

*The worst speculative Sceptic ever I knew,
was a much better Man than the best
superstitious Devotee & Bigot.
David Hume*

Climate and uncertainty
Pseudoscience with teeth
Climate change position statement
Fluoridation misinformation
Skepticism for the harassed
Accelerated Christian Education

new zealand
Skeptic

number 111 – autumn 2014

www.skeptics.org.nz

Does science require experiments with our climate?	3
Pseudoscience acquires muscles – and teeth!	7
NZ Skeptics Position Statement on Climate Change	10
A climate of change	10
Newsfront	12
Fluoridation: Surfing the misinformation wave	15
Under pressure	14
Storm warning	15
Skepticism for the harassed	18
Forum	20
Not science as I know it	22

ISSN - 1172-062X

Contributions

Contributions are welcome and should be sent to:

David Riddell
122 Woodlands Rd
RD1 Hamilton

Email: skepticeditor@skeptics.org.nz

Deadline for next issue:

June 10 2014

Letters for the Forum may be edited as space requires - up to 250 words is preferred. Please indicate the publication and date of all clippings for the Newsfront.

Material supplied by email or CD is appreciated.

Permission is given to other non-profit skeptical organisations to reprint material from this publication provided the author and NZ Skeptic are acknowledged.

Opinions expressed in the New Zealand Skeptic are those of the individual authors and do not necessarily represent the views of NZ Skeptics (Inc.) or its officers.

A word from the Chair

The game is ... on. I've recently rewatched the new *Sherlock* and my partner always reacts to that misquote.

But the game is on.

There has been a good conversation around climate change amongst the committee members that came about after the article from Barry Brill in Issue 108. This has resulted in the society adopting a position statement and a little shuffling of roles. The statement is prominently presented in this issue.

This has also put me in a position where I felt I needed to explain why I started the process. *A climate of change* is the result. The title is intentionally in contrast to the article by Barry Brill.

Conference planning is well underway. If you've not heard, the cast of *The Skeptics' Guide to the Universe*¹ and George Hrab² will be joining us. The trip they had planned was actually the primary reason for the late conference this year. The SGU and the Geologic Podcast (absolutely no geology whatsoever) are podcasts. In the online skeptical community these guys are rockstars. For the most part smart, intelligent and quite humble rockstars.

Details and tickets should be available on the conference website within a month. An alert will be sent out when the tickets are ready.

A group of us have been working on a new website. The new site will have an updated members' area. At this point we have the existing articles imported and cleaned up. Migration of the static content should, by now, be well underway. The membership database should also be imported shortly. If you are not sure if we have a current email address for you, now is the time to update that. Once the site is live things like your contact details will be maintained by you.

We have a few ideas for the members' area under development. If you have any suggestions for features or sections you'd like to see on the new website, we're open to suggestions.

1. www.theskepticsguide.org

2. www.geologicpodcast.com

Gold

Chair-entity, NZ Skeptics

Does science require experiments with our climate?

Martin Manning

Human carbon emissions have been described as a planet-wide experiment with a sample size of one. Are there ways for science to accept uncertainties and just point at what could happen, while not testing the theory? This article is adapted from a talk at the NZ Skeptics Conference, in Wellington, 7 September 2013.

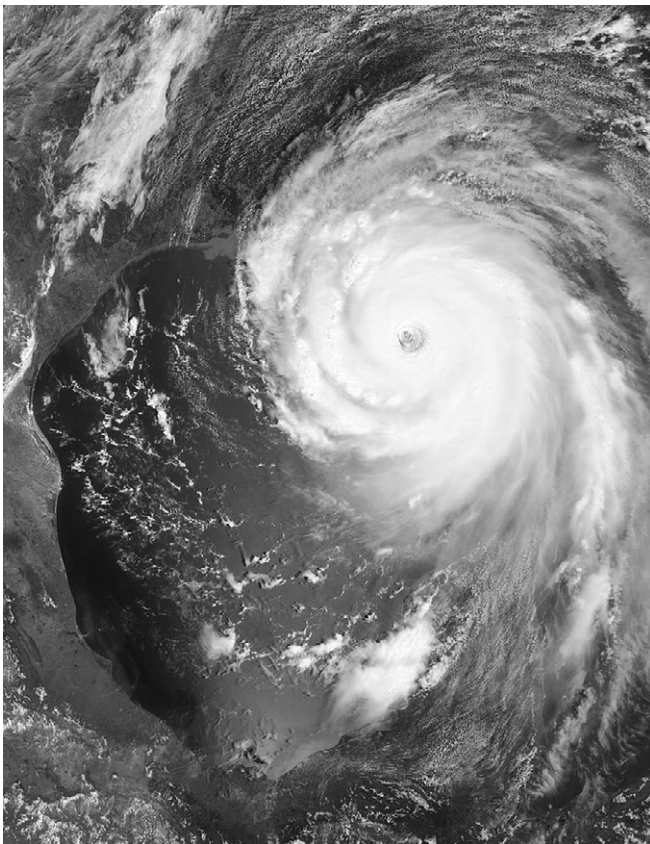
IN 2011, France was running the G20 group of countries

way of exchanging information on the current status of crop production globally. His motivation was driven by the extreme drought that had affected Russia in 2010 to the extent that they had decided to ban all food exports, causing international prices to skyrocket and leading to riots in some countries dependent on importing food from Russia.

with this type of impact. The G20 countries agreed and established an Agricultural Market Information System to get better control of food prices when extreme events occurred.

At the same time several science papers came out debating whether the extreme droughts in Russia, which occurred at the same time as record flooding over large areas of Pakistan and parts of China, could be attributed to human-induced climate change. This also led to debate about whether analyses of such climate events should always be based on testing the null hypothesis of 'no change' in order to avoid what are called the Type I (false positive) errors¹⁻³.

When Hurricane Sandy hit the east coast of the US in 2012, New York's mayor, Michael Bloomberg, believed that this was worse because of climate change caused by fossil fuels and he accelerated plans to



Are extreme climatic events becoming more common?
Photo: NASA.

and their Minister of Agriculture, Bruno Le Maire, started a new

climate change and so there now needed to be a system to deal

radically improve the state's energy efficiency and make their infrastructure more resilient to this type of extreme event. But scientists have not proved that Sandy was caused by increasing greenhouse gases, so that was another decision based on judgment.

For about 20 years the reinsurance industry has reported an increasing trend in weather-related damages caused by climate change. Similarly, the Institutional Investors Group on Climate Change, which represents companies that manage about 20 trillion dollars of long-term investments for pension schemes, is pushing on governments to move faster to reduce the risks that they see climate change causing for their asset base.

These are just a few examples showing that responses to climate change so far tend to be driven by those involved in professional risk management. Risks are directly related to uncertainties and we deal with them all the time, both in insurance schemes and investment strategies.

But some are using the fact that climate scientists admit to uncertainties as reason for not making changes, or at least for delaying responses until we can be sure.

The science basis

In science we work with uncertainties, because they define the challenge for new research that should lead to better understanding backed up by good data. Many see Galileo as the father of modern science because of his

emphasis on careful observations to prove a theory. So while Copernicus had postulated that the Earth goes round the Sun, Galileo provided the evidence for this from detailed observations.

Science has always been seen as based on experiments that test hypotheses and this can be traced back to the philosophy for developing our understanding that was established by Socrates and Plato over 2000 years ago.

And was then excommunicated from the Catholic Church by the power base of cardinals who did not want to believe what he said.

Similarly, in the 19th century, Svante Arrhenius had estimated how much the Earth would warm if we doubled CO₂ in the atmosphere but it was seen as still being a complex issue involving water vapour feedbacks and clouds. It was also thought that nearly all of the CO₂ from our use of fossil fuels was dissolved into the oceans, so that this doubling would take about 3000 years.

But from the 1950s on there has been a steadily accumulating body of evidence based on much more detailed observations. We now know why CO₂ is accumulating in the atmosphere much more rapidly than Arrhenius had expected. Paleoclimatic records for the last 800,000 years show temperature changes correlated with greenhouse gas concentrations rather than with changes in the Earth's orbit around the Sun,

which are just expected to be a trigger for climate change.

Establishment of the Intergovernmental Panel on Climate Change (IPCC) in 1988 was recognition of the need to link policy decisions to what is still a developing field of science. Recently the fifth in a series of detailed assessment reports has started to come out⁴ and some changes can be seen from the early assessments, but the basics are still very much the same.

Much of the IPCC focus has been on attribution of causes for climate change by considering all the known factors such as changes in solar radiation, effects of deforestation, the cooling effect of aerosols that scatter sunlight away, as well as increases in greenhouse gases. Comparing all these effects shows that while an increase in energy coming from the Sun would have contributed to warming prior to 1950, the predominant cause since then has been increases in greenhouse gases.

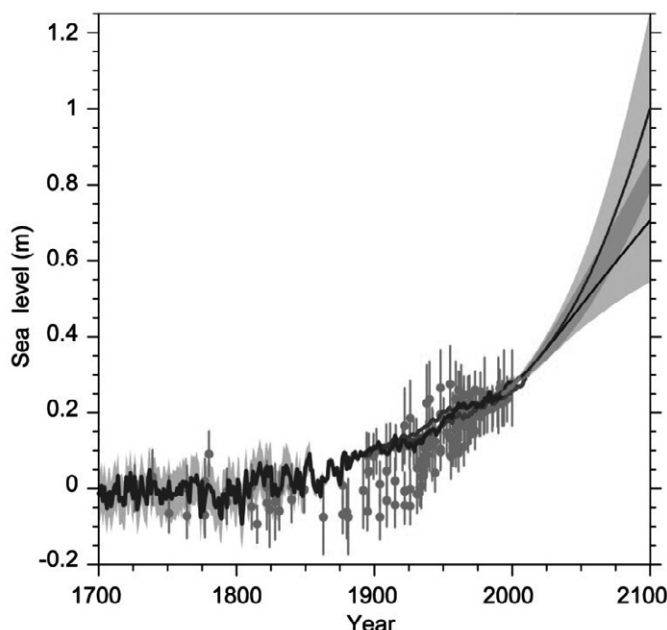
More than 90 percent of the extra heat that is being trapped by greenhouse gases goes into the ocean, some of the rest melts glaciers and ice sheets, and there are increases in latent heat in the form of water vapour in the atmosphere. So only a small part of this heating is going into the surface temperature and while that has slowed down over the last 15 years it can be due to the accelerating loss of ice sheets and to periodic changes in ocean circulation, such as the Pacific Decadal Oscillation. Scientists still want to know more about the details of change in the Earth's

heat distribution, but production of more total heat near the surface by an increasing greenhouse effect is well defined.

Projections of future climate raise several different types of uncertainty. Estimates for the change in global average temperature caused by doubling CO₂

the corresponding emissions, or concentrations, of the greenhouse gases. These now produce a range for global average temperatures in 2100 increasing by less than 2°C or by nearly 5°C from the preindustrial value.

Focussing on global average temperatures has been motivated



Compilation of paleo sea level data, tide gauge data, altimeter data, and central estimates with 66 percent likely ranges for projections of global mean sea level rise for the lowest and highest scenarios, all relative to pre-industrial values. This is from Chapter 13 of the IPCC Working Group I Fifth Assessment, Figure 13-27.

have been sitting in the range 1.5 – 4.5°C for several decades. Much of this range comes from how cloud cover might change and a recent analysis has shown that the upper half of this range is now more likely⁵, but this remains an active area for research.

A quite different type of uncertainty applies to the amount of greenhouse gases that will be emitted into the atmosphere during the rest of this century. That is treated by considering a range of scenarios for future social and technological development and

by ensuring that climate models are reliable. But it can be deceptive because much of the land warms by 50 percent more and annual extreme daily temperatures by twice as much. Also the latest IPCC assessment has significantly increased the estimates of future sea level rise and provided

likely ranges, but did not set an upper bound for how much may occur by 2100.

There are still major issues for uncertainty analysis in climate change because every few months some new result seems to shift the range for what can happen in the future. For example, as I am writing this, a paper has just come out showing that what was seen in climate models as a stable part of the Greenland ice sheet has actually started to break up and slide into the ocean⁶. The question is now to what extent can that continue,

because the drainage basin it covers has enough ice to raise sea level globally by about one metre.

Can science live with uncertainty?

When development of radio-carbon dating led to the discovery that carbon in the atmosphere was getting older⁷, this was rapidly followed by others discovering why all the CO₂ from fossil fuels was not being taken up in the oceans⁸, which led them to say: “Thus human beings are now carrying out a large scale geophysical experiment of a kind that could not have happened in the past nor be reproduced in the future”.

Science has always been seen as based on experiments that test hypotheses and this can be traced back to the philosophy for developing our understanding that was established by Socrates and Plato over 2000 years ago. Socrates was critical of people who often seemed to think that they knew everything that was relevant, whereas his approach was to focus on addressing our limits in knowledge.

While a significant evolution in the philosophy of science was started by Karl Popper, a recent review has shown that it is still heavily based on carrying out tests of our understanding, whether we are considering Einstein’s general relativity theory or Darwin’s theory of evolution⁹.

So can science only make progress by experiments that test theories, even if this would create major problems for humanity? Or are there ways for science

to accept uncertainties and just point at what could happen, while not testing the theory?

The last 70 years has seen significant advances in the way that limits to current understanding are considered in science. Quite different types of uncertainty have become recognised as forms of both aleatory uncertainty, due to limits in the data for processes that we are trying to quantify, and epistemic uncertainty, due to an incomplete knowledge of the key processes themselves. The difference was noted by David Hawkins, who was part of the Manhattan Project developing atom bombs, pointing out that it was quite misleading to treat all forms of uncertainty in the same way as one would treat rolling dice¹⁰.

A recent major review of formalisms for describing uncertainty has set out four levels of understanding, with use of Bayesian statistics and probability distributions being the most advanced of these¹¹. Ways of dealing objectively with more limited knowledge can be based on defining possibility distributions or using fuzzy sets of values and this could become a way

of addressing issues such as the threshold for sustainability of the major ice sheets.

But there are still the policy questions as to whether this could be done in ways that would set a stronger basis for decisions that curtailed fossil fuel emissions globally. In several different contexts, governments have adopted forms of a precautionary principle to deal with these deeper types of epistemic uncertainty, but that is not yet being applied in the case of climate change.

Some have argued that a precautionary principle tends to just create legalistic debates, such as whether precaution should focus on environmental or economic values. However, Cass Sunstein has suggested that for issues such as climate change it would be better to adopt an anti-catastrophe principle¹².

How should this issue evolve?

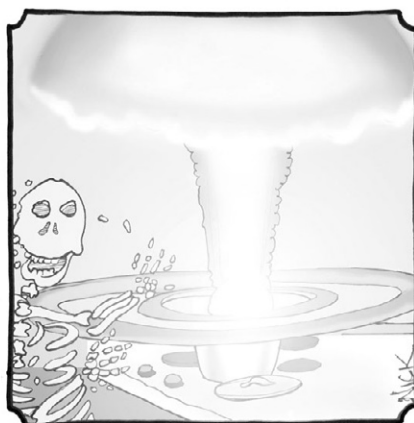
Well, during a meeting of authors for the IPCC's Third Assessment Report, 14 years ago, there was a discussion about the key issues that needed to be addressed. While many were raising questions about cloud properties, or the sustainability of the

Amazon forests, a social scientist stood up and said that we were all wrong because the real question is how society actually responds to major issues. There was a bit of a stunned silence in the room and the chairman changed the subject, but many of us have never forgotten that point, and the person who said it became a lead author for the first chapter in our synthesis report.

Professor Martin Manning is the former director of the New Zealand Climate Change Research Institute, Victoria University of Wellington.

References

1. Trenberth, K. E. 2011. *Wiley Interdisciplinary Reviews: Climate Change* 2, 925-930.
2. Curry, J. 2011. *Wiley Interdisciplinary Reviews: Climate Change* 2, 919-924.
3. Allen, M. 2011. *Wiley Interdisciplinary Reviews: Climate Change* 2, 931-934.
4. IPCC 2014. in *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (eds. Stocker, T. F. et al.) Cambridge University Press.
5. Sherwood, S. C., Bony, S. & Dufresne, J.-L. 2014. *Nature* 505, 37-42.
6. Khan, S. A. et al. 2014. *Nature Climate Change* online 16 March 2014.
7. Rafter, T. A. 1955. *NZ J. Sci. Tech.* B37, 20-38.
8. Revelle, R. & Suess, H. E. 1957. *Tellus* 9, 18-27.
9. Losee, J. 2005. *Theories on the scrap heap: scientists and philosophers on the falsification, rejection and replacement of theories.* University of Pittsburgh Press.
10. Hawkins, D. 1943. *Philosophy of Science* 10, 255-261.
11. Helton, J. C., Johnson, J. D., Oberkampf, W. L. & Sallaberry, C. J. 2010. *Int. J. General Systems* 39, 605-646.
12. Sunstein, C. R. 2006. *Pace Environmental Law Review* 23, 3-17.



New experiments in fusion cooking.

Pseudoscience acquires muscles – and teeth!

Martin Bridgstock worries about a new trend which might, in the long run, threaten both science and skepticism.

WHAT exactly is a pseudoscience? The Oxford English Dictionary defines it like this:

A pretended or spurious science, a collection of related beliefs about the world mistakenly regarded as being based on scientific method or as having the status that scientific truths now have¹.

Probably most of us would be comfortable with this definition. Pseudoscience is fake science. It may resemble science superficially, but the nature of the ideas, and the relationships between the ideas and reality, are nothing like those of true science.

On the face of it, pseudoscientists seem pretty harmless. The idea of self-appointed Great Minds working away in their sheds to disprove Einstein or generate perpetual motion is pretty amusing. Probably most of us would favour a tolerant policy towards them: we live in free countries, and there is a small chance that one day, one of them might be right. However, there is one circumstance in which pseudoscience becomes quite terrifying, and that is when its practitioners acquire power and influence.

Dictatorship and pseudoscience

Before the middle of the 20th century, two forms of pseudoscience gained real power. In Stalin's Soviet Union an eccentric plant scientist named Lysenko got the support of Stalin for his weird ideas. These included the denial of genes and Darwinian evolution, and a refusal to accept that members of the same species competed with each other.

Because Lysenko had the backing of Stalin, scientists opposing him could be hounded from office, arrested and in some cases killed. And because Lysenko's ideas damaged Soviet agriculture, the failure to feed the country's population blighted the standard of living of millions of people for decades².

At about the same time, in Germany, another type of pseudoscience was gaining sway. The basis of the Nazi ideology was the supremacy of the Aryan race to others. Non-Aryans were regarded as incapable of higher civilization and the Jews, in particular, were hated and distrusted. Above all, 'Aryan science' was thought to be superior to 'Jewish

science'. As a result, scientists of Jewish background – hundreds of them – were forced from their positions. And the theories of brilliant scientists with Jewish backgrounds – such as Einstein – were forbidden. The effect on some parts of German science was devastating. When David Hilbert, the doyen of German mathematics, was asked about the impact of Nazi politics upon German mathematics he replied, "It doesn't exist any more!"³

These two types of pseudoscience did great damage to the nations in which they flourished. We tend to overlook them amid the hideous atrocities perpetrated by the two dictators. Alan Bullock, for instance, estimates that Hitler and Stalin were responsible for about 17 million murders each⁴. However, it is becoming clear that in modern, tolerant, democratic societies, pseudosciences are also finding ways to power. As in the dictatorships, they are seeking to undermine real science.

Pseudoscience in the democracies

Let us look at one of these. Way back in 1953, research evidence was emerging that smoking was

addictive and dangerous. Medical statistics and experiments on mice showed clearly that exposure to the tars found in cigarettes greatly increased the risk of cancer. What is more, we now know that the tobacco industry's own research supported these findings⁵.

The top management of the tobacco firms was thrown into a panic. The leaders met, and decided on a campaign strategy to enable their industry to survive. Part of the strategy was a straightforward lobbying campaign.

The industry's position was that there was "no proof" that tobacco was bad, and they fostered that position by manufacturing a "debate," convincing the mass media that responsible journalists had an obligation to present "both sides" of it ... the so-called balance campaign involved aggressive dissemination and promotion to editors and publishers of "information" that supported the industry's position⁶.

To support this position, the industry needed more than PR. It needed scientific evidence – or at least what seemed to be scientific evidence – in support of its position.

But where could the industry get such evidence? As Oreskes and Conway point out⁷, it's not all that difficult. Science is intrinsically full of uncertainties. Even when scientists are pretty sure they know how some aspect of the universe works, there are lots of problems and questions left. If you are determined, it is not difficult to list these problems, then suggest that everything is uncertain, and that

'more research' is needed before anything can be done.

But where would you find scientists to work on such topics? Again, that is not hard. Some scientists – like some of

Surveys show that the general population has little understanding of how science works, or of the key findings of science. This makes the public vulnerable to the slick, convincing claims of special pleaders.

the rest of us – are immoral, and will do anything if you pay them enough. Others simply will not see the ethical implications if their research is funded. Yet others believe strongly that there should be no government intervention in commercial matters, and will be sympathetic for that reason.

Oreskes and Conway describe how the tobacco industry, using lavish funds, was able to create what looked like a massive scientific case for saying that it was not clear that tobacco was harmful to human health. They supported 'scientific' journals and conferences devoted to this argument. And they succeeded. It was not until the 21st century, more than 50 years later, that it finally became clear that tobacco is appallingly dangerous, and that millions of people have died as a result of it.

The industry also had an army of lawyers. Compensation claims against the tobacco industry were resisted ruthlessly through the courts, if necessary making round after round of

appeals against unfavourable findings. Few people had the stamina or the resources to fight a case against the tobacco industry to a conclusion.

Looked at in retrospect, the behaviour of the industry appears truly monstrous. They knew perfectly well, from their own research, that they were killing huge numbers of people, yet they chose to defend their actions and deny those seeking compensation any kind of help. At the same time they sought to blur the science and create uncertainty over issues

which they knew were close to being certain.

Are there other cases in which pseudoscience has acquired this kind of power base? There certainly are. Oreskes and Conway's main focus is upon climate change deniers. They demonstrate that business firms with an interest in opposing restrictions funded scientists to argue that there was 'doubt' about human effects on the world's climate, and that nothing should be done until more research gave the answers. In some cases, the scientists hired to create 'doubt' in this area were the same ones who had argued that the evidence was not sufficient for the harmful effects of tobacco!⁸

In another direction entirely, mass religious fanaticism can also create this new and dangerous kind of pseudo-science. The most florid example of this is the massive 'creation science' movement which, for a time, looked as if it would dominate science teaching in American schools.

To a large extent, the creation science movement was shaped by the American constitution. This forbids government authorities from promoting religion. Therefore, if religious fundamentalists wished to counterbalance the teaching of evolution in state schools, they could not simply demand that their religious beliefs be taught as well. They had to pretend that their beliefs were 'scientific', and that a Two Models approach to science – embracing both creation and evolution – must be taught in schools. It is chilling to realise that at one stage, 23 American state legislatures were considering legislation to enforce 'equal time' for creation and evolution in their state schools⁹.

Of course, in order to make their case carry weight, the creation scientists had to present an intellectual structure which looked convincing. So they ransacked the scientific literature, looking for findings and comments which could be taken as evidence against evolution and for creation. People with PhDs (some genuine, some purchased) wrote and spoke in favour of creation science, and organisations with scientific-sounding names sprouted, such as the Institute for Creation Research and the Creation Science Research Society¹⁰.

Eventually, creation science was identified for what it truly was, a pseudoscience, and conclusively defeated in courtroom battles. So was its successor, the Intelligent Design movement¹¹ (Lebo 2008). However, the fact remains that tens of millions of people still believe that the key scientific concept of evolution is

wrong, and that a viable alternative exists, namely some form of creationism. It is perfectly possible that, one day, their support and resources will be mobilised again.

The implications of the new pseudoscience

I suggest that these developments should be of deep concern. Dissidents who cannot accept scientific findings are no longer confined to tinkering in sheds or writing self-published books. Instead, if they have sufficient backing, they can pose as proper scientists and perhaps acquire real power. It might even be possible for such movements, eventually, to overthrow science itself. It happened for a while in Nazi Germany and Stalin's Russia, and it almost happened with creation science. In my view, there is nothing guaranteed about the onward march of science, and some pseudo-scientific movement, one day, might be capable of reversing it.

What can be done? The skeptics have an important role here. Surveys show that the general population has little understanding of how science works, or of the key findings of science. This makes the public vulnerable to the slick, convincing claims of special pleaders. Skeptics are another matter. We can identify when a pseudoscience is acquiring power, and can subject it to withering critique. Indeed, we are specialists at exactly this, and many of us can publicly spell out exactly how bogus science differs from the real thing. I suggest that focusing on pseudoscience with powerful financial backing, or with mass religious or political backing, should be one of all

skeptics' main priorities. This is the lethal strain of the virus.

Seen in this light, skepticism becomes more than an amusing pastime. It is an important way in which we can preserve one of the very bases of civilisation. That, I think, is eminently worth doing.

Martin Bridgstock is a senior lecturer in the School of Biomolecular and Physical Sciences at Griffith University, Brisbane.

References

1. Oxford English Dictionary, 2nd Ed. 2004. OUP.
2. Medvedev, Z. 1969. *The Rise and Fall of T. D. Lysenko*. New York, Columbia University Press.
3. Cornwell, J. 2003. *Hitler's Scientists*, p. 198. London, Penguin.
4. Bullock, A. 1993. *Hitler and Stalin*. London, Fontana.
5. Oreskes, N., Conway, E. M. 2010. *Merchants of Doubt: How a handful of scientists obscured the truth on issues from tobacco smoke to global warming*, p.21. London, Bloomsbury.
6. *ibid.*, p.16.
7. *ibid.*, p. 31.
8. *ibid.*, p. 186.
9. Bridgstock, M., Smith, K. 1986. 'Introduction.' in Bridgstock, M., Smith, K. (eds): *Creationism: an Australian Perspective*. Melbourne, Australian Skeptics: 5-8.
10. Bridgstock, M. 1986. 'But lots of creationists are scientists, and with so many brilliant people on both sides shouldn't both be taught?' in Bridgstock, M., Smith, K. (eds): *Creationism: an Australian Perspective*. Melbourne, Australian Skeptics: 12-13.
11. Lebo, L. 2008. *The Devil In Dover*. New York, New Press.

New Zealand Skeptics Society Position Statement : Climate Change

The New Zealand Skeptics Society supports the scientific consensus on Climate Change. There is an abundance of evidence demonstrating global mean temperatures are rising, and that humans have had a considerable impact on the natural rate of change.

The Society will adjust its position with the scientific consensus.

A climate of change

Gold

AT TAM 2013 the last talk was by Peter Boghossian and it was on Authenticity. One of the take-away messages I got from that talk was that you should stand by your words and if someone is offended by them let them know that you're sorry that they were offended. But stand by what you said, if you really trust in it.

With that in mind I'm going to apologise in advance for those readers that are offended by the words that follow. I'm sorry that you feel offended, I really am. But I stand by the words I choose, and the order they are presented in.

After the 2013 NZ Skeptics Conference it was brought to my attention that there was an article in issue 108 of the *NZ Skeptic* magazine. *A climate of hope* was written by Barry Brill, Chairman of the Climate Science Coalition (CSC), a denialist organisation that has, in the past, been funded by the Heartland Institute¹. The Heartland Institute is a US-based think tank that is actively fund-

ing climate denialism. Mentioning the Heartland link here is not to poison the well, but more to give context to the motives and position of the CSC.

The article itself² was carefully written and, on the surface at least, sounds reasonable if you can get past the cherry-picking and well poisoning. However, if you follow through to the CSC site and read further their actual agenda is quite clear.

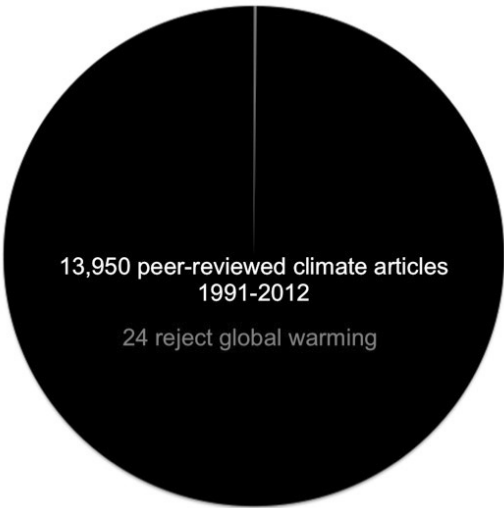
My concern with this article is that it gives Brill and the CSC the ability to say that they've been published in the society's magazine, lending them unwarranted credibility and harming the reputation of the society in the process. I've already had this article quoted back at me once as evidence of the 'controversy' because of where it was published³.

There was also discussion about this in a private list that I'm in. There were a number posts that defended the decision to publish. One argument that

was made was that of "Equal Time". I'll state here that I do not support the concept of equal time. If we're going to promote that then we should do the same for anti-vaxers and creationists. Instead I support, and would like to promote, the concept of proportional time here and in the media. The idea is that the time, word count, [insert your metric here], allotted to any point of view in any particular medium is rationed out based on the scientific consensus. The trick is finding a way to quantify the consensus.

In this case it's an easy one to do. "The Thin Red Wedge"⁴ is the outcome of a research paper that looked at the published literature on this topic. This gives us some reasonable numbers that we can work with. At this point there are eight articles/letters on climate in the *NZ Skeptic* with a total of 4368 words. The breakdown of this is two articles (one each way) and six letters (two for, four against.) I'm not so worried about the letters as conversation

is encouraged and, if nothing else, can be an interesting case study into the mindset there. I will take into account the articles though, as these should represent the position of the society. This gives us 920 words pro science and 780 against the science. The ratio as determined by the graph is 13,950:24 which is 581:1. With 780 words against the science we have 543,180 available to the pro science side. Taking the current pro article into account this leaves us with 452,260 words. Or, roughly, 530(ish) articles that back a scientific position.



This is actual balance.

If you think otherwise I'd love to hear your reasoning and if you think differently I'd love to know why.

NZ Skeptic Editor David Riddell responds:

A WHILE back there was a post on the New Zealand Skeptics Yahoo! mailing list which said: "The most amusing thing about this list is that we have short conversations about psychics and homeopathy with everyone agreeing. Then, about every 6 months, we have a huge heated debate about global warming where nobody changes their mind and everyone gets frustrated."

No topic divides skeptics quite so much as climate change. While many accept that anthropogenic climate change is both real and alarming, there are aspects of both sides of the climate debate which ring alarm bells for others, myself included.

I have no problem with the Position Statement at the top of the previous page. The physics of greenhouse gases have been well understood for more than a century, global temperatures

have risen over that period, and it's hard to see how the concurrent rise in CO₂ levels could not have played some role. There is indeed a scientific consensus on that, and I support it. The pie chart above captures this consensus well.

I do however take issue with the conflation of this consensus with views on the likely future extent and consequences of warming, and the measures that should be taken to reduce, mitigate or adapt to it. In particular I question the credibility of the more alarming of the projections we are bombarded with almost daily. Prophets of doom have a very long history, and a very poor track record.

Martin Bridgstock has a point that special interest groups have used their financial resources to further their own ends, and there is some genuinely bad material out there opposing

Otherwise, to quote Dara O'Briain⁵; "Get in the fucking sack."

Gold is chair-entity of the NZ Skeptics

References

1. goo.gl/0rBYf4 (Hot Topic blog)
2. goo.gl/6Gb68Y (Issue 108, p 17, pdf link)
3. goo.gl/KLhBvn (Rob Julian, October 12, Meetup.com)
4. goo.gl/s1yTmP (James Powell (Recently updated, methodology available))
5. goo.gl/MmzrO2 (YouTube)

the mainstream scientific view which doesn't deserve to be disseminated. But funding from Big Oil cannot explain all of the doubts about the seriousness of climate change. Judith Curry, chair of the School of Earth and Atmospheric Sciences at the Georgia Institute of Technology, is one climate scientist who has engaged with those who hold views outside the mainstream, and she has written about what this has cost her professionally:

"With regards to climate science, IMO the key issue regarding academic freedom is this: no scientist should have to fall on their sword to follow the science where they see it leading or to challenge the consensus. I've fallen on my dagger (not the full sword), in that my challenge to the consensus has precluded any further professional recognition and a career as a university administrator. That said, I have

Psychics get credit for body discovery

TWO psychic mediums have been credited with helping to find the body of a Stratford man who drowned in the Patea River last September (*Taranaki Daily News*, 1 April).

Coroner Tim Scott said in his ruling that the part played by the mediums in assisting to locate the remains of 36-year-old beneficiary Stephen Murphy provided an interesting twist to an otherwise sad event.

Murphy was last seen with his dog Roxy on 1 September, after drinking whisky with a friend. Friends and family contacted two mediums after they realised he had not been seen for a number of days. The mediums directed them to the area of King Edward Park where Murphy's body was found the next day (*NZ Herald*, 1 April).

The NZ Police website reported that Murphy was last seen by his sister in the vicinity of Brecon Road, near where he was found, and had his dog with him. His dog was found wandering later that evening at around 5:30pm by Dog Control.

"Mr Murphy regularly walked his dog along the riverbank not far from where his body was found."

So an intoxicated man takes his dog out for a walk. One of the places he normally walks the dog is a park with a river running through it. He's last seen on a road near the park. He goes missing; the dog turns

up alone. At what point is a psychic necessary to figure out what happened?

Reports of the body's discovery at the time (*Stuff*, 12 September, *Stratford Press*, 13 September, *Taranaki Daily News*, 14 September) make no mention of any psychic involvement. Funny how stories grow with the telling.

Oil say it's a miracle!

Olive oil is being promoted as part of a religious cure-all treatment by an evangelical church (*NZ Herald*, 28 March).

The Universal Church of the Kingdom of God says its "holy oil" has helped cure tumours, mental illness, stomach and bladder problems, marriage difficulties, strokes and heart defects. It had, they said, been blessed at the sites of biblical miracles in Israel.

The oil was promoted in a mass mail drop in Auckland which claimed the oil had helped to fix people in situations where doctors had been unsuccessful. The newsletter claimed the oil helped cure one church member's pancreatic tumour. "After anointing herself for a period of time with the oil, [she] went back to the doctors for a check-up. The doctors couldn't find anything! No trace of the tumour was detected," her story read.

Herald reporter Sam Boyer asked for evidence and was

told in an emailed statement by Bishop Victor Silva that the oil could not cure illness. Using it was an act of faith, and faith could help in the restorative process, he said.

A "generous amount of oil", in cross-shaped bottles, would be free to whoever attended an event at the Vodafone Events Centre in Manukau on Sunday 30 March.

The Universal Church of the Kingdom of God has congregations in Otahuhu, Pukekohe and Porirua. It arrived in New Zealand in 2005, having originated in Brazil. Bloomberg says church founder Edir Macedo has become a billionaire from the tithes of his followers.

The church has previously claimed its "divine healing" could help cure HIV, homosexuality, epilepsy and depression.

Speaking of miracles...

An ice storm could not keep the crowds away as US science communicator Bill Nye and Answers in Genesis president Ken Ham debated before a packed audience at the Creation Museum in Northern Kentucky, a region known by some as the buckle of the Bible Belt (*Dominion Post*, 2 February).

The reportedly captivated crowd of almost 1000 were joined online by a further million viewers; at one point the debate

was one of the top four trending topics on Twitter.

Ham, a former Queensland high school science teacher, believes in a literal interpretation of the Book of Genesis, and that the Earth is 6000 years old.

Nye, known in the US as Bill Nye the Science Guy, has long opposed that view and warned of the dangers of creationism spreading in the school system.

Ham spoke first, and talked about observational science and what he called historical science. No one was around to watch ice layers form, or the rings of ancient trees being created, therefore scientists could not claim to be sure how it happened.

Nye replied that this distinction between observational and historical science was one unique to Ham and showed photos of still living trees that would have drowned in “Ken Ham’s flood”. He asked whether it was reasonable to believe that Noah and his family truly did build the largest wooden vessel ever to sail and put 14,000 animals on it. Did Noah have super powers?

Ham was unmoved and kept referring back to the Bible as evidence for many of his arguments. The debate continued for three hours.

Mark Gregor, a Bill Nye fan, travelled all the way from Boston. “I love this sort of thing, you never get to see this,” he said. He believed the Creation Museum, which displays animatronic dinosaurs grazing happily alongside people to demonstrate that all life was created at once, is evidence of the decline of religion in America.

“I think it is the last spark of deep religion. Religious people are feeling threatened, that’s why you have something like this.”

Moon man beats advertising complaint

Long-range forecaster Ken Ring has defeated an Advertising Standards complaint over his weather forecasting website (*The Press*, 23 February).

Wellington geochemist Douglas Sheppard complained about the site to the Advertising Standards Authority, which rules on the acceptability of ads.

Ring, Sheppard said, “is quite unable to make accurate long range predictions – this has been demonstrated many times”.

In response, Ring gave four examples of accurate long-range forecasts. Among them was a tweet he said he sent on September 7, 2010 - “more big earthquakes in 6 months time” - which he said predicted the earthquakes of 22 February 2011, and 20 March 2014.

He also pointed to an item on his website from 14 February 2011, which predicted a big earthquake in Christchurch between February 15 and 25.

Ring told the ASA he did not claim 100 percent accuracy, “only ... 80 to 85 percent. But I am obviously able to make accurate predictions, so the complainant’s claim that I am ‘quite unable to make accurate long-range predictions’ is false.”

The ASA said it was not “an arbiter of scientific fact”. Instead, its role was to consider the ads

from the perspective of the likely audience and decide whether claims were substantiated by the advertiser. It said Ring’s website carried a disclaimer that the information was “opinion-based”.

The ASA said the likely “consumer take-out” from Ring’s advertisement was that he could make opinion-based weather predictions, which were “often but not always accurate”, and this was clear to consumers.

Bad posture ‘could shorten your life’

Chiropractic got a plug on TV One’s Breakfast programme recently (TVNZ, 4 April). “Dr” Tammy Hume of Vital Chiropractic (her website lists her qualifications as a BSc in Human Nutrition from Otago University and a Bachelor of Chiropractic from the NZ College of Chiropractic) told viewers how slumping over modern technology such as smartphones could cause people to develop spinal and respiratory problems.

“Sitting to our spine is like sugar to our teeth – it causes decay and dysfunction,” she said.

“The cool thing about chiropractic and where we have a really big impact is that by actually accessing that spinal structure we’re able to restore integrity to the nervous system.”

She said she was particularly concerned for children who are “getting plonked in front of technology” from a very young age.

Maybe she has a point about that at least.

From Page 11

tenure, and am senior enough to be able retire if things genuinely were to get awful for me. I am very very worried about younger scientists, and I hear from a number of them that have these concerns.”

DeSmogBlog notes² Curry’s company has received funding for short-term hurricane forecasting from an oil company since 2007, but I can find no indication she has received funding to spread doubt about global warming – if there was any, I suspect DeSmogBlog would have found it.

Why does this topic attract so much vitriol? Probably because of the perception that the fate of the world is at stake. Anyone who questions the model projections is delaying implementation of policies which are vitally necessary to stave off apocalypse. Better to accept that we’re headed for catastrophe if we don’t mend our ways, because the consequences flowing from that view, even if it turns out to be wrong, are far better than those deriving from the assumption that climate change is a minor issue, should that view prove incorrect.

This has always struck me as a version of Pascal’s Wager³, which I’ve never found persuasive as a reason for belief in God; I don’t find it a persuasive argument for belief in climate catastrophe either. The case for catastrophic climate change must be made on its scientific merits, and for that to happen the normal application of scientific scepticism must operate as it does elsewhere, without descent to name-calling and insult.

Nor is the promotion of belief in climate catastrophe free of all downsides. An acquaintance who worked at one of Auckland’s largest secondary schools once told me many of the students there were in a state of despair, because the message they were getting was that climate change would destroy the world within their lifetimes. What this does for youth suicide rates is anybody’s guess, but those studying the psychology of climate change appear to think such an attitude is only right and proper, and see lack of concern (“denial”) as the problem to be addressed⁴.

Policies implemented in the rush to “fight climate change” can have unintended consequences. A classic example is the clearance of rainforest for palm oil plantations, encouraged by subsidies intended to reduce reliance on petrochemicals. Apart from the other effects of this, the net result is to increase carbon emissions⁵.

Another issue is that many governments find it easier to attribute their environmental problems to climate change, rather than their own stewardship practices. Coral reefs, for example, are under huge pressure⁶ from everything from over-fishing to deforestation (sediment and fluctuating salinity from land run-off are very bad for corals), but climate change often gets the blame for reef decline. This is despite corals being at their most prolific around the equator, and limited by cold rather than warmth.

As a skeptic, my biggest concern about over-egging the climate pudding is what it may do

to the credibility of the scientific enterprise. In a recent article⁶ Garth Paltridge, Emeritus Professor and Honorary Research Fellow at the Institute of Antarctic and Southern Oceans Studies, wrote:

“[W]e have at least to consider the possibility that the scientific establishment behind the global warming issue has been drawn into the trap of seriously overstating the climate problem – or, what is much the same thing, of seriously understating the uncertainties associated with the climate problem – in its effort to promote the cause. It is a particularly nasty trap in the context of science, because it risks destroying, perhaps for centuries to come, the unique and hard-won reputation for honesty which is the basis of society’s respect for scientific endeavour.”

There are, then, many reasons to be sceptical of the more extreme claims made about climate change. But I reiterate that the basic science is sound, and I agree with Gold that an article arguing that there is no link between CO₂ and global temperature would have no place in this magazine (a couple of issues back I received, and rejected, just such an item). To date, there have been no such articles published. Barry Brill’s *A climate of hope* was about indications that Equilibrium Climate Sensitivity (ECS) may be lower than previously thought, as noted in the latest IPCC Assessment Report⁷. Implicit in the notion of ECS is the idea that climate is indeed sensitive to carbon. We can still argue about just how sensitive.

I should also draw readers’ attention to the statement at the bottom left of Page 2, namely:

Opinions expressed in the New Zealand Skeptic are those of the individual authors and do not necessarily represent the views of NZ Skeptics (Inc.) or its officers.

Publication in this magazine should not be taken to imply endorsement by the society of the article's contents, or indeed the views of its author. And it certainly should not be taken as an endorsement of any organisation to which an author may belong, or anything that any persons affiliated with that author may have written somewhere else.

The *NZ Skeptic* receives all manner of submissions, written from a broad range of perspectives. I don't agree with everything that gets published (that should be particularly obvious in this issue!), but I see the task of this publication as being to encourage its readers to think, rather than telling them what to think. Feel free to disagree with everything I've written, or with anything in any of the other articles or letters in this issue. One of the traditional strengths of the NZ Skeptics has been the breadth of views that its disparate members have held; long may that continue.

There have been a few climate-related articles come in recently, and I've put them all out in one batch, in the hope that we can now move on to other topics. If you want to continue the discussion in this magazine that's what the Forum is for; I'll keep it open for letters on climate for at least a couple more issues. But please play nicely, and keep it short.

References

1. judithcurry.com/2014/02/22/steyn-et-al-versus-mann/
2. desmogblog.com/judith-curry
3. plato.stanford.edu/entries/pascal-wager/
4. Swim, J., Clayton, S., Doherty, T., Gifford, R., Howard, G., Reser, J., Stern, P., Weber, E. 2009. Psychology and Global Climate Change: Addressing a Multi-faceted Phenomenon and Set of Challenges. A Report by the American Psychological Association's Task Force

on the Interface Between Psychology and Global Climate Change.

5. www.postcarbon.org/article/1964306-how-palm-oil-in-everything-from

6. Pandolfi JM, Bradbury RH, Sala E, Hughes TP, Bjorndal KA, Cooke RG, McArdle D, McClenachan L, Newman MJ, Paredes G, Warner RR, Jackson JB. 2003. Science 301(5635):955-8.

7. judithcurry.com/2014/01/06/ipcc-ar5-weakens-the-case-for-agw/

Fluoridation: surfing the misinformation wave

Daniel Ryan reports from the front line of the battle against the anti-fluoridationists.

THE members of Fluoride Action Network NZ and its spin-off groups are vociferous about the urgent need to remove fluoride from community water supplies. "It's a toxin," they'll tell you. But if you ask an anti-fluoridationist why no major, well-respected health organisations around the world are against fluoridation, it's a different story. The person you're speaking with will either go quiet, or start rambling about some conspiracy.

Studying the major anti-fluoridation leaders, I've found most have a tale regarding why fluoride is being added into our drinking water: most commonly, they believe it's the only way fertiliser companies can dispose

of fluoride by-products. They see their story as being true, as being an accurate view of what's happening, and they believe they need to "fight the corruption" of the fertiliser companies using water as a "dumping ground" for their "toxic waste". They believe someone is "paying to cover up the corruption" and "others don't know they are being fooled". Many also see removing community water fluoridation as the first step in regaining the right to take care of their own health, in their own way.

You don't think so? In his Wellington talk, retired chemistry professor and anti-fluoridationist "World Expert" Dr Paul Connett, who recently visited New Zealand, used a medieval castle

as an analogy¹. “The outer perimeter is fluoridation, the inner perimeter is vaccination. Pull up the drawbridge and defend the castle. And the castle is orthodox medicine; one pill from the pharmaceutical industry for every ailment, and of course the King here is the pharmaceutical industry and their control of modern medicine.” He sees them “attacking chiropractors, people that practice alternative medicine, it’s all part of the same thing of protecting orthodoxy”. Connett believes fluoridation is “the first battle” in bringing down the castle.

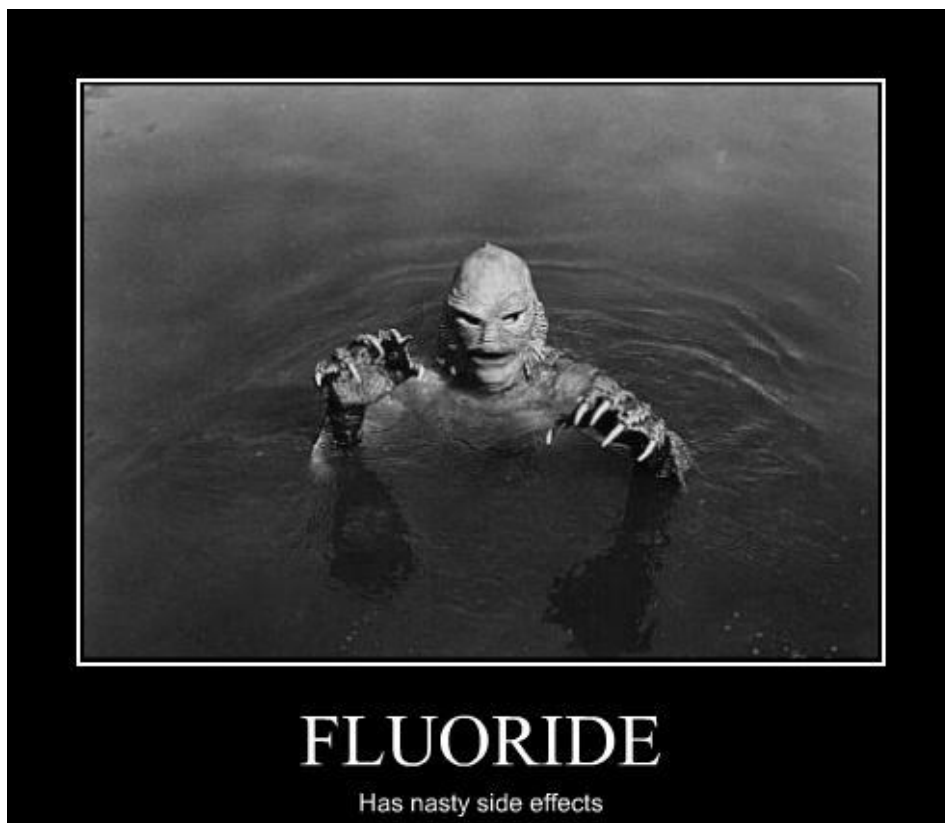
Is it possible to change the beliefs of a committed anti-fluoridationist? I’m not sure that we can. If they firmly believe the scientific community, major health organisations and the government to be corrupt or incompetent, no amount of evidence is going to change their minds². And these leaders of the anti-fluoride groups, and their followers, continue to spread misinformation over social networks at such a massive rate that most won’t be able to be effectively disproved.

However, it is possible to reach those who have yet to make up their minds, and to provide people with the skills needed to accurately assess this out-pouring of anti-fluoride misinformation – skills that need to be developed at school:

“It’s essential that children gain basic science literacy skills at school – including the ability to assess the validity of websites

and other sources of information, and to critically evaluate that information. This is a basic skill for anyone living in the 21st century, regardless of whether they’re going on to a career in science.” – *Dr Alison Campbell, science educator and science communicator*

important, effective public health intervention. We try to educate the general public about the lies, misinformation, cherry-picking and soundbites from self-anointed “experts” who can and do blame any negative health issues on community water fluoridation (CWF).



... or so some would have you believe.

And we can push back in the social media. In July 2013 I created a Facebook page called Making Sense of Fluoride (MSoF), to help people look into the science of fluoridation. The original lay group has now grown to include scientists, skeptics, teachers, health professionals, students and other individuals, all of whom advocate that this significant public health initiative is either introduced or maintained in New Zealand’s communities. We are concerned by the mass of misinformation regarding fluoridation, published on the internet by those opposed to this

Over the top? Unfortunately not. If you read any of the anti-fluoride internet sites you will see claims that fluoride causes cancer, increases suicide rates, results in skin reactions, makes people complacent, and reduces IQ. In fact, it’s even claimed that CWF reduces spiritual powers! Then they have the audacity to say that fluoride does not work for reducing caries.

This is simply incorrect. Fluoridated town supply water contains 0.7-1.0 ppm, enough to help our teeth but not so much that fluorosis is a problem. Nor

has it been shown to cause other harmful health effects:

“Fluoride is a normal and natural component of calcium phosphate (apatite) minerals – including those in our bones and teeth. It strengthens the mineral and lowers its solubility. So fluoride’s beneficial role in fighting tooth decay is just what we expect from the chemistry. Laboratory experiments as well as epidemiological studies confirm fluoridation of public water supplies is a very effective way of reducing tooth decay for all ages.

“Excessive intake of fluoride (usually from industrial pollution or habitual eating of fluoridated toothpaste) can have negative health effects – as is the case with many beneficial elements. However, the only confirmed negative effects from fluoridation are very mild dental fluorosis in some people. This is only cosmetic and usually only noticeable to a professional dentist.

“It is easy to cherry-pick scientific studies, as opponents of fluoridation do, to argue against the effectiveness and safety of fluoridation. But these selected studies usually refer to high fluoride intake or ignore confounding factors. A critical and intelligent consideration of all the literature supports the current scientific assessment that fluoridation of community water supplies is safe and effective in reducing tooth decay.” – *Dr Ken Perrott, retired research chemist*

In June last year, a small but outspoken anti-fluoride group (many of whom did not even live in the city) managed to convince a Hamilton City Council (HCC) tribunal to remove fluoride from the water supply, using evidence from “experts” such as Paul Connett and Declan Waugh. The

response was a strong backlash from both the public and the scientific community.

Hamilton then held a referendum on the issue of CWF, and Hastings and Whakatane also ran referenda. In all three referenda a significant majority of those who voted wanted fluoride retained or reinstated in their water supply.

However, in Hamilton this did not happen. New Health New Zealand (a creation of the New Zealand Health Trust, a political lobby group financed by the ‘natural’ health industry) took South Taranaki District Council to court, claiming that fluoridation is mass medication and illegal. At this point, HCC said they would wait until the court case was done before deciding their next course of action.

The court case, which cost ratepayers \$200,000, ended with a great (and not unexpected) outcome for public health. The High Court ruled that fluoridation of the water supply:

- is not a medical treatment,
 - does not violate the right to refuse medicine,
 - is not in breach of the Bill of Rights,
- and that
- the Council was thoughtful and responsible in making their decision to begin fluoridation,
 - and had no obligation to consider “controversial factual issues” (anti-fluoride propaganda).

Unfortunately, New Health NZ will appeal the judgement; more costs to the taxpayer that

actually could go towards paying for extra dental care.

We personally contacted the HCC members and helped to reduce some of the misinformation. I had hoped everyone on the council knew how political polling worked but alas we even had a discussion regarding statistics, regression and the margin of error. On 27 March HCC saw reason and voted nine to one in favour of reinstating the fluoride supply..

In a review document³, the National Fluoridation Information Service (NFIS) states that fluoridation is cost-effective for populations of 1000 or more people. Fluoridation costs around 50 cents per person per year. Depending on how large the city is, \$1 invested in water fluoridation can save up to \$38 in dental treatment⁴.

New Zealanders need to fight back, challenge the promoters of pseudoscience, and get fluoridation added into more cities around New Zealand.

Daniel Ryan is from Wellington and works as a developer lead at CricHQ. He is the founder of Making Sense of Fluoride and spends his free time carrying out skeptical activism.

www.fb.com/fluoridewater

Notes and References

1. www.facebook.com/fluoridewater/posts/663124637059217?stream_ref=10

2 This mirrors a recent study of efforts to change the minds of those opposed to vaccination. www.motherjones.com/environment/2014/02/vaccine-denial-psychology-backfire-effect

3. www.rph.org.nz/content/d49e7586-71fe-4503-97d3-1a352f266aaf.cmr

4 www.ncbi.nlm.nih.gov/pubmed?cmd=Retrieve&list_uids=11474918

Skepticism for the harassed

Matthew Willey finds Skeptics in the Pub hasn't been as much fun lately.



THIS Friday is our Skeptics in the Pub night. I like going, but I do feel inadequate.

Keep this to yourself, but I have performance issues. I try, as convener, to make the process democratic, but I find myself in the position of lead skeptic, and I am frankly a little wanting in that department.

I am doing a master's course, working full time, looking after demanding children and learning sign language in the evenings. And working with a local astronomy group on a submission to the council. And looking after demanding children.

I know we all have hard lives. This is not special pleading. But it makes me dread Friday nights in the pub with some of the other guys. Being the convenor of the group makes me the mark, it seems, for people who have done their homework.

This is especially true of contentious subjects. We have people with deeply held beliefs show up at our SiTP meetings. Fair enough, we are a broad church. And gosh, they can

argue. I am afraid that their research is extremely thorough. Often they have given their position a lot more thought than I have. Often they have research, books, graphs with which they make their point. They have emails from scientists in the field



David Triumphant over Goliath, by Thomas Crawford, 1848. I'm not saying I ever had those kind of elfin good looks, or indeed wore a toga; the point of the image is its sentiment.

with whom they have conversed. They have trumped me. I am left with nothing but the firm belief that they are wrong and I am right.

Sometimes this has not ended well, I fully admit. I have been told that I am not a true skeptic, and I worry about this, my cover has been blown. I am clearly a fraud, and have no right to take a central place in this group. All I have is my busy life. I've been up since 5.30 and I came out with ketchup on my shirt. My opponent seems to have been at the library most of the day and, judging by their sharpness of tongue, has rehearsed this debate in the mirror. I get my ass kicked.

So how do I live with being not-a-very-good skeptic? How will I gird my loins for this Friday?

Three things, I reckon.

Thing one: The True Skeptic Thing...

If you want to affirm your place as a false skeptic, google the term 'true skeptic'. I did it for this piece. The first seven entries contain three that are pure bunk. One linked to an occultist site about 'Magick', one to an energy healer called Dr Gary Schwarz, and one to Winston Wu's Sceptop site. Wikipedia is there too (which I regard as neutral in this kind of armchair research, since it appears on every conceivable

search page). So let's say half of the top results are definitions of "true skeptic" against which I would rebel being applied to myself. I would hate to think of Winston Wu clapping me on the shoulder for services to skepticism.

The gambit of using the term "true skeptic" is fallacious, as well as being dishonourable. The fallacy involved is, I think, an ad hominem attack. I am having my credentials questioned, and therefore my position on this or that contentious topic is also in doubt. However, I sometimes get my logical fallacies wrong, so pointing out that a given attack is fallacious is a risky strategy.

Still, skepticism is defined in a variety of ways, and who gets to apply this label and who gets to remove it is part of the argumentative armoury that exists out there. The label is a rhetorical device. No longer will I trouble myself if my skeptical credentials are questioned. I care not. Whether I am a true skeptic or otherwise, you still have not convinced me that you are right and I am wrong.

Thing two: How do you fight an encyclopedia?

So settling into my bread and dips on a skeptical evening I also am expected to digest and evaluate chunks of research from people I have never heard of. My opponent may have read several books on this topic, have a box file of research papers, and is personally acquainted with a Doctor from Harvard who supports his view. Nevertheless, I cannot bring myself to agree that the world is, indeed, flat as he asserts.

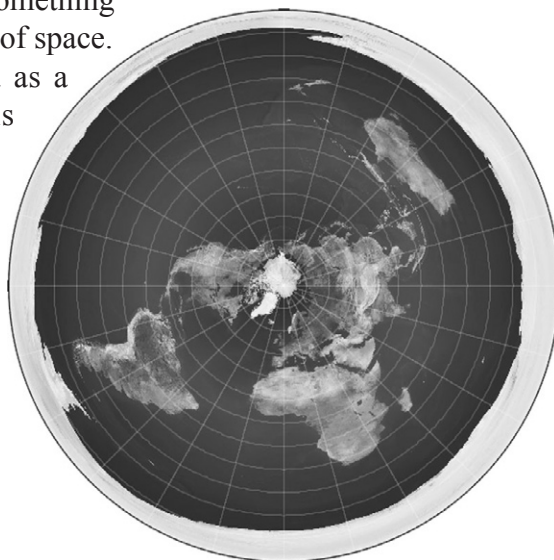
Supporting the Flat Earth theory is a large and respectable body of literature and science of which, until this moment I have been unaware. Some of it seems to involve high-order trigonometry and has something to do with the bending of space. Einstein is mentioned as a covert believer in this theory. I've been up since 5.30 and I came out with ketchup on my shirt. Where do I start?

My ally in this is scientific consensus, which I understand to be generally thought to be true. This is my shot. How come yours is such a minority opinion? Of course this is prepared for. A careful examination of the way that science closes ranks on controversy and defends itself against the small group of scientists who have a radical view on the world. In short, it's a conspiracy.

I don't need to have a complete understanding of the science in order to defend it. I can't possibly be expected to do so. I can invoke what I know about the plausibility of cabals and conspiracies, or even the academic inertia that my opponent cites as the reason that the spherical Earth hypothesis persists in the face of irrefutable evidence to the contrary.

I have at my back the massed knowledge of centuries of hard working geologists, physicists and astronomers, but no matter. The key thing is the conspiracy. Adherence to this is difficult to

explain away. Please, explain to me again how everybody apart from you has gotten it wrong? Now, perhaps this time without equating yourself to Galileo, explain it to me, please?



The flat Earth, the true picture of the shape of our planet. I could beat myself up arguing why this is not a representation about our planet, I could discuss projections. But they already have good answers to that. Simply ask how the conspiracy that keeps this information from us actually works, and sit back and enjoy.

Thing three: I want to have fun

I've been up since 5.30 and I came out with ketchup on my shirt. Did I mention that? I'm tired and can't remember.

Skeptics put themselves out there. They stand up and say hey this is what we stand for, this is what we believe. This, sadly, makes us a little bit of a target. I have a difficult job that involves small-scale politics, and I spend an unhealthy portion of my week being a target. I don't want to do it on a Friday night.

I want to go and have fun. I want interesting conversations and to laugh about stuff, to find common ground with people who value the same things as

I do. We are not there as fodder for someone's sociopathic obsessions. My best and most favourite skeptical night recently was discussing the role of religion in education with two Christian fundamentalists. Make no mistake, I disagree with these people all the way down to the bedrock, but the conversation involved listening and turn taking, we went off-topic, we laughed at jokes and we actually found some common ground upon which we could agree. We left at the end of the evening looking forward to repeating the experience sometime.

I contrast this with debating the nature of the flat earth, or

similar, and although we might express very similar acceptance



of science and rationalism, it seems we have forgotten the simple art of enjoying ourselves. I tell myself it's okay to walk

away at the end of an evening *not* having convinced everyone of your point of view. It's okay to go home in the knowledge that people are wrong and you are right because, you know what? Everyone left at the end of the evening smiling and looking forward to next time.

Now straight to bed little fella, you've got an early start tomorrow.

Matthew Willey works in schools as an adviser for children with disabilities. He lives in Palmerston North with his family, who tolerate his enthusiasm for skepticism with a kindly forbearance. He is English, but losing the accent.

forum

Evidence shows a warming world

IT IS difficult to know where to begin in response to Jim Ring's letter (*NZ Skeptic 110*), but somewhat reluctantly, here goes.

He writes, "But he never makes a case; he only quotes opinion". Well, I gave references for all my arguments, so let me take just one. I quoted from the latest report from Sir Peter Gluckman, NZ's Chief Science Adviser (www.pmcasa.org.nz). He and all the others involved in compiling the report were giving their 'opinion', but I think most people would regard it as an 'expert opinion'. So yes, on that basis, I am guilty as charged.

I am afraid Mr Ring's knowledge of Law is a little sketchy. Expert opinion is often called for in legal cases from specialists in various fields and I can claim

personal experience of this, having been asked for my 'opinion' by solicitors in Edinburgh.

His statement that "the earth is not warming", is truly extraordinary. Even the most hardened sceptics/denialists don't claim that. For example, Chapter 2 of the Heartland Institute booklet, "Nature, not Human Activity, Rules the Climate" is headed, "How much of Modern Warming is Anthropogenic?" Their website is a denialist's delight, but even they acknowledge the fact of global warming. Readers may wish to know that this august body has been defending the tobacco companies for many years (see *Merchants of Doubt* by Oreskes and Conway).

Regarding extreme weather and insurance companies, he fails to quote any references in support of his claim that extreme

weather events have decreased. Let me quote: "Global natural disasters in 2013 combined to cause economic losses of \$192 billion USD, 4% below the ten year average of \$200 billion. The losses were generated by 296 separate events, compared to an average of 259." These figures come from the annual Executive Summary produced by Aon Benfield. Their website (www.aonbenfield.com/catastropheinsight) is worth visiting, as all the disasters are listed.

Finally, the clincher according to Mr Ring is: "The Great Global Warming Scam fell to pieces with the release of the Climategate emails in 2009". Much further on he refers to the dishonesty of so-called climate scientists. The inference is that all climate scientists are to be regarded as dishonest. What evidence does he have for this?

I suspect he is well aware of the fact that no fewer than five

official investigations were conducted. Not one found evidence of malfeasance or anything that would weaken the fundamental results of climate science. Perhaps the best summing up was done by US News and World Report: “Climategate: Science not faked, but not pretty” (www.usnews.com/news/energy/articles/2009/12/12/climategate-science-not-faked-but-not-pretty)

I would like to finish there, but there are a couple of other statements made in his previous letter (*NZ Skeptic 108*) which need to be addressed. “Antarctica is gaining ice”. Well, yes in part. Currently sea-ice is increasing in East Antarctica and its ice-cap may be getting colder, for which we should all be grateful, but West Antarctica is losing ice mass. Interested readers should look to the journal *Nature Climate Change* for information on the Pine Island Glacier (PIG), which discharges into the Amundsen Sea. The latest report says: “Over the past 40 years, PIG has thinned at an accelerating rate, making it the largest single contributor to sea-level rise in West Antarctica”. The glacier covers an area some two thirds the size of the UK.

Finally and I do mean finally, his statement that “The idea of a greenhouse gas is pseudoscience”, is quite sad. Of course the ‘greenhouse’ gases – water vapour, CO₂, methane etc do not function in the same way as a greenhouse and every climate scientist knows that. It has merely become the accepted shorthand which identifies the subject to both scientists and laymen. In the on-line university course I am currently taking on The Science of Climate

Change, this was the very first point made.

Should Mr Ring decide to reply to this, then I shall let somebody else take up the cudgels for Anthropogenic Global Warming. (*abridged*)

Keith L Muir

Moderate warming produces net benefits

NZ Skeptic 109 had a response from Keith Muir to my item suggesting that climate change would be a positive experience unless and until the global mean surface temperature (GMST) rises by a further 2°C. Although Keith says “there is plenty of evidence” to show me wrong, he doesn’t produce any. I really don’t believe that any such evidence exists.

The weighing of aggregate benefits and detriments from small movements in the GMST is undertaken with ‘integrated assessment models’ (IAMs) linking IPCC climate impact models with welfare economics models. The results of all 14 published valuations are brought together by Richard Tol¹. Tol’s graph shows that the aggregate welfare-equivalent impact remains positive until global temperatures increase more than 2.25°C above 2009 levels. Similar findings influenced the UNFCCC to recommend GMST be kept below 2°C from pre-industrial levels. Lesser warming is clearly not ‘dangerous’.

Fortunately, GMST has been decreasing during the 21st century, and last year’s IPCC AR5 projections suggest that there is

little chance of the 2°C warming level being breached by 2100. The only real threats are the extreme events called ‘abrupt climate change’ which are rated as “very unlikely” – ie less of a threat than the next Ice Age.

Those modelled projections were run well before the Stockholm meeting at which the IPCC officially recognised the 15-year “warming hiatus” of 1998-2012. That meeting criticised the models as “running hot” and rejected the projections in favour of a much lower “assessed” table of forecast temperatures. Even the calculator on the Skeptical Science website², whose *raison d’être* is to rebut the arguments of climate skeptics, shows global cooling since 2002 in all the major databases.

Keith Muir cites somebody as believing that ‘extreme weather’ is becoming more frequent. Whatever induced her belief, it wasn’t science – it contradicts both the data (Pielke Jr) and the IPCC’s door-stopper 2012 SREX report.

Those interested in evidence-based science should read the amicus curiae brief³ currently being considered by the US Supreme Court. Pages 19-28 contain a concise summary of three compelling arguments advanced by skeptical scientists. (*abridged*)

Barry Brill
Paihia

1. Tol, RSJ, 2009. The Economic Effects of Climate Change. *Journal of Economic Perspectives* 23(2): 29-51.

2. skepticalscience.com/trend.php

3. tinyurl.com/lxjxnky

Not science as I know it

Alison Campbell looks at the Accelerated Christian Education curriculum.



BY ACCIDENT, I came across the curriculum document for Accelerated Christian Education (ACE), which provides teaching and learning materials to parents who are homeschooling their children. New Zealand students who complete the programme right through to Year 13 gain university entrance.

Home Schooling NZ gives parents advice about the ACE programme, but makes it clear that HSNZ does not work for Accelerated Christian Education or sell their teaching and assessment materials. However, I was startled to see the following listed by HSNZ as one of the “distinctives” [sic] of the ACE programme:

Each student is taught from a biblical perspective developing critical thinking skills that will enable them to discern what is truly “...the good and acceptable and perfect will of God.” (Romans 12:2)

Having had a fair bit to do with the development of the Science section of the current national curriculum document, specifically, the Living World component, I was naturally interested

in seeing how ACE handles a science curriculum. The answer is, poorly. In fact, I feel that it’s most unfortunate that the ACE science programme is officially recognised here, given statements from Sir Peter Gluckman (the PM’s Chief Science Advisor) about the importance of science and science education¹. For example, from the curriculum overview material for Grade 1 students we learn that the student:

- Pronounces and learns new vocabulary words as they are defined and used in the text.
- Discovers God’s wisdom as he² learns about God creating Earth...
- Learns about the design and care of the human eye and ear; high, low, soft and loud sounds.
- Learns about the importance of personal health – clean teeth and hands.
- Gains a respect for God as he learns about God’s wisdom, goodness, kindness, and that all things belong to God.
- Reads stories and answers questions about God’s creation.
- Continues to build eye-hand coordination by drawing shapes, irregular shapes, and directional lines.

That’s it.

In contrast, the New Zealand Curriculum document has a number of subject-specific achievement aims for students at this level, in addition to those relating specifically to the nature of science. For example, students in their first year or two of primary school should:

- Learn about science as a knowledge system: the features of scientific knowledge and the processes by which it is developed; and learn about the ways in which the work of scientists interacts with society.
- Appreciate that scientists ask questions about our world that lead to investigations and that open-mindedness is important because there may be more than one explanation.
- Explore and act on issues and questions that link their science learning to their daily living.

Remember, that’s in addition to the achievement aims for biology (Living World), chemistry (Material World), earth sciences (Planet Earth and Beyond), and physics (Physical World).

And so it continues. I mean, how could this (from the ACE objectives for Grade 3) be construed as science by anyone assessing the document?

Want to join NZ Skeptics or renew your membership?

An on-line subscription/renewal form (internet banking and credit card options) is available on the New Zealand Skeptics website (www.skeptics.org.nz) – click on 'Join us'.

For internet banking, use the details below; it is essential that all references are completed.

First ref (particulars): Your Surname

Second ref (code): First Name

Third ref (if available): Membership type

ANZ Bank a/c name: New Zealand Skeptics

a/c number: 11-7810-0185045-11

If paying by post, fill in the form below, tick box for type of membership and post to:

The Treasurer, NZ Skeptics Inc., PO Box 30501, Lower Hutt 5040. Membership is for a calendar year.

Cheques to be made payable to "New Zealand Skeptics". Receipts issued on request only.

☐ New membership

☐ Renewal

☐ Waged Individual: \$40.00

☐ Unwaged Individual/Student: \$20.00

☐ Household: \$60

☐ Overseas Individual: \$50.00

(Note: payments must be in NZ Dollars. Paying by credit card is an easy way to get NZ Dollars to us – see payment instructions above)

Name: _____

Address: _____

Email: _____

Disclaimer: In becoming a member of the NZ Skeptics (Inc.), I acknowledge that no member of the society may speak on its behalf except its officers or those specifically nominated by the Chair-entity.

Signature

Date

bioblog

"Studies Bible topics such as Jesus' return; sin, death, and the curse; man's freedom to choose to love and obey God."

Or this?

"Discovers the Bible to be the final authority in scientific matters."

Science, it ain't. It would appear that helping students to gain and enhance critical thinking skills isn't on the curriculum either – after all, teaching students to look to authority for the answers runs completely counter to encouraging critical thinking and teaching students how to weigh up evidence.

While I haven't read all the Packets of Accelerated Christian Education (PACEs) available for the curriculum, partly because I am not going to buy them in order to do so, I have read

through the samples available online³. Among other things, the materials I viewed encouraged rote learning rather than deep, meaningful understanding of a subject – a long way indeed from current best-practice models of teaching and learning.

However, others have read ACE's PACE documents, and have been extremely critical of them. The *Times Education Supplement*, for example, was startled to find that ACE materials available in 1995 contained the claim that the Loch Ness Monster has been reliably identified and seems to be a plesiosaur. (It seems this reference has since been removed from new textbooks published in Europe.)

The TES also addressed some rather trenchant comments to the

UK educational body responsible for giving the ACE curriculum equivalent status to O and A level examinations. Perhaps the NZ equivalent of that body should give the ACE documents a closer second look.

Alison Campbell is a lecturer in the Biological Sciences Department at Waikato University. She writes Bioblog as a way of encouraging critical thinking, looking at scientific papers that are relevant to the Level 3 curriculum and Scholarship, and fielding questions from readers.

Notes and References

1. www.pmcasa.org.nz/blog/stem-ming-the-tide-the-need-to-improve-science-education-not-abandon-it/

2. No female pronouns used, that I could see. (No room for female scientists in this curriculum, either – students are introduced to "early men in science".)

3. www.aceministries.com/curriculum/?content=fourthEd

If undelivered, return to:

NZ Skeptics
P.O. Box 30501
Lower Hutt 5040

New Zealand
Permit No. 3357

Permit



Loretta Marron receives the Order Of Australia

Founder of Friends of Science in Medicine and serial presenter at NZ Skeptics conferences Loretta Marron has been recognised for her services to community health.

The award sits alongside her three Skeptic of the Year awards, won in 2007, 2011 and 2012.

Congratulations Loretta!

Renew or Join Now for 2014

See form inside or use the easy online form at:

skeptics.org.nz/subscribe

NZ Skeptics (Inc.)

Chair-entity: Gold (Wellington), chair@skeptics.org.nz

Secretary: Craig Shearer (Auckland), secretary@skeptics.org.nz

Treasurer: Matt Beavan (Wairarapa), treasurer@skeptics.org.nz

Committee: Katie Brockie (Dunedin)
Robert Woolf (Auckland)
Keith Garratt (Rotorua)
Barry Lennox (Rangiora)

Matt Dee (Wellington)
Jim Cheetham (Dunedin)
Nathan Grange (Auckland)

Media Contact: Vicki Hyde, media@skeptics.org.nz; Michael Edmonds, michael.edmonds@cpit.ac.nz

NZ Skeptic Editor: David Riddell, skepticeditor@skeptics.org.nz

Video Librarian: Mark Honeychurch, mark@honeychurch.org