused of not giving proper information to the patient that would enable him to reach an informed decision. Gorman said “It’s silly to be fumbling around, worrying about whether he got consent, when there has been such a good result.”

The tribunal found that Gorman’s conduct amounted to unsatisfactory professional conduct and professional misconduct, saying he did not have sufficient physical or mental capacity, knowledge and/or skill to practise medicine. He was deregistered by the tribunal and ordered not to reapply for registration for another three years.

Griffith Uni rejects homeopathy link

Griffith University, having recently launched a candidate malaria vaccine to protect against all known strains of the deadly disease, has definitively rejected any link between the vaccine and homeopathy.

Claims made on the website of homeopathy spruiker Homeopathy Plus said that the vaccine was an example of homeopathy.

“Our candidate vaccine is not related to homeopathy in any way,” says Professor Michael F Good, chair of the National Health & Medical Research Council, and chairman of the Spinal Cord Injury Network, Institute for Glycomics at Griffith University.

“Our approach is science-based.”

In the press release on the launch, the university announced the opening of the Institute’s new Laboratory of Vaccines for the Developing World, as well as the launch of PlasProtecT™ “whereby ultra-low doses of whole malaria parasites are ‘put to sleep’ using a unique chemical treatment”.

“The sleeping parasite is then injected in very small doses and we have observed very strong immune responses that can protect from multiple strains and species of the parasite, thus potentially overcoming the major hurdle to developing a vaccine.”

Homeopathy Plus, run by homeopath Fran Sheffield who herself is linked to the Australian [anti]Vaccination Network, instantly jumped on the announcement to claim that “Once again, this is homeopathy – an approach homeopaths have used successfully for malaria protection and prevention for centuries.”

Prof Good completely rejected this claim, adding that “Let me assure you that I am no supporter of homeopathy. As Chairman of NHMRC I can also assure you that NHMRC does not support homeopathy.”
Griffith Uni rejects homeopathy link

Continued...

But *Homeopathy Plus* doesn’t stop at claims of spurious links between homeopathy and true science. Its website tells readers how “homeopathy’s ability to protect doesn’t just stop at malaria”. They can “Learn how it is also being used for:

- Dengue fever in Brazil
- Meningococcal disease in Brazil
- Dengue fever in Colombo
- Japanese encephalitis in India
- Leptospirosis in Cuba, and
- Animal diseases such as kennel cough and bovine mastitis.”

Australian Skeptics supports the use of scientific method in the development of such useful and practical medical treatments as that developed at Griffith University. It seems a shame, then, that others have no restraint in claiming such developments as their own, when they are decidedly not!

GPs split over CAM registration

The prospect of naturopaths and herbalists gaining formal registration with the Australian Health Practitioner Regulation Agency (AHPRA) is causing consternation among GPs, with just over half of participants in a *Medical Observer* poll saying they favoured the move.

While it was a small poll made up of 94 web poll votes, 61 per cent believed the two groups should be registered by AHPRA.

The *Observer* says “The poll comes amid an ongoing consultation by the Australian Health Ministers’ Advisory Council on the need to better regulate unregistered health practitioners. Options for the introduction of voluntary or statutory codes of conduct for unregistered health professionals have been put forward in a consultation paper.”

The Australian Naturopathic Practitioners Association chair Chris Brooks said the proposed codes did not go far enough and registration was needed, *The Observer* noted.

Teachers Health teaches woo

In a worrying gesture toward a profession concerned with education and critical thinking, the NSW Teachers Federation’s Teachers Health Fund has given a ringing endorsement to unproven and disproven alternative health practices, without any caveats or suggestions there might be serious doubts about them.

Nicole Lestal, the editor of the Fund’s *Health Matters* publication, says in her editorial in the Winter 2011 issue of the publication that “It’s good to know that your Teachers Health Fund Extras products afford you coverage for a range of alternative therapies to help you to combat those awful winter bugs, and feelings of general ill health.”

The practices covered by the fund include acupuncture, Alexander technique, aromatherapy, Chinese herbal medicine, homeopathy, kinesiology and reflexology.

Statements made in the publication endorsing such practices are extremely credulous and verge on the ridiculous. For instance:

- Acupuncture: “When healthy, an abundant supply of qi or ‘life energy’ flows through the body’s meridians – a network of invisible channels through the body.”
- Homeopathy: “Its effectiveness has been clearly established by over 200 years of clinical experience.”
- Kinesiology: “… identifies the elements that prevent the body’s natural internal energies from accessing life enhancing potential within the individual. ... it works with the body’s innate healing intelligence to restore balance and health to neurological and physiological function.”
- Reflexology: “Reflex points, which relate to all parts of the body, can be found in the feet, hands, face and ears. These points respond to pressure, stimulating the body’s own natural healing process. The body starts progressively clearing blockages, and re-establishing and balancing energy flows.”

We contacted the Teachers Health Fund in July – as did others - asking for an indication the Fund had done any assessment on these practices, and that its “unquestioning endorsement is based on more than an unbridled (and childlike) enthusiasm for practices that are more fitting for a new age organisation than one devoted to the teaching profession”.

We are still waiting for their response. This topic will be the subject of further research by Australian Skeptics.
The National Audit Office has labelled the TGA as a poor communicator, and the TGA suggests stronger labels.

The Therapeutic Goods Administration (TGA) is reportedly considering what was described in *The Age* newspaper as a “radical option of requiring alternative medicines to contain an ‘untested’ disclaimer on their labels”.

The TGA is the body that is tasked with establishing and maintaining a “national system of controls relating to the quality, safety, efficacy and timely availability of therapeutic goods”.

It was suggested that this move would be in response to people’s expectation that anything registered by the TGA has been tested and is as efficacious (or non-dangerous) as the manufacturers claim.

A spokesperson for the TGA said the move was under “active consideration”.

*The Age*’s story on this possible case of TGA activism follows closely on an Australian National Audit Office review into the transparency of the TGA that found the organisation has been conservative in its actions and that it could do a lot more to keep the public informed of its deliberations and processes.

“It was apparent that the expectations of the public are not being met and there is more the TGA can do,” the review’s report says. “The decision to establish the review reflects community concern about the lack of information made available by the TGA.”

One area that was raised in the ANAO’s recommendations was the TGA’s work with stakeholders “to improve labelling and packaging requirements to educate and assist consumers and health practitioners to make informed decisions about the quality use of therapeutic goods”.

With a suggestion that the TGA was serving the industry rather than end-users, the report says that “It is necessary for the TGA to recognise that it serves multiple stakeholders and that it must adapt its communication strategies accordingly. Consumers and health practitioners have as much interest in therapeutic goods as the industry that produces and markets those goods.”

Quoted in *The Australian* newspaper, former Commonwealth ombudsman and head of the inquiry, Prof Dennis Pearce, said “Even among health industry people, they seemed to find it easier to get information from the US Food and Drug Administration website than to find out things that are happening within the TGA.”

The review was looking at the TGA’s level of communication, not how – or whether – it actually undertakes reviews of medical products and devices, though this has been the subject of much criticism in the past. Recommendations therefore concentrated on ways to improve its online presence, information on its members and activities, principles of consultation, etc.

However, many of the submissions to the review did mention the TGA’s approach to testing products.

This might have been reflected in the review panel’s executive summary, which suggests that “the TGA should adopt a pro-active stance to many issues relating to therapeutic goods that are of concern to the public that it serves. It should move away from the conservative approach that has characterised its actions in the past and recognise that it has a duty to collaborate with stakeholders to create a culture in which the community has confidence in the therapeutic goods the TGA regulates.”

While it wasn’t specifically recommended, the possibility of symbols on labels to indicate risk levels was raised by some submissions to the review, including by the TGA’s own Advisory Committee on the Safety of Medicines (ACSOM), which drew the review panel’s attention to the lack of public awareness of the uncertainties of medicine safety in the early post-registration period for medicines requiring a risk management plan.

ACSOM proposed that a new risk communication scheme be introduced to alert consumers and health practitioners to the level of risk in the early post-market period. The scheme would be similar to the United Kingdom’s ‘black triangle’ alert system.

“Health professionals would be particularly encouraged to report adverse events that appeared to be related to drugs with the early post-marketing symbol,” ACSOM said.

However, “while panel members agreed with the concept of an ‘early post-marketing risk communication scheme’, some members are opposed to the use of the United Kingdom’s black triangle as they interpreted it as being ‘sinister’, and not as a cautionary symbol to raise awareness of a product’s recent approval. However, the symbol (or a variant) is used, or is to be introduced, in other European countries.”

Submissions to the review included those from Australian Skeptics Inc vice-president Rachael Dunlop and the Victorian Skeptics.

A submission to the review from the Complementary Healthcare Council of Australia said that CHCA “does not support disclosure of product information in relation to ingredients/formulas as this encroaches on commercial-in-confidence details. The complementary medicine industry already struggles with the lack of exclusivity/data protection available impacting on competitiveness and innovation in the market. The CHC believes publicly disclosing additional product information would not benefit consumers but lessen the forces of competition.”
The question is: why go to The Amazing Meeting?
First the bad news. You are down roughly $2000 which gets you to Las Vegas by cattle-class. After flying through the day and a shortened night, you wake up to the previous day again. Eventually you are welcomed by a typical afternoon temperature of about 42°C. The registration fee of $425 lets you sit in a big auditorium for three days; the optional workshops cost extra. And you haven’t yet paid for a room or played a game of blackjack.

It is James Randi’s annual gathering of some of the world’s most prominent skeptics and their keenest followers – 1652 of them this time. It takes place in the massive and splendid South Point Casino, a plush and sparkling monument to human frailties. Fortunately for the owners, the place is big enough to fit in a lot of other people more inclined to gamble than the sensible skeptics.

If you have led a sheltered life and never been to a big casino, the arrival here is a memorable experience. From the numbing heat, you pass through two sets of doors onto the red and gold carpet of a wide entrance area. A few more metres and you are at the edge of a gaming room that seems bigger than a football field. Bars and restaurants on the other side are almost too distant to make out. The sensations are physical coolness but visual warmth. A soothing twilight of golden beams from above meet the glows and flickers of countless poker machines. No daylight, or daytime, or time of any kind is to be discerned. Unless you are right next to a machine paying out, or a noisy craps table, there are no jarring noises – just a thousand whirs and alluring chimes.

Randi has picked a good spot. It was designed to attract families. Let the parents gamble; let the kids compete at something. What are those kids dragging around in those weird wheelies? Bowling balls destined for one of the 64 alleys in use for a tournament. Those cowgirls and their horses would be heading for the indoor arena, big enough for 4600 people around the edge. Two days later it became a BMX track. Meanwhile, somewhere there was room for hundreds of little martial artists to have at each other, under the benign supervision of Chuck Norris.

The general opulence extends to the huge area made available for us skeptics. Technically things went very well. Down each side of the room, reproductions of the presenters shone from massive screens, the sound so
clear that an infectiously excited Randi, sounded as if he were right beside me. And any inveterate fidgeter would appreciate a place big enough to sneak in and out of without causing disturbance.

The organisers aim to meet the expectations of an audience that has travelled far. Less than three per cent of the guests call the area ‘home’. The rest of us came from 47 States of the Union, plus 17 other countries. That meant lots of fascinating people to talk to between presentations. Many of our American cousins find themselves the only skeptic in their community or family, so TAM is important both intellectually and socially for them as one of the few opportunities during the year to get together with like-minded people.

**SPEAKING OF SPEAKERS**

So who was the pick of the podium? With so many outstanding individuals speaking, overall adjectives are difficult to choose. Impressive? Of course. And also awe-inspiring, authoritative, captivating, provocative … the list goes on.

What is the collective noun for people like James Randi, Neil deGrasse Tyson, PZ Myers, Eugenie Scott, Michael Shermer, Carol Tavris, Pamela Gay, Richard Wiseman and Richard Dawkins? Add another thirteen key presenters, then fifty panellists and assistants, all marshalled with great discipline and aplomb by (the incomparable) George Hrab, plus twenty-one exhibitors (including the Australian Skeptics) and a free vaccination clinic (courtesy of the Skepchicks) and you end up with a program that is so full and varied that it is not humanly possible to see and do everything.

What you get from a cornucopia like TAM will be different for each of us. I suppose it depends upon what you didn’t already know and what you were primed to notice. I’ll suggest a couple of common threads.

The headline this year was “TAM 9 from Outer Space”, so the anchor topic was astronomy and space. Phil Plait moderated a panel with Bill Nye, Neil deGrasse Tyson, Pamela Gay and Lawrence Krauss on the future of space exploration, which was a reminder of how such discoveries can be as amazing as any human experience of the real world, while demanding human virtue at its highest - patience and occasionally great courage.

However, it is sobering to see astronomy as an area where so much was achieved under the pressures of warfare, or peacetime fear of attack. Is that what it takes to divert enough funds towards space work and away from retail-therapy or wasteful economic bubbles that burn years of savings?

Gay gave a heartfelt talk on this issue in the light of recent funding cuts to NASA. When she was growing up, it was the discoveries made by NASA which inspired her to become an astronomer. She questioned what there will be to inspire the next generation if science and space exploration are scaled back.

On a similar note, the charismatic Tyson spoke passionately about the decline in scientific output in the US and Canada over the past 10 years, compared with that of China, Japan and Europe which has been rising, and Brazil, which now has its own space program.

He pointed out that the money spent on bailing out financial institutions in the GFC amounted to more than has been spent on NASA in its entire 50 year existence.

Bill Nye the ‘Science Guy’, as he is affectionately known, a former student of Carl Sagan, brought the focus back to Earth by looking at the atmosphere from space and how frighteningly thin it is. He made the point that
it is wrong to say that human beings cannot influence climate when so many of us consume so much. Instead, we should do more with less. As an example, he spoke about his prototype Solar Sail. With this technology, it is possible to send probes into space at a fraction of the cost.

Even Richard Dawkins abandoned religion for once and spoke about his upcoming book for children, The Magic of Reality. In keeping with the theme of TAM, he talked about the chapter entitled Are We Alone?, which examines how alien life forms might evolve.

Skeptical activism and communicating skepticism were also common themes and in this area the presentations and panel discussions complemented the optional workshops.

Canadian Desiree Schell ran an excellent workshop on how to create and manage a grassroots skeptical campaign and followed up with a presentation on what skeptics can learn from activism in other social movements. The creator of Surly-Ramics, Amy Davis Roth, led a panel with Elyse Anders, Richard Saunders, Jennifer McCreight, Justin Trottier and Maria Walters talking about recent skeptical campaigns and what made them successful.

THOUGHTS ON DICKISHNESS
I noted a recurring sub-text along these lines: as skeptics we are only as good as the skepticism we apply to ourselves.

"A recurring sub-text: as skeptics, we are only as good as the skepticism we apply to ourselves."

by definition. As many presenters demonstrated, the first step towards getting attention from the wider community is for us to appear to be friendly and well-adjusted.

The communications director from JREF, Sadie Crabtree, had some excellent advice on this topic.

If skeptics want to change hearts and minds, we have to approach people in a way that resonates with them. As she said, “Don’t tell people you want to raise their taxes; tell them you want to fix their potholes.” These insights were augmented by the impressive Carol Tavris, who spoke later that day about cognitive dissonance and how conflict and argument entrenches people in their own position, however wrong that position might be.

As usual, medical matters also featured on the program. Steven Novella led a panel with David Gorski, Harriet Hall, Kimball Arwood, Mark Crislip, Rachael Dunlop and Ginger Campbell discussing placebo medicine.

Recent research shows that the so-called placebo effect is in fact a purely perceptual response which takes place only in the brain of the subject. Accordingly, practitioners of alternative medicine cannot use the placebo response to claim that what they do actually heals their patients.

On a lighter note, the Skeptics Guide to the Universe crew did two live tapings of their podcast. Jamy Ian Swiss led an hilarious retrospective discussion with James Randi, Banachek and Michael Edwards about Project Alpha in which magicians Banachek and Edwards posed as psychics and managed to infiltrate a paranormal research laboratory, utterly confounding the researchers.

AND THEN THERE WAS ...
There were plenty of other gems about all sorts of things. Our personal favourite was this, passed on by Eugenie Scott (and known as Gibson’s law): “For every PhD, there is an equal and opposite PhD.” That added up to three days of presentations plus a day of workshops, plus evening shows, all offered in an atmosphere of talent and generosity. Entry to Penn Jillette and the NoGodBand was by donation. At midnight were served the traditional bacon and doughnuts. Penn on vocals and bass guitar turned Viva Las Vegas into slow blues, reminding us of the darker lyrics: “All those hopes down the drain… If you see it once, you’ll never be the same again.”

If all that is not sounding like a full diary, remember that in Vegas, the possible extra-curricular activities are legion. I was reminded of ‘the way of things’ in Melbourne, when I saw one of our eminent Victorian members heading off to the range for a little pistol work and Uzi practice. Different strokes for different folks, as they say.

I’d go to TAM again because they have the talent to succeed in their objectives; and their objectives are worthy, as described by JREF President D J Grothe: “TAM Las Vegas 2011 is a vacation from unreason, a time to celebrate skepticism and critical thinking, a conference for planning and organising the growing skepticism movement. It is a time to debate and learn and make new friends.”

If you can afford to make your life more interesting, then consider next year’s TAM. It’s definitely worth it.
People get confronted all kinds of claims. I see patients every day who come to me and they say “What do you think about this?” And these are the people who are coming to a physician and asking questions, which is probably the tip of the iceberg. The people who aren’t asking their physicians these questions are the ones we really ought to get to.

There is a good process I go through when confronted with a new claim to test to see if it’s BS. It’s not always obvious. Sometimes people ask me about the latest vitamin to cure cancer – Ok, that’s probably BS.

And then there are the ones that, at first blush, you can’t really know if it’s legitimate or not. It may sound iffy, you’re not really sure what the mechanism might be. I’ve heard of “transcranial magnetic stimulation for migraines”. That sounds a little odd, but it actually turns out to be a perfectly reasonable treatment or hypothesis – it’s not yet proven, but we’ll see. When I first heard about “Botox for migraines” I thought someone’s trying to make money there. But now it’s FDA approved and the research is actually fairly robust.

So raising the red flag or activating your BS detector doesn’t mean it’s going to be BS in the end. There is a process we go through. And I would like to demystify it a little bit.

You start with a very basic question – “How extraordinary is the claim you’re being confronted with? That doesn’t determine if it’s true or not. A lot of people think that a priori skeptics give things the ‘sniff’ test and if it seems out of the ordinary then that means it’s BS. But no, it just

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### BS Detector

- How extraordinary are the claims?
- How many different conditions are claimed to be treated by one modality?
- What is the mechanism?
- What is the plausibility?
- Is the treatment generally accepted or promoted by a single individual or a group?
- Are there claims for a conspiracy of suppression?
The BS Detector

Continued...

means you’d want to think about it just a little bit more than something that seems fairly straightforward.

The next question is, “How many different conditions are treated by the same modality?” Now, aspirin is pretty good for a lot of different things. You can treat pain, and fever, and inflammation, and you can reduce your risk of heart attack and strokes, and maybe other things. But they all feedback to a very common mechanism of inhibiting prostaglandins – we know how that pathway works in several different ways. Aspirin is the Swiss army knife of medicine. It is really very useful for a lot of things.

But when people tell you that their treatment works for 20 different conditions, all of which are very different in their underlying cause, that should make you more skeptical. It doesn’t mean it’s impossible, it’s just that your BS detector is getting a little over to the right.

One of the recent things we’ve encountered is ear lights – you shine a light in your ear and it treats all kind of different conditions. The brain balance is another one. Sometimes the way they get away with saying their treatment treats ADHD, autism, Alzheimer’s, whatever ails you mentally, is that they essentially invent one fake underlying cause for all of these disparate diseases. Like, all of these brain problems are an imbalance between the right hemisphere and the left hemisphere. Nope, that’s not true. They just made that up. In fact, that’s a 50 year old made-up debunked claim.

But if you can invent the fake cause for a host of diseases, then of course your one treatment can address all of those. The ultimate manifestation of that is someone like Hulda Clark who claimed that all human disease is caused by a liver fluke. So if you treat the liver fluke, then you can cure whatever ails you – except for the thing that killed her, apparently.

So beware of that, it’s very common.

It’s what I call ‘indication creep’, which happens sometimes I think naively and sometimes deliberately. If you’re a practitioner using a modality and you’re using confirmation bias and the placebo effect and use psychological factors to convince yourself as well as your patient or client that it works, then you know what, it’s going to seem to work for anything. I’ve had practitioners who have told me this – “This is indicated for this one use, but I’ve found it’s good for all sorts of things.” Of course you did, because you take any placebo effect as confirmation that it works. So if that’s your process, then you are going to come to the conclusion that it works for everything. That’s what indication creep is.

There is also the fact that the more things it works for – or that it’s claimed to work for – the more customers you have, so there’s an element of market creep as well.

It’s always nice to have a mechanism. You don’t need to know the mechanism, you can prove with a high degree of confidence that drug A works for disease B without knowing how it works. But then, that means the bar gets set a little bit higher, we need to know that it really does work. Of course, there’s “not knowing the mechanism” and “there’s no possible way this could work”. So we might not know exactly the biochemical pathway that a certain drug for example might be exerting a biological effect that we’re measuring, but that doesn’t mean that the magical hologram in the plastic on your wrist is going to cure arthritis in your knees. That doesn’t mean that, because we don’t know the mechanism, that that’s on an equal footing. There’s a false equivalent that’s often put forward.

But there is a difference between not knowing and knowing that it’s highly implausible, that we would need to rewrite the physics textbooks and the biology textbooks if these claims were true. Homeopathy always comes to mind when you talk about extreme implausibility.

Another question is whether the treatment is generally accepted or promoted by a single individual or a group?

Treatments that work tend to spread over time. The science is generally a transparent process. There are multiple different organisations involved in the decision-making process as to what works and what doesn’t work. Not just individual researchers but universities and regulatory agencies and professional organisations and multiple different and allied professions that are working together. When something works, people will use it. It will be published in the literature, people will read the literature, they’ll do follow-up research. There’s a process and a community at work in deciding collectively that something works.

But if the community hasn’t gone through this collective process then it’s unlikely you’re going to have something that is likely to work. You have to at least ask yourself, why hasn’t it been vetted by the scientific medical community.

Often what you hear is that there’s some kind of conspiracy, Big Pharma or some other vague group of conspirators.

Doctors are hiding the cure. Whatever it is, it’s just that the proponent is being persecuted; they’re individually being persecuted. Whenever you start to hear that conspiracy theory being woven to explain why “this is the only clinic in the world to offer this one lone maverick doctor’s treatment”, then you’re being sold a bill of goods. That’s a way of hiding from this glaring problem that science is a community transparent effort that happens in the peer review literature. It’s not this rather quaint concept of a lone maverick toiling away.

I mean, how would you even do that? That may be the place in the

“ If you can invent the fake cause for a host of diseases, then of course your one treatment can address all of those. ”

Continued...
modern scientific era where you might generate ideas, but you can’t go through the whole process of showing that a treatment, especially a complicated treatment, is safe and effective for a disease unless you have gone through a fairly elaborate process and there’s been replication etc.

If there’s a reasonable question you could ask about a treatment or you’re being met with “there’s a conspiracy against it”, then that’s a huge red flag.

Some more things to think about.

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**THE INSTITUTE OF BOB**

This is the guy who says he’s discovered this all by himself, he has a lone clinic, there’s no other place in the world where you can get this or he has a franchise, and often these are tied to fairly grandiose claims for authority or expertise.

My favourite example is of one neurologist who I investigated called William Hammesfahr. [Hammesfahr was involved in the famous Terry Schiavo euthanasia case in Florida in 2002.] He claimed that he was nominated for the Nobel Prize in Science & Medicine. That was his claim, which has to be a lie because the Nobel Committee does not release the names of who’s nominated for 50 years.

So unless he was nominated when he was three, that can’t be true; he can’t know if he was nominated for a Prize. I also thought it was curious that he was nominated for a Nobel Prize in Science when he had never actually published any science.

I wrote a critical article about him on Quackwatch and over the years I’ve received dozens of emails from patients or prospective patients and that’s the one thing that every single person cites: this guy was nominated for a Nobel Prize in Science & Medicine, so he’s got to be legitimate.

That was brilliant marketing on Hammesfahr’s part. It really worked. For the average person who was looking for a treatment, and he was telling them what they wanted to hear, that was all they needed to hear.

It takes five minutes on Google to figure out this has to be a lie.

Offshore clinics are always a red flag as well. I think it isn’t obvious by now that if you have to go to Tijuana to get something mysterious injected into your butt that it’s probably not a legitimate treatment. (I joke about that, but Tijuana’s apparently a common location.)

There’s a reason why they’re just outside the reach of regulatory agencies and that’s because they want to be just outside the reach of regulatory agencies. They don’t want to be regulated. The ones that are in countries like Australia or the UK or USA that do have somewhat robust regulatory agencies, they will often clash with them.

My experience is mainly in the US, but it’s amazing to me how these people are able to wriggle out of their clashes with regulation by getting grassroots support. (I joke about that, but Tijuana’s apparently a common location.)

There’s a reason why they’re just outside the reach of regulatory agencies and that’s because they want to be just outside the reach of regulatory agencies. They don’t want to be regulated. The ones that are in countries like Australia or the UK or USA that do have somewhat robust regulatory agencies, they will often clash with them.

My experience is mainly in the US, but it’s amazing to me how these people are able to wriggle out of their clashes with regulation by getting grassroots support from their patients. They’ll get chummy with local politicians and media personalities, they’ll bring pressure to bear on the regulatory health agencies. And it works. The fact they get out of these problems always blows my mind.

Essentially, we’re being failed by the institutions that should be shutting these people down.

**SHOW ME THE PROOF**

The final arbiter of course is the evidence.

But this is where it gets really tricky. The process takes a lot of experience and if you’re a layperson you’re probably going to need expert advice. It takes years and years to know how to think your way through the literature.

Even just to find it is still challenging for me.

If I’m looking up a topic that’s not in my narrow area of expertise it’s often challenging for me to know how to find the evidence I’m looking for. In fact, it’s often the second round, when I find something close to it, that I have to read just to find the terms I’m supposed to search on. Once you hit those terms that’s when you start to get the real evidence you’re looking for.

But it’s good to know, generally speaking, what kinds of evidence there are out there and how we think about them.

The lowest level of evidence is the anecdote – “I took this and I feel better”.

We know that anecdotes are all but worthless. The late Barry Beyerstein [former professor of psychology at Simon Fraser University in British Columbia] said that anecdotes lead people to conclusions they wish to be true, not to conclusions that actually are true. Which means that anecdotes are worse than useless; they actually lead you to the wrong conclusion – they are deceptive, they are misleading.

We use them in medicine as a way of generating hypotheses, not a way of testing hypotheses. I mentioned Botox and migraine before - that originally was an anecdote. A plastic surgeon noted that patients he was treating with Botox were coming back to him and saying “Hey, I haven’t had a migraine since I saw you three months ago, and I used to get migraines two or three times a week.” But that was the beginning of the process. It was seven or eight years later, after many increasingly rigorous trials, that we decided this actually works.

If you’re using anecdotes to justify a treatment, that’s a marker of pseudoscience.

But then there’s a lot of published data that’s very preliminary, and most published data is wrong for that reason. At the end of the day, if you go back and analyse the literature, you use...
The BS Detector

Continued...

The Evidence

- Quality of evidence – anecdote vs preliminary rigorous systematic review
- Transparency
- Appropriateness (right type of evidence – preclinical vs clinical - observational vs experimental - efficacy vs pragmatic
- Specific vs non-specific effects

a question you pretty much know for certain what the answer is, and you find that most of the literature published on that question has been wrong for the last ten or twenty years because of the inherent biases in the research, etc.

The purpose of preliminary research is to tell us how to do the rigorous research and not how to treat patients based on a preliminary conclusion. Using rigorous research, where there’s double blind, placebo-controlled, multi-centre, randomised and especially multiple trials, now we’re talking. We’re at the point where we can actually start to make some reliable clinical claims. And beyond that are systematic reviews of that rigorous evidence.

That’s always what I go for first. If I get a question, let me go right to the systematic reviews and see what the bottom line is. Then I can sort of backfill and look at the research that’s going into those systematic reviews. If you start to see a consensus on the systematic reviews on a question then I feel pretty confident that we’re there.

Anything less than that, our track record is just bad. Your conclusions are not going to be really reliable. But how appropriate is the evidence.

“ There’s a lot of published data that’s very preliminary, and most published data is wrong for that reason. ”

This is a tricky one; this is where I see a lot of deception. Using preclinical data – data from a test tube looking at chemicals or proteins or whatever – and jumping from that to clinical claims means that the preliminary clinical evidence is mostly wrong. Back up three or four steps, even before animal tests but preclinical data, and then try to extrapolate from that all the way to a net clinical outcome. It’s a thousand to one against you’re going to make the right extrapolation.

Pharmaceutical companies know this; they study hundreds of things before they get one product to market. Hopefully they’ll do that before they go bankrupt; some don’t.

You see that all the time in the promotion of dubious treatments. They trump some basic science study and then speculate wildly about the clinical applications.

There are also differences between observational and experimental data. Observational is a good way of looking at what’s happening in the real world and generating hypotheses etc, but not really good for testing efficacy, for testing to see if something works, because you can’t control for variables. You have to be careful about what kinds of evidence are being presented there.

And then there’s the difference between efficacy research and pragmatic research. Pragmatic research is about “what happens when we use this treatment in the real world?” versus an efficacy trial which is placebo-controlled and where you try to control for variables.

Interestingly, in homeopathy and acupuncture and a lot of the alternative medicine research, they’re starting to do pragmatic studies instead of efficacy trials because they’re not placebo-controlled. They can get the positive results that they want. And then they make efficacy claims based on those trials. This is deceptive; I mean, this is fraud. They’re using the research incorrectly. And it’s hard to imagine that they’re not doing it deliberately or at least with a profound intellectual dishonesty because the people who are doing this really should know better.

The other thing they do is to sell specific claims but on non-specific effects. For instance, if you give somebody a massage and then claim it’s the ingredient in the oil you use that made them feel better. But you probably didn’t compare that with a regular massage without the magic ingredient in the oil.

What Do the Critics Say

- BS – detector shortcut
- Seek out critical information
- Where does the consensus lie, if there is one?

There’s a recent homeopathy study where they said “It’s the homeopathic consultation that works, not the homeopathic drug. Therefore homeopathy works.” No, therefore talking to patients works, it makes them feel better. But talking to patients is a non-specific thing, and you can’t make a specific conclusion based upon that.

Then, find out what the critics say. No matter what the claim is, I want to know what the other side is saying. Until you’ve done that, you don’t have a complete picture. It doesn’t matter how compelling a case may seem.

That’s the thing you always have to realise. You do enough work, and you cherry pick, you can put together a story, you can make anything seem really compelling, and you can make any case you want if you are willing to comb through the research and pull out the data that you want.

I don’t feel I have my mind wrapped around any question until I have thoroughly explored what the other points of view are, what the critics have to say.

Activism

- Don’t be a ‘shruggie’
- Your friendly neighbourhood skeptic
DON’T BE SHY

Finally, I’ll say to you what Kirk said to the ‘evil Spock’, the one with the goatee: “In every revolution there is one man with a vision.”

My analogy to that is that in every group, in every hospital, in every social group, there’s one skeptic who knows that the emperor has no clothes. And the question is, are you going to be that skeptic and say “You know what, that guy is naked, he’s not wearing any clothes. You guys all know it and may be afraid to say it because of political correctness or you may be so bamboozled by the BS. But you know what, this treatment is bullshit. And it doesn’t work and it’s not scientific.”

You can be nice about it, you can be professional and objective about it. You don’t have to be an arse or, to use Phil Plait’s term, you don’t have to be a dick. Context is everything; be appropriate. But I get a lot of emails from people who say “My family was going down the road to woo, but I pulled them back to reality because I had the information, and I wasn’t afraid to tell them what I thought.”

You plant the seed.

The opposite of that is what we call a ‘shruggie’, someone who doesn’t want to get involved and doesn’t think they should speak up, and doesn’t see the harm.

Don’t be a shruggie, be an activist.

All that really means is just be the person who understands this is BS and who can ask the right question, who isn’t afraid to point out what should be obvious.

Complain when you need to complain. If you’re working in a place which is bringing in an anti-vaccinationist to talk to your corporation or whatever, complain. Provide the counter-information.

These things happen because of the silence of the people who should know better.

But if there’s one thing I want you to walk away with, it is to not be silent in that situation.

Editor’s note: This article is a transcript of a talk presented at TAM Australia 2010.

About the author:

Dr Steve Novella is the host and producer of the Skeptics’ Guide to the Universe podcast, an academic clinical neurologist at Yale University School of Medicine, and president and co-founder of the New England Skeptical Society.

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On March 18, 2011 I submitted my first complaint about the promotion of SensaSlim to appropriate authorities; the Complaint Resolution Panel (CRP) who hear complaints about alleged breaches of the Therapeutic Goods Advertising Code 2007, the Therapeutic Goods Administration (TGA), who administer the Therapeutic Goods Act 1989 and the Australian Competition and Consumer Commission who administer the Competition and Consumer Act 2010.

This complaint, and at least seven others, alleged that the promotion of SensaSlim on the internet, TV and in shops breached numerous sections of the above regulations.

My initial complaint had been worked up with the help of several pharmacists. In addition, specific promotion was directed at pharmacists to encourage them to stock and sell this product. Thus, on March 31, 2011 AusPharm.net.au published a brief but accurate account of the complaint detailing concerns about the claims made.

Later that day both AusPharm and I received a letter from the SensaSlim (Australia) Pty Ltd, titled, “Notice of Intention to Commence Proceedings”. This, and subsequent communications from SensaSlim Australia, threatened legal action against AusPharm and myself. This was initially aimed at removing the material on AusPharmList, but subsequently (after AusPharm complied) it was threatening both my university and me with legal action unless my complaint was withdrawn.

My university could not be joined in the threatened legal action because the conditions of my Adjunct appointment were clear: “During the period of this appointment you will receive no remuneration from La Trobe University. Nothing in this offer creates or implies an employment relationship between you and the University.”

I declined to withdraw my complaint. Whereupon, on April 19, 2011 a ‘statement of claim’ was issued against me in the NSW Supreme Court, alleging that my complaint was defamatory and claiming “general and punitive damages for libel in the sum of $800,000.00”, plus costs.

This action had the effect of stopping the CRP from hearing all complaints about SensaSlim due to Therapeutic Goods Regulations 1990 42ZCAJ (2): “If, after a complaint has been made to the Panel, a proceeding begins in a court about the subject matter of the complaint, the Panel cannot deal with the complaint until the proceeding is finally disposed of.”

SensaSlim subsequently sent out a newsletter to its members which stated: “This defamation action, which could be in the courts for a year or two or even longer, basically gives an iron clad protection that nobody can raise a complaint against SensaSlim to the CRP and hurt us.

“There are nine complaints that were received in a three day period two weeks ago. These were not complaints by members of the public, but clever legal crafted arguments by people acting on behalf of our competitors and big pharmaceutical companies. These are the same people who have written to the CHC [Complementary HealthCare Council] to delay and hinder our progress and having our advertisements...”
approved ... and they also wrote to the TGA.

“But let me say this. We will not allow their dirty tactics defeat us. We had a very big win this week with the determination by the CRP that they cannot adjudicate on any matters pertaining to SensaSlim.”

My own lawyers filed a notice of motion in the NSW Supreme Court seeking orders to have the SensaSlim claim struck out and the proceedings dismissed because they disclosed no reasonable cause for the action. In addition, my lawyers asked for an order that the plaintiff pay the defendants’ costs.

The story broke in the media on May 16, 2011 on Norman Swan’s ABC Radio Health Report. Subsequently, media coverage has been extensive (see the appendix).

On May 21, the medical research director of SensaSlim, Dr Matthew Capehorn, announced he had resigned. He stated that: “Despite requests, I have never seen evidence of the original clinical trial, and it has never been published in a peer reviewed medical journal. Therefore, the White Paper [which SensaSlim claimed proved the benefits of the product based on the supposed study of over 11,000 people] holds no scientific relevance, until that original trial is published.

“It has not been published at the European Congress of Obesity in Istanbul as suggested recently” and “video interviews were put on the SensaSlim website, without my approval or opportunity to review the content” (email from Dr Capehorn sent to the Australian SensaSlim franchisees available on request).

However, the SensaSlim Australia web site continued to feature Dr Capehorn. [Editor’s note: As of August 18, the SensaSlim site, moved to a .com address, is still online and still has the video of Dr Capehorn’s endorsement.]

In addition, the SensaSlim “Where to buy” web page listed numerous Australian pharmacies. On June 5, 2011 SensaSlim published another advertisement for its product in the Sunday Mail newspaper. This resulted in another complaint because the advertisement lacked the necessary pre-approval number. Despite SensaSlim’s objection, the CRP decided to hear this complaint on the grounds that this technical issue was not the subject of court proceedings.

On June 14, 2011 the defamation case was heard by McCallum J. at the NSW Supreme Court. Orders made included that the plaintiff (SensaSlim) pay the defendants’ costs to-date; that the plaintiff could file an amended statement of claim (as requested) on or before 1 July 2011, and that the proceedings be stood over to the defamation list on 15 August 2011 but the parties had liberty to relist proceedings in the defamation list on 11 July 2011.

On June 16, 2011 in response to submissions by the Australian Competition & Consumer Commission, Jacobson J. ordered that the Commonwealth Bank account of SensaSlim be frozen. SensaSlim’s lawyers (Kennedys) then withdrew from the case. The Age newspaper subsequently reported that the research used as the basis for the product’s marketing appeared to have been fabricated.

On June 30, 2011 an external administrator was appointed to take over the company.

A revised statement of claim was not submitted by SensaSlim by the final date allowed by McCallum J. (July 1, 2011). My lawyers then applied again to have the case finally struck out (and costs awarded) at the next defamation list scheduled for July 11, 2011.

However, on July 10, 2011, a letter arrived from the lawyers (ERA Legal) of the newly appointed SensaSlim administrator arguing that the hearing should be adjourned until August 15, 2011 on the grounds that they had had insufficient time to consider the matter. At the July 11, 2011 hearing Nicholas J. agreed to this request despite defence counsel arguing that it was in the public interest to have the case dismissed immediately so that the CRP could consider the eight to nine complaints currently suspended in the queue.

On July 27, 2011 the Federal Court ordered SensaSlim to publish a notice on its web site including a statement that they had: “falsely representing that the Sensaslim Solution was the subject of a large worldwide clinical trial when in fact no such trial was conducted” and “falsely representing that Dr Capehorn, an obesity specialist, gave unqualified support to the effectiveness of the Sensaslim Solution and the purported clinical trials”.

Meanwhile, my lawyers wrote to the SensaSlim administrator’s lawyers asking that the proceedings against me be dismissed; an offer that remained open until 5:00 pm on August 2, 2011. No response was received by that time; hence the case was listed again for the NSW Supreme Court on August 15, 2011.

On August 4, 2011 the CRP wrote to the TGA with respect to the SensaSlim advertisement published in the Sunday Mail on June 5, 2011. The CRP noted that no response had been received to the request to withdraw the advertisement; the CRP recommended that the TGA order compliance and also cancel the listing of the goods under Section 30 of the Therapeutic Goods Act 1989.

On August 15, 2011 the defence motion to have the case struck out and costs awarded was granted by Nicholas J. in the NSW Supreme Court. Ironically this would appear to be a pyrrhic victory as the liquidator has said there is no money to award costs (and there are also many other claimants).

On August 11, 2011 a new defamation claim was filed in the Queensland Supreme Court by Peter O’Brien (previous director of SensaSlim (Australia) Pty Ltd), this time for $1,075,000.00. Hence, round two of this saga now commences.
SensaSlim Saga

Continued...

KEY ISSUES AND LESSONS

There are a number of lessons that need to be drawn from the saga to-date.

Firstly, one might have hoped that university trained health professionals, such as Dr Capehorn and numerous Australian pharmacists, would have recognised snake oil when they saw it; but perhaps the return on investment offered was more compelling?

Second, one might have expected that the TGA would have responded to previous calls to look more rigorously at complementary medicines before they are listed on the Australian Register of Therapeutic Goods (ARTG). This would have saved many people - franchisees, stockists and consumers - from losing large amounts of money on SensaSlim.

Third, on receipt of well documented complaints, surely the TGA should have rapidly de-listed this product from the ARTG using the power it has under section 30 of the Therapeutic Goods Act, 1989? This would have made continued sales illegal.

Ironically, the TGA has yet to formally respond to complaints about this product that were sent to it direct. Perhaps the Pan Pharmaceutical class action, which cost the taxpayer tens of millions of dollars, has made the TGA more cautious about taking such action?

Regardless, until penalties available for unethical promotion of therapeutic goods are greater than the financial returns from such behaviour it is unlikely that some sponsors will be deterred.

Fourth, Therapeutic Goods Regulations 1990 42ZCAJ(2) needs to be repealed; it clearly encourages strategic litigation against public participation (SLAPP) writs by suspending investigation of the complaint while the litigation plays out in the courts. In addition, there is need for national anti-SLAPP legislation to be introduced that will protect whistle-blowers.

Finally, this case shows that the financial cost of defending a defamation action is now out of reach of the average individual. The final cost of engaging lawyers and senior counsel will be of order of $40,000; this includes a discount applied because of the public interest nature of the case. Indeed, at one stage their advice was to roll over, wave my legs in the air and withdraw my complaints on the grounds that continuing to defend this action would be unaffordable. Fortunately, due to the heart-warming moral and financial support of many friends and colleagues, I was able to see this case through to a successful conclusion. In this regard, I should particularly like to thank Eran Segev, president of Australian Skeptics, for organising financial support and supporting me in court. The media also played a crucial role by providing extensive publicity of this ongoing saga. This response by civil society sends a strong message to companies contemplating similar tactics against complainants; the publicity will be counter-productive and these cases will be fought to a successful conclusion.

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APPENDIX - MEDIA COVERAGE

A version of this list with full hyperlinks is available on request.

Justin Armsden. Slim spray scandal. ACA. June 1, 2011.
Jane McCreedie. Law shuts down criticisms. MJA Insight, June 20, 2011.
Martin Hadley. SensaSlim, the ACCC and Dr Ken Harvey. June 23, 2011.
Jo McFarlane. Obesity guru paid £10,000 to promote ‘fake test’ diet spray Sensaslim. Daily Mail UK. July 3, 2011
ACCC news release. ACCC takes contempt action against Sensaslim director. August 16, 2011.
Brain testers

CRYPTIC CROSSWORD no 11

1. Spirited version of the mains I’m involved with. (7)
4. The Lion of Africa is the Inspector General we have been waiting for. (3,4)
8. Nervous mannerism times 99. (3)
9. The last saurian found in Terra Incognita. (11)
10. Emotional transmissions go in six billion directions. (5)
11. Alien and French! (2)
12. Timeless law on public sculpture. (6)
14. I have my doubts about cousin piss. (10)
15. A half might like more. (4)
18. Aliens could be found with knotted ties. (4)
19. Cut fruit is something you look forward to. (10)
22. Prisoner of war added to the Queen’s prerogatives. (6)
24. It’s the art society of the Sun God. (2)
25. Poster would be Nip if it weren’t across. (5)
27. Can you ever find a copper to put a hole in pins and needles? (11)
28. Or back I go for the king. (3)
29. To sleep perchance rated MO. (2,5)
30. 4 across a father I can be. (7)

DOWN
1. Are campaigners’ Biblical books around for one saint? (9)
2. Seductive demon found in young America. (7)
3. Yes, tourism can be wrong, but it’s difficult to know why? (10)
4. My part in the legend. (4)
5. Outside broadcast was dead flat. (6)
6. A very big soldier ant. (5)
7. Follow the measure, follow the litigation. (5)
9. Attack like donkey sick! (6)
13. In a UN club, one for old printings. (10)
16. From the start, you make a nice point. (9)
17. Pathetic creature the French nun wears. (6)
20. Eastern mystical version is primarily a brown deception. (7)
21. Euros a way to lift interest. (6)
22. Stargazer looks like knotted hair but sounds like a dish. (5)
23. Tightened and hurt. (5)
26. Lowlife adds 100 to the total. (4)

DR BOB’S TRIVIA QUESTIONS

1. Among Jesus and his 12 Apostles, who was the treasurer?

2. Why did Sir Isaac Newton hang around in brothels and bars?

3. When Norwegian bureaucrats on Spitsbergen complained to head office in Oslo about mice in their office, what type of cheese were they told to use in the mouse traps?

4. What is the derivation of the Japanese word intoray meaning “scaffolding”?

5. What proportion of the criminal acts in Enid Blyton’s Noddy books are committed by the Golliwogs?

Answers on page 62
Born in 1970, Leo Igwe has been a continual and determined campaigner for human rights and a humanist and skeptical approach in Nigeria, a country which is highly religious, encompassing Christianity, Islam and a strong underpinning of animism. Across his own and neighbouring countries he’s seen corruption, superstition, religious intolerance, cruelty and abuse of the poor and handicapped, sometimes including murder and ritual sacrifice. He regularly addresses conferences and international meetings on the subjects of humanism and religious bigotry and power. He is the ultimate example of a humanist/skeptical activist, and for his efforts in highlighting and trying to counter such activities, he and his family have been arrested, beaten and suffered death threats.

Leo was the founder of the Nigerian Skeptics Society (though that is not active for now), and at one stage he was director of the Committee for Scientific Inquiry for Nigeria. Currently he works fulltime for the International Humanist and Ethical Union (IHEU) as their representative in West and Southern Africa. He also represents IHEU on the African Congress for Human Rights.

During an extended lecture tour of Australia, in which he visited every capital (bar Darwin) over a three week period. His presentations covered what were often the most disturbing aspects of human nature and religion, and he was greeted with rapt attention and much concern for him and the state of human rights in Africa.

He spoke with The Skeptic about his life and activities, and his running up against religious intolerance, superstition, fear and witchcraft.

Tell us about your background.

I was born into a Catholic
family, one that was and still is deeply superstitious. My educational background was training in seminaries for 12 years. My father sent me there - I didn't go out of my own volition. My parents thought that the seminary schools had a better education system. It was designed to turn out priests, but you know that many people who go there do not end up being priests.

At a point I decided I was not going to be a priest because I didn't find the Catholic teaching very convincing. In my high school days at the seminary, I studied philosophy and a few months of theology. It was the theology that put me off completely because it was in contrast with the philosophical outlook. The dogma and beliefs ... some of them were outright nonsense to me. I decided that it would just be miserable for me to continue, so I made up my mind to leave the seminary.

I didn't have a specific moment when a skeptical attitude suddenly dawned on me. I'd always been curious as much as I can recall. My father was a teacher and there was a kind of academic undertone to my studies.

As I was growing up there were so many different religious and superstitious beliefs and teachings, and I used to wonder why my people used to believe things like that.

There's a tradition there that you shouldn't question things. They're also not convinced by any lack of evidence. So as I was growing up I had a tendency to get into areas that when I was told something was forbidden I'd try to find a way to get into it and find out why it was. Sometimes it has landed me into trouble. I almost got drowned in a swimming pool because I was told I shouldn't go in to the deep end. I saw people going in there and I didn't know how to swim. So I always had this feeling that, when I was told “Don't go in there”, my feeling was “What is there?” So I had this curiosity, I was inquisitive.

Therefore I couldn't just believe anything. I was trying to find out for myself.

But I grew up in a family where my father was very authoritative and I went to an authoritarian school, so what I did was I would suspend my own personal doubts and I kept them to myself. I just watched, taking in what they said.

I waited for my independence, when I would live on my own, and I was looking forward to that time. This was particularly when I was doing philosophy.

Because I had these questioning feelings for a very long time, it was not difficult for these [superstitious] attitudes to disappear, like a pack of cards.

When I was in the seminary I used to stay away from church. They used to go to church six times a day to pray. It was boring. And I wasn't going to church to pray, but you needed to go to church to go to classes, to eat and what you did next day.

As a protest, I said that, if there is God, that God should hear my prayer. If I said protect me, then he should protect me. So I went to church saying the same prayer. So I thought, I don't need to go to church today, God will protect me. Then, I wouldn't go to church for two days – God would protect me for two days. So I stayed away from church; I stayed away from prayers because I thought, why must I go to a special place to pray? God will hear my prayer and protect me throughout this week. That should be enough.

I was just toying with the whole idea.

For me, the realisation that the God-idea was empty was a propelling force. I asked myself, what am I doing here? There was no way I could make it as a priest because I would be preaching this thing without being convinced.

I had serious doubts. But there was no space to express that doubt. So I just felt that the best way was to leave them.

I announced that I was going to live on my own. And that was challenging, because I come from a deeply religious society, so I had to go from the south-east where I was born and relocated to the south-west. That gave me a level ground for me to relaunch my life along my own convictions.

I thought that the best way not to feel so miserable and lonely was to start something like a humanist or rationalist group, and use that to look for like minds with whom I could socialise. I knew I was having a hard...
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time meeting people because when you want to make a friend, the first question they ask you is which church do you attend? Then because you don’t have a church you become a target for preaching and professional evangelism. They want to invite you to their church.

I founded the humanist and skeptical movement [in Nigeria], and since then I’ve been fully involved. I was really encouraged by the humanist tradition of the Renaissance and I felt that maybe I could give it a shot, sort of, push some sort of African Renaissance using the humanist/rationalist outlook.

That was the key to my inspiration. But of course it was in the minority. I knew that. But I had this deep conviction that much of what we are told on the supernatural nonsense was out of ignorance and fear. And I see that every day. I see that around me through all the days.

There were no humanist or skeptical movements in Nigeria before you?

There were individual humanists. I read about some people who tried to set up a humanist movement. But by the time I set up my groups there were no humanists or skeptics in the country.

Describe the religious setup in Nigeria. There are Muslims and Christians; the Christians tend to be Catholics?

People have lived in Nigeria for so many years, across many centuries, and most people were animist believers, and you have what you call tribal community gods. We have our own community god in my village. Not in my tribe, I’m talking about my village.

But when the Christian missionaries came, they eventually succeeded in supplanting the local gods by replacing them with the Christian ‘god’.

But our people did not abandon the traditional gods. What happened was that they dismantled the shrines, physically but not mentally. They retained it intellectually even if not physically.

That was in much of the southern part of the country. In the northern part, we had Islam. And they too replaced the traditional gods. In some areas of the north you still have some Christians, but there was confrontation between the two. Islam was already in place when the Christian missionaries arrived, so they were hostile to the missionaries.

That kind of rivalry still remains in my country today. They fight from time to time – physical violence.

In the south, there is some level of tolerance because of the fact that there are so many denominations. There is competition among them. But they will also have different strongholds. In the south, where I come from, that’s a Catholic stronghold. In the other parts, we have the Methodists, Anglicans, which dominate.

People are compelled to be tolerant because of the diverse Christian denominations. But if you say you don’t belong to any, there’s an antagonism toward you.

But I was able to gradually make my parents understand. You could make a choice. My father was born an animist, but converted to a Catholic. It was his own decision. He decided to do it. So I was able to make them understand that, maybe I was brought up as a Catholic but I might decide to be a humanist. It was the same thing – switch from one religion to a non-religion.

I was able to convince them, even though they felt I was travelling a very dangerous path.

I could be assaulted, I could be persecuted, I could be killed. And, of course, when I was having troubles here and there, some of them were telling me: “I think I told you. You were taking a risk; it was committing suicide. You can’t change society.”

When you talk about the dangers of humanism, here you might lose a few friends. In Nigeria, there can be a lot more serious dangers.
I lost all of my friends. So it was like starting my life all over again. You can’t go to people’s homes and introduce yourself. I had a neighbour, he told me that he liked me 95 per cent, but he hated me 5 per cent. And that 5 per cent is because I said there is no god.

According to him, the 5 per cent hatred has poisoned the 95 per cent. They suggest someone with no god has no moral ground, and they’ll give someone else high moral ground, even if they’re a criminal.

When you had moved, you were living on your own, having trouble meeting people, what were you doing? What was your job?

I was teaching in primary schools. Virtually all of the schools were controlled by Pentecostal Christians. It was like I needed to do this work to feed myself, so I focused on my job but didn’t discuss religion or free-thinking. They knew I wasn’t the prayer type, so I asked a friend of mine who worked in a hospital if there were any jobs, and he told me that, “You know, you don’t need support. Many of the funding agencies in Africa are controlled by pastors or imams. So we don’t usually get funds to prosecute our campaigns. The funding we get is from the IHEU, which is very small compared to the enormity of the task. So our challenge is to get a really effective campaign. But nonetheless we still have our campaigns. They include campaigns against witchcraft accusation and witchcraft-related abuse.

Witchcraft accusation is a major problem. They’re actually a death sentence. People accused of witchcraft can disappear at any time, particularly when the person is from the vulnerable segment of the population — women, children, the aged, people with disabilities. Immediately there is some kind of association with witchcraft. I saw it when I was growing up, when I was asking questions “why?”. And I didn’t see any reason for it. And I saw many people in my community die... killed in the name of witchcraft and in the name of ritual sacrifice.

It’s very common and overt?

Yes, witchcraft accusation is very common; maltreatment in the name of witchcraft is also very common. But what happens is that it is always difficult to measure or to track it down. When most people in Nigeria grow old, they grow old into poverty, and they need the support of the younger generation. One way to punish any member of a family who is suspected of witchcraft is to withdraw the support system. And that is why the witchcraft accusers always target the vulnerable, the ones who need support.

There are cases of children being driven out. There are many ways of punishing people because you suspect that they have magical powers and they are using these powers against you. Or you are interpreting your own misfortune as people are after you and are trying to use whatever magical power against you and against your progress.

Let me tell you this story. When I was ten years old, two of my cousins came to our house and beat my father into a coma. My father later told me that the cousins wanted to use my mother for ritual sacrifice. They had been to a witchdoctor and wanted to invoke my mother because they believed that once a witchdoctor has invoked someone they can stab that person or do anything they want to do.

A friend told my father that two of my cousins wanted to use my mother for this ritual. But they failed, the process backfired and they fainted at the witchdoctor’s place. The superstitious belief is that if you want to kill someone through voodoo and you miss it, then the voodoo gets back to you. I don’t know how it works, but that is the belief that is killing my people and killing people across Africa.

My father went and confronted the...
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brother of the cousins, and said you want to eliminate the life of my wife. So the man told the cousins and they went to my father and insisted he tell them who had informed on them. My father refused. So they locked him in a room and beat him.

I was traumatised by this; I was ten years old. It was shocking to look at my father bruised and beaten. What was their reason? Superstition and nothing more.

Two years ago, in my community, a high school boy beheaded a man. This isn't something I read in a newspaper, this happened a few kilometres from my house. You go to see a witchdoctor, and he might say the spirits need some sort of sacrifice. Go and get the head of someone in your family. It could be your mother, it could be your father, it could be your children. So this boy went to his uncle and told him to go to the forest. He cut off his head. He took the head to the witchdoctor, and he might say the spirits need some sort of sacrifice. Go and get the head of someone in your family.

I'm not talking about solving all the problems of the world. I'm not even talking about all the superstitions. But if we can help someone get out of jail who might otherwise be there for years.

But with animism underlying so much of the religion and culture in your country, can you ever solve the problems facing you? You can take some women out of jail, but can you change the whole attitude?

I tell people I cannot make messianic pronouncements - “I have come to change the world”. But I've read histories of other countries. And I think, if Europe can get to where it is today, then there is some hope for Africa.

That is why I ask myself, where do I want our effort to be channelled. Is it toward enlightenment or toward a dark age? Now I have succeeded in drawing a line of distinction between a dark age and enlightenment and what I'm doing is pushing the boundaries … pushing it forward.

If I die and don't achieve it, then so be it. But I will do my best, whenever I'm allowed.

With the areas that you deal with, witchcraft and sacrifice etc, you're dealing with life and death issues. When you look at the issues that we deal with in Australia, do they seem trivial to you?

They do not. We have the same problems. You have the anti-vaccination movement, we have the same thing in our own way.

When I read The Skeptic, I draw inspiration. I get more refreshed; I get my activist 'machinery' lubricated. When I read what you are doing in critical thinking, I get inspired. When I read what you are doing in the area of psychics, some of the methods you are using give me additional tools to tackle what we call witchdoctors or prophets and prophetesses, faith healers.

Some of the things we need to be skeptical activists is we need the confidence to challenge these people.

So reading The Skeptic is like nourishing me. That's what I get. It may not be with the specifics. It nourishes me with the substance … the substance of skepticism. So that is why, when I get my copy, that's what I carry around. There may be a story, this happened in Canberra … but you look at the issues, it's all about dogma, it's all about blind faith, it's all about someone spreading nonsense, and it's all about someone trying to get away with fraudulent claims.

It's very flattering saying you are inspired by us. But we are inspired by what you do. What do you think we can learn from what you're doing in Nigeria? What can you teach us?
What I tell friends, in other parts of the world is that, because of limited resources, we concentrate on what’s happening within the shores of our own country. But it is important that we devote some of our time to finding out what is happening in other countries.

This is the mistake people have made over the years. The say, oh this doesn’t matter, don’t worry, it’s Africa. But Africans, for one reason or another, Africans come to live in Australia. Or Australians, for one reason or another, come to live in Africa. Today, the world, they call it a global village. Any skeptic movement must be a global skeptic movement. In other words, skeptics must be ready not only to confront the challenges in their own country, but they must understand the challenges in other places. And we should also understand that somebody somewhere might be inspired by what you're doing.

I got to know a humanist in Zambia by reading the Australian Humanist.

I have donated skeptical material and Australian Skeptics magazines which some groups in Africa have found useful, and many people file chapters and sections on critical thinking.

Some of the things you read and take for granted are precious for others in some areas. We use them to sow the seeds. If you don’t need your copies, you can give them to us. Out of the hundreds of people, maybe one per cent may read it and get inspired.

I know that you have your challenges, and that the forces of dogma and gullibility will always be troubling the skeptical outlook. I am saying this, you are making some progress, you are going some steps forward. But there are people who have not even started taking these steps. Can we have some sort of skeptical solidarity and global outlook? People who feel they could make donations, let them make donations to support a group. A small donation of a few hundred dollars can help organise a meeting on a campus and distribute those materials. That was how religion in Africa spread. If there is anything you can do to support skeptical activism and look beyond your borders, they should do it. Who knows, the James Randi of tomorrow may come from Africa.

About the interviewer:
Tim Mendham is executive officer and editor with Australian Skeptics Inc.
Despite the best intentions and the best evidence, misinformation can have ongoing implications. Ullrich Ecker and Stephan Lewandowsky ask how we can reduce them ... if we can.

In the lead-up to the 2001 Australian federal election, there were claims that asylum seekers on a boat off Christmas Island had thrown their own children overboard in an attempt to secure “forced rescue” and entry into Australia1. In the lead-up to the 2003 Iraq invasion, then US vice-president Dick Cheney said there was “no doubt” that Saddam Hussein had weapons of mass destruction; that there was “no doubt” that he was amassing them to use against his enemies2. In recent years, a group known as the ‘birthers’ has claimed that US President Barack Obama was born outside the United States3 - which would make him ineligible to be President.

In 2008, Adjunct Professor Bob Carter claimed that global warming had stopped in 19984. What do these publically made claims have in common? They all turned out to be false.

An Australian Senate committee concluded after extensive investigation that no children had been thrown overboard but that people were in the water because the vessel had sunk1. Months of intense search failed to find any weapons of mass destruction in Iraq after the 2003 invasion5. Hawaiian officials and the White House have released Obama's birth certificate, proving he was born in the United States6. Carter's claims about global warming have been refuted7; virtually every science academy in the world now considers ongoing anthropogenic global warming a fact8, and the first decade of the 21st century has been the hottest on record.

Despite the fact that these retractions were clearly and widely communicated in the media, many people continue to believe these untruths. For example, a recent CNN poll found that about one in four US citizens continues to believe the false claims that Obama was born outside the US9. In 2003, over 20 per cent of US citizens continued to believe that weapons of mass destruction had been found in, or even used by, Iraq10. Many people, especially in Australia, continue to believe that man-made global warming is not an issue of concern11.

Why does this happen? And perhaps more importantly, can we prevent this from happening?

In psychology, these effects are called "continued influence of misinformation"13. People continue to rely on misinformation even after the misinformation is clearly retracted or corrected. When people receive a piece of seemingly valid information and are then told it is actually false, they continue to rely on this misinformation. Alas, this even happens when they believe, understand, and later remember the retraction.
To a degree, a person’s susceptibility to such misinformation effects depends on the topic and the person’s related pre-existing attitudes and beliefs: Conservatives are more likely to believe in misinformation about asylum seekers such as the ‘children overboard’ claims. Republicans are more likely than Democrats to believe the birthers’ claims as well as the Iraq-related claims. Free-market ideologists are more likely to deny anthropogenic global warming. In fact, people with very strong beliefs are very good at cherry-picking the data that fits their beliefs (and ignoring evidence that does not, even when it is overwhelming). People tend to protect their beliefs and worldviews because violations of strong beliefs are conceived as threats to one’s identity.

However, the effects of misinformation also occur with completely neutral information and independently of its emotional content. For example, when people learn in a laboratory experiment that a hypothetical warehouse fire was caused by negligently stored gas cylinders and oil paints, and this information is then retracted, people may correctly respond to the question “what caused the fire?” with “I don’t know, they first thought gas and paint, but that was not true.” But a few minutes later they may respond to the more indirect question “what caused the black smoke?” with “the oil paints.” This is like learning that John killed Jane, then finding out that John didn’t, acknowledging the fact that he is innocent, but nonetheless telling your friends not to trust John. As the saying goes, mud sticks.

But why?

When we listen to unfolding news events, we build a mental model of the event. Whenever a piece of event information is retracted, it leaves behind a gap in our model, a gap in our understanding of the world. It seems as if people don’t like these gaps, so sometimes we prefer an incorrect model of the world to an incomplete model of the world.

Making matters even worse, this effect has proven difficult to eliminate. Repeating incorrect information increases its effects. So if you hear false information repeatedly, it will have a stronger effect on your reasoning, and repetition leads to belief. Unfortunately, the repetition of a retraction does not seem to have the same effect. In addition to the fact that headlines are often published on the front page in bold font, while a possible retraction two days later lands on page 17 in small print, repeating the retraction will reduce the effects of misinformation only to a certain degree. In fact, even if the misinformation is given only once, repeating the retraction three times does not eliminate its effects. So if people are told only once that John killed Jane, their attitude towards John will still be affected by this accusation even if they are then told three times that he was actually innocent.

So is there anything that can be done to eliminate people’s reliance on misinformation?

Giving people a plausible alternative - for example, that the fire was not caused by negligent storage of gas and paint but by arson - reduces the effect. This is because the alternative can fill the gap left behind by the retraction. But again, often an alternative does not eliminate the effects of the false claims. In addition, a plausible alternative is, unfortunately, not always available. When you find that John did not kill Jane, you may not have an alternative suspect.

Warning people explicitly and telling them all about the effect also reduces misinformation effects but does not eliminate them. This is because it makes people more careful and they start to strategically monitor their reasoning. Therefore, juries should be informed that, sometimes, inadmissible evidence is introduced into a trial that may mislead them. Children should be told about the resilience of false information in their media education. This seems particularly important in the days of Facebook and Twitter, where information is disseminated quickly, widely, and without the fact checks that proper journalists should always perform. (Of course, the positive side of Twitter is that sometimes the truth gets put out there before it can be twisted or censored.)

Finally, raising suspicion about the source of the misinformation helps alleviate its effects. For example, people who were suspicious about the official reasons for the 2003 Iraq invasion – namely, the search for weapons of mass destruction - were
How Mud Sticks

Continued...

better at distinguishing between trustworthy news reports concerning war events on the one hand, and false, retracted reports of events on the other. Similarly, learning that some prominent climate change deniers, such as outgoing Australian Senator Minchin, also long denied the adverse health effects of tobacco may make people more suspicious of all their claims involving scientific issues.

In general, a healthy sense of skepticism makes you better at telling the right from the wrong. So next time you hear someone explain how and why something has happened, make sure you critically question their motives, because in the long run this skepticism will lead to a more accurate understanding of the world.

About the authors:

Dr Ullrich Ecker is an assistant professor at the University of Western Australia’s School of Psychology and a Postdoctoral Fellow of the Australian Research Council.

Dr Stephan Lewandowsky is a Winthrop professor at the University of Western Australia’s School of Psychology and a professorial fellow of the Australian Research Council. For more information, visit http://www.cogsciwa.com.

References

How I Became A Skeptic

I am often asked how, given a decade in church schools, I became a skeptic. Curiously it was the church in general (and the Marist sect in particular) that actively encouraged me to question all beliefs that had no scientific foundation, including all the belief-systems they hold so dear.

One of the many (often pointless and usually quite tedious) discussions that took place in religious instruction classes will illustrate my point. The topic centred on a question from one of the class about why the church was opposed to superstitious beliefs. Today we would tend to call them “paranormal” rather than “superstitious”.

Following is pretty much the dialogue that ensued:

M (member of the Marist sect): Boys, it is very easy to confirm that superstition is nonsense.
P: How?
M: All you have to do is [wait for it …] scientifically test the hypothesis that the superstition is right.
P: OK, so what about the scientific test? Wouldn’t that reveal a eucharist to be nothing more than unleavened bread? Therefore it can’t be of human origin. Therefore this “body of Christ thing” is a superstition. Therefore we cannot accept it as correct. Therefore we must act as if the eucharist is nothing more than bread.
M: While it is true that a scientific test would show the eucharist to be unleavened bread, your conclusion is wrong and therefore the hypothesis - that the substance you are examining is human flesh - is correct!
P: Uhhhhh! How come?
M: Because priests have a wonderful power. When they say special words and wave their arms in a particular way over a piece of bread [during the ceremony called the mass] transubstantiation happens. This not only converts bread into flesh, but it also causes wine to be converted into human blood.

I began to realise, even then, that one could get very tired and very old before this discussion would come to a satisfactory - or indeed any sort of - conclusion.

In a new feature of The Skeptic, we plan to publish regular input from Skeptics – leading or otherwise – on how they became a skeptic, presuming they weren’t born that way. We kick off with this anecdote from John Smyrk.

Editor’s Note: Contributions to this column are invited, but no promises are offered that every submission will be published – no doubt there are as many anecdotes on becoming a skeptic as there are members.

About the author:
John Smyrk is a visiting fellow in the School of Management, Marketing and International Business at the Australian National University. He is also principal of Sigma Management Science, a project management and process improvement consultancy. John spoke at TAM Oz on management pseudoscience.
Mass immunisation has been such an important factor in the decline in child mortality in the developing world that Bill Gates and Warren Buffett have pledged US$10 billion from their Foundation to make this the ‘Decade of Vaccines’.

Despite all of this, most of the three million people who owe their lives to vaccines each year are unaware of it: while immunisation is as important as oxygen, it is just as invisible. Today, many people in the industrialised world don’t believe that vaccines are really necessary, while others doubt that they are safe or effective or claim that immunisation is unnatural.

These views are not confined to the poorly educated. Some years ago I came home from work to find my wife, who is a doctor, distraught having found that our daughter’s partner had persuaded my daughter and several of her closest friends not to have their babies immunised.

This situation, which incidentally ended well for the children involved, caused me to reflect on how things have changed in my lifetime.

Ian Gust lays out the history, the outcomes, and the real situation of vaccination in the world today … and how times are changing.
VACCINATION IN SOCIETY

By the age of 30, most people of my generation had been immunised about once a decade.

I have no recollection of my first encounter, receiving the so-called Triple Antigen, a combination vaccine which protects against diphtheria, whooping cough and tetanus, as a baby. But as a teenager in the 1950s I have a very clear recollection of standing in a long queue at the St Kilda Town Hall to receive the Salk polio vaccine.

Being mantoux positive, I missed out on the BCG vaccine against TB and received my final shot - TAB, the combined typhoid, paratyphoid A and B vaccine - in the late 1960s just before joining the MV English Star in Tasmania to travel to Europe as a ship's doctor. This was memorable because it caused significant swelling at the injection site and made me feel terrible for a day or so.

All of these vaccines were produced at the government-owned Commonwealth Serum Laboratories.

Compare my experience with that of my grandchildren who, by the time they are teenagers (even without travelling overseas), will have received an additional 12 vaccines, none of which (with the possible exception of influenza) will have been produced locally.

The post-War period has been extraordinarily productive for the vaccine industry. Driven by access to new technology and greater appreciation of the health and economic benefits of immunisation, many new vaccines have been developed and some existing vaccines improved or combined.

During this process vaccines have moved from being high volume, low margin products largely produced by governments to differentiated products, produced by a handful of research-based pharmaceutical companies and commanding premium prices.

For viral diseases, the developments which revolutionised the production of vaccines were the development of penicillin which, when added to streptomycin, made it possible to maintain living cells in culture for weeks at a time, and fermentation technology which enabled the production of viruses and some components at industrial scale.

My parents needed little encouragement to have their children immunised. Born in Europe at the turn of the last century, they had both lost family members from infectious diseases. Later, they nursed my older sister through a severe attack of diphtheria and both of us through the big four: measles, German measles, mumps and chicken pox.

My father's friend, Alan Marshall, who wrote the inspiring book I Can Jump Puddles, was a constant reminder of the threat posed by paralytic poliomyelitis.

Our daughter's generation has had none of these experiences.

Widespread use of vaccines has reduced the incidence of many previously common childhood diseases to such an extent that modern parents are largely unaware of their threat.

When I was a student, measles was known to be a serious disease with important human and economic consequences. In the US, prior to licensing of measles vaccine, a typical year would result in about 500,000 notified cases, tens of thousands of hospitalisations from respiratory and neurological complications, and several thousand deaths. These days, many doctors graduate without having seen a case, let alone any of the sequelae.

The absence of a disease from the community is sometimes equated with the absence of risk, people wrongly assuming that if the disease is absent, the organism causing it has somehow disappeared.

"These days, many doctors graduate without having seen a case of measles."

This is rarely the case. Usually, the causative organisms either persist in the environment or are readily reintroduced, so that when immunisation rates decline, epidemics occur.

One of the most dramatic examples of this was the re-emergence of epidemic diphtheria in the Russian Federation. After the collapse of the Soviet Union, the local vaccine manufacturer was unable to pay its staff and production ceased. Between 1991 and 1996, a massive outbreak of a disease that had been well-controlled for two decades took place, with more than 140,000 cases and 4000 deaths.
The Invisible Success of Vaccinations

Continued...

REACTIONS AND REACTIONS

While familiarity with the disease and their sequelae makes the risk benefit equation of immunisation easy, we shouldn’t be surprised that in the absence of such experience, some parents focus on the potential risks of immunisation alone.

Globally, the majority of serious adverse reactions following immunisation today occur in the developing world, and are a result of programmatic errors, such as using the wrong diluents to reconstitute a freeze-dried vaccine, leaving a multidose vial open at room temperature for so long that it becomes contaminated, or reuse of contaminated syringes.

While this is the cause of most problems, vaccines are not perfect.

The early vaccines against rabies and Japanese B encephalitis (which were produced in the brains of newborn mice) produced neurological disease in some recipients.

The first live measles vaccine produced in the 1960s caused rash and fever in a significant number of children because the Edmonston B strain of the virus was not sufficiently attenuated.

The Sabin oral polio vaccine, which is no longer used in the developed world, caused paralysis in 1 in 1 million to 1 in three million recipients, because of mutations which restored the virus’ virulence.

Even the highly attenuated and highly purified vaccines which are available today sometimes cause local or general side effects, although these are generally mild. Production of refined, highly purified vaccines is a relatively recent phenomenon. Until the 1970s, many vaccines were produced by government-owned facilities, which were lightly regulated and used dated technology. Not surprisingly, the quality and potency of some vaccines varied from batch to batch.

In the 1960s, a series of serious vaccine-related events, caused by production errors by producers in a variety of countries, were documented. The most dramatic of these was the Cutter incident, when a batch of Salk polio vaccine produced by the Cutter Laboratories of California, was inadequately inactivated. When administered to 120,000 children, the batch resulted in 56 cases of polio and five deaths, and an additional 113 cases and five further deaths in family members and close contacts.

These events caused widespread concern, leading to the resignation of several key figures, litigation and the creation or strengthening of national regulatory agencies (FDA, EMEA, TGA) to provide strict oversight of the sector.

As a consequence of increased compliance costs, the low profitability of vaccines which were sold for cents or a few dollars per dose, and a rise in litigation claims, many private sector manufacturers simply ceased production.

As manufacture of modern vaccines requires large, long term investments and a high tolerance for risk, most government-owned production facilities in the industrialised world were closed, privatised or sold, which also solved the problem of the government being simultaneously the producer, regulator and major purchaser of the products.

As a result of this contraction in the private and public sectors, the number of manufacturers supplying developing world markets fell from 17 to five. Alarmed at possibly destroying an industry which fulfils an important public health function, many governments enacted ‘no fault compensation’ schemes, which provided compensation and long term care for anyone seriously damaged by immunisation, provided that the damage was not caused by the negligence of the manufacturer.

Vaccines are now among the most highly-regulated products, with every step in the production process, from sourcing of ingredients to testing of the final product, defined and documented. Each step in the production process, even the methods used to clean equipment, is validated and challenged, and the manufacturer needs to provide evidence that their process is reproducible from batch to batch.

Finally, when a new vaccine is
developed, its safety and efficacy must be evaluated in at least 50,000 individuals before it is approved for licensing.

Regulatory authorities often insist that manufacturers and public health agencies collect additional data once the product goes into general use so that rare adverse events can be detected.

Increased regulation and the demand for products which are highly defined has not only had an impact on the number of manufacturers of vaccines, but how long the process takes (often 15-20 years) and the final cost of the vaccines, which are now typically priced from US$20-50 a dose.

THE ANTI-VAX MOVEMENT

We now have the curious paradox that, while we have never had a better opportunity to protect our grandchildren against a wide range of diseases with products of remarkable quality, many in the public regard the benefits of immunisation as matter for debate.

Much of the information provided by those opposed to immunisation is based on anecdotal data, temporal associations and misrepresentation. It strikes a chord among people who do not have the time or the expertise to review the data because it plays on fears and prejudices.

There is an inbuilt tendency to ascribe a causative relationship to events that are temporally related and seek an answer to serious illnesses whose aetiology remains unknown, especially if the antecedent event is sponsored by government. Little surprise that recent vaccine scares sought to implicate immunisation as a cause of sudden infant death syndrome (SIDS), autism and multiple sclerosis.

When you add to this any distrust of the medical profession and the motives of the pharmaceutical industry, you have a dangerous mix easily inflamed by a media with a voracious appetite for controversy.

A photo library image of babies skewered on a needle accompanied a story in Tehelka, India's leading weekly news magazine earlier this year, following the deaths of several children shortly after they had received a new 4-component vaccine recommended by WHO. As many children in India die early in life at the time vaccines are given, it is not surprising that sometimes deaths occur following immunisation. A rapid and independent review found that the deaths were unrelated to immunisation, but the damage had been done. Public confidence in the program was so damaged that the Indian government replaced the quadrivalent vaccine, which was designed to simplify the administration process, with a trivalent and monovalent vaccine, containing the same four components at a significant programmatic and economic cost.

But the medical profession is not without its own share of the blame.

In the 1970s, Prof Gordon Stewart, a personable and articulate Scottish epidemiologist, persuaded a generation of British mothers that whooping cough vaccine was associated with brain damage, which it is not. This led to a dramatic fall in immunisation rates (from 81 per cent to 31 per cent), which was followed by two major epidemics and a number of deaths. It took more than a decade for the immunisation rate to recover.

In the US, with its focus on celebrities, the leading anti-immunisation advocate is Jenny McCarthy, an ex model and actor, who is the mother of an autistic child whose condition she attributes to immunisation. McCarthy is attractive, articulate and has the support of one of the most influential people in American public life, Oprah Winfrey. While both Stewart and McCarthy clearly enjoy the public attention, I have no doubt that their views are genuine.

By contrast, Andrew Wakefield, who first drew attention to a possible link between measles vaccine and autism, has been found not only to have falsified data but to have benefited financially from a relationship with lawyers representing damaged children, and to have potentially benefited from his interest in an alternative vaccine. Although now debarred in the UK, he still has many supporters who simply refuse to acknowledge the evidence and believe that he is the victim of a giant conspiracy.

WHAT TO DO

We must remember that concerns about immunisation are not new. In the early 1800s, when vaccination was becoming popular in Britain, the Watchtower published a cartoon of immunised subjects turning into cows.

In combating the views of the anti-immunisation groups, both education and the attitudes and beliefs of health care workers are critical.

Cuba, which has one of the highest immunisation rates in the world, not only produces its own vaccines, but begins education on the value of vaccines in primary school and repeats
The Invisible Success of Vaccinations

Continued...

the message frequently to students and parents throughout life.

In every country, the attitudes and enthusiasm of doctors and nurses to immunisation is critically important. Although this can be achieved by education alone, incentives to achieve certain targets have proved helpful.

Finally, public health authorities have learnt that they need to market the benefits of immunisation to the general population in the same way a company might market a new labour-saving device using simple clear messages, and devote particular attention to clusters of people who are currently resisting the message.

While government-funded campaigns promoting the benefits of immunisation have sometimes been uninspiring, the recent Australian campaign for measles vaccine and the UK campaigns for HPV vaccine have been spectacular examples of what can be achieved.

There are no easy solutions. While technology may eventually enable us to administer a variety of vaccines in a single encounter, retaining public confidence in the benefits of immunisation and maintaining high coverage rates remains a continuing challenge.

Editor’s note: This paper was first delivered to the 13th Meeting of the Greek-Australian Medical-Legal society in May 2011.

About the author:
Professor Ian D. Gust, AO, is an Australian medical virologist. Since his ‘retirement’ in 2000, he has been appointed a Professorial Fellow in the Department of Microbiology and Immunology at the University of Melbourne.

Note: Unfortunately, for copyright reasons, Dr Karl Kruszelnicki’s presentation could not be included on the DVD.

Elliot Birch describes the changes in skeptical communication and communities that have turned an isolated bunch of misfits into a bold movement.

Once upon a time, way back in the mists of the last century, skeptics hid in caves and gnawed on the bones of wayward astrologers and UFO nuts. These sad and pathetic creatures dared not come out in daylight least their true identities be revealed and they were forced to admit, with sobs and special pleading, that, yes, they were skeptics, and yes, they were sorry, and yes, they wouldn’t do it again in public.

Then along came CSICOP in the US and the Australian Skeptics in Australia (and a few others here and there). And they brought gifts of magazines, and coaxed the skeptics out of their hiding places and allowed them to take their rightful place, somewhere slightly below used-car salesmen and above journalists and politicians.

Because, you see, skeptics were not popular. They were spoilt sports. They upset the applecart in their attempts to find the rotten apples. And they scared the children with their denials of Easter bunnies, tooth fairies, Santa and God. It was definitely the philosophy that dared not speak its name.

So it wasn’t surprising if these skeptics crawled back into their caves, only to come out once a quarter to get their copy of The Skeptic magazine and their four-times-a-year dose of critical thinking and rationality. Skeptics were lonely, alone and frightened. (Well, not frightened perhaps, but certainly wary of ruining a good dinner party.)

This, we are told by the old grey-bearded ones, was the way it was. In the days before the internet thing, communication was limited among the skeptical fraternity. Apart from the magazine, there was the occasional dinner (few of those were in pubs, as they are now), there was an annual convention and ... Well, that was about it. Those who lived in outlying areas like Broken Hill, Kalgoorlie and Craigieburn didn’t even get the social events.

Which is why the Skeptics invented social media.

And it was good.

In the last, say, ten years there has been a blossoming of skepticism that has paralleled a similar if more numerous blossoming in atheism. Practitioners are actually bold enough to speak their minds, confront the evil, and wear T-shirts that defiantly declare their allegiance and attitude.

And a lot of this has been because of the net, the online community and the various ways that people can contact each other these days; ways that go beyond a quarterly journal and the occasional appearance on a local radio program.

Not to knock the quarterly journal – an unwise action in these pages. The quarterly journal plays an important role in spreading information, providing a central meeting place for ideas and research, and giving skeptics a sense of unified identity. But it is not alone in the task of spreading the skeptical word.

We have text and SMS, we have websites, blogs, podcasts,-vodcasts, Facebooks, Meet-Ups, Twitter, YouTubes, wikis, online forums, Flickrs, drop boxes, and the more recent ones that have come on the scene since I wrote this article.

And yes, some (most?) of what’s on those media is trivial or inane. And some of it is used by the ‘other side’ for their nefarious purposes. But never before have skeptics felt less isolated and more able and willing to come out of their caves and declare to the world, yes, I’m a skeptic, and I’m mad as heck.

And this is a good thing.

For every skeptic who talks to other skeptics on a weekly, daily, hourly basis, the word spreads further and wider and faster. Faster and more widely than a quarterly magazine or an occasional dinner could do.

If anything happens in the skeptical or the asketical world, we know about it within seconds, and we are already doing something about it before the world has got out of bed.

For example, Dr Ken Harvey’s battles with the litigious SensaSlim became widely known thanks to digital media. As soon as the shits hit the fan, we knew about it, a fund to support Ken’s legal bills was launched and, when pledges were called in, more than $13,000 was raised within 12 hours (so our editor tells me).

Traditional media and snail mail pledge drives could never have achieved this.

And this is what we have taken advantage of, and what we must continue to take advantage of. This technology is not a fad, or a toy, or reserved for the geeks and trendy dilettantes and youth of the world. That may have been the way it was seen a decade ago, before its true impact and import was or could be known. But these days it is bread and butter stuff. It’s the not-so-new and better (and additional) way to spread the word.

And it is good.

And to the five or six of you who are not already doing so, I say you should try it one day. Your cave will never be the same again.

About the author

Elliot Birch is the creator of the Young Australian Skeptics, www.youngausskeptics.com
Brian Denning assesses the Miracle of Calanda, the only example of God going out on a limb.

A favourite question asked by skeptics, when confronted with stories of miraculous religious healings, is to ask “Why doesn’t God heal amputees?” The answer? He did, once.

It happened in Spain in 1640, when a young man’s injured leg was amputated. Two and a half years later, his leg was miraculously restored. It’s become known as the Miracle of Calanda, and it’s perhaps one of the best documented of miracles. The faithful have hard evidence to back it up, and the skeptics have no answer. Was the event truly miraculous and unexplainable? Maybe it was; but let’s take a hard look at what’s actually known, and see if we can uncover the most likely explanation.

Miguel Juan Pellicer, a strapping young fellow about 20 years old, was working at his uncle’s farm in the village of Castellón in 1637. A mule-drawn cart ran over his leg, fracturing the tibia. Quickly, his uncle drove him to the hospital at Valencia. The story, as recorded, says that Pellicer stayed in the Valencia hospital for five days, until it was decided that he needed better help than they could provide. Pellicer was sent, on foot, with a broken leg, to the larger hospital in Zaragoza, a journey which took him 50 days.

Once he arrived in Zaragoza, feverish and ill, doctors found his leg to be gangrenous and in a grievous state. Pellicer’s right leg was amputated “four fingers below the knee” and it was buried in a special plot at the hospital. He stayed in the hospital for several months, and was provided with a wooden leg and a crutch. He then applied to the church authorities at the Basilica of Our Lady of the Pillar in Zaragoza for authorisation to make a living as a beggar, which was granted. Pellicer lived in Zaragoza for two years, attending mass daily at the Basilica, and accepting alms from the citizenry. The pious young amputee was a familiar face in town.

At last he decided to return home. He rode a donkey all the way to his parents’ home in Calanda, where he’d grown up. His family was overjoyed to see him, but since he couldn’t work, he spent a couple of weeks riding his donkey to neighbouring villages begging. And then one night, it happened.

A travelling soldier was spending the night in Pellicer’s own room, so Pellicer took a bedroll on the floor in his parents’ bedroom. In the morning, his parents saw not one, but two feet protruding from the end of the short blanket! They excitedly woke their son, who was as surprised as anyone, and the news quickly spread throughout the village that the young amputee had been miraculously healed.

An examination of the leg revealed it was the same leg he’d always had. It bore a scar from where a cyst had been excised when he was a child, two scars made by thorns, and another from a dog bite on his calf. Most notable was a scar where the cart wheel had crushed his tibia. The leg was said to appear thin and atrophied, but within a few days he was using it normally.

As the story spread, it drew in the curious and the official. A few days after the miraculous restoration, a delegation consisting of a priest, a vicar, and the local royal notary came to Calanda to see for themselves and to prepare an official record of the event. They took statements from witnesses and carefully documented Pellicer’s story.

Two months later, a trial was opened...
in Zaragoza where more than 100 people testified that they had known Pellicer with only one leg, whereas now he had two. Ten months later, the archbishop rendered a verdict that the restoration of the leg was canonised as a true miracle. Since that date, skeptics have no longer been able to charge that God does not heal amputees.

The most authoritative work on the Miracle of Calanda is the 1998 book Il Miracolo by Catholic scholar Vittorio Messori which identifies and records the pieces of written evidence collected by the delegation, and which survive today. These are:

- Documentation of Miguel Juan Pellicer’s baptism, confirming that he was a real person.
- Registration of Pellicer’s admittance to the hospital at Valencia.
- The delegation’s original notarised report of the statements collected in Calanda, including statements by people who saw him come to town with one leg and wake up with two.
- A certified and notarised copy of the original minutes of the trial at Zaragoza, including many statements of people who knew Pellicer as a one-legged beggar.

There are also many other documents that do not necessarily support the miracle claim, but that support other parts of the story; for example, proof that other people named in the story exist, proof that after the miracle Pellicer was invited to the royal court in Madrid, and books and other publications retelling the event.

If we accept that these documents are indeed legitimate, and I think we can, is there any wiggle room left? Do the documents consist of proof that a miraculous restoration of an amputated limb occurred?

Medically, Pellicer’s story is improbable, but not impossible. 55 days after the injury, he said, his leg was amputated due to advanced gangrene. In a crushing injury like the one he suffered, gangrene may take from 48 to 72 hours to set in, and once it does, you’re gone from sepsis in as little as a few hours. Nobody lives 55 days with a gangrenous injury. If his skin was not broken, or if any breaks healed cleanly, it is still possible that the wound could have developed internal gas gangrene weeks, months, or even years later. But the appearance of gas gangrene is inconsistent with the condition allegedly reported by the doctors, which was “phlegmonous and gangrenous”, meaning open and wet, and “black”. Without an actual examination, we can’t say for certain that Pellicer’s story is impossible; but the version of the story that’s been reported raises a huge medical red flag.

This red flag is sufficient to prompt a closer examination of the documented evidence. And there is one thing that jumps out. It’s a giant, gaping hole.

In case you haven’t fallen into it yet, or seen any large buildings or 747s get swallowed up in this hole, I’ll point it out: There are no documentation or witness accounts confirming his leg was ever gone.

But what about all those witnesses who knew him with one leg? Allow me to offer an alternative version of what might have happened, that requires no miraculous intervention, and is still consistent with all the documentary evidence we have. Pellicer’s leg was broken in the accident as witnessed and reported, but like most broken legs, did not develop gangrene. His uncle took him to the hospital at Valencia (a documented event), where he spent five days - during which his uncle presumably went back to his farm - and his broken leg was set.

The next 50 days he spent convalescing as his leg mended. Unable to work during this time, he was forced to earn a living as a beggar, and found that the broken leg did wonders for the collection of alms. Once his leg was sound, he reasoned that if a broken leg was good, a missing leg would be even better. He bound his right foreleg up behind his thigh, got a hold of a wooden leg, and travelled to Zaragoza, home of the great Basilica - someplace where he wasn’t known. For two years, the young Pellicer enjoyed the relative financial success of panhandling among the Basilica’s devotees as an amputee with a sad story.

Eventually he made it back home to Calanda, where his plans were accidentally foiled when the existence of his complete, sound leg was revealed when his parents saw his feet sticking out of his blanket. At that point, the miracle story was a perfect cover. Many, many people had known him as the man with one leg, and now everyone could quite plainly see that he had two. There was no way he could lose.

I’m not accusing Miguel Juan Pellicer...
Not a Leg to Stand on

Continued...

of being a fraud, but I am pointing out that there is a far more probable alternative explanation. Faking blindness, infirmity, poverty, and all manner of ailments is hardly unheard of among beggars. It is now, and has been for millennia, a pillar of the profession.

Note that no evidence exists that his leg was ever amputated - or that he was even treated at all - at the hospital in Zaragoza other than his own word. He named three doctors there, but for some reason there is no record of their having been interviewed by either the delegation or the trial. The trial did find that no leg was buried where he said it was at the hospital, but this is exactly what we’d expect to find if it had never been amputated. Although this lack of a buried leg is often put forth as evidence that the story is true, it is actually a lack of evidence of anything.

We have evidence that he was admitted to the hospital in Valencia with his uncle. We have notarised first-hand statements that a scar was visible on his leg where he had been injured by the mule cart. We have numerous statements that he was well known in Zaragoza as a one-legged beggar. All the evidence supports Pellicer being a beggar with a popular and time-honoured gimmick who was caught, not with his hand in the cookie jar, but with his feet out of the blanket. It is only through the introduction of a new assumption, that of the existence of unprecedented supernatural intervention, that the alternative explanation of a miraculous restoration be found consistent with this same evidence. This is where Occam’s Razor comes into play: The most likely explanation is the one that requires the fewest new assumptions.

We can’t say that the Miracle of Calanda is not genuine, and we can’t prove that Miguel Juan Pellicer’s leg was not miraculously restored. But we can say that the evidence we have falls short, and is perfectly consistent with no miracle having taken place.

Editor’s note: This article is a transcript of an episode of Skeptoid (episode #247, March 01, 2011). It is used with permission and is copyrighted to the author.

About the author:
Brian Dunning is a computer scientist, and host and producer of the award-winning podcast, Skeptoid: Critical Analysis of Pop Phenomena (www.skeptoid.com).

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Your Stars: SEPTEMBER 2011

With our Astrologer Dr Duarf Ekaf Jr

Aries: 19 April-13 May
You are extremely gullible.

Taurus: 14 May-19 June
You are extremely gullible.

Gemini: 20 June-20 July
You are extremely gullible.

Cancer: 21 July-9 August
You are extremely gullible.

Leo: 10 August-15 September
You are extremely gullible.

Virgo: 16 September-30 October
You are extremely gullible.

Libra: 31 October-22 November
You are extremely gullible.

Sagittarius: 18 Dec-18 January
You are extremely gullible.

Capricorn: 19 January-15 February
You are extremely gullible.

Aquarius: 16 February-11 March
You are extremely good looking, but nonetheless extremely gullible.

Pisces: 12 March-18 April
You are extremely gullible.

Scorpio: 23 November-29 November
You are extremely gullible.

Ophiuchus: 30 November-17 December
You don’t exist.
Biodynamics produces wines that make you think more clearly

This thought-provoking announcement was made by a winemaker recently in the press. He continued: “With biodynamic wine you are tasting all of the cosmos distilled down into one spot.” All of it.

In his novel, *The Information*, Martin Amis said of the cosmos: “It would seem that the universe is thirty billion light years across, and every inch of it would kill us if we went there. This is the position of the universe with regard to human life.”

So decanting biodynamic wine is recommended. The crust will be mostly dark matter anyway.

Biodynamicists glow with good intentions but, unchecked, their language can drift from earthbound common sense into esoteric eco-babble. Organics and biodynamics tend to blur, perhaps intentionally, but there are distinctions. Organic agriculture is entry-level ecology; it involves muck, mulch, manure and the lyrics to Big Yellow Taxi. Composting is comforting; celebrity gardeners gambol in the stuff and it woos worms. On the other hand, there is a reason why potting-mix comes with a warning-label urging you to don face-mask and gloves. It’s called Legionnaires’ Disease and is as potentially lethal as it is entirely natural.

Biodynamics demands a further leap of faith, and into one. It grafts astrology to oenology and involves rites, rituals, calendars, cow-pats and a founder who believed that eating potatoes causes journalism. True. Rudolf Steiner was the cryptic, mystic inventor of Anthroposophy, which was easy for him to say. He never actually practised farming but that did not stop him from authoritatively addressing agriculture and giving birth to biodynamics. He also expressed some odious opinions about spirituality and skin colour, and he wasn’t talking about grape skins.

One wine writer, who used to be as funny as Woody Allen used to be, underwent a consummate conversion and now advocates biodynamism with the evangelical zeal of a Thermomix demonstrator on heat. He wrote: “We carry within us an archetypal idea of wine as a natural product of the earth ... We carry, too, a little deeper down, a remnant awareness of wine’s ancient cultural and spiritual significance ... We like to believe that the wine we drink has not been buggered around with too much.”

That’s fine, and finely written, as long as reality has not been buggered around with too much either.

Natural? Well, not quite. There is little that’s natural about a vineyard, be it biodynamic or businesslike. Grape vines in nature do not line up in regimented rows, nor trim their own trunks. Their natural inclination is not to make hooch for humans. It’s
to climb trees, seek sunlight and make baby vines. We severely subvert that natural endeavour by annually offing their offspring and drinking their blood.

There is even less that’s natural about wine. Grapes in the wild do not change into Grange. They turn into new vines or sour grapes. Wine is a much manipulated beverage and is no more ‘natural’ than raw-milk cheese, brown sugar or Brazilian blondes.

Neither is there anything natural about the biodynamic practice of cramming cow poo into a cow’s horn. Left to their own devices, cattle tend not to do that. The concept may be cosmic, but it is far from intuitive and you wonder about the first person caught doing it behind the barn.

It is true that the Earth is a profound source of natural power and elemental energy. If once-living organic matter is buried underground for a period of time, and the planet is allowed to exert its natural influence, free from human interference, you end up with … petroleum. And coal. A build-up of bird droppings will mutate into nitrate, and supernaturally into superphosphate. Some refining is required, just as organic wine is refined to make organic brandy.

The significance of the spirituality I cannot speak for, and neither can anyone else without a ouija board, but the cultural influence is approaching cult status. A bunch of winemakers are now manically biodynamic, dozens are dabbling and fellow travellers are ‘in conversion’, which means they are converting to biodynamics about as quickly as I’m converting to celibacy. Self interest also plays its part. A cosmic connection enhances your chances of selling wine to a holistic new market-segment of caring, sharing, environmentally-conscious, new-age customers. Like British and German supermarket chains.

Biodynamic vigneron would be difficult to dislike even if you wanted to, and are invariably charming, disarming and as well-meaning as water-diviners - unless you are a stag, a steer or a sheep, and value your bonce and your bladder. They could be more open about the involuntary involvement of animals in the alchemy. The excuse that “the cow was dead when we got here” – also known as the ivory smugglers’ defence – won’t wash with vegans.

Biodynamicists idolise the Moon, a remote rock that knows nothing of liquids, lunacy, months or Mondays, and does not discriminate between sea and land, water, wine or world events. Its strongest physical influence is when we can’t see it, at the new moon, and only then because it has the intense clout of the Sun’s gravity behind it. Some life-forms evolved to take advantage of the incidental, comparatively small and strictly coastal tidal pull, including sardines, soldier crabs, sea-turtles and real- estate agents. But grape-vines are ocean-ambivalent at best and equally immune to the moon. That serene Stiltonic sphere sends us down three things - weakly reflected sunlight, very faint gravity and inspiration for lame song-lyrics.

But apart from that, and apart from the occasional shocker, many biodynamic winemakers make fine wines and most would not know how not to. And that factor alone may be more important than all the moonshine combined.

So I tracked down a Pinot Noir made by the winemaker quoted at the beginning of this article and shared it with a friend. By the end of the bottle - as mystical as this must sound - we were definitely thinking more clearly.

Or we thought we were. ■

Editor’s Note: This article is reprinted from Winestate magazine with permission.

About the author:
Brian Miller is a fellow traveller of Australian Skeptics, was cast as Devils’ Advocate at Taste Australia’s biodynamics debate and as the Devil by some attendees. Brian works with several Australian wineries, biodynamic and scientific.

Faulty Generalisations

The media often report a common fallacy known as Faulty Generalisation. Other terms for this include false generalisation, hasty generalisation, over-generalisation, unscientific conclusion and even superstition. For simplicity, this fallacy may be divided into two sub-fallacies – false generalisation and over-generalisation.

In a false generalisation, the premises of an argument are weakly related to its conclusion but do not sufficiently justify the conclusion. For example, a person might argue: “I don’t believe that smoking causes cancer, because my uncle Bert smoked like a chimney and yet he lived until aged 93.” Conclusions are drawn about an entire population from too small a sample of the population – in this case, one. Contrast this with the tens of thousands of smokers (plus control samples) who were used in the scientific epidemiological studies that conclusively established the causal link between smoking and cancer. So, the person committing this fallacy is giving more weight to a personal anecdote than the findings of science.

In an over-generalisation, conclusions are drawn from an apparent trend to the entire population. For example, if there are a couple of tragic road crashes on a weekend in which several people are killed, a police officer might say at a press conference that drivers are becoming more careless. A sample of one weekend’s road crashes is no evidence of any such trend; in fact, the long term trend is that the annual road toll is decreasing.

In technical logic terms, these are fallacies of defective induction, where the argument typically takes the following form:

Premise: The proportion Q of the sample has attribute A.

Conclusion: Therefore, the proportion Q of the population has attribute A. Statistical methods are used to calculate the necessary sample size before conclusions can validly be drawn about a population.

For example, a random sample in excess of 1000 people is used in opinion polling, and even then there is a stated error margin in the order of plus or minus two per cent.

- by Tim Harding
Are skepticism and atheism heading in different directions, at loggerheads over definition and diversity? Helen Dale looks at the discussions, the arguments and the politics.

On May 7, 1959, British physicist and novelist C.P. Snow delivered an influential Rede Lecture at Cambridge University. His lecture concerned the intellectual division between the sciences and the humanities, and contained the following famous passage:

“I remember [mathematician] G.H. Hardy once remarking to me in mild puzzlement, some time in the 1930s, ‘Have you noticed how the word “intellectual” is used nowadays. There seems to be a new definition which certainly doesn’t include Rutherford or Eddington or Dirac or Adrian or me? It does seem rather odd, don’t y’know.’

‘A good many times I have been present at gatherings of people who, by the standards of the traditional culture, are thought highly educated and who have with considerable gusto been expressing their incredulity at the illiteracy of scientists. Once or twice I have been provoked and have asked the company how many of them could describe the Second Law of Thermodynamics. The response was cold: it was also negative. Yet I was asking something which is the scientific equivalent of “Have you read a work of Shakespeare’s?”

“I now believe that if I had asked an
even simpler question - such as, ‘What do you mean by mass, or acceleration’, which is the scientific equivalent of saying, ‘Can you read?’ - not more than one in ten of the highly educated would have felt that I was speaking the same language. So the great edifice of modern physics goes up, and the majority of the cleverest people in the western world have about as much insight into it as their neolithic ancestors would have had.”

Snow’s lecture caused a sensation, and its title entered the language. There is still, I think, considerable evidence that his observation holds today, too. In Snow’s time, most scientists were literate and cultured enough to be able to comment with at least moderate intelligence on aspects of the humanities; the ignorance flowed only one way. These days, unfortunately, it is obvious that many scientists are as ignorant of the most basic information outside their own discipline as were the humanities academics when Snow was writing his lecture. I particularly notice this when it comes to the ‘third discipline’ of law, which is neither science nor humanities but borrows bits from both, as well as from moral philosophy. Both scientists and humanities scholars, for instance, often fall into the trap of believing that the solution to some social ill is to ‘pass a law’.

All that is by the by, however, for the simple reason that a version of the Two Cultures arises whenever there is a difference in perspective and attitude, even when the relevant people agree on many other points. Indeed, one manifestation of the Two Cultures of interest to me is that which has arisen between skeptics and atheists.

Regular readers of my blog may be curious and a bit nonplussed at this point, partly because I don’t write about skepticism as often as I ought (so failing to live up to my blog’s name, skepticlawyer), and partly because you may perceive that there isn’t a huge amount of difference between the two. Skeptics are skeptical about supernatural claims, right? Everything from Bigfoot to Zombie Jesus, yes? Atheists reject supernatural explanations for things, yes? They demand evidence for extraordinary or miraculous claims, right?

Well, ish… Part of the conflict between the two related ideas has its origins in what biologist Athena Andreadis calls the ‘narcissism of small differences’, but part of it is also to do with an intellectual division of labour. This division of labour tends, I think, to have its origins in what position one adopted first, often as a child. In my case, I can’t remember whether I began to be skeptical or atheistic first, although I do know that from the beginning my disquiet with religion was not based on its factual assertions, but its social effects. When it made claims that were then enacted into law, and that law produced destructive outcomes, I rejected it. This is very much a skeptical style of rejection. When religion makes testable claims, then those claims should be put to the proof. If they are found wanting, then the people who hold them - if they are intellectually honest - should give them up.

My skepticism did not (and does not) involve arguing over proofs of the existence or non-existence of God: neither claim is falsifiable in the same way that assertions about the social effect of morality as enacted into law are falsifiable, or accounts of the miraculous (if properly formulated) are falsifiable. Of course, bad arguments for the supernatural are often pseudoscientific, but as Richard Dawkins found out when theologians and philosophers had a go at him over his arguments against the existence of God in The God Delusion, arguments for the existence of God (or Gods) are not pseudoscientific. They’re just not testable.

They can, however, be ranked qua arguments, which is, I think, a useful exercise. It was John Finnis, a Catholic jurisprudential scholar (and one of my tutors at Oxford) who pointed out to me that Aristotle’s argument for the existence of gods is an excellent argument for polytheism and henotheism, because it does not assume omnipotence or omniscience or omnibenevolence. It is a bad argument for monotheism, because as soon as it is applied to monotheism, it runs smack dab into the ‘Problem of Evil’. For this reason, Finnis doesn’t make use of it in his scholarship. That struck me as excellent thinking, even though it was about something that cannot be demonstrated one way or the other. In other words, not all non-testable claims are bad or useless.

This intellectual division of labour meant that historically, skepticism steered away from tackling religion ‘head on’, so to speak. Many of the founding fathers and mothers of the skeptical movement were deists (one thinks of everyone from Adam Smith to Mary Wollstonecraft to Harry Houdini), although of course there were atheists, like David Hume and Lucretius.

Atheists were often interested in the social effects of religion, thereby keeping themselves on the skeptical side of the equation, although even then there were difficulties. Some atheists allowed themselves to be diverted into attacking all religion (and religious believers) as an undifferentiated lump. Many have tied atheism to political progressivism, forgetting that some of Richard Dawkins’ most powerful arguments in The God Delusion came from US Republican Barry Goldwater.

“ We became known for sitting around laughing at people who believed in Bigfoot and UFOs. This is unfortunate.”

Meanwhile, some skeptics became so focussed on dealing with pseudoscience and claims for the miraculous that they abandoned even outcomes-based religious critique, leading to a situation where we became known for sitting around laughing at people who believed in Bigfoot and UFOs. This is unfortunate, because traditional skepticism had (and has) important contributions to make to scientific literacy. The efforts of skeptics the
world over in debunking the claims made by the anti-vaccination crowd are vital (as in, life-saving), and something we do very well. The intellectual differences between atheism and skepticism have been forced into the open of late in large part because the former has grown at the expense of the latter, but also contributed to exponential growth in the latter. The atheists (attracted by the writings of the aforementioned Dawkins, Christopher Hitchens, Ophelia Benson and others) want to contribute to skepticism as well, and are left wondering at the reluctance among many skeptics to use their (very considerable) intellectual weapons on religion.

They have a point, but not every point. Let me explain.

G.K. Chesterton once observed that, for many people, an end to belief in God meant the start of believing in anything. Organised skepticism stands athwart this process (you know, exchanging Jesus for crystals) and doesn’t just yell ‘Stop’. It provides methods for interrogating claims, and helps to ensure that people who have abandoned one form of pseudoscience don’t get taken in by another. Skeptics are foolish if they attempt to fence off their skepticism from making religious critiques, a point P.Z. Myers makes on his blog Pharyngula – “Atheism is an essential part of skepticism”:

“I can understand turning away from purely philosophical abstractions that have no weight in the real world: skeptics will not be able to quantitatively resolve the number of angels that can dance on the head of a pin. But faith has real world consequences, and the metaphysical claim that a god is dispensing information by undetectable means to a chosen few on earth, which is certainly a common claim in Christianity, should have effects that could be measured, and that they don’t have such effects is not a reason to recuse the subject from inquiry, it’s a reason to reject it.”

However, another virtue of skeptical thinking about the outcomes attached to different religious beliefs and traditions (rather than theorising about the existence of God) is the capacity to draw meaningful distinctions between religions. Quakers (the historic leaders, along with the pantheistic Stoics, of abolitionism) are different from Catholics, and both of these are different from various Islamic groups, and so on. What they believe has different social effects.

However, it’s become clear to me that many of the new participants in organised skepticism and atheism hold to canards of their own, and these beliefs are just as vulnerable to skeptical enquiry as UFOs or Zombie Jesus (there is a broad strap of social constructivism in much modern feminism, for example, and that really does cry out for skepticism). They also don’t get to remake skepticism in their own political image, for the simple reason that many political claims are like religious claims: they, too, are empirical, and ought to be subjected to skeptical enquiry. This is one point that noted skeptic Daniel Loxton makes with some force: (Skepticblog, “The Surprising Twists of TAM 9’s Diversity Panel”):

“Grothe spoke up on that historical theme, emphasizing that while movements may change, it is important to begin with an understanding of the work done so far - the mistakes made, the lessons won, and the history of things we’ve done right. For decades, skepticism has very deliberately worked to stay close to what it does best: tackling empirical questions in the realm of pseudoscience and the paranormal, and (as the other side of this same coin) promoting scientific literacy.”

This empirical focus has allowed the skeptical community - old and white and bearded as it may have been - to enjoy other kinds of diversity.
If political ideology is not a topic for our movement, then anarchists, libertarians, liberals, and conservatives can happily share the same big tent. If science-based skepticism is neutral about non-scientific moral values, then the community can embrace people who hold a wide range of perspectives on values issues - on the environment, on public schools, on nuclear power, on same-sex marriage, on taxation, gun control, the military, veganism, and so on. It’s a sort of paradox: the wider the scope of skepticism, the less diverse its community becomes.

I wouldn’t go as far as Loxton: claims about the badness of gay marriage or abortion or gun control or nuclear power are typically empirical claims, and can be scrutinised in the same way that claims about ESP or Bigfoot or the social effects of Islam on women can be scrutinised. However, the moment both skepticism and atheism become cosy communities of left-liberals, failing to interrogate left-liberal claims in the same way that religious and pseudoscientific claims are interrogated, then both movements will have lost their way, utterly.

That this could one day come about is evidenced by statements like the following (from Amanda Marcotte, Pandagon, “Diversity, skepticism and atheism” and in response to Daniel Loxton above):

“In other words, the kind of ‘diversity’ he supports is one where a bunch of well-off, older white men can enjoy talking about the silliness of Bigfoot without having to bother with those political concerns that are unavoidable when people who get the shit end of the stick - women, non-white people, poorer people, disabled people, gay people - get involved. There are many flavours of white-dude-whose-privilege-shields-him-from-having-to-be-politicals, but those darn diverse people are forever being political because they don’t have an option to ignore oppression that directly affects them. Personally, I’m far more concerned about a group that’s politically diverse only because they all live in the same bubble than one that’s got racial and gender diversity because everyone has a shared concern about religious power.

“In other words, I support a diversity of viewpoints, not a diversity per se of views. A group of skeptics isn’t made stronger because some people diverge from the norm because they believe they have an army of small fairies to do their bidding, but it is strengthened by improving the number of women and people of colour who can speak to communities who aren’t currently being reached.”

I’m afraid this is the beginning of totalitarian thinking. If Marcotte thinks that diversity of skin colour or disability or gender trumps intellectual diversity, then there are many fine churches she can no doubt join. Churches (with a few notable exceptions) are generally pretty good at making sure the people in the pews are all the colours of the rainbow, and typically do a nice job of disabled access. Oh, and they have plenty of women members, too, as opposed to skepticism and atheism, which are still male-dominated.

Diversity, I’m afraid, is not a per se good. It’s only an instrumental good. If it were a per se good, then we’d all have to change our view of Islam PDQ: the annual Hajj in Mecca is the most diverse gathering of humanity on the planet. I’m hoping that’s not the sort of argument Marcotte wants to make.

In sum: skepticism is a cast of mind, and when done properly, it can be used to consider and examine religious, political and scientific claims. While religion should not be walled off from scrutiny, the cosy assumptions of politics ought not to be protected either.
In Christianity and Islam, sorcery came to be associated with heresy and apostasy and to be viewed as evil. During the European Late Medieval/Early Modern period, fears about witchcraft rose to fever pitch, and sometimes led to large-scale witch-hunts. It was believed that Christianity was engaged in an apocalyptic battle against the Devil and his secret army of witches. Some Muslim practitioners of witchcraft believe that they may seek the help of the Jinn in magic. The practice of seeking help from the jinn is prohibited and regarded the same as seeking help from a devil.

The jinn are mentioned frequently in the Koran, including a surah (chapter) entitled Sūrat al-Jinn.
PLAYING WITH CARDS

In 1496, he wrote *De viribus quantitatis*, a treatise on mathematics and magic. It contains the first reference to card tricks as well as guidance on how to juggle, eat fire and make coins dance. It is the first work to note that Leonardo was left-handed. The book is divided into three sections: mathematical problems; puzzles and tricks; and a collection of proverbs and verses. The book has been described as the “foundation of modern magic and numerical puzzles”, but it was never published and sat in the archives of the University of Bologna, seen only by a small number of scholars since the Middle Ages. The book was rediscovered after David Singmaster, a mathematician, came across a reference to it in a 19th century manuscript. An English translation was published for the first time in 2007.

PLAYING WITH MINDS

The term ‘magic’ is etymologically derived from the Latin word magi, a term that was used to refer to Zoroastrians. Performances we would now recognise as conjuring have probably been practiced throughout history. The same level of ingenuity that was used to produce famous ancient deceptions such as the Trojan Horse would also have been used for entertainment, or at least for cheating in money games, since time immemorial. They were also used by the practitioners of various religions and cults from ancient times onwards to frighten uneducated people into obedience or turn them into adherents. However, the profession of the illusionist gained strength only in the 18th century, and has enjoyed several popular vogues since.

PLAYING WITH FIRE

What is deemed the first textbook on magic was published in 1584. Written by Reginald Scot, *The Discoverie of Witchcraft* was actually an attempt to show that witches did not exist by exposing how apparently miraculous feats of magic were done. The term ‘witch’ was not exclusively negative in meaning, and could also indicate cunning folk. Folk magicians throughout Europe were viewed ambivalently, capable of harming and healing, which could lead to their being accused as witches in the negative sense. These accusations included contacts with fairies, spirits or the dead, out-of-body experiences, travelling through an ‘other-world’, processions of the dead or feasts presided over by a female divinity who teaches magic and gives prophecies, and sorcery.

Zoroastrianism says: The purpose of humankind, like that of all other creation, is to sustain the truth (‘asa’). This occurs through active participation in life and the exercise of constructive thoughts, words and deeds.

Source: Wikipedia, except where noted
Waste Not

Public ignorance, pseudoscience and political timidity have continually fought against wastewater recycling in Australia. Rob Holmes investigates the ‘yuck factor’.

Wastewater is needlessly and expensively discharged into the near shore marine environment when it could be recovered for potable water supply. But the only barrier to achieving a sensible and scientifically rational outcome is public scientific ignorance.

Unbelievably, Perth, where I live, has been facing diminishing rainfall since the 1970s, while a most obvious and immediate solution has been studiously avoided in any public discussion whatsoever. At the same time, proposals are canvassed by State parliamentarians for a canal to bring water 2500km from the Kimberley or tapping the deep South West Yarragadee aquifer.

One is consequently led to believe that that if we cannot live within our means, it is then OK to go and plunder, in a prohibitively expensive manner, the resources of others. The 580km Kalgoorlie Pipeline, built from Perth to the goldfields in the 19th century, is often cited as an example of the forward thinking and courageous engineering that should now ignite the courage needed to build the proposed Kimberley canal. What is missing from the discussion is that the WA Goldfields have never had any other option for water supply. The goldfields receive less than 270mm annual average rainfall and have groundwater with salinity akin to seawater.

Regardless of the fact that reverse osmosis seawater desalination is now coming to the rescue of the metro water supply, we face and will continue to face an increasing water supply shortfall. One of the clear benefits of using wastewater as a resource for potable water is that, as water consumption increases with population size, so does the amount of wastewater generated. Rather than creating a problem of how to get rid of more and more of this stuff, we need to treat it as a precious resource.

The consequences of dumping untreated sewage into the ocean are well understood. To avoid the environmental impacts, wastewater is put through an expensive purification process to allow ocean discharge. Primary treatment removes the majority of solids and secondary treatment further reduces pathogens, solids and nutrients. However, secondary-treated wastewater still represents an environmental risk because of its high nutrient content.

For Perth, at least, expensive environmental impact assessments have been undertaken and monitoring programs are in place to protect the near-shore environment where wastewater is discharged.

Perth has three major wastewater treatment plants that together discharge about 114 gigalitres per annum (GL/pa) of secondary treated wastewater via the Ocean Reef, Swanbourne and Sepia Depression outfalls. The WA Water Corporation (WaterCorp) states that we are currently looking at a deficit of 63GL for the 2011-12 summer season if we don’t cut back on consumption. If no rain this winter, the dams will no longer be a source of water supply until we can get some decent rain; simple as that. 114GL of wastewater could provide about 81GL of high purity recycled water. And nearly as bad, we take nutrients from the soil for food, then discharge these into the ocean as a pollutant. We need to recycle nutrients just as much as we do water.

REVERSE OSMOSIS

Reverse osmosis (RO) is a process whereby water is forced under high pressure through extremely fine membranes to produce water of higher quality. RO technology extends from hand-operated RO pumps that can be bought over the counter to huge seawater desalination plants for major cities – it’s all the same technology, just a matter of size and the amount of power available. RO is used to purify tap water for the beverage industry, is used aboard ships at sea to provide a constant supply of potable water and can be applied to either seawater or wastewater to provide very pure potable water in gigalitre quantities.

“With utter predictability, anti RO campaigns will be fear-based without any reference to scientific data”

But the prospect of any state government or local authority contemplating the option of RO wastewater recycling (“RO recovered water” for the purposes of this article) for potable consumption is nothing less than ‘courageous’; ie political suicide. It’s all about the ‘yuck factor’.
PERCEPTION PROBLEMS

Why is RO recovered water such a problem?

The yuck factor is one. As a social-commentator who writes occasional columns for The West Australian put it: “I would rather have pins stuck in my eye than drink recycled waste water!” That is, for no real reason other than I just don’t like the idea, it’s all too yucky to think about. She probably didn’t go to school the day that they taught science.

Unfounded fear is another. Scientific ignorance will fuel alarmists claiming that there are unknown risks in using RO for potable water supply. Newspapers and radio stations make money from creating or reporting controversy. The West Australian consistently refers to RO recovered water as “recycled sewage”, which is to put the worst possible slant on the matter and which is clearly illogical. It is not sewage that is recycled, it is water. Who wants sewage delivered back to their home? No doubt, the rantings of every nutter, shock jock and scientific dill would be given full voice. No political career can withstand this sort of stuff. Unfortunately, scientific nous is either absent or thin on the ground amongst those who work for newspapers or commercial radio stations.

Even worse, the prospect of RO recovered water for potable use would give the political opposition - it doesn’t matter which party is in opposition - a free kick. Who cares about the security of our water supply, so long as I can score points against the government of the day?

WATER SUPPLIES TODAY

At the moment in Perth, there is absolutely no escaping the fact that the WA Water Corporation is deeply concerned about the ongoing security of supply for the WA Integrated Water Supply System (IWSS). Full page advertisements have appeared in the press together with a TV and radio advertising “Save 60” blitz - the need to save 60 litres per household per day to bridge the existing water

Recall the row that erupted when Toowoomba City Council in SE Queensland proposed that RO recovered water was the best possible option to help secure the town’s water supply. A community action group played heavily on the yuck factor, promoting the idea that they would be forced to drink sewage. Claims that “yet unknown chemicals” in RO-derived drinking water could have an unforeseen outcome such as for asbestos, thalidomide and Teflon (Teflon®). The campaign spread like a virus into the rest of the country where extended drought was having its impact, killing any rational discussion that was underway with leading politicians publicly backing off. Other anti-RO arguments used elsewhere are that RO water is too pure or ultra pure - all the healthy minerals (dissolved solids) are lacking in RO water that are necessary for good health. You can’t win, it’s either too pure or it’s full of unknown chemicals or it’s just yucky. An article published in Wikipedia voices some of the less fantastic concerns about potable use for RO recovery water - unfortunately these claims are unreferenced. However, other websites promote the use of RO to remove these same contaminants that have made their way into US water supply via wastewater infiltration into rivers and groundwater.

With utter predictability, anti-RO campaigns will arise as a matter of certainty should any authority propose RO recycling to supplement public water supply, and with equal certainty these will be fear-based without any reference to scientific data – any factual evidence that is raised in support will be shouted down and ignored. Such is the sad state of affairs where in this country the debate on the anthropogenic role for global warming seems to be led by shock jocks and opportunistic politicians.

The fact of the matter is that the RO product (from seawater or wastewater) has to be constantly monitored for purity before it can be distributed either to industrial or potable use for which extremely high purity is demanded.
supply gap of 63GL over the next year. Traditionally, Perth’s water supply has primarily relied on superficial aquifers on the coastal plain that lie north and south of the city – these are the Gnangara and Jandakot superficial groundwater aquifers. After groundwater, Perth has relied on surface-water storage in the coastal hills for the second-most important source of water. The management (or rather mismanagement I should say) of metro groundwater supply is a story in itself, best left for another article. Superficial groundwater that once dominated Perth’s metro water supply has now dropped to 35 to 55 per cent of total supply with groundwater now approaching exhaustion and with other supply options coming on line.

The accumulated Water Corporation data, collected for metro supply dams, tell the history of Perth’s dwindling rainfall – it is a declining rainfall regime, among other effects, that has impacted the capacity of groundwater to maintain a major supply for the IWSS.

Figures available on the WaterCorp and Dept of Water Websites provide a graphical representation of what has happened to Perth rainfall and the consequences for both surface storage and groundwater supplies. Of course, we could be rescued by good rains or perhaps catastrophic floods, as experienced by our eastern states brethren, but then again we might not. It is not worth going into the detail of the referenced figures, they are from government websites and tell their own story. Of course, we do have others who would tell us that we have never had it so good and that our water supply problems are caused by the naughty WA Water Corporation.

WHAT IS BEING DONE?

Nonetheless, governments of different colours have not been sitting on their hands. We are, after all, staring at a brick wall in water supply that is looming closer every year as is patently obvious from the figures referenced above.

Options either approved or canvassed include the following.

Commissioned in 2004, the Kwinana Water Recovery Plant (KWRP) now returns about 6GL/pa of high quality RO recovery water from secondary-treated waste water. The official line is, of course, that this replaces the scheme water that industry would have used. I suspect that RO recovered water was the most sensible suggestion that WaterCorp could come up with, given the amount of wastewater that gets thrown away every year. Given the yuck factor, it then became a question of which sector in WA is science-educated and would use it without a fuss? Heavy industry, of course! The KWRP, now having been operational for seven years, has provided ample opportunity for WaterCorp to test for every known contaminant that could be a concern to the public should RO be proposed for direct potable use. It is important that such information should be made fully available.

There is WaterCorp’s proposal to replenish groundwater with RO waste recovery. Good on you, guys. But WaterCorp’s website is rather coy about how it will go about this. On closer examination, it becomes clear that high quality RO recovered water is proposed to be pumped into the superficial aquifer which of course will be available for groundwater abstraction. But with a disclaimer of how the little beasties that live in soil and in the aquifers will not be harmed, because we promise to remove all the icky stuff. Not what you would expect from a science-based organisation.

This pandering to the Yuck Factor is clearly expensive and wasteful. Why not just pump RO product directly back into the reticulated supply and take some pressure off the aquifer and allow it to recover on its own?

Toowoomba also had a plan to pander to the yuck factor by pumping RO recovered water into the town water reservoir – where a good proportion of it would evaporate. But that didn’t help one bit as history tells us. Singapore discharges its RO recovered water into its drinking water reservoirs. Singapore also exports RO recovered water to NSW as bottled water – NEWater – not a bad idea.

Commissioned in 2006, the Perth Seawater Desalination Plant pumps 45GL/pa into the IWSS. Planned for commissioning later this year, the Southern Seawater Desalination Project, Perth’s second desal plant, is planned to eventually produce 100GL/pa. Without these plants, we would now most certainly be up the proverbial creek without a paddle – our groundwater is at its lowest level yet and our dams are in a similar situation. Regardless of RO seawater, we are still facing a 63GL/pa shortage that somehow has to be met this year if users don’t stop splurging tap water on their lawns.

Colin’s Canal was originally proposed by Ernie Bridge, former Minister for Water in the WA State Parliament, as a 2500km canal from the water-rich Kimberley region. This idea was credited with the loss of the Liberal Party’s election hopes when espoused by leader Colin Barnett as
an election promise for the 2005 state
election (maybe not, but I don’t think
it helped much). The current Minister
for Water in the WA state parliament
recently raised the issue again as a
matter for discussion.

A previous State Labor government
proposed that the South West
Yarragadee be tapped to supplement
the IWSS. The SW Yarragadee
Aquifer,19 is a vast and deep aquifer
storing an estimated 1000GL overall
of fresh water. The plan to extract
up to 45GL/pa from the SW of the
aquifer was vehemently opposed by
south-west communities, among
others, for other reasons, stating that
the proposal could reduce natural
surface discharges that feed south-west
river ecosystems20. The matter has now
recently been raised in the press again,
as a cheaper option to the Southern
Seawater Desalination Project, which
is going to burn a lot of electricity
over the years.

WHAT CAN BE DONE?

Clearly, the problem is political
timidness in the face of public
scientific ignorance which will be
used by alarmist and opportunistic
politicians and shamelessly exploited
by the media - who should know a lot
better.

The job is to debunk ignorance
and to educate and assist those who
are capable of making good policy
decisions. I know from my contacts
within the State water authorities that
leading environmental scientists and
political parties are all are aware of the
need to stop throwing away treated
wastewater. They are justly fearful of
the yuck factor.

Our job, wherever we are in
Australia, is therefore multifaceted.

We need to encourage politicians
on both sides of politics to agree to a
position that they will not use water
recycling as a scoring point wherever
they may find themselves on the
benches.

We will need to encourage water
ministers and their public servants to
engage in open public debate on the
merits of RO water recycling.

And we will need to encourage,
through our own efforts, a debate on
water recycling.

About the author:
Dr Rob Holmes’ career
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Science at the movies

Lab Coats in Hollywood: Science, Scientists and Cinema
By David A. Kirby
The MIT Press, $42.95

Science fiction movies have come a long way since The Deadly Mantis or Cat Women of the Moon. Even in the fifties, of course, there were movies that did as good a job as the times allowed to show science and scientists. With the help of the superbly realistic visual effects we have had over the past couple of decades, the capacity for accurate depictions of science has increased, and so, too, has the interest of filmmakers who want to do such depictions correctly.

Since film directors and producers are not scientists themselves, they hire out to get advice. Sometimes the results are good for the movie and also good for science, and sometimes not.

Science consultation in the movies is the wonderful subject of Lab Coats in Hollywood. David Kirby is nicely positioned to write such a book; he was a practising evolutionary geneticist before becoming a lecturer in science communication studies. And he obviously loves movies.

Kirby starts on a high note, looking at Stanley Kubrick's 2001: A Space Odyssey, which he says is "the most scientifically accurate film ever made for its time". He adds that the amount and range of advice that 2001's filmmakers received during production is still unsurpassed. Kubrick was interested in advancing science fiction movies from juvenile adventures to intellectual journeys, and he knew he could not do so without getting the science right. His primary science consultant had been at NASA, and the person who visualised the spacecrafts for the movie had done the same for NASA. There was also a statistician who gave advice about supercomputers. 2001 is, of course, mostly about space flight and exploration in the future, but don't forget the 'Dawn of Man' sequence; Kubrick got advice from the father-and-son anthropological team Louis and Richard Leakey.

2001 was an artistic and popular success for many reasons, but some of them at least are due to its firm grounding in science. People did not go to see science on display, but the science involved made the film visually stunning and intellectually true. The science was among the creative tools that Kubrick used to make a superb film. (So realistic were the visuals that many in the moon-landing-was-a-hoax crowd think it was Kubrick who used the same techniques to fake the moon landing.)

Kirby has talked extensively to scientists and filmmakers, and has had workshops with them all together. The scientists don't like to see bad science on the screen, and want to know, "How can we make the science in entertainment products more accurate?" Kirby says this is the wrong question; it is better to ask, "How can accurate science make your film better?"

Consultants can make movies better by fact checking, or by advising on the look of tools and lab spaces. Consultants can increase the scientific plausibility of the movie, and if the plausibility is up, suspension of disbelief is maintained, and the audience is drawn in. It doesn't hurt that scientists in the audience of an accurate film won't be picking at it.

You'd think, for instance, that it wouldn't make a bit of difference if a cartoon which is set underwater got a bit of oceanic biology wrong, but it did make a difference to the makers of Finding Nemo, who asked a marine biologist what would be something they might show on the screen that would really annoy him. He answered that seeing kelp, which grows only in cold waters, flowing around a coral reef would do it. They should have asked him before they started drawing. One of the lessons here is that getting a science consultant often happens late in production, when corrections are expensive, while getting one integrated from the beginning can, among other things, save lots of money. Every pixel of every kelp frond was removed from every scene. There may be talking clownfish in the movie, but there was no risk that scientists would be including its kelp within coral in their lists of bad movie science.

Next to 2001, the book pays the most attention to the Jurassic Park series. The movies are based on getting real, preserved dinosaur DNA and making dinosaurs from it, and although that requires many leaps of imagination, it isn't all pure fantasy. Stephen Spielberg and his crew were interested in taking that premise and making its results as scientifically keen as possible. Enter paleontologist Jack Horner, who was involved in many aspects of the movie. He made sure that the actors would pronounce words like Pachycephalosaurus right. Filming could not be done on a genuine Montana fossil site, so Horner was there to ensure the set looked like the sites...
Science at the Movies

Continued...

with which he was so familiar.

What Horner got out of the deal was money, of course, and if you’d rather not think of a scientist getting filthy Hollywood lucre, you can think of the research grants and donations to his museum. The money isn’t the interesting part of the story, though. Horner was a strong advocate of the concept that birds are the direct evolutionary descendants of dinosaurs. This idea has broader acceptance now than it did in 1993 when the first of the films came out, but it was contentious at the time (and still not all biologists accept it). Horner suggested visuals, animal behaviours, and more that would give cinematic confirmation for the bird-dinosaur connection. Horner’s own concepts of dinosaurs thus got a strong visual confirmation; it’s not scientific data, but those dinosaurs looked natural on the screen, and their birdlike aspects looked natural too.

The movies helped spread his ideas, and though they are paleontologically mainstream now, at the time they got scientists in other camps riled up and writing rebuttals, though of course rival scientists didn’t have blockbuster movies to spread their views. One scientist admitted that the movements of the T. rex looked natural, but doubted that a six-ton, two-legged animal could run at 45 miles an hour. Computer models confirmed that it could not. Thus the film inspired research, and a correction to an idea that was neither proved nor disproved when the film was made.

There are sometimes problems because a scene that is scientifically accurate might be cinematically boring. Sometimes there are problems because scientific accuracy clashes with an audience’s view of the way things are supposed to be. The 2000 movie Mission to Mars had plenty of scenes on the ‘Red Planet’, but we know from the rovers that it is actually a yellow-brown. In the movie, the geology has a red tinge; scientific accuracy would have made things look less plausible. That inaccuracy didn’t bother scientists too much. What did bother them (especially the guy who advised on science for the movie) was that the movie included a ‘Face on Mars’, inspired by the pseudoscientific importance some devotees have given to a natural geologic formation that happens, in the right light, to look like a face. There wasn’t anything wrong with supposing, for the movie’s sake, that there had been a previous Martian civilisation, but giving cinematic credence to a silly folk legend was a scientific blunder.

There are many movies cited here that have used good science to promote public understanding and intelligent debate on contentious issues. The China Syndrome was well researched and its questions about the safety of nuclear power still linger. Armageddon and Deep Impact, both released in 1998, made people think about what might be done if we see that asteroid or comet headed to wipe us out (although Armageddon showed deep flaws in its science, as described here). The Day After Tomorrow had some realistic climate disasters, unscientifically squashed into a time frame of days, but surveys after it was shown showed that people did have more concern over the problem of global warming. The Core was full of scientific howlers, and no one knows if, with fewer of them, it might have had people worrying about how the supposed spinning nuclear ball in the centre of the Earth is someday maybe going to stop and cut our magnetic field. The ideas of the real-life geologist who advocates the “nuclear planet theory” didn’t really get any extra traction from this movie.

Kirby’s book shows how products of the future might be introduced in a movie; the interfacing by gestures with the computer, as used by the detective in Minority Report, was an imaginary prototype suggested by one scientific advisor who has gone on to make physical prototypes of such an interface.

Scientists are often thrilled to work on a picture with famous people from Hollywood, and frequently do so without pay. This can be a big disadvantage: if the scientist needs to be on set or on call, it’s a good bet that this will be an impossible schedule for an academic, field, or commercially-employed scientist, so maybe one who just got a degree would be hired, for all the problems that might cause.

One of the important themes here is that scientists and filmmakers are increasingly acknowledging the importance of their close connection; the National Academy of Sciences’ Science & Entertainment Exchange program, for instance, wants to increase the involvement of scientists in the filmmaking process. Kirby knows plenty of the personalities involved here, and obviously has watched the movies carefully. He has given many detailed descriptions of scientific and cinematic work, and his brightly-written book ought to be enjoyed by anyone interested in either subject.

- Reviewed by Rob Hardy
The Climate for debate

Climate Change Denial: Heads in the Sand
By Haydn Washington and John Cook
Earthscan, A$34.95

Haydn Washington is an environmental scientist of 35 years experience. John Cook is a youthful physicist working nearly full-time on his skepticalscience.com website and providing smart-phone apps for those engaged in argument about climate. Together they have produced a book which deals with denial as exemplified by the climate change debate.

The book does a good job in describing the scientific method, in delineating scepticism and denial, in categorising the forms of denial and in discussing the sociology of denial. Skeptics will approve of this subject matter. Unfortunately the authors have allowed the outrageous antics of the climate change deniers to cloud the dispassionate and forensic scepticism they undoubtedly possess. The book is a polemic and not a work of scholarship. This is a pity because an academic approach to analysing the machinations of both sides in the debate would show that the peccadilloes of the alarmists fade into insignificance in the shade of the egregious enormities of the deniers.

There are two questions posed in the climate debate. Firstly, can mankind cause catastrophic climate change? And secondly, is there evidence this is happening now? These questions must be kept well separated for meaningful discussion. Indeed, the deniers are careful to conflate them, for whereas the theory behind anthropogenic forcing of the climate is very compelling, the existence of a small signal buried in a lot of noise can always be discredited. In a book, discussion of the two arguments should be carefully separated into different chapters and the authors have failed to do this.

I found the chapter on climate science disappointing. The general reader does need a general understanding of the basic theory but is unlikely to acquire it here. The essential figures which enable the reader to do the arithmetic are absent. Incoming from the sun are 1365 watts per square metre of the Earth’s surface.

Add 0.006 W/m² for each sunspot. Divide all this by four to account for spherical geometry and multiply by 0.7 to account for albedo and you get 239 W/m² to power the climate. One might mention that about 150 W/m² of this is swishing around the troposphere where the weather manifests itself and where we live. There! Nothing difficult about that and nobody disputes it and it needs stating and it is indeed found in the posts on skepticalscience.com.

The dispute comes when one calculates how many watts have been added so far by the activities of man. The IPCC reckon it’s 1.6 W/m² and the opposition generally estimates less than 0.3 W/m². The general reader now needs to know how the energy of radiation can cause molecules to vibrate and liberate heat: once the real mechanism of the greenhouse effect is understood, the rest of the science falls into place. The dot points on page 22 and the table on page 23 make little sense otherwise.

Too much didacticism runs the risk of producing a text-book. However, it wouldn’t hurt to provide descriptions of the techniques used by climatologists to obtain their numbers. How do oxygen isotopes act as a proxy for temperature? Why are beryllium isotopes a proxy for solar irradiance? What information can you get out of an ice-core? All fascinating science, but with flaws and the reader needs to know about them.

An appendix is provided listing the many organisations claimed by Greenpeace to be “greenscam and denial groups”. Several of these groups provide a rich seam of outrageous nonsense but these risible sources are largely untapped: a shame, for we could do with a good laugh. For example, there is no mention of Lord Monckton. David Bellamy’s faux pas in New Scientist does rate a few lines but the hilarity of the occasion is not exploited.

There is a six-page analysis of Ian Plimer’s book Heaven and Earth. This discussion acts as a case study of denial and is a good enough exposition for the general reader. There is, however, an omission. The use of data belonging to a time when the Earth was effectively a different planet is a favourite device of the geological contrarian. The climate debate is about the next century which will follow on from ten thousand years of fairly stable interglacial warmth. Looking at the conditions when the continents were in different positions fifty million years ago is to set up an argument.
The Climate for Debate

Continued...

of the straw man variety.

While the authors take the high moral ground of the scientific sceptic over the irrational denier, the tone of the book is decidedly authoritarian and one can understand why many climatologists are on the nose with the scientific establishment. The discipline has too many variables for too few equations and deals with data so imprecise that they have to be averaged over thirty years.

Fifty years ago, climatology was at the bottom of the pecking order along with non-sciences such as economics, sociology and psychiatry. It is good that things are more egalitarian now. However, climatologists need to be very careful before they throw their weight around. The testimony of James Hansen before the US congress in 1988 that “(anthropogenic) global warming is already happening” is a case in point. Back then, the evidence for this statement only had something like a 65 per cent confidence limit. Today, as this book states, the confidence level is 90 per cent. Indeed, the figure is slightly more than this and is slowly creeping towards the scientific two-sigma yardstick of 95 per cent. Calculation of probabilities can be salutary: I reckon the chances that Lord Monckton’s estimates of anthropogenic climate forcing are correct are less than 1 per cent!

As in all disciplines, climatology has its own way of coping with its inherent problems. All that noisy data needs smoothing in some way to make sense of it. Unhappily, any smoothing operation takes information away from the original data set and climatologists tend to go one smoothing operation too far. Thus on page 58 we have the wiggly plot of yearly temperature from 1880 to 2010 and the wiggly plot of the yearly solar irradiance. The divergence around 1950 provides evidence that the sun is not the cause of the temperature rise since then. Superimposed on these wiggles is the 11-year average, presumably to flatten out the sun spot cycle, nominally 11 years long. To the scientific eye these additional plots detract from the message and simply confuse the non-scientist.

One of the examples where scientific scepticism has helped the climate debate is the criticism by McIntyre and McKitrick of the famous hockey stick temperature plot published by Mann, Bradley and Hughes in Nature in 1998 and in Geophysical Research Letters in 1999. There are things which consenting paleoclimatologists can do in the privacy of their own seminar rooms which should not be done in a nice family journal like Nature. This includes taking a series of proxy temperature measurements, averaging and smoothing them with a function which removes evidence of the Medieval Warm Period and Little Ice Age and which has an intrinsic bias to curl upwards at the edges. It makes things worse to graft directly measured numbers onto the upwardly curling bit and it doesn’t help to include some questionable tree-ring data.

When attention was drawn to this litany of errors, the National Center for Atmospheric Research made an assessment which supported the conclusions of Mann et al leaving them with a little egg on their faces but with their integrity intact. The bottom line was that a more robust climate theory was advanced. This is how scientific scepticism works and we need more of it in the climate change debate. Washington and Cook are, for my tastes, too defensive in the face of rational sceptical criticism.

Other examples of productive scepticism are the Svensmark hypothesis which links the sun’s magnetic field with cloud formation and Lindzen’s idea of a radiative feedback mechanism. Both hypotheses have been shown to be very unlikely but testing them has given useful insights into the mechanics of cloud formation. I note that Lindzen gets a very bad press at skepticscience.com and no mention in this book.

Bjorn Lomborg’s The Skeptical Environmentalist does contain sufficient fabricated data and trimmed results to be called denialist literature. But is he a part of the Machiavellian non-denier denier group? If so, I confess that I have been duped.

I can find no errors of fact in this book and it will give heart to the climate foot soldiers but will be ignored by the contrarians. It has been distributed to all our federal parliamentarians; I wonder what they will make of it.

- Reviewed by Nick Ware

Editor’s Note Nick Ware is a “retired scientific minion”. His annotated PowerPoint presentation on Skepticism and the climate change debate can be found by scrolling back on Past Activities at www.canberraskeptics.org.au
You may have read or seen the movie about Marley, “The World’s Worst Dog”. Marley, at least, was just a dog, and those whom he troubled might have had to suffer torn belongings and other messes. But Marley was a piker at ‘worstness’; he did not speak all the languages of Satan, for instance, and he could not change his shape into that of a seductive woman, and he could not render himself and his master invisible.

These are the sorts of naughtiness ascribed to Boy, a dog who lived over three centuries ago and belonged to Prince Rupert, nephew of the British King Charles I. Whatever demonic things Boy could do, he did play a real role in the English Civil War, and he did affect how the British regarded witches, so if you are interested in reading a book about a real dog with a real place in history, here is The Black Legend of Prince Rupert’s Dog. Mark Stoyle is a history professor with special interest in witchcraft and the English Civil War period, and says that he knew even as a child that Prince Rupert had possessed an unusual dog. While Stoyle denies that he was “bewitched” by the story, he started devoting serious academic attention to the dog six years ago, mostly because although the occult connections of Boy were famous in the dog’s own time, and have been storied ever since, no one had investigated the origin of the rumours about the dog or how Prince Rupert’s diabolical image developed over time. This is the book to do just that, and the play of superstition and its effect on reality is fascinating throughout.

Here are some pointers, for those who don’t make the English Civil War the object of their constant study. The first part of the war, the one in which Rupert and Boy took part, was fought from 1642 to 1646. Rupert was on the side of the Royalists, or Cavaliers, supporting his uncle Charles I. They were opposed by the Parliamentarians, Roundheads, or Puritans, led by Oliver Cromwell, who barely appears in these pages. Stoyle’s account starts when Rupert’s mother, Charles’s sister Elizabeth, was left a widow after Frederick V, elector of the Rhineland Palatinate, died in 1632. As a child, Rupert got the nickname “Robert the Devil”. There is little explanation why he got the name, but it may have been the first indicator to make people think of a connection between him and the occult. Even as a teenager, Rupert proved to be a competent soldier. He miraculously escaped death or wounding in the Battle of Vlotho in Westphalia in 1638 when he was nineteen, and a rumour went around that Rupert was ‘shot-free’, or unable to be hurt by bullets due to some sort of enchantment. Nonetheless, he was captured and imprisoned in Linz Castle, Austria. Sometime during his two and a half years there, he was given a dog.

There is some confusion about what sort of dog this was and its name, but best evidence supports that he was a white hunting poodle, and he went by the name of Boy. When Rupert was released, he, with Boy, went to England to serve in his uncle’s cavalry. He may have come to the service bearing a reputation as a witch or sorcerer, but any such stories would have been forgotten if it were not for the Roundhead pamphleteers. There may have been initial reports that Rupert had committed “divelish” outrages, but one pamphlet came out saying that Rupert had disguised someone else to look like him and that Roundhead soldiers had seen “the plundering Prince, or some fiery spirit mounted on some airy apparition in the likeness of a horse”. No reason was given why there should be an assumption that if it wasn’t Rupert, it had to be some incorporeal spirit, but the link between Rupert and witchery was made. Another referred to Rupert taking disguises in order to spy on the Roundheads, but said he had taken “severall shapes” in such disguises, hinting at the witch’s capacity for shape-shifting. The Roundhead propaganda also sparked the idea that there was a diabolic tribe around the king.

On their side, the Royalists were happy to portray the Roundheads as dunderheads who could believe the most foolish superstitions. The poet John Cleveland got into the act with a poem that made fun of Roundhead credulity, saying that the Roundheads were just as scared of Boy the dog as they were of Rupert, because Boy ate human flesh, and before he lay down he went around in circles, circles just like witches made on the ground for their enchantments! The Cavaliers would have found this hilarious, and the Royalist leaders, including the king, thought...
The dog of war

Continued...

Cleveland may also have been the author of a famous pamphlet of 1643, *Observations upon Prince Rupert's White Dog Called Boy*, the text of which is included as an appendix in this book. Historians had first thought the pamphlet was a Roundhead diatribe against Boy’s witchery, but Stoyle masterfully shows it to have been a Royalist satire on Puritan propaganda. Among other things, the pamphlet borrowed on the stock belief that a witch would have a “familiar,” the devil himself or one of his subordinate imps in the form of a pet, to help the sorcery go along. *Observations* may have been satire, but it was also the first pamphlet about witchcraft published in England in fifteen years. It would have achieved its purpose of making Royalists laugh at the foolish credulity of Roundheads, but it had a serious unintended consequence. Stoyle shows that the pamphlet and others created “an intellectual atmosphere in which the subject of witchcraft could be discussed more freely in print than it had been for many years before”. The fanciful stories about Boy only supported the beliefs of the Roundheads that the king was really in league with genuine witches, and thus proved a propaganda masterstroke against the home team that had generated the stories in the first place. It may be that they did influence the first part of the war, increasing the vehemence and courage of the Roundheads; Rupert was not ultimately successful in his campaigns against them, and left England in 1646.

More importantly, Stoyle shows that the newly-revived public thinking about witches may have lead the Roundheads to massacre the female Royalist camp-followers after the battle of Naseby. Even more significant, the increased attention paid to the familiars of witches because of Boy’s reputation of being himself a familiar may have influenced the way the witch-finder Matthew Hopkins proceeded in his persecutions. No witches were executed in the king’s quarters during the years covered in this book, but scores were executed after the Roundheads took over. Boy himself was killed at the Battle of Marston Moor in 1644, but stories about him continued to reinforce ideas that Rupert was in league with the devil, as were the king and the rest of the Cavaliers. That the dog had absurd stories told about him proves to have been far from a frivolous matter, and a case could be made that Boy, because of the reputation bestowed upon him, was one of the most influential dogs in history.

Stoyle seems to have investigated this surprisingly important sliver of history as deeply as can be done. While many of the connections he draws are tentative (and he admits it), Stoyle’s picture is a dark and convincing look at a few monstrosities resulting from the sleep of reason.

- Reviewed by Rob Hardy
The postman knocks

Letter to Christian Leaders: Hollow be thy claims
By Jake Farr-Wharton

In 2007, Sam Harris wrote an interesting little book called A Letter to a Christian Nation. That book was a basic rebuttal to Christian fundamentalist and blind belief. Harris's book succeeded in upsetting most Christians in the United States, but gained a degree of notoriety that it demolishes many of the arguments used by those who have faith, couched as a personal letter to those who believe in a god. While Harris's book is addressed to all who believe, Jake Farr-Wharton's book is addressed to specific celebrities within the fundamentalist Christian world.

The growth of books from the cluster of 'new atheists' has inspired many of like mind to write their own. The original group of authors - Dawkins, Hitchens, Harris and Dennett - approach the criticism of religion using rational argument and by being less accommodating to religion. The new crop of atheist authors has taken this doctrine and is starting to use this effectively in the written word. With such technology as podcasting and websites, some authors such as Farr-Wharton are making in-roads into demonstrating the irrationality of religion, but are taking point in facing the religious leaders directly.

As a reader, I like the concept. Atheists and skeptics tend to know which personalities are pushing a wheel-barrow. If you are interested in vaccination, you look at Wakefield; if you are interested in young earth creationism, you look at Ken Ham. Farr-Wharton goes one step further and actually writes a letter to each of the 'fundys', his hit list including such as Roberta Coombs and Pat Robertson. Eleven people are targeted, but Pat Robertson is actually targeted with two letters.

Roberta Coombs is the president of the Christian Coalition of America (CCOA). Her letter commences with the position of the CCOA and the aims of the organisation. Among Roberta's desires is for all military chaplains to be allowed to conduct prayers at military functions, the removal of funding to stem-cell research and ensure the introduction of the 'Fairness Doctrine', where equal time for religious and liberal programs is required.

Farr-Wharton also takes aim at Dinesh D'Souzan, an academic who has made a lifetime commitment to saying that atheists have killed more people in the name of atheism than religion - just look at Stalin and Hitler. Again, Farr-Wharton demolishes his statements by, on one hand, simply quoting Hitler's Mein Kampf and looking at Vatican records in regards to Russian Orthodox Church acceptance of Stalin's rule. Other victims include Rick Warren, former child-star Kirk Cameron, intelligent design specialist Dr Georgia Purdome and Bill McGinnis, to name a few. Each of these leaders was selected for their outspokenness concerning their beliefs, but also the irrational arguments they use to further those beliefs.

The forward was written by another atheist author CJ Werleman, (God Hates You Hate Him Back, subject of a book review and interview in The Skeptic, 30:4). No doubt Farr-Wharton has been influenced by Werleman, Harris and Dawkins, but his idea of writing a letter to destroy separate ideas from separate people is original. By dissecting arguments rationally and logically, Farr-Wharton provides a background for further research and study by the reader.

A Brisbane-based writer, Farr-Wharton's first book is a response to the dogma put forward by various leaders in statements they release on the internet, meetings or to public forums. Many are appropriately referenced for the reader to gain full text and context for their information.

The research in the book is impeccable, and his conclusions sound and effective. But if you also like your conclusions delivered at times in a sarcastic tone, this is the book for you.

It is not a light read, but in saying that, it is entertaining. Farr-Wharton strips the arguments and statements of the leaders and puts together a logical response. It may not be the book for the first time atheist reader, but those who have been on the atheist wagon will enjoy it.

If there were a shortcoming, it would be the lack of Australian leaders for Farr-Wharton to write to. I suspect that a number of people could have been used, but the leaders that were chosen are defiantly the best of breed for the case that Farr-Wharton makes.

- Reviewed by Geoff Cowan
What you think ...

More degrees

I am pleased you are addressing degrees of woo, as I am a bit bored by the power balance wristband (not that such nonsense should be ignored) as three of the magazines that come into this house: New Scientist, Choice and The Skeptic, have given it attention.

Three years ago I went back to UTS to add to my teaching qualifications and was horrified to see acupuncture on a course list. At the end of my course, in online communication, there was a feedback section. I took the opportunity to say that I believed the inclusion of acupuncture in a university course degrades the value of all degrees from that university. In general, publications seem to tippy toe around the subject yet evidence for its efficacy seems pretty thin or non-existent.

Hope to see more along the lines of ‘degrees of woo’

Anita Carty
Balmain, NSW

Don’t waste your time

A correspondent in the last issue of The Skeptic suggested that a repository of studies that failed to find anything should be kept to help evaluate whether findings were real effects or just the one in twenty that something is statistically significant by chance. His suggestion was a Journal of Negative Results. Readers will be pleased to know that such a journal exists in psychology: The Journal of Articles in Support of the Null Hypothesis (see: http://www.jasnh.com/). This journal has the stated purpose of preventing researchers from “wasting their time examining empirical questions that have already been examined”. Of course, researchers would not know these questions had been examined if non-significant results had not been published but this journal provides an outlet for such research.

Guy Curtis
Queens Park, WA

Matter that Matters

I hope that you will indulge me. I have several matters I’d like to comment on which have been the subject of articles and correspondence in The Skeptic.

Ian Bryce, (The Skeptic, 30:4, p59), quotes an equation $E = K – m/r$. Dimensionally, energy is $[ML^2T^{-2}]$, so what are the quantities $K$, $m$ and $r$ which will make the dimensions balance? Could Ian please explain?

Brian Marsh on p60 of the same issue wishes to draw a distinction between mass and matter. Mass is the way in which the quantity of a matter is measured. It is the amount of matter in a body, measured in kg in the SI system. It’s hard to see in what way they could be considered ‘different concepts’. Matter, simple or otherwise, will always have mass. It might be that immediately after the Big Bang there was no mass in the universe, only energy, and Einstein’s equation tells us how much energy can be extracted from an amount of matter, and the other way around.

Ian Foster, p57 of the same issue, ‘has trouble understanding how a true skeptic can be an atheist’. Having read a few blogs on the topic, particularly those that go along with the Jesus & Mo strip, which I recommend, it all depends on what you mean by ‘atheist’. Taking the Shorter OED for an authority, an atheist is “one who denies or disbelieves the existence of a God”, and an agnostic as “one who holds that existence of anything beyond material phenomena, eg of a First Cause, … cannot be known”. Bertrand Russell has said that in public he was an atheist and in the company of philosophers, an agnostic. Richard Dawkins wrote of the idea of a tooth fairy agnostic, which I’m attracted too. I don’t see that it is reasonable to infer that agnostics are 50%ers. So to that extent, I’m with Ian. Atheism on the above definition is dogmatism.

Ian goes on to say that “countless scientists and lay persons” acknowledge something more in our universe. Forgetting the hyperbole and noting that “one scientist and countless lay persons” satisfies the description, and accepting that what is meant is that lots of scientists acknowledge …etc, I have read that, and will find if pressed the authority for, the ratio of non-believing
to believing scientists is around seven to one. More to the point, and recognising that a scientist requires evidence, believing scientists are not adhering to the scientific method in formulating their views in this matter, and their views therefore are no more to be regarded as worthy than anyone else’s.

Ian also wants to know where the respect and tolerance for others is. Well, respect is not a God-given right (sorry!) and tolerance should only be accorded to a belief that deserves it. (Let’s not bring Hitler into it.)

“We happily accept that this applies to all other areas of the primary school curriculum” (My emphasis). So all the capital cities and rivers of the world I committed to memory in primary school, and all the mountain ranges and deserts too. I was misled on? See, the trouble with being hyperbolic is that you make yourself a large target. See, the trouble with being hyperbolic is that you make yourself a large target.

“It’s intuitively obvious that the table my elbows are resting on (and my elbows) are solid. Atomic theory tells us something very different. It isn’t possible to sit in a chair, thinking no matter how deeply, and discover something about the real world. Eventually, you have to go to have a look. You can’t say that everything that exists had a beginning unless you have looked at everything and found it to have a beginning.

In response to John Nash (p62), mathematics and physics are fundamentally different in kind. Mathematics follows by strict logic from a few premises or axioms, so 1+1=2 – always. Physics (and all science) depends on observation of the world to tell us what the best theory is, for the moment, and is always open to revision. Mathematics, of course, is a very helpful tool which allows you to say that if such & such is true, then so & so is also true. I suggest that it isn’t necessary to imagine √-1. It is an operator which obeys certain rules in its manipulations and allows us to say (for instance) that the number of solutions of a polynomial equals its degree, sometimes some of the solutions being complex. Without complex numbers, fifth degree polynomials might sometimes have five solutions, sometimes three. Complex numbers allow the generalising of mathematics. By the way, i =0.2079… - a real number!

And lastly (for the time being), my sincere thanks to Martin Bridgstock for Decision Time. This is a valuable road map, as they say, for working out what you’ve got good reason to believe and what you haven’t, and what lies between. And for the last, keep quiet.

Bill Smalley
Maylands, WA

[Editor’s note: Mr Smalley’s letter arrived too late to be included in The Skeptic 31:1, and shortage of space meant it could not be run in 31:2. I hope Mr Smalley appreciates the editor’s dilemma, and accepts its publication in this issue. Some of the matters he refers to were also responded to in those earlier issues.]
Organics

Continued...

legitimate, scientifically sound enterprise, while the latter involves shaking water under a full moon (or some such nonsense), and is the outdoor version of homeopathy.

Big Bang Skepticism

The Big Bang has become fairly generally accepted. Most cosmologists and physicists accept, and say, that the universe is 13 billion years old. They should, as scientists, be more sceptical. They can quite simply be shown to be wrong.

The figure of 13 billion years derives from the Big Bang ‘fact’ that the matter out at our limit of visibility has travelled 13 billion light years of distance at the speed of light. It has taken 13 billion years to ravel from the Big Bang origin to where we see it today. So, the universe is that old.

When that matter got to where we see it now, we see it by means of light that has taken 13 billion years to travel to us. So 26 billion years have elapsed during the time of travel of that matter and the time of travel of that light. The Big Bang universe must be 26 billion years old. How can all those ‘experts’ be so uncritical and 100 per cent wrong?

Those same experts also enthuse about galaxies out there that are very young; we see them as they were, soon after they were formed, soon after the Big Bang. So out there, 13 billion light years away in one direction we might see one such galaxy and in the opposite direction there is another young galaxy – two galaxies formed within a short time of each other. How could they have got some 26 billion light years apart in such a short time? How can people whom we expect to be critical and sceptical scientists accept things so uncritically?

Those same scientists accept that the Big Bang began at a point in space. When Edwin Hubble found that the expansion of the universe is uniform, the cosmologists of the time worked out how long the expansion had been going. They imagined the expansion in reverse and could reason that the further back in time the smaller the universe was and that it must have been at a point at the beginning. Any physicist, looking at the expansion of any matter, would calculate back in time to when the matter would have been at its maximum density. No reputable scientist could reason or accept anyone else’s reasoning that any expansion of any matter could begin at a point. But the Big Bang acceptors do!

Brian a’B Marsh
St James WA

CRYPTIC CROSSWORD SOLUTION

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DR BOB’S TRIVIA SOLUTIONS

1. Judas Iscariot “had the bag” – John 13:29
2. As Master of the Royal Mint he had saved Britain from a major financial crisis, and he became obsessed with finding forged money and with catching forgers.
3. It had to be Gouda cheese, and before its use-by date
4. The Japanese had never seen or used scaffolding before, until they saw it in DW Griffiths’ epic movie Intolerance (1916).
5. Six per cent - Most crimes were perpetrated by Noddy himself.

You can see more like this, every month and going back some years, at www.skeptics.com.au/features/dr-bobs-quiz/
Local Skeptical Groups

VICTORIA

Gippsland Skeptics – (formerly Sale Skeptics In The Pub)
Meets every second Friday in Sale and Morwell in alternate months.
saleskepticsinthe pub@hotmail.com or 0424 376 153
Facebook: http://www.facebook.com/pages/Gippsland-Skeptics/172376579482915

Great Ocean Road Skeptics – (Geelong)
Meets on the last Wednesday of each month from 6pm, City Quarter, Cunningham Pier East Geelong
Contact: Carolyn Coulson carolco@barwonhealth.org.au

Melbourne Eastern Hills Skeptics in the Pub
Meets second Monday of each month at The Knox Club, Wantirna South Vic.
Contact: Lucas Randall 0423141453
mehsitp@codenix.org
http://mehsitp.codenix.org

Melbourne Skeptics in the Pub
Meets on the fourth Monday of every month from 6 pm at the Mt View Hotel in Richmond.

Mordi Skeptics in The Pub
Meets at 7.30pm on the first Tuesday of each month at the Mordi Sporting Club. ($2 to cover website costs)
http://www.meetup.com/Mordi-Skeptics-in-the-Pub/

Peninsula Skeptics – (aka The Celestial Teapot)
Contacts: Graeme Hanigan 0438 359 600 or Tina Hunt 0416 156 945 or glannagalt@fastmail.fm
http://www.meetup.com/Teapot-Mornington-Peninsula/

NEW SOUTH WALES

Batemans Bay Skeptics in the Pub
Contact: Ken McLeod on 02 4473 6363
turlinja@intemode.on.net.

TASMANIA

Launceston Skeptics
Skeptics in the Pub
Contact: Jin-oh Choi, 0408 271 800
info@launcestonskeptics.com

NOTE: LISTINGS WELCOME
We invite listings for any Skeptical groups based on local rather than regional areas. Email us at editor@skeptics.com.au with details of your organisation’s name, contact details and any regular functions, eg Skeptics in the Pub, with time, day of the month, location etc. Because this is a quarterly journal and most local groups meet monthly, it is unlikely we will be able to include references to specific speakers or events.
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