SKEPTICISM ■ SCIENCE ■ SOCIETY

THE SKEPTIC

Vol. 34, No 3. September 2014

Scared of Science?

How to get the message across

+ Pharmacy Pheromones Placebo Paul

Australian Skeptics ■ www.skeptics.com.au

Skeptical Groups in Australia

Australian Skeptics Inc – *Richard Saunders*
www.skeptics.com.au
PO Box 20, Beecroft, NSW 2119
Tel: 02 8094 1894; Mob: 0432 713 195; Fax: (02) 8088 4735
nsw@skeptics.com.au

Sydney Skeptics in the Pub – 6pm first Thursday of each month at the Crown Hotel, cnr Goulburn and Elizabeth Streets in the city (meeting upstairs)

Dinner meetings are held on a regular basis.
2014 convention - November 28-30. convention.skeptics.com.au

Hunter Skeptics – *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 month, excepting January, commencing 7.00pm, with a guest speaker or open discussion on a given topic. Visitors welcome. Further information from the secretary at: kevin.mcdonald379@bigpond.com

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Australian Skeptics (Vic) Inc – *Chris Guest*
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.

More details on our web site www.skeptics.com.au/vic

Borderline Skeptics Inc – *Laurie Smith*
RSB 11 Callaghhan's Creek Boxes, via Tallangatta VIC 3701
Tel: (02) 6072 3415
Meetings are held quarterly on second Tuesday at Albury/ Wodonga on pre-announced dates and venues.

Queensland Skeptics Association Inc – *Bob Bruce*
PO Box 3480, Norman Park QLD 4170; www.qskeptics.org.au
Tel: (07) 3255 0499 Mob: 0419 778 308 qskeptic@bigpond.com

Meetings with a guest speaker on the last Monday of the month from February to November at the Redbrick Hotel, 81 Annerley Road, South Brisbane. Dinner from 6pm, speaker at 7.30pm.
Qskeptics eGroup - www.egroups.com/list/qskeptics
Brisbane Skeptics in the Pub - brisbanesitp.wordpress.com

Gold Coast Skeptics – *Lilian Derrick*
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Tel: (07) 5593 1882; Fax: (07) 5593 2776
lderrick@bigpond.net.au
Contact Lilian to find out news of more events.

Canberra Skeptics – *Lauren Cochrane*
PO Box 555, Civic Square ACT 2608
http://www.canberraskeptics.org.au Tel: 0408 430 442
mail@canberraskeptics.org.au (general inquiries),
arthwollipot@gmail.com (Canberra Skeptics in the Pub).

A free monthly talk, open to the public, usually takes place on the 1st Saturday of each month at the Lecture Theatre, CSIRO Discovery Centre, Clunies Ross Rd (check website for details of the current month's talk). Skeptics in the Pub gather at 1pm on the third Sunday of each month at King O'Malleys Pub in Civic. For up-to-date details : 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

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WA Skeptics – *Dr Geoffrey Dean*
PO Box 466, Subiaco, WA 6904
info@undeceivingourselves.org

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.org

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Australian Skeptics in Tasmania – *Leyon Parker*
PO Box 84, Battery Point TAS 7004
Tel: 03 6225 3988 BH, 0418 128713 parkerley@yahoo.com.au

Skeptics in the Pub - 2nd Monday each month, 6.30pm, Ball & Chain restaurant, Salamanca Place

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Darwin Skeptics – *Brian de Kretser*
Tel: (08) 8927 4533 brer23@swiftdsl.com.au

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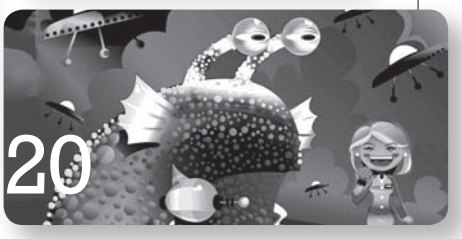
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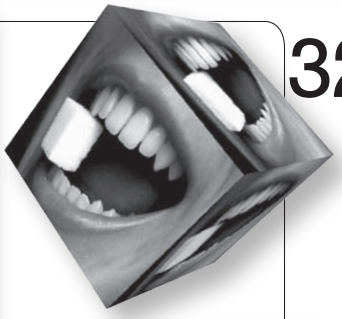
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Skeptics

It's critical

CSIRO recently announced that it was discontinuing its Holiday Science sessions for school kids. These have been running for 20 years during school holidays for both primary and secondary level students.

Australia's premier research organisation does put a positive spin on changes to its science education and outreach activities: "From 2015, we'll be refocussing our activities and will be offering a range of exciting new programs that will have CSIRO's science as their context. ... We will continue to publish engaging science content for young people through Science & Maths by Email and the *Scientriffic* and *Helix* magazines."

But the message is that, at least for the time being, CSIRO will be scaling back its Education Centre activities "while we focus on developing these new programs".

The decision to cut the holiday science classes was, it says in a letter to parents, "due to changing circumstances across the organisation" For changing circumstances you can probably read a lower budget.

OK, the holiday classes are only one aspect of CSIRO's many forms of science education, but it is a worrying indication of what might occur in the future.

There is a desperate need to expose the population – and especially children – to science and technology and the accumulated knowledge that has grown up through scientific endeavour and scientific method.

Cutting back on science education, in whatever form that takes, is totally counterproductive to ensuring national and individual development in coming years and decades.

There is a huge and abiding interest in science among the general population. A lot of this interest revolves around areas that have a direct impact on people, such as health and medicine, and the environment. But there are other, more interest-based, areas where adults and children alike have an interest from a non-utilitarian perspective. Astronomy, space travel, wildlife and palaeontology (especially dinosaurs) are just a few.

An important aspect of this for Skeptics is that science is a key area for education in critical thinking. It is also vital in our understanding of the real world and how it works and affects us.

Downgrading science education not only affects our general level of knowledge but it is also an indication of priorities. If science education for kids is seen as less important than building roads, then this opens the way to the substitution of pseudo-knowledge for the real stuff. A less educated population, no matter by how many degrees and no matter how gradual the change, is less able to critically deal with claims of pseudoscience and the paranormal.

The future has enough worrying aspects without throwing in the lack of a positive and constructive attitude to the essential nature of science, especially in fulfilling a very human need for information and reality.

BRICKBAT AND BOUQUET

First, the brickbat. Several readers have kindly pointed out to me that in this column in the last issue I gave lawyer and skeptic Clarence Darrow a new first name. I called him Charles (though Clarence was used correctly elsewhere). I'll try not to do it again.

On the bouquet side, once more I have to give great thanks to Steve Roberts, who proof read and made suggestions on this issue while sitting in a hot sauna and/or icy lake in Estonia. Steve travels a lot, but is always available to help out and play an intrinsic skeptical role, day or night. Thanks. ■

- Tim Mendham, editor

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Editorial submission deadline for the next issue:
October 15, 2014

Around the traps ...

SGU, Chaser/Checkout, Smith, Kruszelnicki, FitzSimons for 2014 Convention

AUSTRALIA: There's a great line-up of speakers for the next Australian Skeptics National Convention in Sydney, November 28-30.
These include:

- The entire crew of the Skeptics Guide to the Universe (Steve, Bob and Jay Novella, Evan Bernstein, and Rebecca Watson)
- Members of Checkout/The Chaser – Julian Morrow, Kirsten Drysdale, Chas Licciardello
- Dick Smith
- Dr Karl Kruszelnicki
- Peter FitzSimons
- George Hrab
- Robyn Williams
- Kendrick Frazier, editor of The Skeptical Inquirer
- Prof Simon Chapman, 2013 Skeptic of the Year
- Delia Rickard, deputy chair of the ACCC
- Alan Kirkland, CEO of CHOICE.
- Peta Ashworth, leader CSIRO Science into Society Group
- Dr Amanda Bauer, research astronomer and outreach officer at the Australian Astronomical Observatory
- Dr Alex Wodak, director of the Alcohol and Drug Service at St Vincent's Hospital in Sydney
- Dr Rachael Dunlop
- Sonya Pemberton, Emmy Award-winning filmmaker, producer of Jabbed

Tickets are still available for both the convention and the accompanying dinner. Go to www.skeptics.com.au/convention for details and registration.

And there will be a meet-and-greet Skeptics' social event at the Orchard Hotel, Chatswood – a few hundred metres from the convention venue – on Friday, November 28.

A must-attend for every skeptic.

Vaccination ... personal stories

AUSTRALIA: Richard Saunders, long time member of Australian Skeptics and judge on the hit TV series The One, has released his short documentary film *The Vaccination Chronicles: If Only* on YouTube as a reminder of a time before wide-spread vaccines were available.

The documentary features stories of Australians from all walks of life (including the popular science communicator Dr Karl Kruszelnicki) all of whom share a common experience - knowing the personal effects of serious, infectious diseases. The film serves as a warning for today's parents who think that diseases such as polio, diphtheria, whooping cough, measles and others are no longer a threat.

In a time where vaccination rates are at dangerously low levels in several areas across Australia, including the North Coast of New South Wales, Saunders said, "This is all about getting an important message out, a lesson from history.

"I think it's vital that young parents hear for themselves the stories from people who have seen what happened in the past and what could happen again if we let our guard down as a society." He added, "No one wants to go back to the bad old days with babies dying and children in iron lungs."

The Vaccination Chronicles: If Only can be viewed at http://www.youtube.com/watch?v=mTprFOmIjIg, and permission is given for public screenings. The production, a personal endeavour by Saunders, was made possible with the financial and personal support of many like-minded people from all over the world.

Astro-illogical MP

UK: A British Conservative MP, who is a member of the UK Government's health and science and technology committees, has spoken of his belief in astrology and his desire to incorporate it into medicine.

The BBC reports that David Tredinnick said he had spent 20 years studying astrology and healthcare and was convinced it could work. Tredinnick is also vice-chairman of the Government's herbals working group.

He said he was not afraid of ridicule or abuse. "There is no logic in attacking something that has a proven track record," he told BBC News.

"I am absolutely convinced that those who look at the map of the sky for the day that they were born and receive some professional guidance will find out a lot about themselves and it will make their lives easier," he told MPs in an address to the House of Commons.

Ghost busted

USA: A US Department of Veterans Affairs cop, convinced his former New Jersey workplace is haunted by evil spirits, says the 'feds' are using his belief in ghosts as an excuse to fire him. *The New York Post* reports that Valdo Vaher, a retired Army sergeant and former lieutenant in the New York Guard, insists otherworldly phenomena are real.

"This seems strange to some people, but for religious Catholics like myself, many feel as I do about this - that there are spirits in the world and they are more likely to be around hospitals, where people suffer and die," he told *The Post*. Vaher was chided for giving a "hair-raising talk" to a rookie colleague, warning him of evil spirits and trees with faces.

Kiwi activists succeed against faith healers

NZ: A New Zealand church which advertised that a prayer session could heal health problems, including "incurable diseases", has been told to remove the advertisement.

The newly formed NZ Society for Science Based Healthcare made a complaint to the NZ Advertising Standards Authority about a brochure from the Universal Church of the Kingdom of God, which contained a timetable of healing sessions.

The brochure says that its sessions work for "people who suffer with constant pain, deteriorating health, can't work due to illness, incurable disease, doctors don't know what's wrong, dependent on pills, recovering from injury, weight problems, sick children".

The New Zealand Herald reports that the church has been pushing olive oil as a part of its religious cure-all for everything from tumours and schizophrenia to relationship problems. It says its "holy oil" — olive oil purported to have been blessed at the sites of biblical miracles in Israel — has helped to cure tumours, mental illness, stomach and bladder problems, strokes and heart defects, and even marriage difficulties.

Bishop Victor Silva of the church (pictured right), when responding to a previous ASA complaint regarding a direct mail advertisement, had promised that: "When we come to hold another similar event, we will take external advice as to the content of any promotional material to doubly ensure that it is fully compliant with all regulation and that there is no chance of another complaint of this nature."

The SSBH says that, despite these assurances, within three weeks of this promise the church sent out another direct mail advertisement for a "chain of prayer" series of events. This advertisement claimed that "IT WORKS!" and that a "HEALING" session was for such cases as "When doctors and medicines are not enough" and "incurable diseases". A majority of the complaints board agreed that "the advertiser had presented their religious beliefs in evangelical healing as an absolute fact, rather than opinion, and may mislead and deceive vulnerable people who may be suffering from any of the illnesses listed in the advertisement". It therefore ruled to uphold the complaint.

These are the latest in a line of successful complaints about misinformation regarding healthcare, with the Society previously having complained to the ASA about 'amber teething necklaces', which are promoted with phrases such as "Traditional homeopathic treatment for teething babies", and detox foot patches, claimed to remove 'toxins' and heavy metals "by stimulating the reflexology points and the blood circulation".

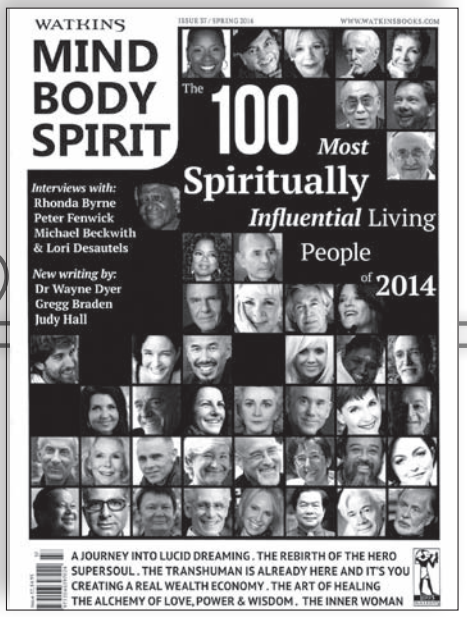
The Society was only formed in June of this year, with the aim of protecting consumers' rights to make informed healthcare decisions, and already has achieved significant results in promoting science-based practices. Some of the members of the Society are also members of NZ Skeptics. ■


BRINGING IT ALL TOGETHER
Skeptics
SYDNEY
2014
AUSTRALIAN SKEPTICS NATIONAL CONVENTION
NOVEMBER 28-30
Convention & dinner tickets available now
Skeptics.com.au/convention

Readers' indigestible

Tim Mendham looks at those 'other' publications, where skepticism is a dirty word.

This issue, we look at a magazine and a website that couldn't be more opposite. One is a polished colourful treatise on all things nice and rainbowish. The other is a brutish and extreme as they come, looking at how and why we should all just go away ... permanently. Read on.



Mind Body Spirit

Read no further! *Mind Body Spirit* is exactly what you think it will be – endless repetitive stories from one enlightened person after another espousing how to be one with the universe, finding your true self and why you should buy their latest book.

Published quarterly, *Mind Body Spirit* (A$7.50) comes out of the UK, published by a bookshop, Watkins Books, that specialises in "mind body spirit, modern teachers and magick". Apparently the bookshop was established in 1893, and has been in the same premises in a small sidestreet of London off Charing Cross Road since 1901. Cecil Court is so much a sidestreet that you can't even get down there on Google Maps, but it does have lots of shops selling "rare and antiquarian books, maps and prints and all manner of related printed material including stamps and banknotes".

As described by what must be the Cecil Court Appreciation Group and ersatz chamber of commerce (www.cecilcourt.org.uk), "Whether you are looking for weighty sixteenth-century folios, modern first editions, early maps of your area, theatre posters, children's books and more besides, someone in Cecil Court will be able to assist."

And assist with books about minds, bodies and spirits.

The issue under review is #31, so the title must have been around for about eight years; not quite as long as Watkins Books, but about the same as the various Mind Body Spirit exhibitions we see in Australia, and which share the same interests of, as the magazine says, "contemporary spirituality, perennial wisdom, self development, eastern philosophy, western mysticism". There's not a lot of the usual new age trimmings we see at the exhibition – only one piece on crystals, nothing on psychics, tarot card readers, channelers or the wisdom of extraterrestrials.

It's all spiritual self-development. Actually not self-development, as all of the articles are promoting books that will give you the answer to life's mysteries and how to fulfil your predestined role in it, so it's really someone else telling you how to develop. The titles of some of the articles give both the content and the tone: "A More Meaningful Life"; "Supersoul: A Radical Worldview for a New Consciousness"; "The Inner Woman"; "The Transhuman is Already Here and It's You". And on and on it goes.

But the articles are extremely frustrating, as they never say anything. Not just in the way that all new ageisms are platitudinous inanities, but the articles in *Mind Body Spirit* (Mind BS?) don't actually say anything. They're all teasers for the authors' latest books. Take the interview with Australian author Rhonda Byrne, she of the Oprah-approved multi-million seller *The Secret*. Her latest book is called *Hero*, and it brings together "the wisdom and insights of twelve of the most successful people in the world". But never once does the article tell you who those 12 people are.

Likewise what could be an interesting article on another Australian, Rosaleen Norton, famous bohemian witch of 1950s Kings Cross in Sydney. A page and half of superficial info, barely touching down on anything that looks like in-depth storytelling and biographical fact. And why? Because it's an ad for the author's book, *Pan's Daughter*. That book is published by the delightfully-named Mandrake of Oxford, which is about the only interesting thing in the whole piece.

The issue also has a list of the "100 most spiritually influential living people of 2014", most of whom you've

never heard of. There are the usual suspects, including the Dalai Lama, Deepak Chopra, Desmond Tutu, Oprah and the Pope (and, of course, Rhonda Byrne). But honestly, Erich von Daniken!? And the one that really stands out is Russell Brand, acerbic UK comedian and one-time Mr Katie Perry. Apparently he's big on the Dalai and Transcendental Meditation. Who would have thought it?

But enough! Or not enough, if you were hoping to get something out of this glossy, well-produced collection of nothingness. There's never a payoff, no real substance, just platitudes and meaningless meaningfulness. Just like every other new age self-obsessed publication.

But you've read this far, so you deserve a treat: the 12 heroes of Rhonda Byrne's book of heroes. They are Michael Smith (kids entertainment); Layne Beachley (surfer); Peter Burwash (tennis player management); Peter Carroll (football coach); John Paul DeJoria (beauty schools); Peter Foyo (telecoms); Laird Hamilton (another surfer); Mastin Kipp (blogger); Liz Murray (motivational speakers); Paul Orfalea (Kinko's); GM Rao (infrastructure); and Anastasia Soare (eyebrow expert).

Don't you feel personally fulfilled now?

Hang on ... eyebrow expert?! That pretty well sums it up. ■

VOLUNTARY HUMAN EXTINCTION

What can you say about a site whose motto is *"May we live long and die out"*?

Well, for a start, you can say the site sets a new standard in minimalism (http://www.vhemt.org/).

VHEMT obviously didn't spend a lot on web design, because the home page of the site is just one long list of links to articles. The only picture is a view of Earth from space at the top of the page. From then on it's just down to text, all on the left hand side, with blank space on the other side for most of the way down.

Actually, that's not quite correct. Down the bottom are some of the most depressing dystopian cartoons you'll ever see, covering such happy topics as the evil of storks, talking cancer cells, and human breeding frenzy. Well worth a look; Disney, they are not.

As for the articles, they cover the gamut of everything you'd want to know about voluntary extinction.

For example, under the heading "Will human extinction solve all of Earth's problems?", you have the response "Sounds like paradise, doesn't it? Gaia completely cured of pox humanus. Without us meddlesome humans, all other species would get their fair chance at survival. Naturally, it's not that simple, but just for fun, let's envision an impossible dream: all human sperm suddenly and permanently loses viability - no impregnated human egg begins meiosis to form a zygote - none transforms from embryo into the sacred fetus, is carried to term and sentenced to life. Zero conceptions, wanted nor un."

Fun, huh?

The articles are categorised into 10 themes: biology and breeding; death; demography; ecology; economics; politics; philosophy and religion; science fiction and fantasy; failure; and success.

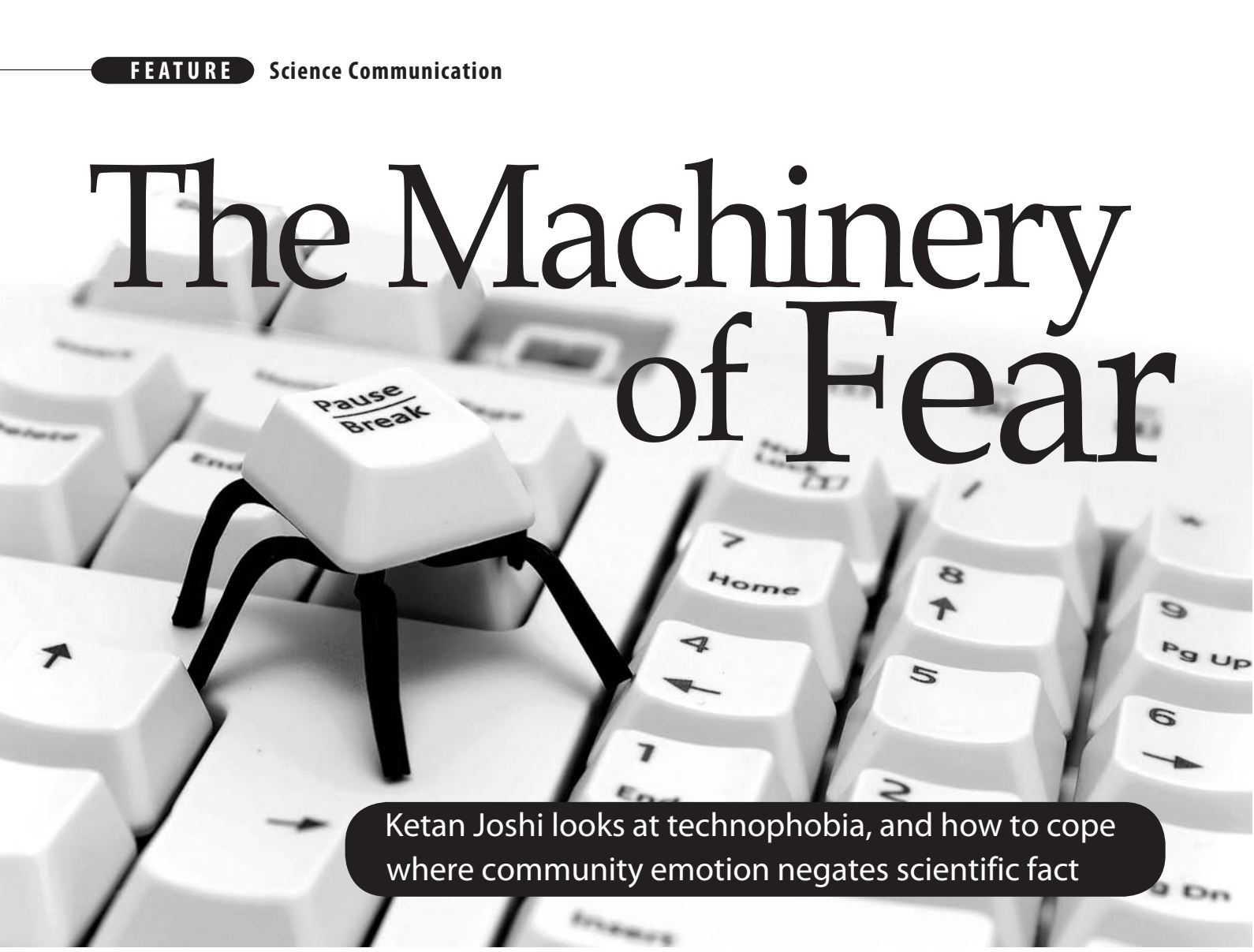
As Peter Bowditch has described it on his Ratbags site (ratbags.com/loon/2001/02february.htm): "At first I put this into the Too Good To Be True category, but an awful lot of work has gone into convincing us that we should all stop breeding and return the planet to the state it was before humans evolved and immediately started inventing things like global warming, genetically modified food, atomic weapons, whale harpoons, daytime television shock shows, polyester shirts and broccoli."

So who is VHEMT?

There's not a lot of background material on the site. According to Wikipedia, it was founded in 1991 by Les U. Knight, an American high school teacher and activist who became involved in the environmental movement in the 1970s and thereafter concluded that human extinction was the best solution to the problems facing the Earth's biosphere and humanity.

It's certainly interesting, and extreme. Worth a look, but don't watch those cartoons too close to bedtime. ■

The Machinery of Fear



Ketan Joshi looks at technophobia, and how to cope where community emotion negates scientific fact

One sadly underappreciated component of studying a neuroscience degree is the frequency with which one needs to kill one's own brain cells to get through it. My cohorts and I would indulge in the various beers offered by Sydney Uni's Manning Bar, and mull over the things that our professors had pressed upon us in class. One autumn, we'd been learning about brain tumours, and during our boozy gnashing of new ideas, a friend thought it apt to voice his opinion on a ubiquitous piece of technology. "Mobile phones" he boomed over the scattered beers, "are so dangerous, they can cook popcorn."

Our mental imaging faculties instantly spawned pictures of our soft, mushy brains popping out of our skulls, like kernels of freshly exploded corn. One of my braver friends raised a skeptical eyebrow and asked him how he'd stumbled across this curious factoid. He was prepared for the question, and his reply was swift. "Doctors used to think smoking was fine. How did that turn out?" There was no argument. It was true. People did think smoking was harmless. For a long time after hearing his words, I felt a flicker of trepidation any time I held a phone to my ear.

That creeping yet inalienable sensation of consternation that trickled into my mind stemmed from some internal, primal mechanism rather than any logical, conscious conclusion. This is a feeling, not a deduction. It's driven by something deep under our skin, rather than the machinations of logic.

A quiet sense of dread, joined to a morsel of misinformation, can transform into something much more serious. The feeling of fear and anxiety can often induce reports of symptoms – reports that are incredibly consistent, no matter what technology is being reported.

Technophobia can, I suspect, manifest in such a way that it becomes responsible for the presence of what seems to be an ailment – a malady with physical outcomes but psychological causes. This is something I'll refer to here as 'Anything Syndrome', the symptoms attributed to the experience of proximity to new technology, fuelled by a combination of risk aversion, misinformation, ideology and finance, to varying degrees.

Let's delve into some examples of Anything Syndrome.

LANDLINE SYNDROME

In 1889, in the September 21st edition of the *British Medical Journal*, a doctor wrote: "The patients suffered from nervous excitability, with buzzing noises in the ear, giddiness,

and neuralgic pains ... All the trouble speedily vanishes if the ear is allowed a sufficient measure of physiological rest; this it can only obtain by the cause of the evil being withdrawn. The victims … seem all to be of markedly nervous organisation, and the moral may be drawn that such persons should not use the telephone."

It's comical to think that landline telephones once posed a physiological threat to people. But in the early 1900s, as the telegraph system spread, so did a powerful newfound anxiety about their usage. This is something that's been happening for a long time. It's embedded in us all.

MICROWAVE SYNDROME

Microwave ovens are another example of the fears that emerge around new technology, in particular, technology that's ubiquitous in our homes and offices. The Global Healing Centre website states that: "Microwave sickness's first signs are low blood pressure and slow pulse. The later and most common manifestations are chronic excitation of the sympathetic nervous system [stress syndrome] and high blood pressure.

"This phase also often includes headache, dizziness, eye pain, sleeplessness, irritability, anxiety, stomach pain, nervous tension, inability to concentrate, hair loss, plus an increased incidence of appendicitis, cataracts, reproductive problem and cancer."

One might intuit that if a technology is everywhere, it becomes obvious that it's not a threat. Consider the times you've recently been near a microwave, and try to recall whether that coincided with hair loss or eye pain; it's obvious that proximity to a microwave doesn't cause the acute symptoms that websites warn against. My suspicion is, with regard to ubiquitous technology, the sheer fact that it's inescapable actually worsens the anxiety experienced by those who are already primed to fear it. 'Anything Syndrome' can't be cured by familiarity or experience.

WIFI SYNDROME

A British current affairs show, Panorama, aired an episode about the dangers of WiFi and electromagnetic radiation, asserting strongly that the risks posed by the injection of WiFi into schools and public areas was likely to harm the health of ourselves, and our children.

"The explosion in the use of WiFi means it's fast becoming unavoidable. But there's a catch – radio-frequency radiation. An invisible smog. The question is: is it affecting our health?"

> "The fact that technology is inescable worsens the anxiety experienced by those who are already primed to fear it."

Health fears associated with the spread of technology frequently get traction on media that have a wide audience. This episode of Panorama rated incredibly well; though the science underpinning the show was poor, the episode had high ratings.

If you're worried about the impact of WiFi signals on your physiology, quell your concern. A patented WiFi spray from a company called Clarins is made from ingredients found in undersea volcanoes. They claim that "Scientists at Clarins whipped up the Magnetic Defense Complex from ingredients found 2000 metres deep in the ocean and were elated: 'We exposed our cell cultures to a frequency of 900 MHz in the presence of these two plant extracts and found that their structures hardly changed!"

Does it work? An online review states that "After 12 months it expires I doubt you would be able to use all of it ... It smells like Kraft dinner macaroni and cheese." Not a strong vote of confidence, really.

It's natural for us to fiercely protect the thing that sustains our existence. If your work as a presenter depends on a large audience, then why wouldn't you take up a cause that's likely to bolster your ratings? If your products can only be sold if people are truly scared by technology, you'll accept the bad science that underpins the spread of these types of health fears. These drivers can power the emergence of 'Anything Syndrome'.

SMART METER SYNDROME

Financial and career motivations are only a part of the story. Sometimes, ideology can play a big role, and you can estimate the role of ideology by gauging the ferocity with which

The Machinery of Fear

Continued...

health fears are communicated and expressed.

A curious example is the website of the Institute for Geopathology. Here, fonts are huge, colours are garish, text size varies between tiny and insanely huge, caps lock has free reign, and word-salad paragraphs are strewn down the seemingly unending page. You've likely seen this type of site before – it's driven by ideology and sentiment, rather than commercial polish.

Recently, I came across a great example of how ideology can stimulate the spread of misinformation. A libertarian privacy advocate wrote an article for the *Hobart Mercury* back in December 2013 about the 'health dangers' of smart meters. Though the health issue formed the bulk of the article, it was book-ended by concerns about privacy and data-retention. These two concerns are quite different, but they were awkwardly jammed together into a single piece.

A constellation of unrelated concerns presented as a single case tends to give us a clue as to what might lead someone to accept bad science, when it comes to the health risks posed by novel technology. In this case, the acceptance of Anything Syndrome is boosted by a strong ideological drive related to privacy issues and libertarianism.

This ideological engine drives the spread of fears around a group of symptoms. In the case of Smart Meter Syndrome, I found a list of 91 unique symptoms. These include childlessness, drug resistancy, treatment resistancy, therapy resistancy, Lupus, Tourettes, Sjogren's disease, suicide, depression, narcissistic personality disorder, motor neurone disease, muscular dystrophy, cancer, autism and, somehow, foetal alcohol syndrome.

MOBILE TOWER SYNDROME

Two news stories that aired on Australian television neatly highlight a couple of important points we can take away from health fears around mobile phone towers. In 2010, *Today Tonight* aired a story on a man who genuinely believed that his work near mobile phone telecommunications towers had caused him serious harm. The presenter asked: "So if I was to work in here for two years, with that mobile phone tower there, and that radiation in here, how would that affect me?" The man replied: "Worst case scenario: bowel cancer, liver cancer, lung, heart, brain problems." As a way of protest against a mobile phone tower built near his house, the subject of the story went on to steal a military tank and demolish the tower, obtaining jail time for his offences.

Another news story, aired on Channel Ten in the mid 90s, is equally fascinating. A Sydney seaside community now known as Freshwater but which used to be known as Harbord gathered to protest a Telstra mobile phone base station built next to a kindergarten. The story opened with furious parents and their children, chained to the fence of the newly built base station. A young Tony Abbott addressed the crowd, promising to stand between the community and the tower.

"We will change the rules to take away the exemptions and the immunities which Telstra currently enjoys to put these things virtually where it likes. ... They just can't allow people's neighbourhoods to be invaded by these installations."

Control, helplessness and invasion are themes that feature prominently in the report about the Harbord Telstra base station. Abbott's statements worked to exploit this sentiment. In the final seconds of the clip, a member of the community elegantly summarises the engine of their credulity: "I don't think they [Telstra] fully appreciated the depth of community feeling".

The fellow who drove a tank into a mobile phone base station simply felt he was being ignored and, as a consequence, he made some rash decisions. "But it was out of sheer frustration, wasn't it?" stated the interviewer at the end of the report. It really was.

Issues of control and helplessness have been identified as a key component in how we judge the risks posed by unfamiliar additions to our environment. It seems that the experience of Anything Syndrome can be easily catalysed by the perception of a lack of control.

The clip featuring the Harbord Telstra protest was four minutes and 13 seconds long. The comments from the scientist at the Australian Radiation Laboratory (now known as ARPANSA), take up a grand seven seconds, or about two per cent of the total air time. The terminology he used was precise and unambiguous - it was impossible measure any radiation at all from the device at the Kindergarten. Nil exposure. Nothing.

The fact that the device was literally undetectable is quite important. So why did he get such little air time?

The residents were driven by an incredible passion. The

> "A young Tony Abbott addressed the crowd, promising to stand between the community and the tower."

drive to defend their community and their children made them intensely focused, and their declarations were infused with vigour and dynamism. The meek, bespectacled scientist can't compete with footage like that.

NBN SYNDROME

In the past few years, the National Broadband Network has begun its rollout across Australia. The company charged with the construction of the network, NBN Co, proposed a tower in Dereel, Victoria, which was opposed voraciously by a local resident who claims electromagnetic radiation makes her sick. A WIN TV news report covered her view: "She says she's forced to wear protective clothing in the vicinity of radiation. Chronic pain, nosebleeds and face swelling are just some of her symptoms."

In the clip, the resident wraps her face in 'protective' cloth, wields a device labelled 'ELECTROSMOG METER', and a book titled *Disconnect,* authored by Devra Davis. She's genuinely concerned about the impacts on her health here, and from the information in the news report it seems she's been convinced that the protective clothing she's been sold will protect her against the symptoms she's attributed to the presence of electromagnetism.

It's likely that the products she's bought play a role in reinforcing her fears. Anything Syndrome is exploitable, and there's a buck to be made when those with genuine concerns about their health are taken in by misinformation. The exploitation of fear is fertile ground for those seeking to make money.

WIND TURBINE SYNDROME

From what we've seen so far, there are some consistent symptoms that seem to occur as a result of Anything Syndrome. In the case of wind energy, Sydney University Professor of Public Health Simon Chapman has actually gone to the effort of compiling a list of ailments that people have attributed to wind turbines, and it's huge. I explored the issue of 'wind turbine syndrome' in *The Skeptic* last year [June 2013, Vol 33, No 2, p26].

I wanted to explore the issue of symptom attribution, and I decided to use one of my two pet guinea pigs in a harmless demonstration. I used to live in Redfern, Sydney, and my house was about two kilometres away from a small wind horizontal axis wind turbine in Glebe. So I went to a website called Ill Wind Reporting which collates reports of "adverse health impacts" from wind energy.

I submitted a report to their page. Everything I submitted was true - my guinea pigs make a weird rumbling noise when they walk around, and we did, at the time, live two kilometres away from an operational wind turbine. I didn't submit an email address or any further information for verification.

They accepted what I'd written as a valid report of the symptoms of wind turbine syndrome. You could describe anything in that box, and they'd publish it on their site as a symptom. They even accepted that I'd classified my guinea pig as one of my children, and they marked it the submission with a big, friendly green 'VERIFIED' tag, despite the fact I'd provided no personal or contact details.

Michael Shermer, the editor of the US *Skeptic* magazine and the author of an excellent book called *Why People Believe Weird Things,* defines 'patternicity' as the tendency to find meaningful patterns in meaningless noise.

It's sometimes viewed as an error in cognition, but that's not quite the case. It's an adaptation that evolved in an ancient world where we had to be risk averse. We hear a noise; is it a rustle in the wind, or is a predator lurking slowly through the tall grass? We were better off assuming it was a predator, because if we assumed it was the wind and we were wrong, we were dead.

Ill wind reporting is a website comprised entirely of rustling grass.

The Machinery of Fear

Continued...

That sensation that we feel, of an imminent threat, goes back many thousands of years, and that's why anything that occurs near technology is a potential candidate symptom for Anything Syndrome.

SOLAR PANEL SYNDROME

Solar Panel Syndrome isn't yet a reality, but it might be if we're not careful. Small-scale solar has taken off in Australia, passing one million Australian solar-powered homes in April last year. But large-scale solar farms are in their infancy, and already we're seeing a set of concerns raised that closely match the pattern of complaints that preceded the emergence of wind turbine syndrome.

> "If we are to communicate these facts, perhaps considering sentiment and framing can play a part."

Like wind turbines, issues of aesthetics, autonomy, control and community engagement are now coming to the fore. Despite the fact that solar PV is designed, as you'd expect, to absorb light rather than reflect it, glare is a major concern for residents living near these developments. Dedicate 15 seconds to some googling, and you can find the symptoms of exposure to solar panels - pain, headaches, mood swings, restlessnesss, diabetes, injury, cancer and death. Solar syndrome isn't widespread yet, but it has all the makings of a new sub-type of Anything Syndrome.

THE SYMPTOMS AND THE CURE

The symptoms that bubble to the surface whenever technological health fears arise are consistent. Dizziness, headaches, nausea, sleeplessness - these are common ailments, and the physical manifestations of anxiety also tend to be prevalent. I gathered a list of the symptoms that came up during my search engine sessions. It's probable you've experienced at least one of the 416 symptoms in the past 12 hours. To fit the diagnostic criteria for Anything Syndrome, you only need to be alive. So, how do we push back against a syndrome so widespread, so ubiquitous, and so easily spawned by human nature?

Stating the facts about exposure to radiation and low-frequency sound is likely to be ineffective on its own. An assertion born of sentiment can't be negated by facts. Facts combined with a powerful sentiment seem to be much, much more effective.

Graeme Maconachie is a landowner at the Challicum Hills Wind Farm. He was interviewed for a video produced by the Victorian Wind Alliance. Andrew Bray, who spoke for the Ballarat Skeptics in the Pub, was involved in the production of this video.

Listening to Graeme talk frankly about his motivations for hosting wind turbines certainly puts wind turbine syndrome in stark perspective. On one hand, he's talking about scientific investigation, but he's also combining it with a strong sentiment. It works well.

When you closely consider how deeply human these fears are embedded, perhaps we need to dig a little deeper. Adherence to evidence, and a willingness to follow it wherever it may lead, remains as compulsory as it always was. But if we're to communicate these facts, perhaps considering sentiment and framing can play a part.

An utterly fascinating piece of research by Witthoft and Rubin published in 2012 demonstrated the incredible power of framing. They showed that simply receiving negative information about WiFi signals can cause people to report illness when exposed to a sham WiFi signal. The film they watched was the BBC *Panorama* documentary I mentioned earlier.

"54 per cent of the subjects reported experiencing agitation and anxiety, loss of concentration or tingling in their fingers, arms, legs and feet. Two participants left the study prematurely because their symptoms were so severe that they no longer wanted to be exposed to the assumed radiation."

The story of how we're so deeply vulnerable to misinformation, to the extent where it can cause real suffering and anxiety, is profoundly important and incredibly interesting, and it's based on solid science. It works the other way around as well – an incredible paper published by Fiona Crichton in 2013 found that negative information about infrasound can cause symptoms, but that positive information about infrasound can actually stimulate experiences of well-being and good health.

Technophobia stems from the fissure between the technological output of science and the fairly unavoidable fact that we're fleshy organisms with hopes and fears and cognitive shortcomings. We are born terrified, and every moment of calm is a temporary excursion from a state of extreme, evolutionarily-inspired caution.

It seems, then, an effective way to stick it to the merchants of fear is to embed ourselves deeply in that thrilling, violent and dynamic fissure that sits between what we're told by science and what we're told by the primal messengers underneath our skin. ■

About the author:

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Who do You LOVE?

An ANU survey has found that Australians are very interested in science and technology; they're just not so certain who to get their information from.

A survey undertaken by ANU's Australian National Centre for the Public Awareness of Science (CPAS) has found that 20 per cent of respondents did not know who to trust on science and technology, and nine per cent did not trust anyone.

The *How do Australians engage with science?* survey was commissioned by Inspiring Australia, a program set up in 2010 to "deliver a more scientifically engaged Australia".

The current report* by Dr Suzette Searle of CPAS presents the preliminary findings from a national survey of 1020 Australians over the age of 18. It found 80 per cent of participants agreed that science was very important to solving many of the problems facing us as a society today, yet only 49 per cent could name an Australian achievement in science and technology.

The following is taken from the report's conclusion.

OVERVIEW

Generally, Australians appear to be engaged with science and technology, both in a less active sense in terms of how information about science or technology reached them (82% having recalled listening, watching, or reading about science and technology at least fortnightly in the previous year), but also in terms of seeking out information (that is, searching) about them.

Of a mix of nine topics presented, there were high levels of interest expressed in the science and technology-related topics compared with other topics. Most people (around two thirds) indicated interest in science and technology topics. Health and medical discovery related topics are of most interest, therefore science and technology news, information or stories with a health aspect are likely to be of most interest to Australians.

There is an awareness of Australian accomplishments in the fields of science and technology with around half (49%) being able to name an Australian scientific or technological achievement.

Science and technology topics appear to be part of every-day conversation, with the majority of Australians saying they have talked about technology (87%) or science (77%) in social settings within the last year. Further examples of Australians' interactions with science and technology are that two thirds

Who do you LOVE?

Continued...

of Australians have visited a science centre, science museum, botanic garden, zoo or similar in the previous year; and around two-in-five have been to or watched (or listened to) a seminar or debate or similar on the topic of science or technology.

INTEREST IN SCIENCE AND TECHNOLOGY

There is an appetite for knowledge among the public with around one-in-two Australians wanting to know more about science (50%) and technology (46%). The topics most likely to interest those who want to know more about science are medicine, the environment, health and things to do with astronomy. And for those interested in knowing more about technology computers, new inventions, medical technologies and consumer technologies (such as tablets and mobile phones) were the subjects most mentioned.

A minority (14%) agree that they are not really interested in finding out more about science or technology, thus confirming the public's interest in science and technology.

SEEKING OUT INFORMATION ABOUT SCIENCE AND TECHNOLOGY

Reflecting the high level of interest in science and technology and high frequency of listening, watching or reading things to do with science and technology, Australians report frequent searching habits on these subjects. Almost half report searching for science (46%) and technology (44%) at least fortnightly in the past year.

The internet is the go-to place for Australians to find out about science and technology; the vast majority (over four-in-five) named a search engine or the internet in general as their initial searching destination. Traditional printed resources including books and printed media are rarely used in an initial search for science or technology-related information (a maximum of 4% mentioned one of these sources).

Feelings are mixed in terms of the adequacy of the media in providing information about science and technology. Two-in-five think they get enough information about technology through the media (one-in-five disagreed), and around a third think they get enough information about science in this way (around a quarter disagreed).

Australians appear satisfied with the internet being their go-to search destination since around four-in-five said their preferred source of information was the internet when looking for information about science (59%) and technology (58%). Television programming is also a preferred way of finding out about science and technology, mentioned by just over a third.

The vast majority (90%) of Australians find what they are looking for when searching for scientific or technological information meaning that most appear to have adequate resources at their disposal when it comes to looking for information. Those without convenient internet access are more likely to struggle to find what they were looking for, reflecting the high reliance overall on the internet for searching. But despite this, even those without convenient internet access were more likely to report success in searching for information than not.

> "The high percentage of respondents who did not know who to trust or trusted no one is a cause for concern."

Just less than a quarter (23%) consider that although they generally find the scientific information they are looking for, it is often hard to understand (67% found what they were looking for and consider it normally easy to understand, 7% say they often struggle to find what they were looking for). A smaller proportion reported struggling to understand the technological information that they found (17% said they generally found what they were looking for and it was often difficult to understand, 73% usually found what they were looking for easy to understand and 8% reported difficulties in looking for information).

TRUSTED SOURCES OF INFORMATION

Friends and family and CSIRO are the most commonly mentioned trusted sources of accurate scientific information (each mentioned by 12%). 8% mentioned TV presenters, reflecting the preference to receive information via television programs. Although spontaneous mention of 'scientists' is low, when prompted with different sorts of people who might explain the impacts of scientific or technological advances, scientists were the most trusted groups of people. Of the different sorts of messengers tested, well known scientists such as Nobel Prize winners or Australians of the Year were the most trusted (82% indicating trust). Reflecting the spontaneous mention of CSIRO as a trusted source, CSIRO scientists (78%) were the next most trusted group followed by Australian Chief Scientists (75%).

The high percentage (30%) of respondents who did not know who to trust (21%) or trusted no one (9%) as a source of accurate scientific information is a cause for concern and warrants further investigation to understand why.

[As an aside, those with higher levels of education were less likely to say 'don't know' (13% did so compared with 23% of those without a bachelor's degree) and were less likely to indicate that they did not trust anyone (5% compared with 11% of those without a bachelor's degree). Only 11% trusted religious leaders for scientific information. - Ed]

ATTITUDES TOWARDS SCIENCE AND TECHNOLOGY

Australians value the pursuit of science and technology research, with most giving a high agreement rating to the statements *"Australia should be a world leader in science research and development"* (8.1/10) and *"Australia should be a world leader in technology research and development"* (7.9/10). Furthermore, Australians also highly value the provision of publicly-funded scientific research results to the community (8.3/10 mean agreement with *"The results of publicly-funded scientific research should be made publicly available")*.

Australians are optimistic about careers in science, 88% agreed that a career in science was a good choice. When participants were asked how important particular professions are in contributing positively to society, scientists were ranked third (60%) behind doctors (75%) and teachers (69%).

Most Australians see science as important to society through solving problems (a mean agreement rating of 8.0 out of ten) and making a direct contribution to Australia's economic growth (7.4 mean agreement rating). As well, most are comfortable with the rate of change in relation to both science and technology, while only a minority think science and technology cause more problems than they solve.

Dr Searle commented that "It's heartening that people do talk about and participate in science and technology. But we need to find out more about why people didn't know who to trust." She suggests that this is the next stage of her research. ■

**Searle, S.D. (2014). How do Australians engage with science? Preliminary results from a national survey. Australian National Centre for the Public Awareness of Science (CPAS), The Australian National University. The report can be downloaded from http://tinyurl.com/k77ef74*

TABLE 1
Level of interest in different topics with regard to news, information or stories

TOPIC	VERY INTERESTED	NOT INTERESTED AT ALL
Health issues	33%	3%
Medical discoveries	32%	4%
Technologies, inventions & innovations	27%	5%
Environmental issues	26%	6%
Scientific discoveries (other than medical)	25%	6%
Music	25%	7%
Sports	22%	21%
Films	20%	7%
Australian politics	20%	21%

TABLE 2
Trusted sources of scientific information (multiple choice - commonly mentioned)

Friends/family	12%
CSIRO	12%
Television presenters	8%
Scientific organisations	7%
University scientists	6%
Government	5%
Newspapers/magazines	5%
Scientists (not specified)	4%
ABC/ABC website	4%
Internet	3%
Journal articles or peer-reviewed journals	3%
Doctors	3%
Radio presenters	3%
Other	27%
Don't know	21%
Don't trust anyone/no one	9%

TABLE 3
Level of trust in specific professions to explain impacts of science and technology advances

PROFESSION	TRUST	DON'T TRUST
Well-known scientists (eg Nobel Prize winners or Australians of the Year)	82%	4%
CSIRO scientists	78%	3%
Australia's chief scientists	73%	5%
Scientists in general	71%	3%
TV and radio presenters with scientific knowledge or medical qualifications	42%	12%
Spokespeople for environmental groups	30%	24%
Government politicians responsible for science	15%	42%
Radio talkback presenters or commentators	14%	45%
Religious leaders	11%	57%

Don't expect EXPERTS

Peter Ellerton knows that not all experts are experts ... or even have expertise.

How do you know the people billed as science experts that you see, hear and read about in the media are really all that credible? Or have they been included just to create a perception of balance in the coverage of an issue?

It's a problem for any media and something the BBC's Trust is trying to address in its latest report on science impartiality in programming.

As part of ongoing training, staff, particularly in non-news programs, were told that impartiality is not just about including a wide range of views on an issue, as this can lead to a "false balance". This is the process of providing a platform for people whose views do not accord with established or dominant positions simply for the sake of seeming "balanced".

The BBC has been criticised before for "false balance" and there are reports now that certain climate change sceptics are banned from BBC News, although this is denied by the BBC.

It's understandable that such false balance could grow from a desire to seem impartial, and particularly so since public broadcasters such as the BBC and the ABC in Australia are sensitive to claims of imbalance or bias.

Couple this with the need to negotiate the difficult ground of expert opinion, authentic balance and audience expectation, not to mention the always delicate tension between the imperatives of news and entertainment, and it hardly seems surprising that mistakes are made. An investigation this year found the ABC breached its own impartiality standards in its Catalyst program last year on statins and heart disease.

FINDING THE RIGHT BALANCE

How then can journalists decide the best way to present a scientific issue to ensure accurate representation of the views of the community of experts? Indeed, how can any of us determine if what we are seeing in the media is balanced or a misrepresentation of expert opinion?

As I have written elsewhere*, it is important not to confuse the right to be heard with an imagined right to be taken seriously. If an idea fails to survive in the community of experts, its public profile should diminish in proportion to its failure to generate consensus within that community.

A common reply to this is that science isn't about consensus, it's about the truth. This is so, but to use a consensus as evidence of error is fallacious reasoning.

While it's true that some presently accepted notions have in the past been peripheral, the idea that simply being

against the majority view equates to holding your intellectual ground in the best tradition of the enlightenment is ludicrous.

If all views are equal, then all views are worthless.

Were I to propose an idea free of testing or argument, I could not reasonably expect my idea to be as credible as those subject to rigorous experimentation and collaborative review. If such equality did exist then progress would be impossible, since progress is marked by the testing and rejection of ideas.

DEFINING AN EXPERT

In the case of science, this testing is the process of experimentation, data analysis and peer review. So if someone – scientist or otherwise – has not worked and published in an area, then they are not an expert in that area.

The first imperative for a journalist covering any story is to determine exactly in what field the issue best sits and then to seek advice from people who work and publish in that field.

Knowing how the issue fits into the broader picture of scientific investigation is very useful in determining this. It is one of the reasons that good science journalism follows from having journalists with some training in science.

Such a selection process, performed transparently, is an excellent defence against charges of bias.

AVOIDING FALSE BALANCE

False balance can also be created by assuming that a person from outside the field (a non-expert) will somehow have a perspective that will shed light on an issue, that the real expert is too "caught up in the details" to be objective.

But suggesting that an expert is naive usually indicates an attempt at discrediting rather than truth seeking. Credibility is more about process than authority, and to be a recognised expert is to work within the process of science.

Also, if a piece of science is being criticised, we should ask if the criticism itself has been published. It's not enough that someone with apparent authority casts doubt as this is simply an appeal to authority – an appeal that critics of mainstream science themselves use as a warrant to reject consensus.

A second journalistic imperative would be to recognise that not all issues are binary.

The metaphor that a coin has two sides is a powerful one, and the temptation to look at both sides of an issue is naturally strong. But the metaphor also assumes an equal weighting, and that both sides present the same space for discussion.

> "It is important not to confuse the right to be heard with an imagined right to be taken seriously."

PROOF AND EVIDENCE

When an issue is genuinely controversial, the burden of proof is shared between opposing views. When a view is not mainstream, say that scientists are engaged in a conspiracy to defraud the public, the burden of proof sits with those promoting that view.

In such cases, as Christopher Hitchens succinctly put it: "What can be asserted without evidence can also be dismissed without evidence."

Attempting to dishonestly shift the burden of proof is a common device in the push to have young earth creationism taught in science classrooms.

The idea of "teaching both sides" or that students should be allowed to make up their own minds seems again like a recourse to the most basic ideas of a liberal education, but is in reality an attempt to bypass expert consensus, to offload the burden of proof rather than own it.

The fact is, that for issues such as creationism, vaccination and that climate change is occurring and is a function of human activity, it's not about journalists suppressing views, it's about quality control of information.

STAY WITH THE ISSUE

A classic means of muddying the waters is to employ straw man arguments, in which the point at issue is changed to one more easily defended or better suited to a particular interest. Politicians are adept at doing this, dodging hard questions with statements like "the real issue is" or "what's important to people is".

Deniers of climate science often change the issue from global warming to whether or not consensus is grounds for acceptance (it alone is not, of course), or focus on whether a particular person is credible rather than discuss the literature at large.

The anti-vaccine lobby talks about "choice" rather than efficacy of health care. Young earth creationists talk about the right to express all views rather than engage with the science. Politicians talk about anything except the question they were asked.

The third imperative, therefore, is to be very clear as to what the article or interview is about and stick to that topic. Moving off topic negates the presence of the experts (the desired effect) and gives unsubstantiated claims prominence.

THE IMPARTIALITY CHECKLIST

The best method of dealing with cranks, conspiracy theorists, ideologues and those with a vested interest in a particular outcome is the best method for science reporting in general:

- insist on expertise
- recognise where the burden of proof sits
- stay focused on the point at issue.

If the media stick to these three simple rules when covering science issues, impartiality and balance can be justifiably asserted. ■

**https://theconversation.com/brandis-confuses-right-to-be-heard-with-right-to-be-taken-seriously-25791*

Note: *This article was first published on The Conversation website on July 17, 2014.*

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RARE but NOT WELL-DONE

Tim Mendham opens the pages of the media's coverage and attitude to science.

Back in July, it was reported that BBC journalists were being sent on courses to stop them "inviting so many cranks onto programs to air 'marginal views'".

The BBC Trust had published a progress report into the corporation's science coverage which was criticised in 2012 for giving too much air-time to critics who oppose non-contentious issues.

"Science coverage does not simply lie in reflecting a wide range of views but depends on the varying degree of prominence such views should be given."

It added that man-made climate change was one area where too much weight had been given to unqualified critics.

This concept of 'false balance' rings very true in Australia, particularly concerning the anti-vaccination movement. For many years the Australian Vaccination Network had received 'soft' coverage of its views, with then president Meryl Dorey credited (and self-credited) as Australia's foremost authority on vaccination. The fact that Dorey's only qualification was that she had a brain (her words) didn't seem to matter to journalists. She said she was the foremost authority, so that was enough for them.

The credulity of the media is legendary. Press releases run as factual reports, sensational headlines and stories published without any foundation in truth, and misunderstanding and misrepresentation of scientific findings are all presented as bona fide journalism. And when such reports are exposed as being wrong, then corrections are rarely run or published with similar weight to the original piece.

Science doesn't sue, unlike politicians and high profile business people. So there is no pressing need to retract and correct reports that are erroneous.

But the story goes beyond mere poor coverage. There are more intrinsic issues in the media's treatment of science, and these focus on the priorities of the publishing organisations in regard to both the space and people they allocate to science and technology reporting.

THE OUTLETS

In January 2013, the US-based *Columbia Journalism Review* pointed out that the number of regular science reports in American newspapers had dropped dramatically over the last two decades.

In 1989, there were 95 weekly science sections in newspapers in the US. In 2005, that number had dropped by almost two-thirds to 34. And by 2012, there were only 19 weekly science sections in newspapers. That's a mere fifth of the number that existed 23 years before.

Most of those that did still exist shifted their coverage more toward health issues than general science.

In Australia, science reporting in mainstream media has been far from regular, and again tends to concentrate on 'medical breakthroughs' and 'eco-disasters'. Everything else is there for its novelty value. There is the occasional 'gee whiz' story on an interesting discovery in astronomy, but often here, as with other science stories, the scientist interviewed normally has to dumb down the content for the presumed average viewer, throwing in a dash of eccentric enthusiasm to show how exciting this discovery is. Then it's back to shonky builders for the next item.

The ABC, in TV, radio and online, is an obvious exception to the rule, with relatively extensive science coverage. But this is often done on the back of heavily restricted budgets, relying on the hard work and good will of presenters and reporters. The second noteworthy exception is *The Conversation,* an online independent source of news and views, sourced from the academic and research community - http://theconversation.com/au. This includes regular discussion of science issues. After these two institutions, you quickly start to run out of avenues for regular serious discussion of science in the media.

In September 2009, the Association of

British Science Writers carried an online debate titled "Is the mainstream media's science coverage broken, mis-leading, dangerous, lazy, venal, and silly?"

Noted science writer Ben Goldacre wrote for the 'positive', concurring with that view.

"Discussions on this problem could easily descend into banal lists of examples. As a starting point, the irresponsible reporting on MMR – which continues even now – is this profession's flagship of shame. The endless over-extrapolations from tenuous studies to specific dietary recommendations are absurd, and not only mislead the public on the specifics of a healthy lifestyle, but also on the very nature of how we know if something is good for us or bad for us.

"The 'scientists have proven' stories which turn out to be built on a PR survey or some PR 'report', are equally corrosive, and are frequently well-disguised by correspondents eager to affect professionalism. Then there are the distorted studies, sometimes on topics as sensitive as rape. If you want more examples, I'm never short of material for the column."

But the problem goes beyond publishing priorities. A key issue is the quality of the reporting itself, regardless of how many 'column inches' or screen seconds it is granted

THE REPORTING

The main problem is the dearth of scientists who can effectively report on science full time. There is a limited number of people in the media who have any sort of science background – ABC Radio's Robyn Williams, Norman Swann and Karl Kruszelnicki are three of a small minority in Australia.

It's true that you would not want to put many professional scientists in front of a camera, largely because, frankly, their ability to clearly explain scientific concepts for a lay audience is limited.

So the media resort to non-qualified journalists, with many of those taken from other areas of reporting.

Cristine Russell, former president of the US Council for the Advancement of Science Writing, told the *International Business Times* last year that "There is a concern that more science reporting is being done by writers who don't have a solid background in science. Specialised science reporting has been cut back, similar to the trend with specialised arts coverage."

There are organisations that aim to help journalists in this area, including several in Australia.

The Australian Science Media Centre is an independent, not-for-profit service for the news media, giving journalists direct access to evidence-based science and expertise.

> "Science reporting is being done by writers who don't have a solid science background."

"We aim to better inform public debate on the major issues of the day by improving links between the media and the scientific community," it says. The Centre acts as a matchmaker between the media and academia for both stories and potential interviewees. It works with journalists to help them cover science, as well as identifying the science angles in everyday news stories, and works with the scientific community to help them interact more effectively with the media and ensure that their voices are heard on issues of national importance. Close to 1000 journalists receive its alerts and there are more than 3000 scientists on its database.

The Australian Science Communicators (ASC) has been running since 1994, and works with the providers of science news, including journalists who are in-house within scientific institutions. It has around 500 members including scientists, teachers, journalists, writers, entertainers, students and other communicators who engage Australians (and people overseas) with science, technology and innovation.

"Our members enable access to science and technology through a range of formats and activities, from publications and media, to educational, fun events to performing arts. We are drawn together by a desire to improve our skills, exchange ideas and collaborate, and in general to advance the profession of science communication."

While Cristine Russell, who has been writing about science, health and the environment for more than three decades, is concerned that newspaper science sections are fewer in number and their bevy of journalists are largely unqualified in science areas, she adds, perhaps surprisingly, that "these days, science writers are more plentiful than ever".

She says she sees more young scientists showing an interest in journalism and in communicating scientific ideas to a wider audience. The situation is that they just aren't in mainstream media.

"While print newspapers might not be knocking down their doors, websites, science blogs and specialty publications are picking up the slack."

That trend is only likely to continue, she told the International Business Times, as many of the biggest issues facing humanity in the 21st century can only be tackled by trained scientists.

"It's ironic that newspapers are cutting science sections now," she added. "More than ever, people have an interest in science-based topics. Issues like climate change, technology and health care are affecting everybody, and people understand that."

As a science journalist trained in print media, Russell says she no longer lies awake at night lamenting the imminent demise of a bygone era. The future of science reporting, she adds, is far more exciting, and young writers looking to pursue this field have more opportunities now than ever.

"After a lot of hand wringing about the newspaper industry about six years ago, I take a more optimistic view these days," she says. "The world is online. Science writers today have the opportunity to communicate not just with their audience but globally." ■

About the author: **Tim Mendham** is executive officer and editor with Australian Skeptics Inc.

PHARMACY FANTASY

Loretta Marron looks at a disturbing attempt by pharmacists to woo customers ... with woo

Tired and feeling unwell? Want to improve your vitality? Why not see the in-house naturopath in your pharmacy - surely they can help! After all, they offer a wide range of goods and services – but do they actually work? Are they value for money?

Tucked in the corner of my local pharmacy is a high tech naturopathy clinic, complete with a flashy chrome and glass door etched with a long list of available alternative services. According to the pharmacy staff, wearing badges referring customers to the clinic, they go there for "natural treatment alternatives". Alternatives to what? To treatments which actually work? Perhaps?

At only $90 for a one-hour consultation (attracting a private health insurance rebate from most funds – so there must be something in it!) these naturopaths, claiming expertise in complementary medicines and wellness, use approaches tailored to individual needs.

They are 'caring people', with your health and well-being their priority (unlike your money-hungry GP). They will:

- "correct underlying causative factors";
- support your lifestyle to compensate for environmental factors which might be damaging your health;
- advise you on how to make your body's "natural defences" work more efficiently;
- advise you on stress management, digestive health and improving your "energy";
- assist you in achieving an "abundantly healthy life";
- educate you how to promote optimal "vitality";
- help you improve your immune system "naturally";
- help relieve the signs and symptoms of ill-health;
- help you live a healthy, balanced quality of life, and
- help you make informed decisions about your health.

Left: Selling pseudoscientific potions among the prescriptions

Wow! Who could possibly refuse such an offer? - And all that for only $90! And it gets better! With a Naturopathy Loyalty Card, your fifth consultation is free! Too good to be true?

What happens during a consultation? It might start with iridology (unproven) and tongue diagnosis (unproven). For more in-depth analysis, your blood may be viewed under a microscope with live blood analysis (unproven). To help "assess your current state of health and evaluate possible stressors" with "bio-energetic" screening, you might be connected to a Vega, Magnagraph, AsyraPro or LIFE System apparatus (all unproven) which assess organ function, nutritional, vitamin and hormonal deficiencies, heavy metal toxicities, allergies, digestive disorders, sensitivities to environmental substances, background infections, viruses, bacteria, fungi and parasites, mental and emotional states, spinal energy, dental work and dental materials (such as amalgam fillings, root canal work, anaesthetics, antibiotics), vaccination disturbance, metabolic issues, thyroid disturbance, neurological imbalances and more.

While these tests sound convincing, you will not be told that all should be avoided, that these devices are not listed with the Therapeutic Goods Administration and that many complaints against them have been upheld. One sponsor was even successfully challenged by the ACCC! Getting tested by a naturopath might seem like an option, but, apart from a friendly smile and alarmist words, what they offer is mostly a waste of time and money.

But haven't naturopaths been trained at a uni? Some have, but attending an Australian university is, regrettably, no longer a guarantee that what is learnt has any scientific basis. One-third of our universities offer non-science (= nonsense) courses without credible evidence to back their claims: homeopathy, acupuncture, craniosacral therapy, applied kinesiology, energy medicine – the list goes on.

> "Can you trust a pharmacy where you are encouraged to have unproven diagnostics & questionable advice?"

So why do pharmacy owners allow naturopaths in among their real business of co-operating with doctors and hospitals and dispensing effective medicines? According to the Pharmacy Board of Australia, pharmacists "must limit their provision of advice" about alternative interventions to those therapies which have documented evidence of effectiveness. Offering the services of in-house naturopaths not only bypasses these obligations, but considerably increases the owner's profits – from 'complementary medicines'.

Pharmacies are supposed to be frontline agents of primary care. Their role includes protecting patients from the fraudulent and the unscientific. Pharmacists must be "personally and properly persuaded" of the safety and effectiveness of what they offer. But, with deals negotiated behind closed doors by the marketing departments of 'Big Vitamin', with no professional input, the provision of naturopathy remains an unethical, profit-seeking gimmick. (See the story on vitamin supplier Blackmore's attempted "coke and fries" deal with the Pharmacy Guild, *The Skeptic,* p20, 31:4, December 2011.)

Are we to believe that pharmacy owners who host these clinics are unaware of what their customers are being told?

Patients trust the professional judgment of their pharmacists. Isn't hosting a naturopathy clinic "inadvertently making a recommendation by implication"? Can you really trust a pharmacy where you are encouraged to have unproven diagnostics, questionable advice and so-called treatments, from someone trained in pseudoscience?

Pharmacies can only be owned by pharmacists. Many argue that they must offer alternative medicine to meet consumer demand. Have they forgotten that they are part of the team treating patients, not consumers? Are they not ignoring science and putting profit over their patients' health? As honest pharmacists speak out against this unethical practice, will others start listening to their own professional leaders? ■

About the author: **Loretta Marron** is three-time winner of the Skeptic of the Year, and founder of Friends of Science in Medicine

The GOOD OIL

Tim Harding assesses the seeds of doubt spread about genetically modified foods

In May this year, a farmer accused of 'contaminating' his neighbour's crops with genetically modified canola won a highly publicised civil case in the Western Australian Supreme Court (Marsh v. Baxter, 2014). Although the case was about a claim of conflicting land use rather than food safety, it fired up the long-running community debate about genetically modified foods in Australia. It also exposed a lot of misinformation and misunderstanding about DNA and genetic modification.

GENETIC MODIFICATION

One of the biggest misunderstandings is about the very term "genetic modification". Genes can be modified in two main ways:

- natural selection and sexual selection – the key mechanisms of evolution; and
- artificial selection by human intervention.

Artificial selection can occur in three main ways:

- long-term plant and animal breeding;
- mutagenesis (inducing random mutations in genes by exposure to mutagens, a physical or chemical agent that changes the genetic material,); or
- short-term genetic engineering – the targeted insertion or deletion of genes in the laboratory (which cannot easily be achieved by other methods).

As a result of artificial selection, all farmed foods we eat today have been genetically modified by humans, via plant and animal breeding, since the dawn of civilisation around 11,000 years ago. This includes all meats except for wild game and kangaroo; and most farmed fish such as salmon.

> "For some reason, plant and animal breeding are not referred to as genetic modification."

Similarly, almost all of the plants we eat (vegetables, fruits, nuts, herbs and spices) have been genetically modified by humans. Most horticultural varieties bear little resemblance to their original wild forms. A wheat grain is a genetically modified grass seed. In Australia, the only exceptions are 'bush tucker', seaweed and other wild plants foraged by a few fancy restaurant chefs. Fungi are not plants, but even cultivated mushrooms have been

genetically modified through selective breeding.

The end result of the different methods of artificial selection is the same – modification of the genetic code by human intervention. They are all ways of artificially modifying genes, yet for some illogical reason plant and animal breeding is not usually referred to in the popular media as genetic modification. So to avoid any confusion, in this article I will refer to genetic modification of foods by genetic engineering by its scientifically more accurate description, that is, genetically-engineered foods (GE foods).

WHAT IS DNA AND HOW DOES IT WORK?

The molecular basis for genes is deoxyribonucleic acid (DNA) a very large double-stranded molecule, coiled into the shape of a double-helix, as discovered by Watson and Crick in 1953. DNA is composed of twin backbones of sugars and phosphate groups joined by ester bonds. These backbones hold together a chain of nucleotides, of which there are four types: adenine (A), cytosine (C), guanine (G), and thymine (T). Genetic information in all living things exists in the sequence of these nucleotides, and genes exist as stretches of these sequences along the DNA chain. This structure of DNA is the physical basis for inheritance. DNA replication duplicates the genetic information by enzymes splitting the two strands (like a zipper) and using each strand as a template for synthesis of a new partner strand.

The sequence of these nucleotides A, C, G and T is just a code, similar to the binary digital code used in computing. When you consider that all the instructions for everything that computers can produce such as text, calculations, music and images are stored as a binary sequence of ones and zeros, it is not hard to conceive how the instructions for making and operating living organisms can be stored as a four-letter code. The DNA code is transcribed into single-stranded RNA which provides the instructions for making proteins, many of which are enzymes that catalyse and control other chemical reactions within the animal or plant cells.

All DNA, whether modified naturally or artificially, is biochemically similar in composition. The only difference is in the genetic code, that is, the sequence of the nucleotides G, C, T and A. In other words, DNA is DNA – there are no such things as 'natural DNA' and 'artificial DNA'. Whenever we eat and digest proteinaceous food, the DNA inside the food gets broken down in the stomach and the sequence

Fig. 1

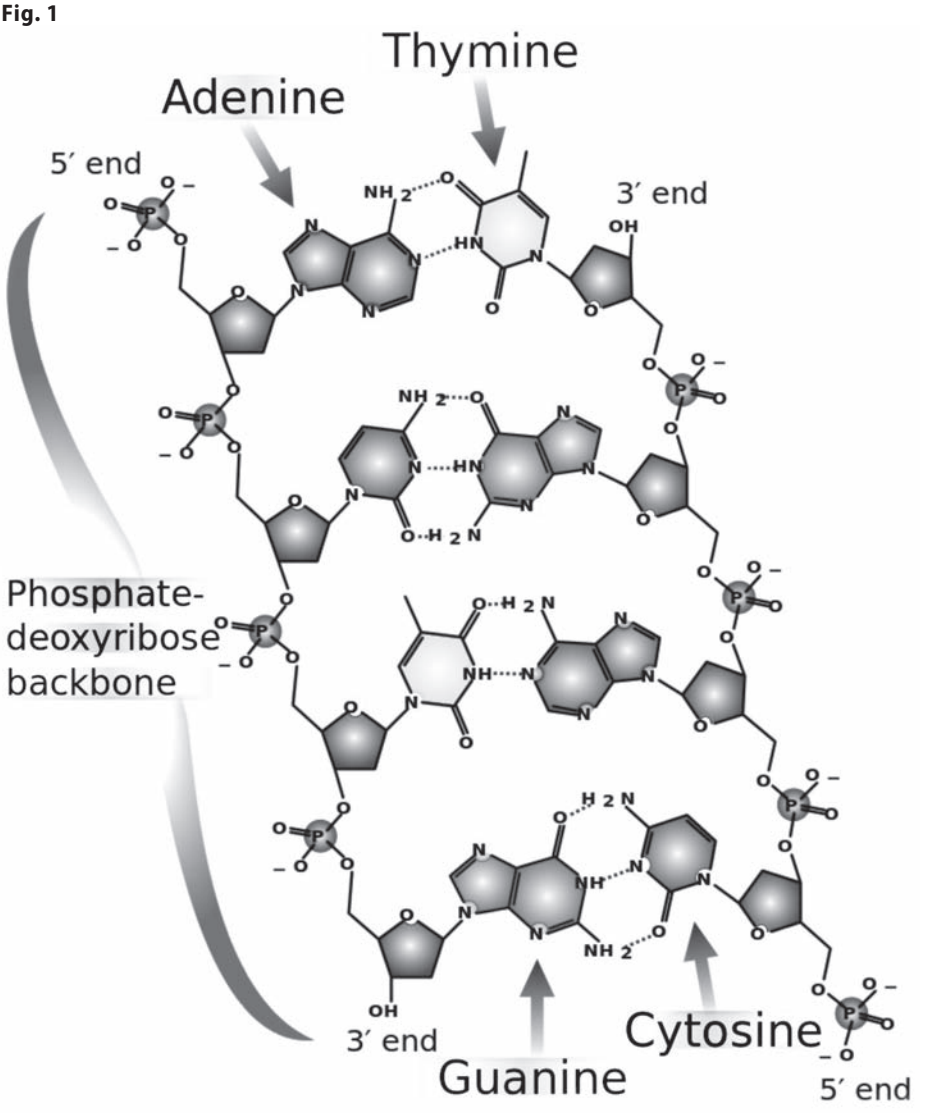
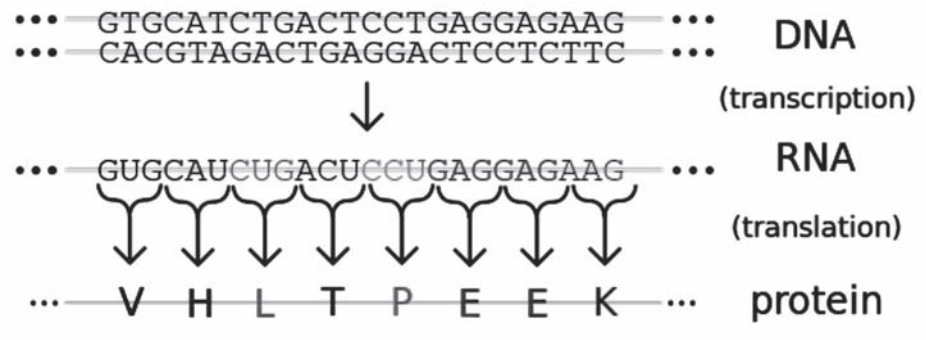


Fig. 2



The Good Oil

Continued...

of nucleotides gets all jumbled up anyway. They are then further broken down into smaller components for absorption in the intestines. It is therefore logically impossible for any changes in the genetic code, whether artificial or natural, to make DNA unsafe to eat.

Not only is it logically impossible, but there is no empirical evidence that genetically modified foods are harmful. The technology to produce genetically-engineered (GE) plants is now over 30 years old, yet in all that time there has not been a single instance of anybody becoming ill, let alone dying, as a result of eating GE foods.

In a recent major review of the scientific literature on the last 10 years of the world's GE crop safety research, the reviewers conclude that "the scientific research conducted so far has not detected any significant hazard directly connected with the use of GE crops". The authors further believe that "genetic engineering and GE crops should be considered important options in the efforts towards sustainable agricultural production" (Nicolia et al, 2013).

GE FOODS

GE foods can be produced by either cisgenesis (within the same species) or transgenesis (from different species). However, the point needs to be made that the human genome naturally contains genes resulting from billions of years of evolution – even genes from our fishy ancestors. A substantial fraction of human genes seem to be shared among most known vertebrates. For example, the published chimpanzee genome differs from that of the human genome by 1.23 per cent in direct sequence comparisons. We even share many genes with plants. So transgenesis is not all that bizarre after all.

GE foods were first put on the market in the early 1990s. Typically, genetically-engineered foods are transgenic plant products: soybean, corn, canola, and cotton seed oil. GE genes may be present in whole foods, such as wheat, soybeans, maize and tomatoes. The first commercially-grown genetically-engineered whole food crop was a tomato (called FlavrSavr), which was designed to ripen without softening in 1994.

These GE whole foods are not presently available in Australia. GE food ingredients are, however, present in some Australian foods. For example, soy flour in bread may have come from imported GE soybeans.

> "Research has not detected any significant hazard directly connected with GE crops."

Brassica napus

In addition, various genetically-engineered microorganisms are routinely used as sources of enzymes for the manufacture of a variety of processed foods. These include alpha-amylase from bacteria, which converts starch to simple sugars, chymosin from bacteria or fungi that clots milk protein for cheese making, and pectinesterase from fungi which improves fruit juice clarity.

Genetic engineering can also be used to increase the amount of particular nutrients (like vitamins) in food crops. Research into this technique, sometimes called 'nutritional enhancement', is now at an advanced stage. For example, GE golden rice is an example of a white rice crop that has had the vitamin A gene from a daffodil plant inserted. This changes the colour and the vitamin level for countries where vitamin A deficiency is prevalent, potentially preventing blindness and millions of deaths. Researchers are especially looking at major health problems like iron deficiency. The removal of the proteins that cause allergies from nuts (such as peanuts and Brazil nuts) is also being researched.

Animal products have also been developed, although as of recently none are currently on the market. However, human insulin has been produced using GE *E.coli* bacteria since 1978. In 2006 a pig was controversially engineered to produce omega-3 fatty acids through the expression of a roundworm gene. Researchers have also developed a genetically-engineered breed of pigs that are able to absorb plant phosphorus more efficiently, and as a consequence the phosphorus content of their manure is reduced by as much as 60 per cent.

Once again, there is no evidence of any person being harmed by eating genetically-engineered foods. The reasons why genetically-engineered whole foods are not yet available in Australia are political or emotional rather than scientific.

BENEFITS OF GE FOODS

There is a need to produce inexpensive, safe and nutritious foods to help feed the world's growing population. Genetic engineering may provide:

- sturdy plants able to withstand weather extremes (such drought);
- better quality food crops;
- higher nutritional yields in crops;

- inexpensive and nutritious food, like carrots with more antioxidants;
- foods with a greater shelf life, like tomatoes that taste better and last longer;
- food with medicinal (nutraceutical) benefits, such as edible vaccines – for example, bananas with bacterial or rotavirus antigens;
- crops resistant to disease and insects and produce that requires less chemical application, such as pesticide and herbicide resistant plants: for example, GE canola.

OBJECTIONS TO GE FOODS

So why is there such significant public opposition to GE foods? Critics have objected to GE foods on several grounds, including:

- the appeal to nature fallacy (natural products are good and artificial products are bad);
- fears of food safety issues, despite the lack of evidence of any adverse health effects in over two decades since GE foods became available;
- marketing concerns about 'contamination' of so-called organic food crops by genetically-modified organisms (GMOs), such as in the Marsh-v-Baxter case;
- ecological concerns about the spread of GMOs in the wild, and
- economic or ideological concerns raised by the fact that these organisms are subject to intellectual property rights usually held by big businesses such as Monsanto.

The only one of these objections that may have any scientific legitimacy is the ecological concern about the spread of GMOs in the wild. However, the use of GE technology is highly regulated by Australian governments and any such ecological concerns are fully taken into account.

Current food regulations in Australia state that a GE food will only be approved for sale if it is safe and is as nutritious as its conventional counterparts. Food regulatory authorities require that GE foods receive individual pre-market safety assessments prior to use in foods for human consumption. The principle of "substantial equivalence" is also used. This means that an existing food is compared with its genetically-engineered counterpart to find any differences between the existing food and the new product. An important to note is that Australia has the most rigorous food safety testing regime in the world, and that GE foods are tested even more rigorously than non-GE foods. Foods certified as organic or biodynamic should not contain any GE ingredients, according to voluntary organic food industry guidelines.

The consensus position of the American Association for the Advancement of Sciences on GM foods is: "The science is quite clear: crop improvement by the modern molecular techniques of biotechnology is safe. … The World Health Organisation, the American Medical Association, the U.S. National Academy of Sciences, the British Royal Society, and every other respected organisation that has examined the evidence has come to the same conclusion: consuming foods containing ingredients derived from GM crops is no riskier than consuming the same foods containing ingredients from crop plants modified by conventional plant improvement techniques." ■

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Other references for this article may be found on Tim Harding's blog at *<http://yandoo.wordpress.com/>*

About the author:

Tim Harding majored in biochemistry and microbiology and has worked for the last 16 years as a consultant, among other things evaluating the regulation of Australian agriculture.

the Logical Place

The Sunk Cost Fallacy

In economics and business decision-making, a sunk cost is a cost that has already been incurred and cannot be recovered. Sunk costs are sometimes contrasted with future costs that are avoidable if appropriate action is taken.

Traditional economic theory tells us that investors should not let sunk costs influence their decisions. To do so would not rationally assess a prospective investment on its own merits. On the other hand, evidence from behavioural economics suggests that this theory fails to predict real-world behaviour. Sunk costs do, in fact, influence decisions because we humans are emotionally averse to the realisation of our losses. In light of such cognitive quirks, it is unsurprising that people frequently fail to behave in ways that economists deem to be rational.

For example, if one is considering pre-ordering movie tickets, but has not actually purchased them yet, the cost remains avoidable. However, after purchasing a non-refundable movie ticket, many people would feel obliged to go to the movie despite not really wanting to, because doing otherwise would be wasting the ticket price – they feel they have passed the point of no return. Similarly, some people will not walk out of a movie they dislike, because they do not want to 'waste' the money they have already paid and cannot recover, ie the sunk cost. This is despite the fact that if they do walk out of the movie, they could spend the time doing something else that they much prefer.

Another common instance of this behaviour is the reluctance to sell underperforming company shares for fear of wasting one's original investment, when it would make better sense to sell the shares and use the money to buy some other shares that are likely to perform better. Such irrational behaviour is known as the sunk cost fallacy.

- by Tim Harding

Knocking on Heaven's Door

Michael Wolloghan looks into the problems for those getting out of the JWs.

Most Australians know of the Jehovah's Witnesses because of their dedicated door knocking, wholesome clean cut appearance, refusing blood transfusions and other unusual beliefs.

While many might think the Jehovah's Witnesses are a tiny, obscure and relatively uninfluential religious group they are, in fact, a large growing denomination.

Many drive by cookie cutter 'Kingdom Hall' buildings and probably think they are just another generic Christian church. However, they are significantly different.

The Watch Tower Society, based in New York, is the main organisation that directs, administers and develops doctrines for the Jehovah's Witnesses. The Society is run by the "Governing Body of Jehovah's Witnesses" and is believed to be the "faithful and discreet slave" referred to in Jesus' parable in Matthew 24:45, divinely appointed by Jesus Christ to lead the Witnesses.

The governing body currently consists of seven men. Witnesses who criticise the leadership are regarded as apostates, disloyal to God.

Some former Jehovah's Witnesses have criticised the Watch Tower Society for being dictatorial, oppressive and deceptive. They also alleged that the organisation imposes mental and emotional abuse on people who choose to leave through its shunning policy, which tears families apart.

Only a few have been courageous enough to provide a look behind the tightly drawn curtains of the Witnesses.

> "Witnesses consider themselves the only true Christians and others are considered 'apostate Christendom'."

Former Witness James Zimmerman, author of Deliverance at Hand!, provides some background to this questionable religion.

"Jehovah's Witnesses are a Christian millennialist denomination that broke off from mainstream Adventism in the late 19th century. Their origins are in the teachings of Charles Russell, an American businessman who tried finding the correct interpretation of the Bible. At first, Russell's groups were simply people who met in private homes to discuss and interpret the Bible. By the 1920s, under the leadership of Joseph Rutherford, the group had consolidated into a bona fide religion; dissention was no longer encouraged – indeed, it wasn't even allowed – and members were expected to fall in line with the Biblical interpretation expounded by the Watch Tower Society", Zimmerman explains.

Under the charismatic Rutherford, the religion revised its doctrines

numerous times, including the prediction of the arrival of Armageddon in 1918, 1920 and 1925, and moving the 'invisible' return of Jesus, which Charles Russell had predicted, from 1874 to 1914.

Not surprisingly, Witnesses consider themselves the only true Christians and all other denominations are considered "apostate Christendom".

The Watch Tower Society peddles some dangerous practices and questionable beliefs. For example, Witnesses believe that Armageddon is imminent and all of humankind will be destroyed except faithful Witnesses, and a few others, who will live forever on earth.

BLOOD TRANSFUSIONS

However, refusing blood transfusions, a practice based on unorthodox interpretations of Biblical scriptures, is probably the best known doctrine and has cost countless lives.

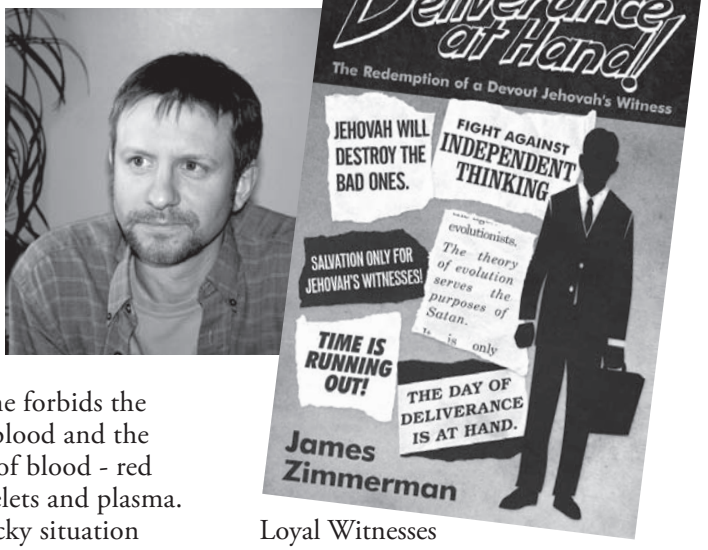
The prohibition of blood transfusions was first announced in 1945. At that time, donating blood was considered patriotic, as it supported the injured Allied troops. The Watchtower Society, which directs Witnesses to remain politically neutral and abstain from military service, saw the blood issue as a matter of choosing God over Caesar. The original doctrine prohibited whole blood transfusions but over time certain allowances were made.

The current doctrine forbids the transfusion of whole blood and the primary components of blood - red cells, white cells, platelets and plasma.

"This presents a sticky situation because many surgeries can be done without blood, and Witnesses have to ensure that their surgeon will abide by their belief. Of course, most people who need blood are in an emergency situation, and so Witnesses often don't have the luxury of going over surgical and treatment options with the hospital staff", Zimmerman clarifies.

Bizarrely, 'minor' or 'small fractions' of all primary components of blood - albumin, immunoglobulin and haemophiliac preparations - are permitted.

The governing body offers no explanation on why some treatments are acceptable and why others are not.



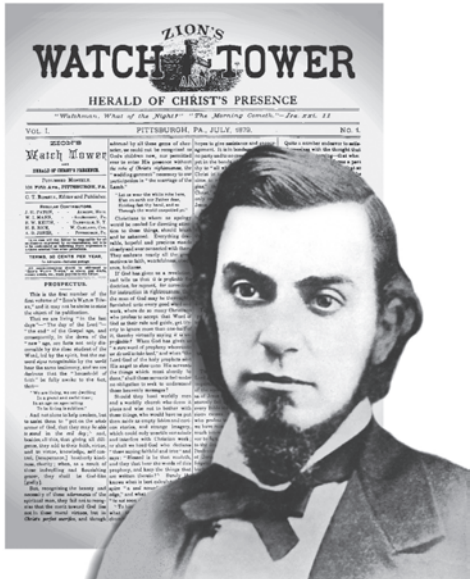
Loyal Witnesses have no choice but to accept doctrine, in spite of its apparently arbitrary nature, or be disfellowshipped.

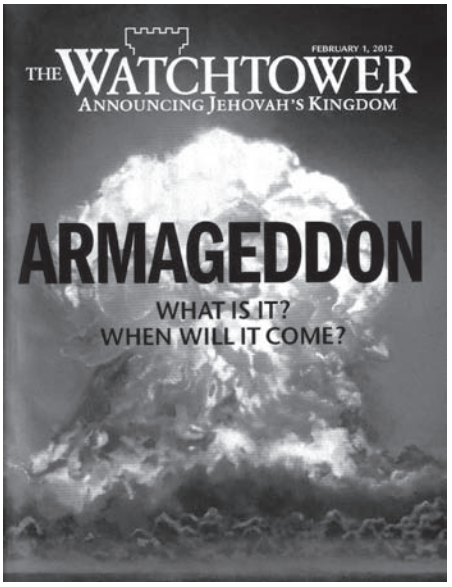
The Watch Tower Society strictly enforces conformity to the doctrine relating to blood transfusions.

For nearly forty years, stifling Jehovah's Witness Hospital Liaison Committees have shown up at emergency rooms trained to block any efforts to convince Witnesses needing transfusions to change their minds.

Numerous physicians have voiced serious concerns over Witnesses seemingly being stopped from making

Top: James Zimmerman, ex-Jehovah's Witness and author of *Deliverance at Hand*.
Below: Charles Russell, founder of Jehovah's Witnesses, and *Watchtower* through the years.





Knocking on heaven's door

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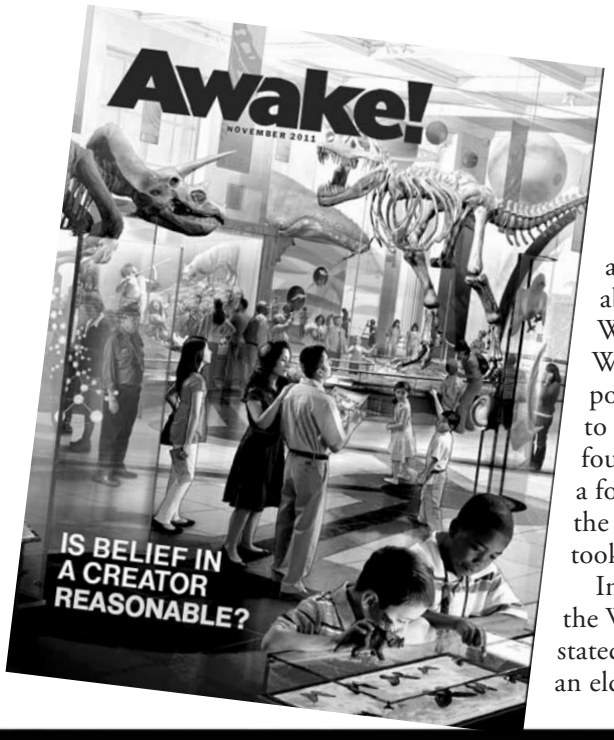


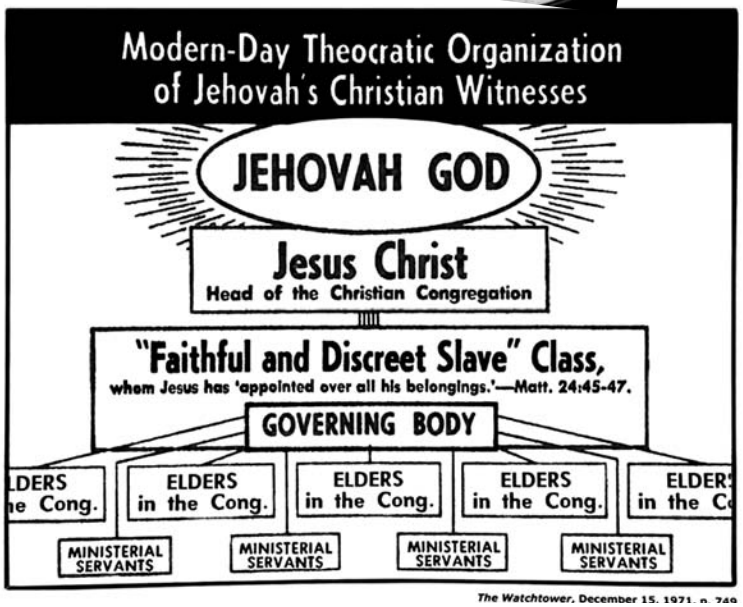
Left: JW's *Awake!*, second most widely distributed free magazine in the world, after *The Watchtower*. **Below:** 1970s depiction of JW hierarchy, including elders and slaves .

decisions about their own medical care.

On the official Jehovah's Witnesses website (jw.org) it states that the claim that many Witnesses, including children, die each year as a result of refusing blood transfusions is "unfounded".

However, on the cover of the May 22, 1994 *Awake!* magazine - an official Watch Tower Society publication - are the photos of 26 Witness children, with the caption "Youths Who Put God First". Inside, the magazine declares: "In former times thousands of youths died for putting God first. They are still doing it, only today the drama is played out in hospitals and courtrooms, with blood transfusions the issue."

One sincerely hopes that with heightened public scrutiny, this irrational doctrine will one day be abandoned so people stop sacrificing their lives needlessly - or their children's.



The Watchtower, December 15, 1971, p. 749

CHILD PROTECTION

Certain little-known Witness polices regarding child protection have also recently received global media attention. These extremely inadequate polices have unfortunately served to protect the identities of child molesters.

The governing body believes that unless two people see something happen, it didn't occur. They believe this "two witness rule" should be applied to all offences including accusations of sexual molestation against children.

This policy is based on Bible verses such as Deuteronomy 19:15: "Only on the evidence of two witnesses, or of three witnesses, shall a charge be sustained."

The official guidebook for Witness elders states that, if the accused denies the charges and no one else saw the incident, elders should "leave matters in Jehovah's hands". The accused must be treated as innocent. Elders are instructed to make certain the Watchtower's branch office is the first to be informed of any abuse allegations rather than the police. Only the branch office is to decide whether elders can go on to report the allegations to the authorities, or warn other parents.

The elders then demand the victim to remain silent or face disfellowship for slander of an 'innocent' individual.

Silentlambs, a group that assists victims of child sexual abuse experienced within the Witnesses, has alleged that Witnesses have a long-standing policy of not reporting molesters to police. William Bowen, founder of the organisation, is a former Witness elder who quit the denomination after he said it took no action against a molester.

In his letter of resignation to the Watchtower Society, Bowen stated "I can no longer serve as an elder in an arrangement that promotes unethical and immoral behaviour toward children. I refuse to support a pedophile refuge mentality that is promoted among Body of Elders around the world. Criminals should be ousted, identified, and punished to protect the innocent and give closure to the victim."

In his book, Zimmerman tells of a child molester in his congregation. The molester was removed from the congregation, but almost no one in the congregation knew why. About a year later, the individual was reinstated as a member and nearly every one in the congregation – Zimmerman and his wife being two notable exceptions – naively welcomed him back. "It really shows how insidious religious control can be," he says. "Witnesses welcome that man into their home, yet they won't even speak to me. I guess disagreeing with the Watchtower Society is a worse sin than child molestation."

In June 2012 a court in California found the Watchtower Society responsible for the abuse inflicted

on Candace Conti who, as a child, was molested by an adult member of her congregation. The court found that congregation elders, following the policies of the Watchtower Society, contributed to the abuse. The Watchtower Society was ordered to pay $21 million in punitive damages.

It was the largest jury verdict for a single victim in a religious child abuse case in the US.

How many vulnerable children continue to remain in possible danger due to this policy is chilling to consider. Witnesses who have argued against these policies and doctrines have been deemed "apostates".

The *Watchtower* magazine – another official Watch Tower Society publication - explains that congregations should act towards apostates as such: "True Christians share Jehovah's feelings towards such apostates; they are not curious about apostate ideas. On the contrary, they 'feel a loathing' towards those who have made themselves God's enemies, but they leave it to Jehovah to execute vengeance."

Recent *Watchtower* issues have compared apostates to criminals and claim they are "mentally diseased" (July 15, 2011). Witnesses must sever all ties with apostates unless they themselves wish to be disfellowshipped. In Deliverance at Hand, Zimmerman recounts the time he waved at a former member he saw at a store, and how he felt like this was a sin against God. When he sees Witnesses who used to be his friends, they won't make eye contact with him; his sister-in-law even turned and walked out of a store she was walking into when she saw Zimmerman and his wife were already there.

The psychological trauma of isolation, depression and anxiety suffered by a shunned person is dreadful and has resulted in documented cases of suicide. (See for example the story on http://tinyurl.com/m6nx9th.) "It's absurd that they consider themselves to be an organisation that excels in showing love," Zimmerman says, "yet they inflict such mental anguish on their friends, family, and even their own parents and children."

The Watch Tower Society compares the disfellowshipping practice to the execution of wrongdoers by the Israelites and, in essence, teaches to treat shunned members as if they were dead.

The shunning practice works to coerce members to strictly comply and conform to doctrine and policies.

When Zimmerman left the religion, a few friends contacted him to find out whether or not he still believed the Witnesses had the one true religion. When he told them he did not, they didn't respond, and he has not heard from them since. This includes his cousins, uncles, aunts and even grandparents. One of his friends later visited his website, and she was disciplined for even that tangential 'fellowship'.

> "Recent Watchtower issues have compared apostates to criminals and claim they are 'mentally diseased'."

As former governing body member Raymond Franz once commented to Time magazine that "I frankly do not believe there is another organisation more insistent on 100 per cent conformity."

CULT BEHAVIOUR

The Watchtower Society's lack of candour in dealing with the inherent problems with these policies and doctrines should make the general public seriously concerned.

Steven Hassan, one of the foremost authorities on cults and mind control, defines a destructive cult as "a pyramid-shaped authoritarian regime with a person or group of people that have dictatorial control. It uses deception in recruiting new members (eg people are not told up front what the group is, what the group actually believes and what will be expected of them if they become members). It also uses mind control techniques to keep people dependent and obedient."

Many former Witnesses agree that the Jehovah's Witnesses fit these criteria.

Zimmerman provides some interesting strategic questions to ask Jehovah's Witnesses when they next appear on your doorstep.

"Ask Witnesses if they consider their religion to be a cult. After their answer - which assuredly will be 'No' - mention to them that one of the identifying features of a cult is that members can not deviate from official doctrine at all. Then ask them which of the Watchtower's doctrines they disagree with.

"As another option, ask if theirs is a religion of love. After their answer - which assuredly will be 'Yes' - ask if they are shunning anyone. Any former congregation members, such as former friends, or even family members? Then ask how they can reconcile their policy of shunning with their belief that their religion is exemplary in showing love to fellow humans. A Witness might try to weasel out of this by saying that they need to abandon contact with former members in order to keep themselves 'clean'.

"While this may be true if the former member turned to a life of, say, serial murder, it's hard to see why a former member needs to be shunned if their only crime is disagreeing with the Witness doctrine, or voting, or celebrating holidays."

Hopefully such questions will make a Jehovah's Witness think twice.

The accounts of former Witnesses' involvement and departure from the religion are so incredible at times that one hesitates to believe a religion like this, with such a large global following, could really exist in the 21st century.

Indeed, these stories remind us that truth can be much stranger than fiction. ■

About the author:
Michael Wolloghan
is an investigator of cults.

Mind over Medicine

Trevor Traherne looks at the ethical issues behind the use of the placebo effect in medical treatment.

In the mass of US college japery which clogs the YouTube archives, there are scenes from Princeton in 2002 which purport to show a non-alcoholic keg party, with students falling about themselves in a seemingly drunken stupor. Acting drunk, in situations when somehow appealing in itself, is not always a process which requires the alcohol which actually brings about such effects.

The validity of that video aside, it is hard to deny that our expectations of an experience go some way to invoking that experience in itself. An analogy introduced to me by Chris Jordens, a philosophy of medicine professor at The University of Sydney, centres on a thought experiment where we attend the cinema to watch a horror film. While watching this film we do not come into contact with any medical interventions, nor are any of the threats that appear on screen 'real' in the sense that they could actually harm us at that point.

However, while simply watching a film we may start sweating, have our pulses raised, our muscles become tense, have the hairs on the back of our necks rise, become sick (original screenings of The Exorcist involve stories of some attendees being physically sick in the aisles), perhaps even have a heart attack and die. The point is we can invoke physical changes in our body with the forces of our minds and its interactions alone.

In medical terms of treatment and curing, we understand this phenomenon as the 'placebo effect'. Despite broad acknowledgement of the effect and its legitimate influence, it remains misunderstood, controversial, but also vital in our overall understanding of which medicines display efficacy.

WHAT IS THE PLACEBO EFFECT?

Defining the placebo effect is actually a burdensome process. Several current definitions invoke the non-specific nature of the treatment effect as the leading feature of the placebo, while others suggest it involves non-specific, plus psychological or psychophysiological factors. The American Medical Association (AMA) defines a placebo as "a substance provided to a patient that

the physician believes has no specific pharmacological effect upon the condition being treated".

However, it is a mistake to suggest the placebo effect is shorthand for "no actual effect", or just a mild sedative invoked in the mind. It is like thinking 'psychosomatic' is merely something which is 'all in your head'. Your entire beliefs set, true and misled, are 'all in your head'. It does not completely diminish an effect to state it is simply neurobiological and largely self-invoked.

There is plenty of empirical evidence to validate actual efficacy. Several medical fields accept placebo effectiveness, including in surgery, cardiology, psychiatry and primary care. The placebo is also more persuasive than many might think. Dr Ben Goldacre, author of The Guardian column "Bad Science" and book of the same name, states that we are all susceptible to the placebo effect, even if we are dyed-in-the-wool skeptics or profoundly intelligent.

You might also suspect the placebo effect only works if we are deceived by the practitioner or source of the drugs that we are getting a genuine 'cure'. Not necessarily. A 1965 study from Johns Hopkins University where patients were explicitly told that they were going to receive a simple sugar pill as treatment for their neuroses reported substantial improvements in many of the study subjects' symptoms.

So what explains this biological oddity? An evolutionary perspective, based on recent evidence from a computer model (http://tinyurl.com/mzpez54), suggests that the immune system has an on-off switch controlled by the mind. The immune system is costly to run and saps energy reserves, so provided the infection is not lethal, it pays to wait for a sign that fighting it will not endanger us in other ways. The truth is, while the placebo effect can be difficult to define, it is even trickier to fully explain in the same terms that medical science can explain some other effects.

WHY DO WE REJECT PLACEBO USAGE?

So why do we not embrace placebo treatments as a cheap, easy and low-risk treatment harnessing the body's natural abilities? That is effectively what most alternative medicines do, but why does orthodox medicine snub placebos?

There are some rather obvious ethical elephants in the room and some more practical objections too.

Firstly, issuing placebo treatments conflicts with medical practice notions around patient autonomy and informed consent, rendering the vital trust-based relationship between practitioner and patient undermined by the idea that doctors would willingly issue treatments under a misleading guise. Issuing placebo is deceptive and the medical profession should, somewhat obviously, avoid such practices.

> "Unethical doctors who will abuse placebo prescriptions to get rid of troublesome patients."

However, even this oft-noted patient autonomy argument has its detractors. Philosopher Mary Rawlinson argues that as illness undermines autonomy, and healing illness restores autonomy, then deceptive placebo use actually restores patient autonomy. Bioethicist David Shaw suggest that giving patients placebo treatments without informing the patients that the treatments are placebos is consistent with respecting patient autonomy — not because it is consistent with informed consent but because respecting patients' autonomy does not always require obtaining informed consent.

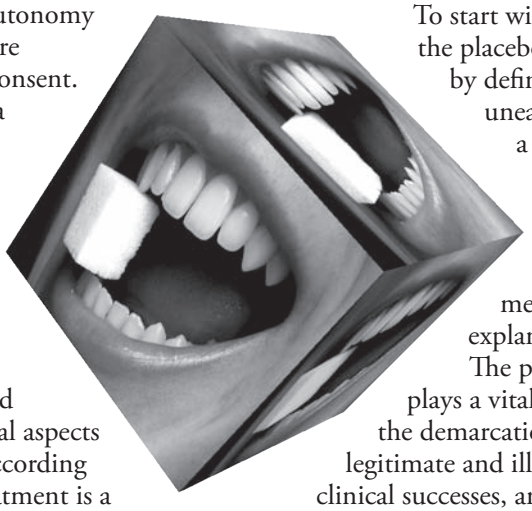
Philosopher Onora O'Neill argues that respecting patients' autonomy requires informing them about their treatment and obtaining their consent but that they need only be informed about the fundamental aspects of their treatment. According to O'Neill, that a treatment is a placebo is not a fundamental aspect of the treatment, so patients do not need be informed that a treatment is a placebo. This is, of course, a somewhat debatable argument, but the point is that philosophers are not strictly sold on the intuitively appealing argument that placebo deception is untenable for autonomy and informed consent reasons.

Aside from the trust issues that placebo deception would spark, other objections centre on misdiagnosis. If the doctor gets the diagnosis wrong and sends the patient away with placebo treatments, this could stop the patient from getting a treatment with greater efficacy for the actual illness they have. This might also result in the patient not seeking a second opinion, even if the condition worsens, as they believe the doctor has a good handle on their illness and is treating it with the supplied medication.

Another ethical issue is whether the placebo effect is playing into the hands of unethical doctors, who will abuse placebo prescriptions to get rid of troublesome patients or increase their patient rates.

A final objection is that widespread placebo use would diminish its effect since patients will develop less of an association between taking medicines and benefiting from their pharmacological actions.

There are also two further more non-ethical objections worth considering: one practical, the other hinges on the overarching attitude of science.



To start with the latter, the placebo effect by definition sits uneasily with a scientific approach which demands proven mechanisms of explanation. The placebo effect plays a vital part in the demarcation of both legitimate and illegitimate clinical successes, and medicine

Mind Over Medicine

Continued...

as a science and a profession. In double-blind clinical trials, it plays a truly crucial role in defining the nature of orthodox medicine and in particular demonstrating the efficacy of particular medicines.

This is perhaps best explained by University of Washington professor of psychiatry Mark Sullivan, who states: "The role of the placebo effect in double-blind clinical trials points towards its fundamental significance for scientific medicine. Within such trials, placebo effects are not merely artefacts. They are that form of healing success against which contemporary scientific therapeutics is defined. Placebos are now recognised to produce actual clinical improvement. Yet this therapeutic success is not assailable into systematic scientific therapeutics as it is now conceived. Placebo-induced therapeutic changes are specifically those successes which are illegitimate for orthodox scientific medicine. Whether a treatment works is today evaluated in terms of a theory as to why it should work."

Sullivan's final distinction is an important one. It is not enough to cite efficacy and expect that to define a treatment as scientific medicine. There must be an understanding of the functionality of why a theory should work and a desire to discover and prove this. For a treatment to move beyond a placebo explanation, it must navigate to a point where we have a scientific understanding of why a particular theory actually works. For example, when treating diabetes we use insulin as we know it is a hormone produced by the pancreas to control blood sugar; we inhale bronchodilators when we have asthma as we know it relaxes the small muscles that tighten our airways.

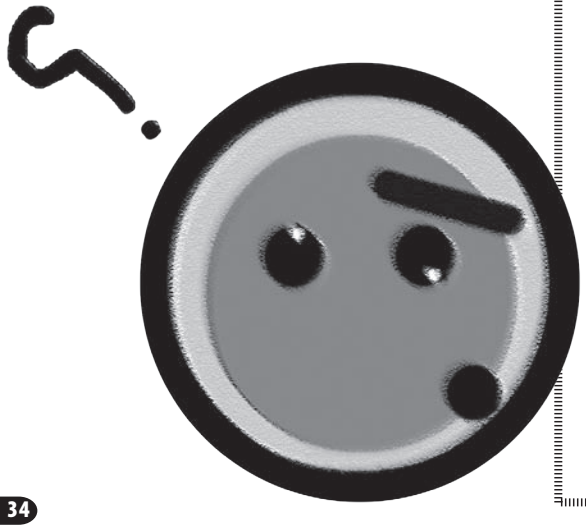
There is the rather obvious correlation between understanding a treatment and its efficacy, but the point is that medical science demands such levels of explanations to be accepted into the orthodoxy. Many practitioners of alternative medicines know less about such mechanisms and rely on claims of efficacy. That is one of the reasons they remain on the fringes (alongside their failures to actual prove such efficacy). As the placebo effect does not target a specific scientific mechanism which targets the precise aliment, orthodox medicine rejects it.

The other objection is more obscure, and is more food for thought than solid theory. One possible reason for the rejection of a placebo treatment is that it would struggle to enter a capitalist structure. It is not something which can be easily monetised. Powerful pharmaceutical companies are not in a position to sell a 'placebo pill' as the assumption is they are selling nothing which cannot be invoked in our bodies without parting with our cash.

In conclusion, it is important to acknowledge the true efficacy of the placebo effect and how this has been harnessed by medical science as a yardstick for the further efficacy of other medications. The placebo effect is a valuable piece of 'noise' in ascertaining which medications actually work.

However, despite some rather large ethical issues around practitioners using placebo treatments, the philosophical and bioethical landscape is by no means sold on the nature of such objections. It might not just be the ethical issues that cause its orthodox rejections; there are other practical and pragmatic issues at hand too. ■

About the author:
Trevor Traherne is a journalist, author of How to Prove God Does Not Exist: The Complete Guide to Validating Atheism, and is currently undertaking a Masters in Bioethics.



The Nocebo Effect

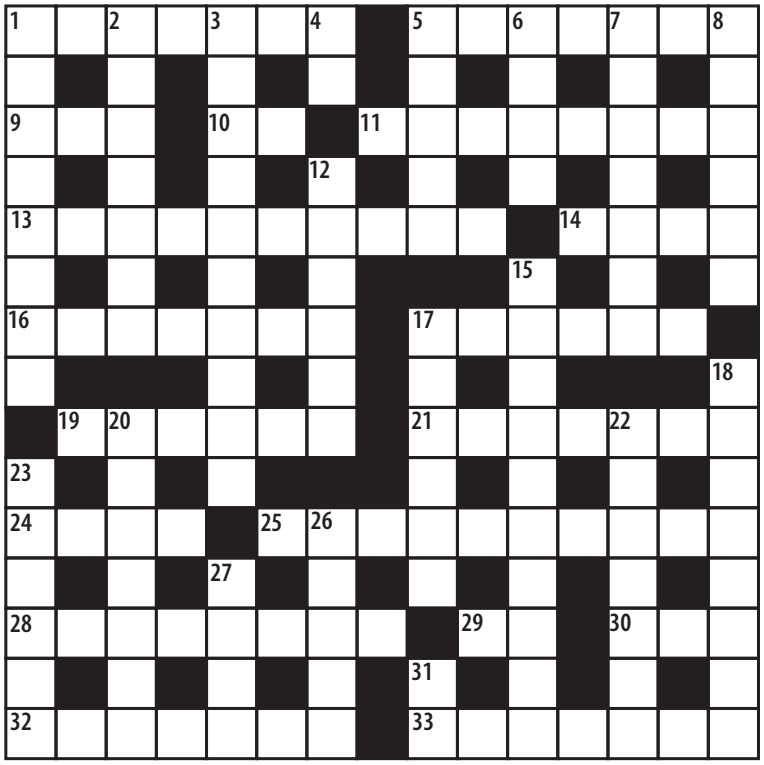
The 'nocebo' effect is a phenomenon that is opposite to the placebo effect, whereby expectation of a negative outcome may lead to the worsening of a symptom.

An Italian study on people with and without lactose intolerance involved giving the patients what they believed to be lactose. Even though the substance given was not lactose at all, 48 per cent of those with intolerance and 26 per cent without it developed symptoms of gastrointestinal discomfort.

Despite obvious ethical issues with testing the nocebo effect on study participants, a 2007 study (http://tinyurl.com/kqqv5bj) found experimental evidence indicates that negative verbal suggestions induce anticipatory anxiety about the impending pain increase, and this verbally-induced anxiety triggers the activation of cholecystokinin CCK which, in turn, facilitates pain transmission. ■

Brain testers

CRYPTIC CROSSWORD no 23



Tim Mendham + Steve Roberts

ACROSS

1. Ghost outlaws laughter. (7)
5. Sailor found in bubble baths on a day of rest. (7)
9. Curse hydrogen as it used to be. (3)
10. Promotion of old current time. (2)
11. Leader has balls. (8)
13. Satellite's transportation will drive you to distraction. (10)
14. God lives twice. (4)
16. Muffet's seat needs a mow. (7)
17. Religious retreat in a marsh. (6)
19. Stable that needed cleaning is a Nu Age arrangement. (6)
21. Elf has debts for being anti-religious. (7)
24. Bad Khan was fairly cross. (4)
25. Friend of rubble has rock's hue. (10)
28. Renouncer is ground to a paste. (8)
29. Relational number for an inquiry agent. (2)
30. Eye a joule in the middle and round on both ends. (3)
32. Sleep-inducer is one among a thousand maniacs.
33. Katherine used to do like a grasshopper. (7)

DOWN

1. Monster ate both he &me. (8)
2. Number ten has debts that are dangerous. (7)
3. Top teachers rewrite notes for dead people. (10)
4. Both alien and French. (2)
5. Determined to be a saintly leader. (5)
6. Not a drink for the dead. (4)
7. Forgetfulness leaves men lost in Asia. (7)
8. Here is why it is an unorthodox belief. (6)
12. Near two thousand are bothered by a sea monster. (6)
15. Metamorphose fish phase before time. (10)
17. Right in as foreigners. (6)
18. A body, a builder, a storied construction. (8)
20. United Nations familiar with a direction that's not celebrated. (7)
22. Egg-shaped attachment like most of an instrumental space? (7)
23. Primitives put the attorney general in cooking containers. (6)
26. The main language of romance? (5)
27. Particle at zero measure. (4)
31. Psychokinetic gum. (1-1)

DR BOB'S QUIZ

1. **The brothers in the 1954 film *Seven Brides for Seven Brothers* - Adam, Benjamin, Caleb, Daniel, Ephraim, Frank and Gideon - were all named after Old Testament personalities ... except for Frank. Why Frank?**

2. **Some scientists realised it would be a natty idea to mount a Foucault Pendulum at the South Pole, to show the Earth's rotation (although this can be demonstrated in various other ways). So they set up a good one in a tall building there. Such a pendulum should be started by burning through a cotton thread that pulls and holds the weight at the end of its arc. What went wrong?**

3. **Some homeopaths sell homeopathic fluoride at 6X potency. Is there an alternative source for this?**

4. **What is the well-known quote from the political speech "Normalcy, Never Again"?**

5. **Japan's Okayama Castle has three gates – Ote Mon, Akazu No Mon, and Rokujuu-ichi Gangi Ue Mon. What is the origin of the name of the third gate?**

Answers on page 62

Off THE Shelf

Bostijan Savle visited his local library and didn't like what he saw ... and said so.

Nothing seems to whip people up into a rabid frenzy like a good old conversation around vaccination. I have an old school mate who happens to be a medical doctor on the Queensland Sunshine Coast. On the first of April (no joke intended) an article about anti-vaccination literature appeared in the Sunshine Coast Daily ("Anti-vaccination books in library anger Coast doctors" - http://tinyurl.com/mcj5whv).

My friend, Dr David McIntosh, reported to his local council that there was in fact anti-vaccination propaganda being freely displayed in the health and wellbeing section of his local library. In particular literature that suggested a link between vaccination and autism.

After several letters expressing concern over this material being available and despite the Sunshine Coast having some of the country's lowest vaccination rates, the Council cited freedom of speech and the good old 'two sides to every debate' as the reason for its decision.

Following is a copy of the correspondence to the Council:

"Dear Mayor and Counsellors of the Sunshine Coast,

"I wish to draw to your attention that several libraries under the auspices of the council have books on their shelves that contain misinformation about vaccination.

"Of concern is that there is content suggesting vaccines cause autism. I have drawn this to the attention of library services, and to their credit they have elected to defend the right of free speech. This is at the expense of accuracy though.

"It is my suggestion that open discussion of topics of all types is to be commended, but given we have one of the lowest vaccination rates of children in Australia, it seems inappropriate

that council would tacitly approve conspiracy theory literature that results in compromise to children's health. The mere fact that such literature can be accessed at a public library can only serve to support the notion that anti-vaccination stances are supported, which would seem contrary to the role of a responsible government body.

"I would seek to implore council take a leadership role in assessing the accuracy of literature it makes available on its shelves when it comes to such an important health topic and implement a review of policy regarding this particular topic.

I welcome your feedback and comments."

This got me thinking, are there these kinds of things in the ACT public library? Of course there are, although not as many as I feared. But what they did have was what I consider to be some of the worst. I found *Vaccination Roulette* written by none other than the former AVN now the AVsN.

I did my best to try and read it. It was hard going; the book is filled with the expected anecdotal 'evidence' and lashings of vitriol, misinformation and loads of cherry picked statistics and evidence (not to mention a quote from Gandhi in the introduction).

I also found another book which was rather more subtle with its anti-vax message called *Vaccinations: A Thoughtful Parent's Guide*. It is written by Aviva Jill Romm. The following is the blurb on the jacket of the book: "Deciding whether or when to vaccinate a child is one of the most important - and most difficult - health-care decisions a parent will ever make. The recent increase in the number of vaccinations recommended and the concurrent controversies about whether vaccinations are safe or even effective have left many parents confused and concerned.

"Midwife, herbalist, and mother of four, Aviva Jill Romm sifts through the spate of current research on vaccine safety and efficacy and offers a sensible, balanced discussion of the pros and cons of each routine childhood vaccination. She presents the full spectrum of options available to parents: full vaccination on a standardised or individualised schedule, selective vaccination, or no vaccinations at all. Negotiating day-care and school requirements, dealing with other parents, and travelling with an unvaccinated child are covered in detail.

"The book also suggests ways to strengthen children's immune systems and maintain optimal health and offers herbal and homeopathic remedies for childhood ailments. Emphasising that no single approach is appropriate for every child, the author guides parents as they make the choices that are right for their child."

> "I am not a fan of censorship, but the information in this book was possibly harmful."

My next step was to contact the manager of collection services National and State Libraries Australasia, Matthew Burless, to discuss my concerns regarding these books. While I stated that I was not a fan of censorship, I also felt that the information in the AVN book had been proven to be fraudulent and there was a very real possibility of that information harming children. I stated that this topic didn't have two sides to argue, as the overwhelming scientific evidence was in favour of vaccination. I also told him of the recent warning that had been issued by the HCCC in relation to the information, in particular to the AVsN's website and the information it provided. He agreed that from time to time books needed to be reviewed. This was particularly so with those found in the health, well being and science categories, so as to keep up to date with current scientific opinion. He said he would reserve the books (which he did) and review them in good time and respond to me with his findings.

I also enlisted the Canberra skeptics to lend a hand. Amanda Devaus has been making queries on behalf of the Canberra skeptics and I thank them greatly for their support in this matter.

The end result in my endeavours has been the removal of this particular book from the ACT public library system, much to the howls of the AVsN. I was also informed that this book may have well been 'donated' and placed on the shelves perhaps by someone sympathetic to the AVsN, as I was assured that this was not the sort of book the Library would be interested in purchasing or placing on its shelves.

Since the AVsN and/or its supporters found out I was responsible for this action, I have been attacked on Facebook and likened to Hitler, as the AVsN has suggested that we are burning books just like the Nazi Party. The AVsN also suggested that it would be petitioning to get the book back on the shelves. However, to date, there is no record of any books being received and they are not found when doing a catalogue search. I was willing to concede to have the book simply moved to a section other than the health and wellbeing section, but the library manager was the one who decided to remove it, not me.

In the end I feel that this was the best result I could have hoped for. But as I have said, there are still plenty of anti-vaccination books out there and it pays to always be vigilant.

I suggest that every one should perhaps take a vist to their own local library and take a look on the health and wellbeing shelves. You might be surprised at what you find. ■

About the author:
Bostijan Savle is an amateur astronomer and podcaster @skeptichef

The Pauline Conspiracy

Paul Willis puts on both his pop hat and his tinfoil hat to look at a classic plot from the Fab Four.

The Mayan apocalypse was not the first apocalyptic prediction that I've lived through, although it was nice to have a change from the monotonous regularity of our impending demise at the hands of a biblical Armageddon. And the fact that this was a misreading of one particular text was of little consequence to the true believers. Prophecies and conspiracies have a tenacious hold on the minds of those bewitched by them.

So I decided to have a look at conspiracy theories - what makes them so appealing and how do they cloud our understanding? Science is redolent with conspiracy theories, both within its mainstream ranks and on its fringes. But I want to take an example far removed from science so that we can have a more objective dissection. I can think of no better example than an old favourite of mine from a youth spent slavishly devoted to listening to Beatles records. There are those out there who still think that Paul McCartney is dead.

This whole story can be traced back to an article published on 17 September 1969 in the Drake University student newspaper, *The Times-Delphic*. This was written by Tim Harper, quoting fellow reporter and musician Dartanyan Brown, who tells of hearing about the hoax from other musicians and reading about it in some underground newspapers.

Harper starts by claiming that there was a lot of speculation on campus that Paul may have been either "insane, freaked out, or even dead". Harper makes the astute but widely held observation that the 1967 album *Sergeant Pepper's Lonely Hearts Club Band* was a radical turning point in The Beatles' career. Possibly it could be seen as the death and rebirth of the band and the album cover appears to be a graveside scene perhaps marking the occasion. He then goes on to lay out a litany of supposed clues as to the actual death (or insanity or freaked outedness) of Paul McCartney.

The album cover features the four Beatles standing around what appears to be a grave bedecked with a left-handed guitar and Harper claims Paul was the only lefty in the band (in fact Ringo is also a southpaw, though he played a 'right-handed' drum kit). A hand over McCartney's head was a "sign many believed is an ancient death symbol of either the Greeks

or American Indians" (two rather divergent cultures, would you not think?). The clues mount up on the cover of *Sgt Peppers* and also on the cover of *Magical Mystery Tour* EPs. In the lyrics of *The Beatles* double album (more popularly known as the *White Album*), Harper claims that, by playing *Revolution No 9* backwards, the phrases "Turn me on, dead man" and "Cherish the dead" can be heard, which rather begs the question who on the campus of Drake University in 1969 came up with the bright idea of sitting down and listening to Beatles records backwards? Then again, it was the drug-addled 60s.

There are some glaring errors in Harper's articles which ought to have alerted anyone to the quality of the research and journalism. Paul's recent wife is named as Jane Eastman, not Linda, a mistake repeated later in the article. This is simply sloppy journalism and easy to identify.

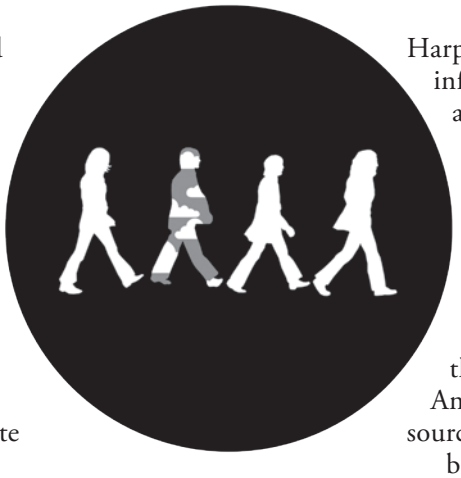
A real kicker for me is the claim that, "there just seems to be more to it, such as the phone numbers discernible when the *Magical Mystery Tour* cover is held up to a mirror". Say what? Come again? So, in between listening to their record collection played in reverse some stoned hippy thought to look at an album cover in a mirror, where they thought they could see a phone number and therefore Paul is insane, freaked out or dead? Probably a good thing that no one seems to have thought to phone that number!

[Editor's note: Honestly Paul, it's obvious! The number is 5371438, and can be seen if you turn the cover upside-down. If you rang that number in London you got someone who was really angry at being called by every demented Beatles fan, often in the middle of the night!]

In October 1969 someone named "Tom" called WKNR-FM to spread the rumour on air. Two students at the University of Michigan picked up the story and published their own Paul Is Dead piece in the Michigan Daily in which they simply made up more clues. They were astounded when many of these clues were subsequently repeated without question in newspapers across the USA. Thus the rumour and hoax rapidly grew to a global phenomenon of Beatles fans scouring lyrics and album covers in search of yet more clues. A more complete account of this myth together with a listing of many 'clues' and the reality behind them can be found at http://tinyurl.com/36p2r.

[Editor's note: This site gives a different phone number of 2317438, but only if you hold the cover up to a mirror. If you rang that number in London you got a completely different person who was even angrier at being called be every demented Beatles fan in the middle of the night! Another site debunking Paul is Dead clues is http://tinyurl.com/chpau3u.]

Eventually the story settled down to Paul McCartney having stormed out of a recording session on 9 November 1966 and having a fatal car accident. In an effort to spare the public any grief at this tragic loss, Paul was replaced in the band by a 'William Campbell', the supposed winner of a Paul McCartney look-alike competition. All this in spite of Paul being quoted in *Life magazine* in November 1969 saying that "(if) the conclusion you reach is that I am dead, then you are wrong, because I am very much alive, I am alive and living in Scotland".



> "The 'Paul is Dead' story seems too big to defeat with facts. And it seems facts aren't the issue, anyway."

WHAT MAKES A CONSPIRACY?

I wanted to detail this saga to reveal some key points about a 'good' conspiracy theory.

Firstly, an origin in second-hand information from a reputed authority. Harper relied on information from a musician (Dartanyan Brown) and surely he ought to be a trustworthy source of information about all things in the music world? An authoritative source is essential to breathe life into a conspiracy.

Secondly, there is no end of evidence put forward in support of a conspiracy theory but most of that evidence is impossible to test or verify. The lines of evidence are often convoluted (reading in mirrors and listening backwards?) and unconventional. Evidence that can be fact checked is easily shown to be wrong, but that does not prevent true believers from sticking to their story. Similarly, evidence contrary to the conspiracy is usually ignored. As one review of the Paul Is Dead conspiracy commented "But the 'Paul Is Dead' story seems too big to defeat with facts. And it appears facts aren't the issue, anyway."

Thirdly, there is a significant impact on the status quo if the conspiracy were shown to be legit. The Beatles were the biggest and most influential band of their time (and I would contend that they continue to be so, almost five decades later); so swapping one of the most influential of them with an impersonator at the height of their fame would be unthinkable.

Lastly, a strong conspiracy theory detracts from a more profound appreciation of the reality of the situation. Even if it were true, the Paul Is Dead theory would not alter a single note or impact on the beauty and richness of the Beatles' music which is their

The Pauline Conspiracy

Continued...

greatest legacy. So why would you want to cloud that appreciation with a load of irrelevant and erroneous guff?

Now translate those findings to any of the numerous conspiracies surrounding science: be it anti-GMO research or mobile phones and cancer, climate change sceptics or the musings of the tobacco lobby and the impacts of smoking, even the more orbital fringe conspiracies such as creationism, alien abductions or extra-terrestrials in ancient civilisations. If you look over these propositions you will find similar features in the way they amass evidence in support of their case and ignore evidence against it. There are 'authorities' to champion every cause and the stakes are high should they ever manage to prove their contentions correct. But for me, the saddest feature of all conspiracy theories is the distraction from progressing with a legitimate understanding of the reality before us.

I think there are some ready reckoner features by which a conspiracy theory can be identified. The handling of evidence, convoluted and unconventional paths of logic and cherry-picking only the facts that support the case may be an indication of the veracity of a proposition. But, in the market place of ideas that is science, a good conspiracy can lay hidden, waiting to ensnare the unwary and slow the progress of research. The truth is out there but it can be hidden in a sea of false leads. ■

About the author: **Dr Paul Willis** is the director of RiAus. He is probably not related to the rapper Paul Willis.

Birth of a Notion

Eran Segev and Peter Bowditch look back on those days before they were Skeptics officials, when they dealt with God, aliens and coffee.

Eran Segev discovers von Daniken's dodgy evidence. **Peter Bowditch** doesn't know what it is.

ERAN SEGEV, FORMER PRESIDENT ASI

As a kid I was really interested in UFOs and all kinds of strange things. But then in the early '70s, when I was just around 10, I read all of Erich von Daniken's books. I was really taken with it because the idea of God always seemed pretty stupid, to me and this seemed a good explanation for why people believed in God. Of course, at the time, I hadn't heard the quote from Arthur C Clarke about "any sufficiently advanced technology is indistinguishable from magic".

But then in one of the books I saw a photo that showed a person standing on what was supposedly Earth, and this was supposed to show that the ancients knew that the Earth was round. I had an inkling even then that the ancient Greeks and Egyptians knew that the world was round, but this was much older. But then I saw that it had what looked like longitude and latitude lines which were supposed to show it was the Earth and not just a boulder. And even at that age I realised that these lines are not part of nature, but are a relatively modern invention. So for me that killed the whole thing. All of a sudden I dismissed the whole argument because the evidence was flimsy.

That was just a sign of things to come.

I'd been sceptical and quite cynical about claims of the paranormal. But I didn't know about CSICOP, I didn't know about skepticism. I was always interested in science but I just didn't know anything about those things.

In about 2000 my kids went to a school where there were a lot of parents with alternative lifestyles. The school newsletter had an article about vaccination, and I was having a chat with one of the mothers there who proudly exclaimed that she "wouldn't let her kids go anywhere near that poison". I told her what I thought about that, that she was a freeloader trading on the health of my children. She asked me what my evidence was for that. So I looked it up, and there was an article on the Australian Skeptics' website by Dr Stephen Basser about the anti-vaccination movement. He described all their techniques, and talked about why vaccines are safe and effective.

And that was a conversion moment. It was through the Skeptics' website that I realised that scepticism was not just a personality trait but that it was a movement. It wasn't a conversion from being a non-skeptic to a skeptic, but from being a cynic to being a skeptic.

PETER BOWDITCH, FORMER PRESIDENT ASI

I suppose I have always been skeptical and too ready to ask difficult questions. I tried to take religion seriously when I was young (my parents only ever attended church for weddings, funerals and baptisms which, in retrospect, I realise moulded my thinking), but I was always being told things in Sunday School and from the pulpit which didn't sound quite right. I was often taken to the museum when I was in primary school, and we were encouraged to think about such topics as evolution and the evidence for it. I can remember getting up early in the morning to watch school science shows from a local university where famous scientists like Julius Sumner Miller talked about science.

One epiphany I had was the realisation that I do not need a personal god. At my grandmother's funeral the priest was desperately trying to explain how a person who had led an unblemished and charitable life could have been stricken with a disease causing her to spend the last years of her life in increasing pain. I realised that a god who could do that was not the sort of god I needed to believe in.

Another epiphany took place in a coffee shop in Glebe Point Road in Sydney. At lunchtime I had bought a copy of Martin Gardner's *Fads and Fallacies in the Name of Science*, which I had wanted to read for some time. I stopped for a coffee on the way back to work, and I didn't get up from the table until I had finished the book. The tragedy is that this book was published in 1952 but reads like it was written yesterday. It told me that there is no shortage of mad, bad and just plain weird thinking. ■

Pig Perfumes *for* Lonely Hearts

Do pheromones really attract females? Or are they just wishful thinking for lustful lads? In this Classic Catch article, Anthony G. Wheeler gives the lowdown on stinky stuff.

You can find many claims made in popular newspapers and magazines. One that caught my eye claims 'science' to support it. Poppycock! The expression 'making a pig of yourself' may soon take on a whole new meaning, largely because of the range of scents for men - called 'pheromones' - now being promoted in men's magazines.

These are some of the claims being made for this exciting new product (the originals used lots of capital letters that I have omitted): "Science discovers the 'secret' to attracting women!"

"Errol Flynn had it ... so did Valentino; stags & stallions, rams, bucks & Tarzan all have it."

"The secret is out. At last man has discovered a spray on male pheromone: A female attractant that really works."

"Spray on sex appeal."

PHEROMONES

Pheromones are real, and in general terms can be described as 'odoriferous chemicals secreted by the skin glands, or into the urine and/or faeces, of various animals'. The idea is that any airborne chemical is then detected by another individual of the same species, and alters the behaviour of that animal.

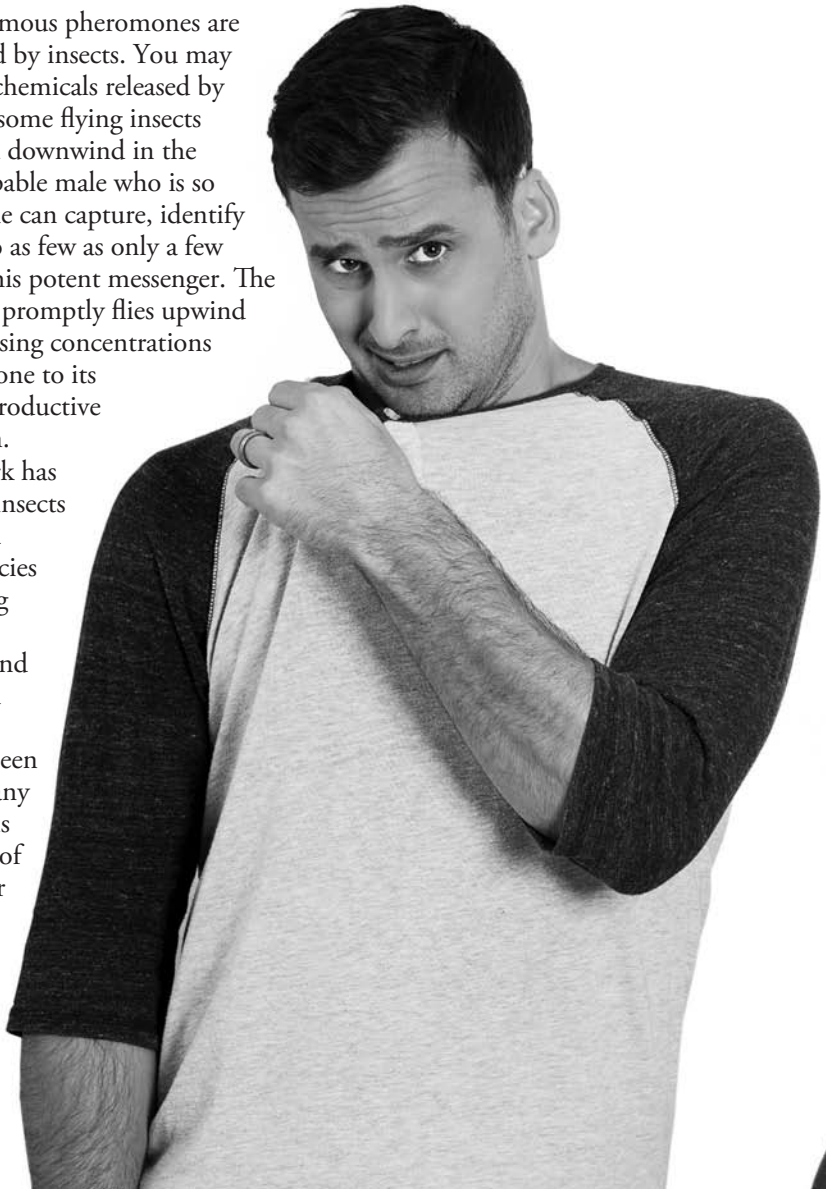
While the more familiar 'hormones' are secreted by one organ to change the activity of another organ in the body, 'pheromones' are secreted by one individual to change the activity of another individual.

Pheromones are produced by males to influence females, by females to influence males, and even by females to influence other females. And it seems that most species of mammals make use of them.

The most famous pheromones are those produced by insects. You may have heard of chemicals released by the females of some flying insects that are wafted downwind in the air to some capable male who is so sensitive that he can capture, identify and respond to as few as only a few molecules of this potent messenger. The receiving male promptly flies upwind through increasing concentrations of the pheromone to its source and reproductive consummation.

A lot of work has been done on insects to lure selected pestilential species into traps using synthesized pheromones, and so protect man and his crops. This goal has been achieved in many species, but this is hardly news of interest to your average reader.

'Female' pheromones communicate fertility to males.



Pheromones are just as important and interesting in mammals.

Those familiar with farmyards may recall seeing a ram or a stallion sniffing around the backsides of his females, who promptly pass a little urine. The male then appears to lick his lips (he actually takes just a few drops of urine onto his tongue), strains his lower jaw forward as if to stretch his neck, and curls his upper lip back while apparently sniffing the air with fast, shallow pants.

This is known as the Flehman response, where the male is vaporising the few drops of the female's urine and directing that odour into a small, specialized upgrowth from the nasal cavity, the Organ of Jacobson (less evocatively referred to as the vomeronasal organ). In this chamber the molecules of odour are concentrated and detected by special receptor cells, and, presuming the indication is right, the male will then mount the female. This is the mechanism by which many of our female farm animals communicate to their mates that they are 'in heat' (oestrus).

The pheromone produced by the female, the pheromone which triggers the mounting behaviour by the male, is only produced during the female's oestrus. Oestrus is the time of her oestrous cycle when she is most likely to conceive, and the only time when she will stand still when a weight (the male) is applied to her back.

> "The dominant males mark their territory with piles of odoriferous faeces at strategic junctions."

COMPETITIVE MAMMALIAN PHEROMONES

Males also use pheromones to communicate their maleness to attract reproductive females and repel possible rival males.

This is the reason for red deer bucks urinating on the backs of their front legs from where the odoriferous urine is wafted to all and sundry.

More familiar to you may be the ritual deposition of carefully measured amounts of strong urine around their territory by our dogs and tom cats. Rabbits live in very tightly controlled communities that make the extremes of either fascism or communism, let alone the Big Brother of 1984, look liberal. The dominant males mark their territory with neat piles of odoriferous faeces deposited at strategic junctions in the warren's network of paths, and the influences of the dominant males and females are so overwhelming that by odour alone they can suppress reproductive activity in the subordinate adults. (So much for the innocence of Watership Down.) And to avoid charges of sexism, the dominant female Mongolian gerbil in a community suppresses the attainment of sexual maturity by other females by the power of her smell.

You may well have observed the purely territorial use of pheromones too. Our pet female cat often rubs her scent onto things - doorways, furniture, etc This is how she warns other cats that this is her territory. (Humans mark their territory, but visually. This is one function served by cave paintings, hanging posters, pictures, etc. Sure they are nice and/or informative to look at, but because they are familiar to us and not others they mark our territory.)

PIG BREEDERS' DISCOVERY

The traditional method for producing baby pigs is to put the boar in with the sow each day after the previous litter has been weaned; when the sow is in heat, they will copulate and conception and pregnancy will follow. There was nothing seen to be wrong with this method, and indeed it was popular with farm-hands since it gave them the chance for a break from their labours (as well as something interesting to watch).

Nevertheless, change was on its way. Scientists and vets had discovered that the attributes of male cattle could be quantitatively measured in such terms of growth rate, carcass quality and milk yield. And from these bulls semen could be collected, with the valuable sperm diluted and stored so that females could be inseminated artificially.

With the ability to regularly collect semen twice or thrice a week and distribute it greatly diluted so that each ejaculation would serve hundreds of cows, an enormous selection pressure could be applied to the bulls by using only a few of the very very best, thereby improving quickly the genetic basis of the animals.

AI was promoted in the pig industry for similar reasons, and even had the advantage that the artificial insemination was technically easier in pigs so that the farmer could carry out this little ritual himself (if you take my meaning) unlike the procedure in cattle where a full-time professional inseminator had to be paid. All that was required was to choose from which prize boar you wanted to order your semen, establish when the sow was 'in heat', insert a rubber, artificial penis in place, connect the container of refrigerated diluted semen to the end, pour it in and hey presto! – one pregnant sow (with any luck).

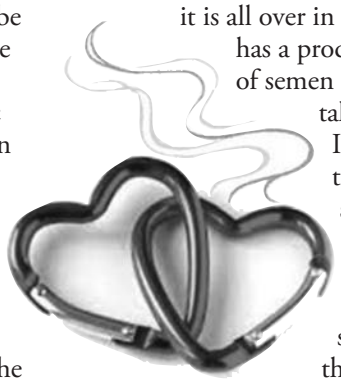
Naturally farmers were sceptical at first, and most kept their boars in

Pig Perfumes for Lonely Hearts

Continued...

reserve, unused but ready, in case the new fashion should fail to live up to expectations. As it happened all went well, with artificial insemination being one of the success stories of modern agriculture. There was even a slightly comic side to the procedure since whether or not a sow was 'in heat' was established by the farmer, or his assistant, sitting on the sow's back.

Ordinarily a sow would be greatly offended and remove the burden in no uncertain manner (this was the comic bit), while a sow that was 'in heat' seemed remarkably indifferent to being mounted and the persistent weight on her back, even planting her legs firmly so as to remain more immobile as she contentedly ate her breakfast with hardly a step to one side or the other to upset her rider (with the right sense of humour and the appropriate ribald comments this could be even funnier).



Once artificial insemination had proved itself the local boar's days were numbered. After all, why bother to feed and care for a very large boar that consumed considerable quantities of valuable feed, produced considerable quantities of unattractive waste, and contributed nothing, when a 'phone call to the local AI centre would be followed by the receipt of a couple of doses of semen from one of the best boars in the country within a day or two?

Also remember that boars (and to a lesser extent sows) are very large, deceptively quick, bad tempered meat-eaters; in other words they are a considerable threat to the farmer, his work-force, his family and any visitors. Soon it was apparent that keeping a boar was dangerous extravagance, and the farmyard boars were dispatched.

Now we come to the problem. With the absence of boars from the farms for some reason it suddenly became quite difficult to detect when a sow was 'in heat'; it seemed that no matter what stage of her reproductive cycle she wouldn't stand still with a weight on her back.

The problem was solved by a French gentleman (JP Signoret). It seems that the boar produces two steroids (androsterone and testosterone) in its testes that are secreted along with its saliva; these steroids are pheromones, and this is the secret.

You see, in most animals copulation is a relatively quick in-and-out operation. Once the female cow, ewe or mare has stood to the male's mounting it is all over in a flash. But the boar has a prodigious 400 to 540mL of semen to transfer, and that takes about ten minutes! It is for this reason that the boar has evolved a screw-like thread to the end of his penis, and the sow has evolved a complementary screw-like thread to the inner lining of her cervix. Consequently, despite the sow's odd step to one side or another to take a tasty morsel of food to chew during the ten-minute orgasm, the penis is held firmly in place with none of the semen wasted.

To further assist the anatomical adaptation the boar and sow are aided by another adaptation by which the ejaculating boar ensured that the female sow would be held stationary.

This mechanism is the hormone and pheromone androstenone, which is contained in the boar's saliva. When the sow smells the boar's androstenone when she is in oestrus - she stands still. There is no doubt about this; she doesn't reflect on whether she feels like at that time, she doesn't ponder how attractive that particular boar is - she just stands still. As long as she smells androstenone and she is in oestrus, the sow stands still to permit the male to commence, continue, and complete his protracted intercourse.

So when farmers test their sows nowadays by sitting on their back to check whether they are in oestrus, first they spray a little androstenone on the sow's snout (marketed in aerosol cans as 'Boar Mate' by Jeyes Animal Health Division). The sow thinks a boar is present, and if in oestrus will stand still to the weight of the pig breeder.

Coincidentally, a steroid very similar to androstenone is produced by the fungal organ truffles. Truffles grow hidden underground, and are typically located using pigs to sniff them out. The link between truffles, androstenone and sexuality probably explains the pig's success in locating these morsels.

HUMAN PHEROMONES?

Will a quick spray from a can of appropriate pheromone have the woman of our choice begging with unbridled lust for our attentions? According to recent advertisements for such products in 'men's magazines' there is no doubt: all our sexual limitations can be overcome with a quick spray.

Quite simply, many pheromones can be considered aphrodisiacs in that they induce sexually receptive behaviour in individuals that would otherwise run away, and surely this is what power- and sex-loving humans have been seeking for centuries. After all, what are perfumes, after-shaves, body lotions, and all the other smellies for if not to change our smell so that others regard us more favourably. For this reason one might think that the perfume industry would be intensely interested in the advances in the scientific understanding of animals pheromones.

Well if so, they weren't too quick off the ground. In 1971 I wrote to some 20 leading perfumers on this subject. Most replied that they had never heard of pheromones; one replied that they were aware of them but had no interest, one suggested that I had mistaken "perfume" for "pheromone" in the telephone yellow pages, and only one knew anything of pheromones helpfully referring me to an article in a recent copy of the perfumer's trade magazine.

That may have been the case then, but whether they realise it or not, one

company at least suggests that it its product has the power of a pheromone. Have you seen the TV advertisements for the female perfume Impulse where the smell is sufficient to induce an attractive male to perform actions (he always seems to steal flowers) that he presumably would not otherwise have done?

This typifies the difference between a 'perfume' and 'pheromone': perfumes are attractive and may make us take more interest in their source, while pheromones are powerful odours that induce a qualitative change in our behaviour or endocrinology, a change that cannot be resisted no matter how bad the headache. Nevertheless, despite the advertisement 'Impulse' is only a perfume.

Meanwhile in rhesus monkeys, research has shown that the frequency of copulation may be directly determined by the quantity of five fatty acids (acetic, proprionic, isobutyric, butyric and isovaleric acids) produced by microbial action on the vaginal secretions. These odoriferous acids apparently enhance the attractiveness of particular female monkeys to male monkeys of the same species. Further, the amounts of these odoriferous fatty acids vary similarly in human females to what they do in the female monkeys.

Unlike with true pheromones, however, where there is no 'all-or-none' effect, there is considerable variation between male rhesus monkeys in the degree of their response to such smells. Furthermore, the status of this finding is made uncertain by the fact that other researchers have had no response from their male monkeys when they've repeated the experiment. And anyway in rhesus monkeys it was the male being attracted to the female. All of this information seems at odds with the often extravagant claims of the pheromone advertisers.

Human sexuality is tremendously variable, with satisfaction obtainable through such diverse routes as masturbation, homosexuality and relationships with inanimate objects and animals. Consequently it's impossible to defend any suggestion that a specific odour is necessary for orgasm by either sex. If such an odour were needed, it would have been noticed many times by many unsatisfied people. And from what is known of animal pheromones, their reactions are invariably specific.

> "No apparent change in the behaviour of students where I have sprayed porcine pheromones."

As well as this humans are notoriously poor smellers, with only a tiny 0.0001 percent of their brain volume devoted to analysing odours, and are certainly devoid of the Organ of Jacobson that seems to be specifically involved in pheromone detection in mammals.

So what is the magic ingredient that pheromone manufacturers are flogging at exorbitant prices to under-achieving males? Some quick research reveals that it's not the fatty acids suggested by the rhesus monkey studies, but a steroid by the name of androstenone. And that's where the pigs come back into the story.

SELLING HUMAN PHEROMONES

"Science discovers the 'secret' to attracting women!"?

So what is this fantastic newly-discovered human pheromone that attracts women irresistibly to any man with a quick spray behind his ears? None other than androstenone. The very same androstenone found in boars' saliva and sold in 'Boar Mate'.

I have never heard of any claim about the effect of androstenone upon humans (other than the claims in capital letters made by the companies selling it). I've never heard of any female farm hands succumbing to unbridled lust after cleaning out the pig sties. I have certainly noticed no apparent change in the behaviour of the many classes of students in which I have sprayed 'human' and 'porcine' pheromones with gay abandon.

The success and variety of circumstances in which humans achieve orgasms suggests pheromones are not necessary nor useful adjuncts. The lack of an Organ of Jacobson in human noses is a strong negative indication. And I am not aware of truffles having a reputation as an aphrodisiac.

For all these reasons, I am not convinced that a can of Aeolus 7 ($27.50 a can) or Attractant 8 ($29.95 a can) will improve my sex life. (See recent issues of men's magazines for the latest prices.) And even if it did, I am sure that 'Boar Mate' with the same ingredient would do it far cheaper.

Before your curiosity leads you to conduct an experiment comparing exposure to different odours, with one being Aeolus 7 or Attractant 8, take a little time to consider what behaviour you will observe.

Consider the consequences of what might be the behaviour of your subjects if 'Aeolus 7' or 'Attractant 8' does work! Maybe this sort of experiment is best performed in the home rather than the office at work!

I strongly suspect that the male pig pheromone has absolutely no effect on humans - male or female - at all. But be warned: the pheromone does have a very real and strong effect on pigs. If you are tempted to try a little spray next Saturday night, make sure that you give farmyards a miss for a few days. Otherwise you might be in for the surprise (and experience) of your life.

CONCLUSION

Science is not just something to study at school and then forget. Your knowledge of science can help you to identify fraudulent claims, and save you embarrassment and money. ■

This Classic Catch article is reprinted from The Skeptic, Vol 15, No1, Autumn 1995.

About the author: At time of writing, **Dr Tony Wheeler** taught science in Central Queensland. His knowledge of pig sexuality astonishes all who know him.

The GUT Check On GUT Loss

The US Federal Trade Commission's guide to spotting false weight loss claims

To make it easier to spot false weight loss representations – what it calls 'gut check' claims – the US Federal Trade Commission has compiled a list of seven statements in advertisements that are likely to be a tip-off to deception. While directed at the media, these observations are equally applicable to general consumers. This article is an edited version of that advice.

INTRODUCTION

Misleading ads for weight loss products target consumers desperate for results. But let's face it, when it comes to dieting, there are no easy answers. If a product promises weight loss without effort and sacrifice, it's bogus.

That doesn't stop some marketers from trying to make a quick buck at consumers' expense. What's more, they often use the reputation of respected media outlets as cover. "It has to be true," consumers conclude. "The ad ran on my favourite channel", or on the radio, in a national magazine, in a local newspaper, or on a trusted website.

The Federal Trade Commission, the US's consumer protection agency, has brought hundreds of cases challenging deceptive weight loss claims and will continue their law enforcement efforts.

Of course, there's no one-size-fits-all way to spot every deceptive weight loss claim, but scientists have established that there are some statements that simply can't be true. In consultation with experts, the FTC has come up with a list of seven representations – we call them 'gut check' claims – that the public should think twice before accepting.

Just because a claim in a weight loss ad isn't a gut check claim doesn't mean it's legitimate. But taking a moment to stop an obviously bogus gut check claim should be standard operating procedure.

For the most part, the examples we're talking about apply to dietary supplements, including herbal remedies, over-the-counter drugs, as well as patches, creams, wraps, and similar products worn on the body or rubbed into the skin.
They don't apply to prescription drugs, meal replacement products, low-calorie foods, surgery, hypnosis, special diets, or exercise equipment.

THE BASICS ABOUT WEIGHT LOSS PRODUCTS

It's the [US] law – and it's always been the law – that before companies can run ads for weight loss products, they need scientific proof to support objective claims their ads make.

False or misleading claims can be conveyed in words and in images. Some brazen scammers just flat-out lie. Others use eye-catching before-and-after pictures. A word about consumer endorsements (sometimes called testimonials): Endorsements from supposedly satisfied customers – *"D.G. lost 38 pounds in just 3 weeks" or "Jane from Springfield dropped 4 dress sizes in 30 days!"* – are a staple of weight loss ads. Too often, advertisers cherry-pick their best cases or even make up bogus endorsements, deceptively conveying to consumers that they'll get similar results. Under the law, advertisers

that choose to use endorsements have two choices: either the results in the ad must be typical of what other consumers can expect to achieve, or the ad must clearly and conspicuously disclose what the typical results are.

Even for the most effective products, services, or programs, weight loss of more than a pound a week over a long period is unusual. As a rule, endorsements from people who claim to have lost an average of two pounds or more per week for a month or more – or endorsements from people who say they lost more than 15 pounds overall – should be accompanied by a disclosure of how much weight consumers typically can expect to lose.

What makes a disclosure "clear and conspicuous"? Simply put, it stands out in an ad. It finds you; you don't have to look for it. In general, disclosures should be:

- close to the claims they relate to – for example, consumer testimonials – and not buried in footnotes or blocks of text people aren't likely to read;
- in a font that's easy to read and at least as large as other fonts the advertiser uses to convey the claim;
- in a shade that stands out against the background;
- for video ads, on the screen long enough to be noticed, read, and understood;
- for video or radio ads, read at a cadence that's easy for consumers to follow; and
- in words consumers will understand.

If disclosures are hard to find, tough to understand, obscured by other elements in the ad, or buried in unrelated details, they don't meet the "clear and conspicuous" standard. Furthermore, it's not enough to say "results not typical" or "your results will vary."

Although the seven gut check claims apply just to dietary supplements, over-the-counter drugs, and products rubbed into the skin or worn on the body, the rules about consumer endorsements apply across the board, including all weight loss products, programs, and services. If an ad features endorsers making weight loss claims that aren't likely to be typical – but there's no disclosure of typical results or the disclosure isn't clear and conspicuous – ask the advertiser to make a good disclosure or show you that the results are typical.

THE 7 GUT CHECK CLAIMS

To make it easier to spot false weight loss representations – the gut check claims – the FTC has compiled a list of seven statements in ads that experts say simply can't be true. If you spot one of these claims in an ad, it's likely to be a tip-off to deception.

By the way, several of the gut check claims refer to "substantial weight loss". This means "a lot of weight" and includes weight loss of a pound a week for more than four weeks or a total weight loss of more than 15 pounds in any time period. But as the examples illustrate, advertisers can convey that "substantial weight loss" message without using specific numbers. Substantial weight loss can be suggested by reference to dress size, inches, or body fat.

If you see one of these seven claims crosses your desk, do a gut check:

1. causes weight loss of two pounds or more a week for a month or more without dieting or exercise;
2. causes substantial weight loss no matter what or how much the consumer eats;
3. causes permanent weight loss even after the consumer stops using product;
4. blocks the absorption of fat or calories to enable consumers to lose substantial weight;
5. safely enables consumers to lose more than three pounds per week for more than four weeks;
6. causes substantial weight loss for all users; or
7. causes substantial weight loss by wearing a product on the body or rubbing it into the skin.

Some gutsy con artists may repeat a gut check claim verbatim. That's a sure sign that false advertising is afoot.

But gut check claims can be conveyed in more subtle ways, too. Knowing you'll be on the look-out for specific false claims, some advertisers are careful not to use the exact wording of gut check claims. Others may try to work in limiting phrases that consumers may not catch. For example, they may claim a product "helps consumers lose substantial weight without diet or exercise" or that people can take off "*up to* three pounds a week for a month or more."

You can outfox the fraudsters by understanding what makes each of those claims bogus. Fine-tuning your falsity detector will make it easier for you to spot deception when marketers try to slip a false claim past you by paraphrasing or using synonyms.

CLAIM #1

Causes weight loss of two pounds or more a week for a month or more without dieting or exercise

Meaningful weight loss requires taking in fewer calories than you use. It's that simple. But it's also that difficult for people trying to shed weight. That means ads promising substantial weight loss without diet or exercise are false. And ads suggesting that users can lose weight fast without changing their lifestyles – even without mentioning a specific amount of weight or length of time – are false, too. Some ads might try a subtler approach, say, by referring to change in dress size or lost inches, but the effect is the same.

> "Fine tuning your falsity detector will make it easier for you to spot deception using synonyms.

That's why these variations on that claim should fail your gut check:

- "I lost 30 pounds in 30 days – and still ate all my favourite foods."
- "Lose up to 2 pounds a day without diet or exercise."
- "Drop four dress sizes in just a month without changing your eating habits or enduring back-breaking trips to the gym."
- "Finally there's FatFoe, an all-natural weight loss compound so

The Gut Check

Continued...

powerful, so effective, so relentless in its awesome attack on bulging fatty deposits that it eliminates the need to diet." (Next to the consumer endorsement, *"I lost 36 pounds in 5 short weeks."*)

CLAIM #2

Causes substantial weight loss no matter what or how much the consumer eats

It's impossible to eat unlimited amounts of food – any kind of food – and still lose weight. It's a matter of science: To lose weight, you have to burn more calories than you take in. To achieve success, dieters have to put the brakes on at the dinner table. If an ad says users can eat any amount of any kind of food they want and still lose weight, the claim is false. That's why these variations on that claim should fail your gut check:

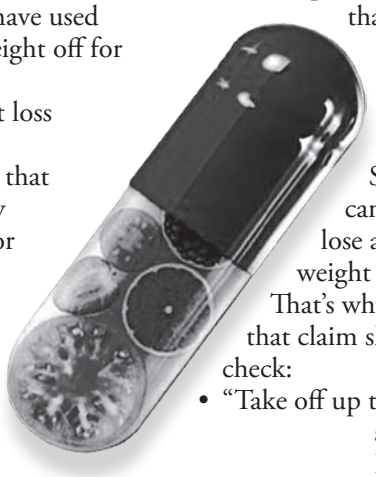
- "Need to lose 20, 30, 40 pounds or more? Eat your fill of all the foods you crave and watch the weight disappear!"
- "Who needs rabbit food? Enjoy any mouth-watering foods you want anytime you want, and blast away dress sizes and belt notches."
- "This revolutionary product lets you enjoy all your favourites – hamburgers, fries, pasta, sausage, and even gooey desserts – and still lose weight. One FatFoe tablet before meals does the work for you and you'll lose all the weight you want."

CLAIM #3

Causes permanent weight loss even after the consumer stops using product

Without long-term lifestyle changes – like continuing to make sensible food choices and upping the activity level – weight loss won't last once consumers stop using the product. Even if dieters succeed in dropping pounds, maintaining weight loss requires lifelong effort. That's why these variations on that claim should fail your gut check:

- "Take it off and keep it off. Kiss dieting goodbye forever."
- "Thousands of people have used FatFoe and kept the weight off for good."
- "It's not another weight loss gimmick. It's a unique metabolism accelerator that changes how your body burns fat. Why settle for temporary weight loss when you can get rid of those flabby thighs and that unsightly muffin top once and for all."
- "No more yo-yo dieting. Eat more. Weigh less. And finally – yes, finally – stay slim for the rest of your life."



> "If an ad says users can eat any amount of any food they want and still lose weight, the claim is false."

CLAIM #4

Blocks the absorption of fat or calories to enable consumers to lose substantial weight

Without lifestyle changes, no over-the-counter product can block enough fat or calories to cause the loss of lots of weight. To work, even legitimate "fat blockers" must be used with a reduced-calorie diet. That's why these variations on that claim should fail your gut check:

- "Super Flablock Formula is an energised enzyme that can absorb up to 900 times its own weight in fat. Relax and enjoy rich favourites like ice cream, butter, and cheese, confident that you'll still blast off up to 5 pounds per week – or more!"
- "Take a StarchBloxIt tablet before meals. It dissolves into a gel that absorbs excess sugars and carbs, preventing them from forming body fat. Eat what you want and still lose weight."
- "Block fat before your body absorbs it. The pounds and inches will melt away."

CLAIM #5

Safely enables consumers to lose more than three pounds per week for more than four weeks

Medical experts agree: Losing more than three pounds a week over multiple weeks can result in gallstones and other health complications. So if an ad says dieters can safely and quickly lose a dramatic amount of weight on their own, it's false. That's why these variations on that claim should fail your gut check:

- "Take off up to 10 pounds a week safely and effectively. Imagine looking into the mirror two months from now and seeing a slim reflection."
- "Even if you have 40, 50, 60 or more pounds to lose, doctors recommend Fat Foe as the no-risk way to blast off the weight and inches in a few short months. Just in time for bikini season or that class reunion."

CLAIM #6

Causes substantial weight loss for all users

People's metabolisms and lifestyles are different. So is how they'll respond to any particular weight loss product. The upshot: No product will cause every user to drop a substantial amount of weight. Any ad that makes a universal promise of success is false. That's why these variations on a claim should fail your gut check:

- "Lose excess body fat. You can't fail because no will power is required."
- "Lose 10-15-20 pounds. Gelaslim works for everyone, no matter how many times you've tried and failed."
- "FatFoe is guaranteed to work for you. Melt away the pounds regardless of your body type or size."
- "Maybe you want to drop a dress size before that get-together next

month or perhaps you need to take off 50 pounds or more. Your search for a weight loss miracle is over. We've found the diet supplement guaranteed to work 100 per cent of the time – regardless of how much you want to lose."

CLAIM #7

Causes substantial weight loss by wearing a product on the body or rubbing it into the skin

Weight loss is an internal metabolic process. Nothing you wear or apply to the skin can cause substantial weight loss. So weight loss claims for patches, creams, lotions, wraps, body belts, earrings and the like are false. There's simply no way products like that can live up to what the ads say. That's why these variations on the claim should fail your gut check:

- "Ancient healers knew that a metabolism-boosting energy current runs from the earlobe to the stomach, making it easy to shed 30, 40, even 50 pounds. That's the secret behind our Dieter's Earrings. Why starve yourself when an attractive piece of fashion jewellery can do the weight loss work for you?"
- "Rub Melt-X Gel into your problem areas and watch the active ingredient penetrate the skin layers to melt fat at the cellular level. Use Melt-X around your mid-section to whittle a contoured, streamlined waist. You'll melt away 20 pounds in just a month."
- "Slink into those skinny jeans in no time. Our patent-pending body wrap will increase the metabolism around your hips to burn fat faster. You'll lose 2-3 pounds per week just by wearing the body wrap while relaxing. Blast off 25 pounds in 8 short weeks." ■

Source: US Federal Trade Commission, Bureau of consumer Protection. http://tinyurl.com/qc52c4d

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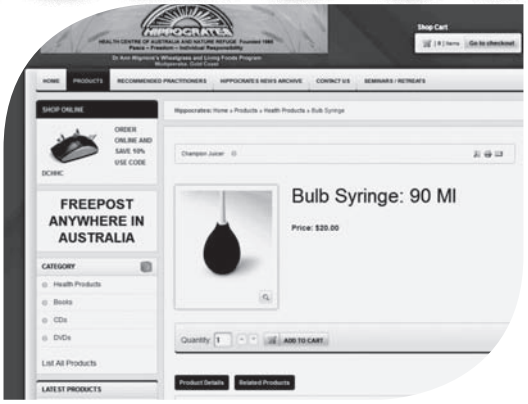


PRIVATE PARTS

A recent complaint to the Therapeutics Goods Administration concerned an internet advertisement published at the website of the Hippocrates Health Centre. The ad had the heading "Vaginal/Rectal Syringe: 90ML", a picture of the syringe (basically a bulb and a tube), and the wording "Vaginal/ Rectal Syringe to insert wheatgrass juice. May be used for vagina or rectum, but not both."

Various sections of the TGA Code prohibit representations that are "likely to arouse unwarranted and unrealistic expectations of product effectiveness", advertisements that are "likely to lead to consumers self-diagnosing or inappropriately treating potentially serious diseases", that "mislead directly or by implication or through emphasis, comparisons, contrasts or omissions", and prohibit advertisements which "abuse the trust or exploit the lack of knowledge of consumers or contain language which could bring about fear or distress".

Accordingly, the TGA ordered that the company withdraw the advertisement from further publication and (among other orders) that it withdraw any representations that the advertised product can be used to insert any substance into either the vagina or the rectum.

But the product is still on sale, with somewhat changed wording: "Bulb Syringe with 90ml capacity. Used to insert liquids into orifices. The Therapeutic Goods Administration have barred us from sharing specific usage procedures with you."

While the fact that they're still selling this product is a worry, you'll be pleased to know that it's "Shipped to you in an unmarked parcel".

The company is also promoting Hippocrates Pure Organic Coconut Oil. This has the pitch that "According to researchers, gum disease in rats is associated with impaired sexual function. And this isn't the first study to find a link. Another found that men who struggle with erectile dysfunction are more likely to have gum disease than those who do not." Coconut oil can also be used as a sexual lubricant, for vaginal dryness and to treat yeast infections. The Hippocratics are obviously very interested in our private parts.

ANSWERING THE DOOR KNOCKERS

A new app with Biblical info at your fingertips has been developed to help those faced with pesky proselytisers.

As the developer describes it: "Bible Basher, Bible Thumper and Bible Puncher are all phrases used to describe individuals, usually religious fundamentalists, who impose their beliefs on others. It's no longer necessary to dismiss those who accost you on the street or whose door knocking disturbs your afternoon sleep simply because you lack the knowledge, ability or readily available material with which to engage them. The means to debate and defeat a Bible Puncher are now available on your Smartphone. Defend yourself! You can now download the app "The Atheist's Ally" and access the most troubling (for a fundamentalist) scriptural contradictions, errors, false prophecies and absurdities, all with chapter and verse references."

He adds, perhaps proudly, that: "The app was rejected by Apple on the grounds that It may cause offence!"

Maybe you need to leave a smartphone by your front door with the app loaded and ready to go.

The app is now available for free from http://tinyurl.com/mx92yw8. ■

The cycle of life

Geese – levitators – apologisers – gold diggers. And so it goes, the almost inevitable realisation that all knowledge is connected and connectable.

THE UNDERWATER GEESE

The barnacle goose *(Branta leucopsis)* was so-named in medieval times because it was thought that they were produced from fir timber tossed along the sea. During growth, they supposedly hung down by their beaks as if they were seaweed attached to the timber. The belief may be related to the fact that the geese were never seen in summer, when they were supposedly developing as barnacles underwater (they were actually breeding in remote Arctic regions). While the legend was widely repeated in medieval texts, it was also criticised by other medieval authors, including Albertus Magnus.

What goes

THE DRUNKEN SAILOR

Yerba Buena Island was rumoured to have the treasure of a lost Spanish galleon buried there. Among the visitors in search of the treasure were two 19th century sailors, William Bernard and a shipmate, "Mr Phelps". They found it deserted except for a small colony of domestic goats. Bernard was a sailor and gold miner, who went to the California gold fields after his unsuccessful search of the island. He returned to Yerba Buena at a later date, and lived there for a time before moving on, again in search of fortune and fame. He was known to be fond of a drink, and became known through a ribald drinking song as "Barnacle Bill the Sailor".

Popeye takes a beating from an eponymous drunken sailor.

THE SAINTLY CITY

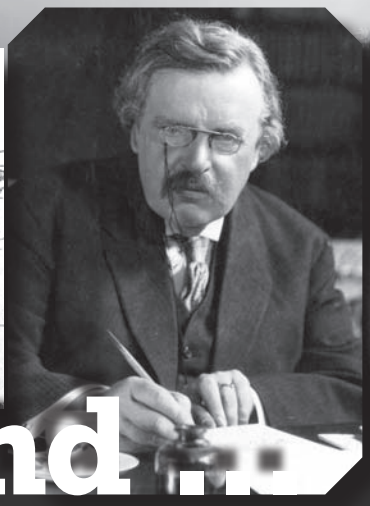
St Francis gave his name to a mission on the west coast of the USA. It was located a few miles from a fort established in 1776 by colonists from Spain at the Golden Gate, at what is now known as San Francisco. At the time of the California Gold Rush of 1849, San Francisco was the largest city on the Coast. Not far from the famous Golden Gate Bridge is the San Francisco-Oakland Bay Bridge (known as the Bay Bridge) which was opened six months earlier than the Golden Gate. The Bay Bridge is in two halves, with Yerba Buena Island forming the midway point. Yerba Buena is the former name of the city of San Francisco.

Source: Wikipedia, except where noted

THE ARISTOTELIAN SAINT

St Albertus Magnus, (1193/1206 – 1280) was a German Dominican friar and Catholic bishop. He was known during his lifetime as *"Doctor Universalis"* and *"Doctor Expertus"*. He has been referred to as the greatest German philosopher and theologian of the Middle Ages. Albertus was principally educated at the University of Padua, where he received instruction in Aristotle's writings. He became a member of the Dominican Order against the wishes of his family, and studied theology at Bologna and elsewhere. In 1245 he went to Paris, received his doctorate and taught for some time as a master of theology. During this time, one of his students was Thomas Aquinas.

Branta leucopsis, no doubt looking for driftwood for breeding purposes.



around ...

THE LEVITATING SAINT

St Thomas Aquinas (1225 – 1274) was an Italian Dominican friar and influential philosopher and theologian, also known as the *"Doctor Angelicus"*, *"Doctor Communis"*, and *"Doctor Universalis"*. He was the foremost classical proponent of natural theology, and believed that truth is to be accepted no matter where it is found. Despite his emphasis on realism, for centuries there were recurring claims that he had the ability to levitate. GK Chesterton wrote that, "His experiences included well-attested cases of levitation in ecstasy; and the Blessed Virgin appeared to him, comforting him with the welcome news that he would never be a Bishop."

THE APOLOGETIC WRITER

Gilbert Keith Chesterton (1874 – 1936) was an English writer, lay theologian, poet, philosopher, dramatist, journalist, orator, literary and art critic, biographer, and Christian apologist. He has been referred to as the "prince of paradox": according to a *Time* magazine review of a biography of Chesterton, "Whenever possible Chesterton made his points with popular sayings, proverbs, allegories—first carefully turning them inside out." He is well known for his fictional priest-detective Father Brown. Among his works are biographies of Thomas Aquinas and Francis of Assisi, the latter described as the best appreciation of Francis's life – "the one that gets to the heart of the matter".

St Thomas Aquinas, getting a lift thanks to GK Chesterton (above left)

North coast woo

In which is discussed esoteric breast massage, ovarian readings and mystical nonsense

As a perennial skeptic I cling tenaciously to the arid rock face of reality. My main purchase is provided by experience, knowledge and fantastic articles such as "Too Much Trouble" by Nik Bogduk [*The Skeptic,* 34:2, p18].

Sadly, all too often an exponent of woo will happen by to rain rocks and debris of ignorance upon me, threatening to knock me into the dark abyss of mind numbing stupidity.

Just such an event occurred on the weekend of June 22, 2014, in the form of a Special Report in the Sunday Telegraph, written by Jane Hansen. If the report is true, the possibly delusional and the gullible have arrived at the one place - Wollongbar in Northern New South Wales.

According to the report, situated in Wollongbar is the College of Universal Medicine (CoUM). CoUM is run by a new age healer, Serge Benhayon who offers 'esoteric' breast and ovary massage. Serge also believes he is the reincarnation of Leonardo Da Vinci. He is a former tennis coach and has no medical training. Benhayon is a 50-year-old father of four who decided to become a healer after receiving an 'energetic impress'. He urges followers to avoid negative energy from cheese, alcohol and tampons. Benhayon claims esoteric breast massage can assist to heal many issues such as painful periods, polycystic ovaries, bloating, endometriosis and menopausal symptoms.

With family members also working as healers he said "In 2012 CoUM turned over $2.0 million a year in treatments in Byron Bay, Lismore, Brisbane, Vietnam and England".

Benhayon applied for and was granted a charity licence for CoUM in July 2012, but he has also been accused of and is under investigation for breaching charity laws.

A Mr Martin has made claims that CoUM has breached charity laws and also claims CoUM was responsible for breaking up his marriage, and knows of 40 other marriage breakups due to CoUM.

Jane Hansen also cited the claims of Ms Rockett who attended four healing sessions. At the last session Benhayon suggested an ovarian reading. While inferring it would be a psychic reading, he laid his hands on her lower abdomen. Rockett said she considered him sleazy and felt she was being groomed. She reported the incident to the Health Care Complaints Committee (HCCC).

I looked up the CoUM website (www.coum.org) and asked for a reference source for Ancient Wisdom. Their welcome message, while not saying a lot, tells you what you can expect at the establishment, as follows:

"The College of Universal Medicine is a charitable educational institution that was established in 2011, and is dedicated to promoting true health and well-being based on the teachings of the Ageless Wisdom through advanced education in the aforesaid, by founding a metaphysical school and conducting workshops, lectures and courses and an extensive publishing program.

"The Ageless Wisdom has always been available to humanity and is presented to these times by Serge Benhayon who stands in an ancient lineage of living wisdom that serves the progress of unity and equality in mankind and offers humanity a new and true way of living.

"The College of Universal Medicine is dedicated to serving its charitable objects."

There is much more to see at the web site but little of it makes me think CoUM is the place to go for evidence-based anything.

At the time of writing, CoUM could provide no scientific reference to Ageless Wisdom. However the website of Michael Benner, a radio host in Southern California, provides the following definition: "The Ageless Wisdom is a non-religious approach to spirituality, the nature of the soul, and the development of consciousness. Also known as the Perennial Philosophy, Esoteric Philosophy, Mysticism and prisca theologia, the Wisdom is a consensus from all cultures and all times about the spiritual reality of our lives as human Souls incarnate.

"From ancient times the wisdom always has been known, yet hidden, veiled and secretly whispered from lip to ear only to the most worthy. To avoid persecution by the church-state, the great mystery schools were invisible colleges - a reference to the spiritual nature of the information as well as its hidden traditions, rules, principles and ceremonies."

And on it goes for another two paragraphs and then the explanation is in précis form as follows: "The Ageless Wisdom is metaphysical in its recognition of Consciousness as the spiritual Force behind all physical form. [It] is mystical in its emphasis on the spiritual path of self-initiated self-realisation - largely free of ego based masters and dogmatic religious doctrine. [It] is magical in its ability to manifest and refine form. [It] is contemplative in its approach to God-absolute

via feeling beyond thought, emotion or physical sensation."

I must say we live in an age where so much knowledge has never been so freely available to so many. Where so many huge advances have been made in medicine and evidence-based care, which are also available to just about everyone. How can the notion of Ageless Wisdom grow in such an environment?

Tony Barnett
Oakdale NSW

Make 'em laugh

In which is discussed humour, a few one liners and how to amuse anti-vaxxers

Does humour have a place in skepticism? I think it does.

Edward De Bono – he of lateral thinking and the hats - once described humour as a classic example of the art of lateral thinking. He described humour as like water running down a path, suddenly hitting an obstacle and veering off in another direction. This is how humour works. We travel down one path thinking we are going in one direction and suddenly we are diverted elsewhere. A different meaning of a key word has been used, or the man walking down the street minding his own business suddenly slips on a banana skin. Somehow we have been diverted from the path that we thought we were travelling and the surprise value is humour. In fact if you could draw humour, I think that it would look like a right angle.

I would expect (well, hope) that lateral thinking is a tool in the skeptic's box, as it is used to create a solution to a given problem. (I would also hope that skeptics do not spend all their time on analysis and little on problem solving and solutions.) Lateral thinking enables us to look at a situation from a different angle. Humour uses lateral thinking to create a funny outcome for a story, joke, anecdote or one-liner.

The anti-vaccination lobby has recently used just such lateral thinking and come up with a creative solution in deciding on a new name. They are now the Australian Vaccination Skeptics Network. How is this for a poke in the eye for the Skeptics, to take our name and use it against us?

Humour is also a great tool if you want people to listen to you, especially if they are not open to your point of view or you are not certain where they stand. Let's say you are speaking to a group from the AVsN. Your natural instinct is to rip into them for their ignorance, but this is going to do nothing but give you a warm fuzzy and will not change the status quo. You will be as far apart at the end of this interaction as you were at the beginning, so why bother?

You could start off with a humorous opening by saying something like "I now know how Daniel felt when he entered the lion's den." or "I feel like a mosquito in a nudist colony; where do I begin?" or "I wish that I had something easy to discuss, like the national debt."

The small laugh you receive will ease the tension and get them prepared to listen.

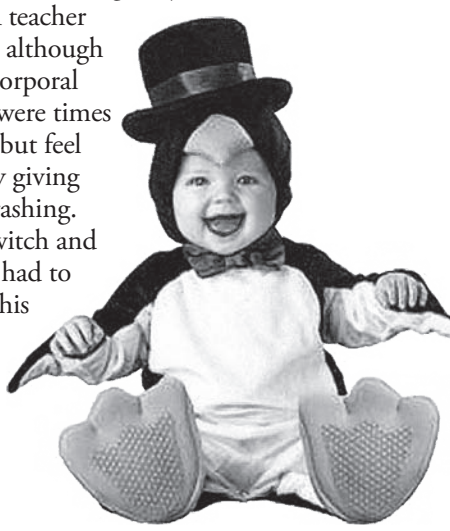
What about a few vaccination jokes to 'inject' some humour into your presentation? The internet and old joke books are ideal for this material.

For example, "A little girl was terrified at her first vaccination. 'No, no, no!' she screamed at the doctor. 'That is not very polite' the doctor replied. 'No thank you, no thank you, no thank you' the girl screamed."

"A doctor was giving a man an injection. 'Can you scream as loud as you can when I give you this?' he asked. 'Why?' asked the surprised man. 'I have a waiting room of patients, and I want to get away early for the football match'."

Look for jokes that are portable. Just because a joke is on one subject does not mean that it might not be adapted to suit your purpose; in this case, injections.

For instance, there's the original joke or humorous story: "A teacher once remarked that although he disapproved of corporal punishment, there were times when he could not but feel that he would enjoy giving some students a thrashing. He felt his hands twitch and his fingers itch and had to firmly put them in his pocket."



This could be altered to something like: "I guess that there are

some doctors who enjoy giving some patients an injection. Be nice to your doctor and make sure that this person is not you!"

Maybe you have seen some cartoons that, if not about the topic under discussion, could be adapted?

"I once saw a cartoon that showed a church confessional with three doors, labelled Mortal, Venial and Cardinal."

Perhaps this could be adapted to become: "A doctor's surgery showing two doors for injections. One door labelled cheap and painful and the other expensive and painless."

How about any anecdotes that might be useful? My father recalled: "During World War two being given their vaccinations before being sent for overseas service. The troops received every vaccination for the tropics known at that time. They were then sent home for pre-embarkation leave, which of course they spent in bed. However sadly, this was not spent with the wife or girlfriend they were about to leave and might never see again, but as sick as a dog. When they complained on return from leave they were told by the Sergeant-Major, 'If the army wants you to be sick as a dog on pre-embarkation leave, you will be as sick as a dog. There is a war on, you know.'"

Be prepared to have a few one-liners ready to deal with hecklers, or if something goes awry during your presentation.

For example, if the audience does not laugh at your witticisms (unlikely): "You are going to hate yourself in the middle of the night when you wake up and get this joke." Or simply crumple a piece of paper up into a little ball and throw it over your shoulder with a grimace (an oldie but a goodie).

Dealing with a heckler may well happen if you are speaking to a group opposed to your point of view. I am not a great exponent of the use of put-downs, but they are sometimes required when someone tries to shout you down. Most hecklers will bail out if the audience starts laughing and this is what you need in this situation.

"I would like to help you out sir/madam. Which way did you come in?"

"Listen, if I want a character assassination I will ask my teenage kids/my mother-in-law."

Alright, a lot of the above humour might be viewed as corny. But a lot of humour is corny if you examine it forensically. But used with confidence like a professional comedian, it will be successful.

The idea of using humour when talking about an issue is not to have the audience thigh-slapping, belly-laughing and rolling in the aisles. It should be gently blended into the material to give it some lightness and the listeners an investment in listening to you. By listening, they might even concur with your point of view.

There are more techniques you can employ when using humour in a presentation. There are those for developing original jokes, joke toppers and one liners; there are tips on how to present humorous material – to name but a few.

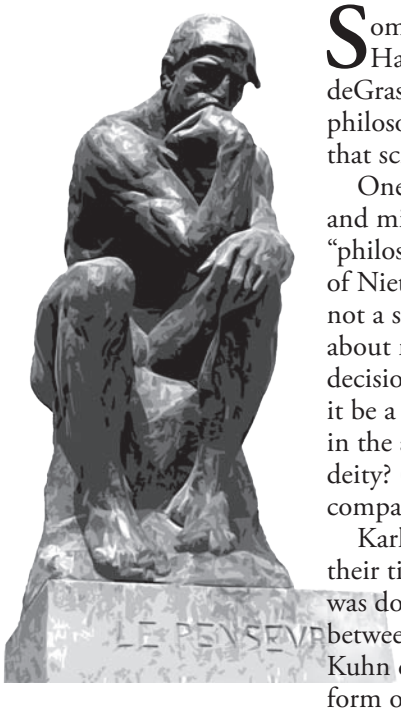
By using humour you may persuade the AVsN or the Flat Earthers of the error of their ways. Well pigs might fly too. However, at least you are unlikely to end up in a verbal altercation and maybe some of them might consider your point of view. Surely this has to be a plus for all concerned.

Alison White
Falcon WA

Alison White is the author of "LOL (Laugh Out Loud) the Science and Art of Humour"

Thinking about skeptics

In which is discussed philosophy, science, moral decisions and railway tracks



Some prominent scientists such as Stephen Hawking, Lawrence Krauss, and Neil deGrasse Tyson have recently declared that philosophy is dead and that it provides nothing that scientists need to know or worry about.

One problem is that people misunderstand and misquote philosophers. I used the expression "philosophy is dead", which might remind people of Nietzsche saying "God is dead". This was not a statement of atheism, it was a statement about morality: as people tended to base moral decisions on the teachings of religions, would it be a problem to establish a moral framework in the absence of directions from some assumed deity? (The perennial "Atheists have no moral compass" and "Good without God" arguments.)

Karl Popper didn't say that scientists spend their time trying to falsify what everyone else was doing, he was talking about the demarcation between science and pseudoscience. Thomas Kuhn didn't say that science progresses like a form of punctuated equilibrium with revolutions occasionally throwing over the consensus and totally new theories replacing old ones; he was saying that even well-accepted theories might not explain everything and there can come a time when the unexplained anomalies reach a mass where a different explanation is required.

I'm going to stick with Nietzsche and look at the moral framework of science, that is, how questions in moral philosophy affect the way science is done.

I've often been told that science is amoral and disinterested – that is, that science can't take any moral position, it is what it is and practitioners have to go where the science takes them, leaving it up to others to decide on what is right or wrong. This might sound like an extreme position, but I've had it put to me – research goes where it goes and that is all that matters to a scientist. Note that I'm not talking about the ethics of the way research is done, just what the results are used for afterwards.

A few years ago I read an interview with someone who had worked on the development of the hydrogen bomb. (Edward Teller held the view I referred to above – the science that produced the weapons could not be held responsible for the results of using the weapons. Robert Oppenheimer, on the other hand, wanted senior Japanese politicians and military figures to be invited to witness the first atomic bomb test to frighten them into surrender before it became necessary to destroy any cities.) I know that people working on military weapons must know what they are used for (someone invented napalm), but the point I'm making here is about the level of detachment.

The person being interviewed was concerned, because most of the early researchers had seen above-ground nuclear tests and rightly held the view that the use of the weapons should be avoided. Above-ground testing finished in the 1960s (except for France and China) and all testing by major powers ceased in 1996. India and Pakistan conducted tests up until 1998, and North Korea did a test in 2013 (but nobody has access to any data from the test), so the current crop of researchers had either only worked with data from underground testing where the instrumentation was destroyed within milliseconds of the explosion or, in the case of younger researchers, had only worked with computer simulations. It was all good physics and good fun to these people, because they were totally detached from any concept of the results of their work.

For an example of detachment outside science, consider Adolph Eichmann. Here was a man who was just doing his job. He had no particular hatred for Jews, he never saw a concentration camp, he never saw a train being loaded, he never killed anyone or asked anyone else to kill for him – he just did his job of arranging trains and timetables so that millions of people could be efficiently transported to their deaths. At his trial, he continually maintained that he had done nothing wrong, and the bad results of his excellent work were the fault of others and of no concern to him. It's why Hannah Arendt chose the word "banality" to describe him.

The British philosopher Philippa Foot came up with a thought experiment which many of you will be familiar with. The situation is a tram track with five workers on it. A tram is approaching at a speed which means that it can't stop before reaching the workers and they don't have time to get out of its way. Between the tram and the workers is a set of points that can be used to divert the tram to another track where there is only one worker. Should you throw the switch, knowing that you will inevitably kill one person

but save the lives of five? When tested on this most people say "Yes", but I suspect that given the situation in real life most of us would do nothing, paralysed by indecision.

An American philosopher, Judith Jarvis Thomson, came up with a variation on Foot's experiment. In this case the track is straight with no fork, but you are on a bridge between the tram and the workers. There is a very fat man on the bridge and if you push him off in front of the tram it will slow it enough for the workers to escape death. Again you have sacrificed one to save five. Most people say that they wouldn't do it, even when it is suggested that they just pull a lever to drop the fat man through a trapdoor. It's now too personal. (Thomson's paper was published in 1976. You will be pleased to find that it hadn't been written before 1945 when the name "Fat Man" was chosen as the name for the atomic bomb dropped on Nagasaki. That would not have been banal evil; it would have been cynicism of almost unimaginable dimensions.)

Here's a third hypothetical, modified slightly from another scenario by Thomson.

There are five patients waiting for organ transplants in the hospital. None are expected to survive beyond two weeks unless donors can be found. A fit, relatively young man is brought into the ED with severe head injuries after an accident. He is otherwise in perfect health, but he is put into an induced coma and there is no way of knowing when or if he will recover. He is also a tissue match for all the people waiting for organs. Should he be allowed to die so that his heart, lungs, kidneys, liver, and pancreas can be used to save five lives? Almost nobody answers "Yes" to this.

Note that in none of these thought experiments are there any details of the people involved. Sometime you might see these questions with details such as choosing between relatives and strangers, or good people and bad people, or people tied up who can't escape. I have deliberately left all that out. It's a simple question – kill (or allow to die) a small number to save a large number or not?

And now the hypothetical situation I want you to put yourself in.

Let's imagine that you are working in medical research and you come up with cures for two forms of cancer. Both show 90 per cent cure rates in early investigations even when all other treatments have failed, neither have any unacceptable side effects, each will require about a billion dollars to bring to market (research, clinical trials, promotion, manufacturing and distribution setup, etc), and each will have five years of patent protection after release to the market.

One treats a type of cancer (A) for which the only cure is massive surgery that leaves the patient crippled in a wheelchair, attached to colostomy bags, on a restricted diet and requiring constant attention. Life is generally extended by no more than two years. Without treatment median time between diagnosis and death is ten months, mean time is 13 months, and the death is very painful with the patient being incapacitated for the last few months of life. The other one (B) kills relatively slowly, can be detected early, and can be successfully treated with a variety of means including radiotherapy and various levels of surgery. But even with the most drastic surgery, patients with cancer B can live an almost normal life afterwards. About ten percent of the people with this cancer die from it.

Any split of the billion dollars would result in neither getting enough to do the job properly. You have to decide which one to pursue and which to abandon.

Disease	Cancer A	Cancer B
Cases per year	1000	1,000,000
Deaths per year	100	100,000
Lives saved	900	90,000
Price to each patient for 5 year cost recovery	$200,000	$200*

** If given to all patients; $2,000 if only given to recalcitrant cases.*

It's pretty obvious what the decision would be, and remember this is not a decision forced on the researchers from bean counters above. The decision to proceed with either option is to be made by the scientists at laboratory level.

Three questions:

- Do you really think you can detach your work from the use to which it is put?
- How does this differ from throwing the fat man under the tram?
- Your daughter is diagnosed with Cancer A. How do you explain your decision to her? Think about it.

Peter Bowditch,
Wentworth Falls NSW

What you think ...

Randi and Faith

Your article "Alone at the Movies" [*The Skeptic*, 34:2, mentions the movie *Leap of Faith*, which is based directly on my book *The Faith Healers* (1987). But though the film even uses entire quotations of dialogue I cited in my book, no credit or mention is given to me or the book.

A magician acquaintance of mine who is a friend of Steve Martin, I suspect, gave a copy of the book to Martin or to one of his writers.

Of course, it's very evident that the ridiculous ending that you mention was a confusing last-minute change insisted on by the studio, since no movie is acceptable without sufficient woo-woo included.

I've rankled over this for years, especially since the magician involved has now severed contact with me.

Thought you should know.

Randi
Fort Lauderdale, Florida USA

Animal Welfare

I have a couple of comments about Tim Harding's generally informative article about animals ["Creature Features, *The Skeptic,* 34:2, 36]. I would differ only in that there are alternatives to adopting or euthanising stray cats. For one thing, many feral cats are unadoptable because they were born in feral conditions. Organisations such as Alley Cat Allies (http://www.alleycatallies.org/) have sprung up to avoid the senseless euthanisation of otherwise healthy cats. Feral cats are trapped, neutered to prevent the colony from perpetuating, and released if unadoptable. Kittens which can be socialised, are put up for adoption.

Regarding fishing, I would only add that stocks of ocean fish are becoming rapidly depleted as world population grows and fishing technology becomes more capable of collecting huge numbers of fish in larger and larger nets.

Gary Goldberg
Silver Spring, Maryland USA

Forteans & dogs

Firstly, let me say that as a *Fortean Times* subscriber, I am pleased to see the generally positive review of *Fortean Times* in the June 2014 issue ["Them", *The Skeptic*, 34:2 p12]. I have long been of the view that it serves to inform a truly sceptical agenda by letting you know what's up on the other side of a broad range of issues that scepticism might be applied to. Scepticism about perceived reality is also an important and necessary scepticism.

However, I am deeply disappointed to see an 'own goal' perpetuated in Myth #2 of "Creature Features" of this issue.

As a person raised by two Basenjis, I'm appalled to see the half truth repeated.

Genetic data actually demonstrates that Northern Hemisphere Grey Wolves and domesticated dogs are descended from a common ancestor/gene pool. This is usually incorrectly rendered as "dogs are descended from wolves", which is incorrect.

It would be more correct to say that the ancestor of domestic dogs (and dingoes), the pariah dogs from the Middle East to India and the Indian White Wolf, are all part of a gene pool, of which the European and North American Wolf is an outlier. In other words, the dog, like agriculture etc, was acquired independent of interaction with the wolf.

Before there were European recognised breeds of dog, humans interacted with a range of 'dogs' from the African Basenjis to the North Korean Dingo-like wild dog.

It is my belief that the true age of domestication of the dog can be found indirectly, not from human/dog burials, but from the fact that there is a time when early Europeans stopped having to dispose of offal, bones, etc by dumping them way out the back of inhabited caves. I believe that the primary role of the nearly domesticated dogs was to take away this unpleasant-to-be-around rubbish, a role which you can see to this day in parts of Asia and America, where there are Dingo-looking canids which are tolerated to live around the place, eating scraps and vermin, being trusted not to bite your children.

Garry P Dalrymple
Earlwood NSW

I used to be like you ...

I really enjoyed Barry Williams' piece in the last Skeptic on pseudoscience on 'pseudophrases' ["Terms of Your Natural Life", *The Skeptic*, 34:2, p22]. One of the phrases, "I used to be a skeptic", brought back a buried memory.

Way, way back in the 1980s, when Joh Bjelke-Petersen ruled Queensland, I made the acquaintance of an evangelical Christian. I think he was in the Assembly of God. One day, he asked if he could 'witness' to me. I thought it might be interesting, agreed, and sat back to hear what he had to say.

His first words were, "Martin, a year ago I was just like you ...".

Something went click in my mind, and a number of thoughts appeared, all jumbled together. Sorted out – which took several days – they went like this:

(a) How can this bloke say he was just like me when we hardly know each other? That's rubbish!

(b) The only way we are alike is that I don't belong to his church, and a year ago he did not belong*. That is ridiculous.
(c) His thinking is hopelessly muddled and he has no idea about evidence.
(d) This is very likely to be a waste of time.
(e) I want this to stop!

The last thought predominated. A few seconds later I stopped him, said that I was glad he had found what he wanted and that the conversation was over. He seemed a bit stunned, but that was all. We parted politely and never spoke again.

Now maybe this bloke would have unveiled the wisdom of the ages to me later in his talk, but I don't regret what I did. We all have to decide how to spend our time, and what to focus on in our lives. And if the first sentence is nonsense, the case for going on listening seems a very poor one.

Martin Bridgstock
Griffith Uni, Nathan QLD

**Apart from things which are so obvious as to be unworthy of mention, such as that we were both human, male, in Brisbane and so on.*

Sycophantic Drivel

Tell me if I've got this right: doctors are prescribing neuroleptics to children as young as 4 for "behavioural issues", depression rates have tripled since the introduction and overprescribing of antidepressants, the journals that doctors rely on for unbiased information admit they could not survive if it wasn't for drug company sponsorship, and you guys think that homeopathy is the problem?

I'm just asking is all because frankly I'm baffled. I can't imagine why you think that pretending to cure people with a bit of harmless "magic" water is worse than pretending to cure people with dangerous drugs which are probably not safe even in the short term, but certainly cause damage and drug dependency in the long term. You sound more like establishment toadies than skeptics. And if you truly believe that your brand of skepticism is going to preserve "the very basis of civilisation" as Bridgstock writes in Vol32 No2 p17 ["Bad Science – the New Battlefield"], you are deeply disturbed.

And how about you have the guts to print this letter instead of the usual sycophantic drivel you normally publish?

Duncan Hackett
Elizabeth North SA

Piscean Pain

By coincidence, I had been drafting an article to submit to your journal titled "Do fish feel pain?" when I received the June 2014 volume of *The Skeptic*, in which Tim Harding mentions this very topic[1]. I intend to submit my article in due course, but in the mean time, allow me to expand a little on Tim's contribution.

Firstly, we need to understand what we mean by the words "feel" and "pain". To physically "feel" something is to register, in the central nervous system (CNS), a sensation such as touch, pressure, pain, temperature, vibration, etc. This has nothing to do with "emotional" feelings such as fear, terror, anxiety, suffering etc.

"Pain" is a noxious sensation that warns us of a danger to the integrity or stability of our body. It is a primitive sensation which has evolved from very basic avoidance systems seen in even unicellular organisms. In our even more highly developed systems, we have specific detectors for all sensory input. In the case of pain, stimulation of nociceptors, bare nerve endings, and severed or disrupted nerve fibres can send electrical impulses back from the periphery via sensory nerves to the CNS (brain and spinal cord). These messages 'inform' us that something is going wrong. Our body will then respond by taking avoidance measures such as removing our hand from the hotplate or kicking our leg to remove or get away from the source of danger.

This initial response is an entirely involuntary reflex. The sensory nerve inputs to the spinal cord synapse with motor nerves going back to our muscles, stimulating them to contract and remove us from the noxious stimulus. This is the basis of the 'knee jerk', where tapping the patellar tendon stretches it, threatening its disruption, and the leg muscles contract in response, causing the knee to jerk.

We also see this type of activity clearly demonstrated in biology classes with pithed (dead) toads, proving that the brain is not necessary to produce this reflex. And, of course, this also happens to fish.

Now, at the same time that this reflex activity is occurring, the sensory impulse is transmitted further up the spinal cord to the brain. In higher animals, such as mammals, including ourselves, more recently evolved parts of our brains (the neocortex) integrate this message with other brain centres such as those controlling memory, emotion, and other 'association areas', and bring into play anticipation and consciousness, which can now bring about the emotional feelings of fear and suffering.

But fish are quite primitive animals, and fish brains do not have a neocortex. So there is no such central integration of noxious stimuli. We might see a fish at the end of a line seemingly "struggling to free itself", but that is not what it's actually doing. We must not anthropomorphise. The fish's activity is entirely involuntary. Its muscle contractions are caused by continued stimuli from the hook in its mouth reflexively returning to its muscles causing them to contract. And when it wriggles, it re-stimulates its nociceptors and the cycle repeats itself. The fish is not 'aware' of what's happening, and it is not "trying" to escape. It cannot consciously "choose" to throw the hook.

It cannot "choose" to fight. And it is not "suffering".

When I cut out a mole or skin cancer under local anaesthetic (LA), the patient feels me cutting and pulling – the touch and pressure of the procedure – but there is no suffering because the LA blocks the pain impulses from reading the neocortex. The fish has no neocortex. So, yes, it 'feels' the pain, ie a sensation is registered in its CNS indicating the presence of a noxious stimulus. But the fish does not 'suffer'; it feels no anxiety, fear, or other emotional response. To attribute suffering to the fish is purely and simply anthropomorphising.

Furthermore, stress hormones are a poor indication of pain and suffering. They are neither qualitatively nor quantitatively linked to the degree of mental anguish experienced. These hormones such as adrenaline and cortisol are released when the sensation of pain is registered in order to prepare the body for the "fight or flight" response.

They are in no way indications of the degree of pain or suffering. They, in fact, probably decrease the amount of pain and suffering registered.

In times of war, soldiers have received devastating injuries and their stress hormone levels would have increased markedly, yet they have ignored their wounds and continued fighting, and performed heroic deeds without suffering or, apparently, feeling pain. Their stress hormone levels become very highly elevated, yet there is no suffering.

Just yesterday I saw a television news report[2] interviewing a shark attack victim who stated he felt no pain until he reached the shore and then saw the bleeding wound to his leg. It was no small injury, requiring 27 stitches[3].

So, again, fish 'feel' pain in its simplest, most basic sense. But as they have no neocortex, we can be sure that there is no higher emotional mental anguish such as fear or suffering, and we are purely anthropomorphising to ascribe our own feelings to them.

Alan Moskwa
Joslin SA

REFERENCES

1. **Harding, T** (2014) "Creature Features." *The Skeptic* 34:2, pp36-39.
2. News report (2014) Adelaide 9 News. Aired 9 June 2014.
3. **Robertson, D** (2014) "I couldn't feel anything at first. I was in shock." *The Advertiser*, Adelaide, 20 June 2014, p3.

Research Funding

After seeing articles comparing climate skeptics to anti-vaccinationists and intelligent design advocates, and declaring that such skepticism is a mental condition, I should be accustomed to the insults associated with climate nay-saying. But it is a little difficult to take when this esteemed journal gives space and apparent credence to the thesis of Naomi Oreskes and Erik M Conway that there are parallels between scientific resistance to the link between cigarette smoking and cancer, and climate skepticism. ["Bad Science – the New Battlefield", *The Skeptic*, 34:2, p14]

Professor Oreskes, an otherwise distinguished US science historian, and author Mr Conway concoct this insult in their 2010 book *Merchants of Doubt* which is supposed to show that the scientific resistance to all the feel good causes of the past few decades, acid rain and nuclear winter through to climate change, is due to a small number of scientists funded by "right wind think tanks" (a phrase repeated often in the books).

But do Oreskes and Conway present any real evidence of these dark and sinister forces? They mention a handful of scientists who have been in these debates, only one of which I had heard of before, the now elderly Professor Fred Singer. The nature of their scholarship can be seen more clearly in the chapter on global warming (each cause gets a separate chapter) in which they barely mention the real leader of the skeptics, Professor Richard Lindzen, and do not mention at all prominent figures such as Professors William Grey and Roger Pielke Jr, or Roy W. Spencer at the University of Alabama to name a few in the US market, possibly because they are unable to identify any "links" between those figures and right wing think tanks or funding from equally evil energy companies.

They complain that the apparently deep public skepticism about global warming is due to the activities of these skeptical scientists, but fail to mention 'climategate' and the notorious "hide the decline" remarks, although this occurred well before the book was released, or the repeated, wild overselling of the climate disaster message by scientists and activists over decades.

As for the funding, among the very few figures cited by Oreskes and Conway is that "over several years" Exxon Mobil distributed US$8 million (perhaps US$2 million a year) to 40 different organisations challenging the global warming orthodoxy. Excuse me? While billions of dollars (literally) flooded into climate change activism and research and scores of non-government organisations were screaming about global warming during that same period some skeptical organisations got a few dollars each, as part of Exxon-Mobile's stock-standard corporate grants program? It's hard to believe anyone takes this nonsense seriously, but it seems even skeptics will believe anything.

Mark Lawson
Hornsby Heights NSW

Anyone who uses the term "climate change denier" has turned off their skeptical brain. The word "denier" belongs to ideology and religious fanaticism. It prevents rational discussion.

This term appears in "Bad Science – the New Battlefield" by Martin Bridgstock, where Bridgstock spruiks a paper, *Merchants of Doubt* by Naomi Oreskes and Erik Conway. Oreskes and Conway liken the egregious behaviour of scientists working for tobacco companies

in the 1950s to 'climate change deniers'.

Bridgstock doesn't say what he means by the term 'climate change denier'. This is critical as the term has been applied to people as diverse as those who say God wouldn't allow it to those who disagreed with the Minister for Climate Change in the Rudd government. Also dismissed as 'deniers' are scientists who question catastrophic anthropogenic global warming (CAGW) – model-based prediction made by a small group of climate modelers. These questioners base their arguments on existing understanding and contemporary observations, in other words, data. From the tone of his article, I infer that these questioning scientists are Bridgstock's villains.

Bridgstock reports favourably on the argument in *Merchants of Doubt* that, just as Big Tobacco subverted science in their own interest, business firms fund research to throw doubt on catastrophic anthropogenic global warming (although the authors don't call it that). Since they say that the tobacco companies knew that their product was harmful, making parallel with (un-named) business firms investigating a new orthodoxy – one supported by modeling, not data - is unreasonable.

They warn that a scientist's source of funding skews research results.

Let's take this warning seriously. What are the main sources of funding for investigation into the effects of the increasing amount of carbon dioxide in the atmosphere, especially that caused by human activity? The United Nations would figure large through their funding of the Intergovernmental Panel for Climate Change, as would funding from various governments.

An Australian skeptic would ask: when seeking research funds, did scientists feel that they needed to produce results that agreed with the previous government's assertion that climate change is the biggest moral challenge of our time? An Australian skeptic would seek out the scientists who lost their jobs because they disagreed with the prevailing orthodoxy. Then this skeptic would read their publications to discover their data and their reasoning.

Calling people 'deniers' prevents such examination of evidence. Science continually seeks for new evidence. Richard Feynman puts it this way: "Science is the organized skepticism in the reliability of expert opinion."

Margaret Graetz
Hackett ACT

[Editor's note: The letters have been edited to reflect the decision taken earlier to limit publication of discussion re climate change – see Vol 33:1, March 2013, p54 for the reasons. for this decision. As edited, they now concentrate on the issue of funding for climate change research in response to such claims made in the book Merchants of Doubt, and not on the arguments pro or con re climate change per se.]

CRYPTIC CROSSWORD SOLUTION

DR BOB'S QUIZ SOLUTIONS

1. There are no Old Testament names starting with F.
2. It is forbidden (by the Antarctic Treaty, no less) to have naked flames at the South Pole.
3. Tap water, if properly (or naturally) fluoridated
4. "I have a dream."
5. Ote Mon (Main Gate), Akazu No Mon (Unopened Gate), and Rokujuu-ichi Gangi Ue Mon (Gate At The Top Of The Sixty One Zigzag Steps). "This gate is so called", says the guidebook, "because …"

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

Ballarat Skeptics
Meets the first Friday of the month at Seymours on Lydiard Street
https://www.facebook.com/groups/39781220309544

Citizens for Science – *Mornington Peninsula*
(formerly Peninsula Skeptics, aka The Celestial Teapot)
Contacts: Graeme Hanigan 0438 359 600
http://www.meetup.com/Citizens-for-Science/
www.facebook.com/groups/peninsula.skeptics/

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
https://www.facebook.com/groups/147741491945391/
The Surfcoast Summer Skepticamp is run annually by members

Melbourne Eastern Hills Skeptics in the Pub
Meets second Monday of each month at The Knox Club, Wantirna South.
Contact: Andrew Rawlings
mehsitp@codenix.org
http://mehsitp.codenix.org
https://www.facebook.com/pages/Melbourne-Eastern-Hills-Skeptics-in-the-Pub/192412907376 90?ref=ts

Melbourne Skeptics in the Pub
Meets on the fourth Monday of every month from 6 pm at the Mt View Hotel in Richmond.
http://www.melbourneskeptics.com.au/skeptics-in-the-pub/

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

TASMANIA

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

Launceston: Skeptics in the Pub
1st & 3rd Thursday of each month
5.30pm @ The Royal Oak Hotel

Launceston: Skeptical Sunday
2nd Sunday of each month
2.00pm @ Cube Cafe

QUEENSLAND

Brisbane Skeptics in the Pub
Meets on the first Tuesday of each month from 6:30pm at the Plough Inn, Southbank
http://Brisbanesitp.wordpress.com -
follow links for Facebook, Twitter and email list

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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