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

How lumpy is random?

Pink and White Terraces

Christmas – the annual ordeal

Alternative medicine 'journal'

Water treatment woo

CUSP podcast turns four

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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.

editorial

Forwards and backwards

AND so another year begins, and as I write this on New Year's Day 2014 there is the opportunity, as with every new year, to reflect on past years and consider the prospects for the future. 2014 will no doubt be an especially busy year for recollections and commemorations, marking as it does the centenary of the start of World War I. Few could have had any idea, on that New Year's Day of a century ago, of what the next few years would bring.

It's always fun at this time to look back at what predictions the psychics have made for the previous year. **RelativelyInteresting.com** has a good summary of their efforts for 2013. Among the more entertaining were that Prince William and Kate would have a daughter "whom many will believe is the reincarnation of Princess Diana", experimental monkeys would escape from a lab and cause a pandemic, and meditation would be proved to be the gateway to contact loved ones on the other side. As the Danish proverb says, predictions are difficult, especially about the future.

Looking a bit further back, 10 years ago (2 January 2004) I took part in a successful hunt for the supposedly extinct New Zealand storm petrel, not reported for more than a century but reliably sighted a couple of months previously less than 100 km from downtown Auckland – a truly unexpected development. In the intervening decade live birds have been captured, their DNA analysed, and just last year their breeding grounds were discovered on Little Barrier Island.

The Summer 2004 *NZ Skeptic* editorial (by Annette Taylor, also on the trip) commented that the storm petrel's story was very different from those of other elusive creatures such as moa, lake monsters, or Bigfoot – or, for that matter, the supposed 'panthers' in the South Island. The *NZ Herald* website had another article about this mystery beast on 22 October 2013, photographed walking across the ice of Lake Clearwater in August. The photo looks quite dramatic, with a distant feline silhouette sharply defined against the icy landscape and no obvious visual cues to help assess size, but when the animal is magnified and examined in isolation it's clearly a feral domestic cat.

It's a fairly safe prediction that 2014 will see more sightings of South Island panthers, but no actual specimens. What else the year may hold is anyone's guess.

David.

How Lumpy is Random? and other burning questions in quantitative reasoning

David Bulger

Most people are very bad at distinguishing genuine patterns from random noise, but fortunately there are statistical methods that can help. This article is adapted from a talk at the NZ Skeptics Conference, in Wellington, 7 September 2013.

STATISTICS is one of those things, like health, politics and home maintenance, that everyone should know a little about. It is important in the life of an informed modern citizen and a major part of scientific literacy.

A narrow definition of numeracy implies proficiency at specialised calculations; a broader notion of it encompasses intuition about quantity and significance, and a general understanding of how statistics works and what statistical claims mean. These concepts are essential for a critical engagement with journalism and public discussion.

For instance, some sense of the scale of very large and small numbers is required to evaluate the plausibility of abiogenesis and the evolution of diverse species by natural selection; the whole theory is absurd if we don't appreciate the Earth's immense age and size (especially when compared to the speed of molecular biochemical processes and the size of the relevant molecules and cells). Intuition for significance helps us draw the line between mere coincidence and meaningful patterns when we read a number of anecdotes about vaccinated children developing autism, or see a string of record-breaking storms in the news, or see a cloud bearing a striking resemblance to (Renaissance painters' depictions of) Jesus. Lastly, a qualitative overview of statistics tells us what kinds of questions statistics can and cannot answer, and how statistical arguments can be used to inform or mislead.

James Kerr, left, introduces David Bulger at the 2013 NZ Skeptics Conference.

The online version of this article includes some interactive content to augment the exposition. Please consider accessing it on the NZ Skeptics website (**www.skeptics.org.nz**) in an HTML5-enabled browser.

Pareidolia

We don't have fangs, exoskeletons, camouflage or venom; humans rely on intelligence to

survive. A big part of intelligence is pattern recognition, and we're very good at it. Maybe too good. The human brain does not take an 'innocent until proven guilty' approach to looking for patterns; we imagine trends and connections on the slightest whiff of evidence. This kind of over-interpretation of random data is called pareidolia.

Sometimes we know the perceived patterns are imaginary, and they can even be useful. For example, grouping the stars into constellations sketching out fanciful images aids in learning the arrangement of the night sky – whether or not we believe that Poseidon placed Cassiopeia in the sky as a punishment. But when we don't know *a priori* whether perceived patterns are systematic, intuition is a poor guide. One of the main aims of statistics is to provide objective quantitative measures to determine whether apparent patterns are too strong to appear by chance.

Part of the difficulty with intuition is that truly independent random data tends to cluster more than people expect. (Random is lumpy!) For instance, the chance of any two people sharing a birthday is about 1/365, or 0.27 percent. However, this seemingly rather unlikely event probably will happen (with a 50.73 percent chance) in some pair, given a group of only 23 people – but it will still seem like a surprising coincidence.

To test your own intuition for the amount of clustering appearing in independent data, try the interactive random dots image in the online version.

Hypothesis testing

Hypothesis testing is one of the central methods of statistics. Loosely, it is used to quantify the amazingness of a coincidence. When a pattern is perceived, hypothesis testing can be used to distinguish between pareidolia and real systematic trends.

The human brain does not take an 'innocent until proven guilty' approach to looking for patterns; we imagine trends and connections on the slightest whiff of evidence.

The world is already awash with quantitative, nitty-gritty, formulaic descriptions of the mechanics of hypothesis testing, and I'm not going to add to them (not here, anyway). Instead, let's focus on the conceptual framework.

Hypothesis testing is all about measuring the consistency between observed data and some hypothesis (called the null hypothesis) about where the data came from. This is done by gauging how extreme the data would be, if the null hypothesis were true. 'How extreme' really means 'How improbable would this data be if the null hypothesis were true?' or more accurately 'How likely would we be to see something as extreme as – or more extreme than – the observed data, under the null hypothesis?'

Suppose we make an observation which produces two numbers. We can use these numbers as horizontal and vertical coordinates to plot a point on a graph. If we have a null hypothesis, that is, a theorised mechanism for producing observations, we can use it to produce a large sample of points on the graph; this is shown in Figure 1a as a cloud of grey dots representing hypothetical observations.

Now suppose we make an actual observation, and plot it in black, superimposed on the cloud of hypothetical observations. If it falls comfortably in the middle of the cloud (eg, Point A), then it accords perfectly with the null hypothesis: the grey dots and the observed point may have the same distribution. On the other hand, if it falls well outside the cloud (Point C), then it is not the kind of point produced by the hypothesis; we have strong evidence against the hypothesis.

But where do we draw the line? If the observed point falls just on the outskirts of the grey cloud (Point B), it can be difficult to judge how consistent it is with the hypothesis. Mathematics (or, often nowadays, computer simulation) can be used to calculate how extreme the observed point is with respect to the grey distribution. Conventionally, if the observed point falls in the outer five percent of the grey cloud, the null hypothesis is rejected. (This threshold, five percent, is called the significance of the test. It describes how much evidence against our null hypothesis we will need to see to persuade ourselves to reject it.) Figure 1b shows a decision boundary separating the most extreme five percent of the null distribution from the most typical 95 percent.

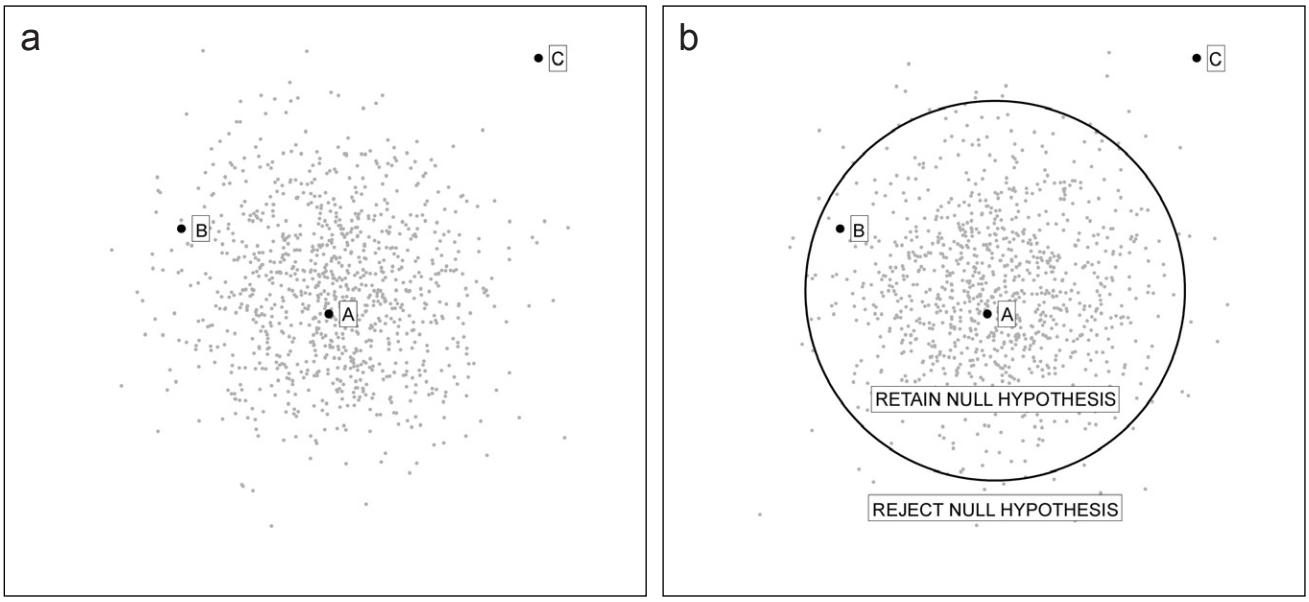


Figure 1. In (a), the grey cloud represents the null distribution, a theory about the distribution the observed data should follow. If we observe A, the theory seems reasonable. If we observe C, the theory seems unreasonable. But it is less obvious whether an observation of B significantly contradicts the theory. In (b), we separate the most typical 95% of the null distribution from its most extreme 5%; since B sits within the most typical 95%, we conclude that it agrees with the theory.

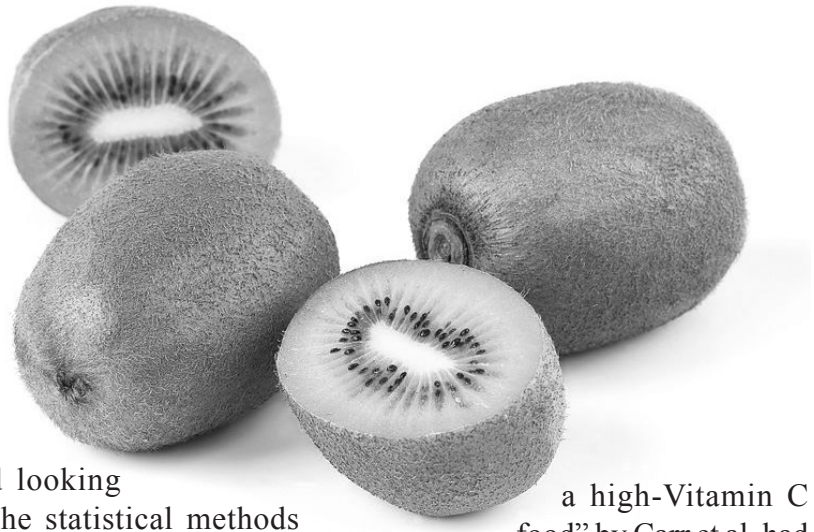
This conceptual framework has some implications. Firstly, the null hypothesis needs to be a specific, falsifiable hypothesis, and therefore usually states that some variable, medical intervention, etc has no effect on some outcome. Also, there is no such thing as evidence for the null hypothesis, only evidence against it; the question is whether there is enough evidence. If the null hypothesis is nearly but not quite true, eg, if there is a small but systematic relationship between two variables, then a hypothesis test based on a small sample will be unlikely to find the relationship, whereas a large enough sample will find it. So if a study retains the null hypothesis, it means one of three things: too little data was used, or there is no relationship, or there is a relationship but we tested for the wrong kind of relationship. And even if there is no relationship, the significance level (also known as the false positive rate) gives the probability of wrongly rejecting the null hypothesis, so that typically one in 20 studies will find a non-existent relationship.

Let's consider the danger of searching for the wrong kind of relationship in more detail. The 'answer' a hypothesis test gives can only be as sophisticated as the question – and generally, more sophisticated questions require more data to answer. For instance, if a study investigates the health effects of a certain food, drug or exercise, usually it only considers the effect on an average subject.

Consider clinical experiments aimed at determining the Recommended Daily Allowance (RDA) of 'Nutrient X'. Presumably, each person actually has a different optimal intake of Nutrient X, so if we give everyone the same dosage, it will be a little too much for some people, and not quite enough for others. With a large enough sample, we might even be able to determine which other variables influence each subject's optimal intake. However, it requires more data to study the combined effect of Nutrient X and daily exercise, say, than the effect of Nutrient X alone, and data sets are never as large as we might like. Estimating only the average optimal intake of Nutrient X is a compromise, and suits almost no one perfectly. If the RDA has been 250 mg/d, and a new study indicates that it should be raised to 300 mg/d, that may increase average health, but it will at least slightly decrease the health of almost half the population! See the online version of this article to try this yourself.

Statistics in journalism

In preparing to present this material at the NZ Skeptics conference in Wellington last year, I wanted to illustrate statistics' place in daily life by finding a newspaper piece reporting on a scientific study, tracing it back to the original journal article,



and looking at the statistical methods involved and how they were presented in the newspaper. The very first science piece I found was **www.stuff.co.nz/science/9088473/Kiwifruits-surprising-health-benefits**, reporting on a study conducted at Otago University on kiwifruit's effect on health.

Credulously reading the newspaper piece, we learn that "good things can happen when normally fruit-and-vegetable-averse university students eat two kiwifruit a day." The piece indicates that, during the six-week study, the two halves of the sample group ate either two kiwifruit, or half a kiwifruit, per day. The two-kiwifruit group showed significantly less fatigue and depression than the other group. The piece also mentions that the study was partly funded by Zespri International; this shouldn't necessarily prejudice us – nutritional research on kiwifruit seems an appropriate thing for Zespri to spend money on – but obviously it raises the possibility of biased or perfunctory work.

The original journal article, "Mood improvement in young adult males following supplementation with gold kiwifruit, a high-Vitamin C food" by Carr et al, had recently appeared in the *Journal of Nutritional Science*, and naturally goes into a lot more detail about the study. It explains that the sample comprised 36 male university students, selected after some screening. Smokers were excluded, as were excessive drinkers, diabetics and anyone with a bleeding disorder or kiwifruit allergy or on prescription medication; there may be good reasons for these exclusions, though (particularly for young adult males) is the sample still representative of the population?

However, the remaining exclusions are where, for me, the story started to unravel. The study also excluded anyone with high fruit and vegetable consumption, anyone taking Vitamin C supplements, and anyone with average or higher blood plasma concentration of Vitamin C. The article's study design section explains that, during the six-week observation period and for five weeks prior, the subjects were instructed to keep to a diet low in Vitamin C. That is, the researchers deliberately narrowed the experimental sample to subjects who already had low Vitamin C, and ensured that they continued to get too little Vitamin C other than via kiwifruit. It turns out that two kiwifruit per day is healthier than half a kiwifruit per day – when kiwifruit is given a monopoly over your Vitamin C intake.

The newspaper piece mentions nothing about the exclusions or restricted diet. The journal article's conclusion is much fairer: "Overall, our kiwifruit supplementation study shows that a positive effect on mood and vigour can be measured in an otherwise well population with suboptimal intakes of fruit and vegetables and Vitamin C."

It is tempting to imagine that news originating from the objective disciplines of science and statistics can be trusted. Unfortunately, it is easy for the interpretation of such work to be distorted, due to conscious or unconscious bias, sloppiness, or simply word count pressure. Often, the distortions in journalism and other public discussion can only be guessed at, but a general awareness of the common sorts of misrepresentations, at least, is helpful.

The peculiar geometry of multi-dimensional data

Figure 1 depicts two-dimensional data: each observation produces two numbers, and by using these as coordinates, we can plot the observations in a two-dimensional graph. Using perspective, 3D glasses or solid models, we can depict three-dimensional data in a similar way. Because we live in a universe with only three spatial dimensions, we cannot use the same graphical methods for higher-dimensional data, but of course many studies

involve observations which each produce many more than three values. High-dimensional data has some counterintuitive geometrical properties. In fact, even two-dimensional data sometimes confounds our intuition.

From time to time, one hears driving ability used as the classic illustration of the cognitive bias known as illusory superiority, people's tendency to overestimate their abilities and qualities relative to others'. Over the years, several studies in various countries have found that most people surveyed consider themselves to be above-average drivers. It is then pointed out that it's not possible for most people to be better than average – and this seems reasonable (if 'average' means 'median' anyway). The seemingly inescapable conclusion is that a lot of people overestimate their driving ability.

That most people overestimate their driving ability should be obvious to anyone who's ever been in a car – or near a road. (And kiwifruit probably are quite good for you!) But this is not implied by the survey results, because what constitutes 'driving ability' is subjective and multi-dimensional. Many qualities are involved in driving ability. To keep things simple, suppose that driving ability encompasses just 'skill' and 'caution', and that everyone agrees how to measure skill and caution, but that opinions vary on the relative importance of skill and caution. Probably most drivers will put more effort into developing the qualities they rate as more important, whether skill or caution. So most drivers will be, subjectively, above average – with no self-deception. For help visualising this, try the interactive driving ability graph in the online version.

In fact, driving ability comprises many more than two dimensions, strongly accentuating this effect. Almost any driver will be above average in some qualities, and below average in others. We can expect that drivers will tend to overvalue their strong points, and undervalue their weak points, for two reasons: drivers will work harder to learn habits they value, and 'sour grapes' (drivers will eventually dismiss things they can't master). Our initial idea – that most drivers' considering themselves above average implied widespread overconfidence – was flawed, because it assumed dimension reduction to be trivial and objective.

Statistics has been described as 'the language of science', because of its focus on testing for disagreement between data and theory. Some familiarity with statistics, and numeracy in general, makes for a more informed and engaged public.

David Bulger is a senior lecturer in the Statistics Department at Sydney's Macquarie University. As well as maths and computing, he has a misguided inclination for playing and writing music.

The Pink and White Terraces: still lost?

Reports of the 'rediscovery' of the Pink and White Terraces may be premature, writes ***Bill Keir****.*

ON 2 February 2011 a post on the blog of GNS Science's outreach educator Julian Thomson announced:

> "Pink Terraces found! Yes – the unbelievable news is that in spite of being located at the centre of New Zealand's most violent eruption in historic times, shaken by volcanic earthquakes, covered by many metres of mud and ash, and then flooded underneath a large lake, a large area of New Zealand's iconic Pink Terraces of Rotomahana has been rediscovered!"[1]

Newspapers and television gave extensive coverage, and blogs posted in March 2012 gave updates with higher resolution data. The project leader, Dr Cornel de Ronde, promoted the finds with public lectures, television interviews, and YouTube video presentations. In one video he stated categorically, "There is no doubt about it … [the Pink Terraces] were not modified by the eruption."[2]

These conclusions came from imagery obtained during the Lake Rotomahana Survey Project using sophisticated underwater sonar instruments, GPS systems and cameras capable of yielding very accurate location data and images of physical features under water. The project's main

aim was to improve knowledge of the local geothermal fields. Any evidence of the Pink and White Terraces would be coincidental spinoff, but of great public interest.

The published images appear to show scallop-shaped stepped features of solid material similar to the famous silica terraces, which were either buried or destroyed during the eruption of the Tarawera-Rotomahana rift on 10 June 1886. However, these terrace-like objects were discovered at depths of 50-60 m in the lake. A simple calculation of the relative lake levels demonstrates that the objects found by the GNS team are almost certainly not in-situ remains of the terraces – they are too deep in the lake.

I based my calculation on the well-recorded fact that before the eruption the outlet of Lake Rotomahana, the Kaiwaka Stream, flowed into Lake Tarawera. Ferdinand von Hochstetter's 1859 map of the area labelled this stream with the words, "Disembogues into Lake Tarawera."[3] Therefore, before the eruption, Lake Rotomahana must have been at least one metre higher than Lake Tarawera to give sufficient fall for the water to flow the 1.5 km between the two lakes.

We also know that, before the eruption, the Pink and White Terraces descended to the shore level of Lake Rotomahana – many pre-eruption photos verify this. The precise vertical height of the terraces above the lake was never recorded prior to the eruption. The most commonly quoted approximate figure for the White Terraces is 30 m. The White Terraces were probably slightly higher than the Pink Terraces.

We also know that outlet blockage and other factors caused Lake Tarawera to rise after the eruption. Ronald F Keam, who published a book on the eruption in 1988, estimated this rise as no more than three metres.[4] A visual comparison of two well-known photos of Lake Tarawera's Wairoa inlet and surrounding peninsulas – one taken before the eruption by George D Valentine, the other taken after the eruption by Charles Spencer – confirms that Keam's estimate is about right.[5] Lake Tarawera has maintained about this level until today, with one dramatic fall of two or three metres in 1904 when the outlet blockage burst, causing a flash flood that affected communities downstream.

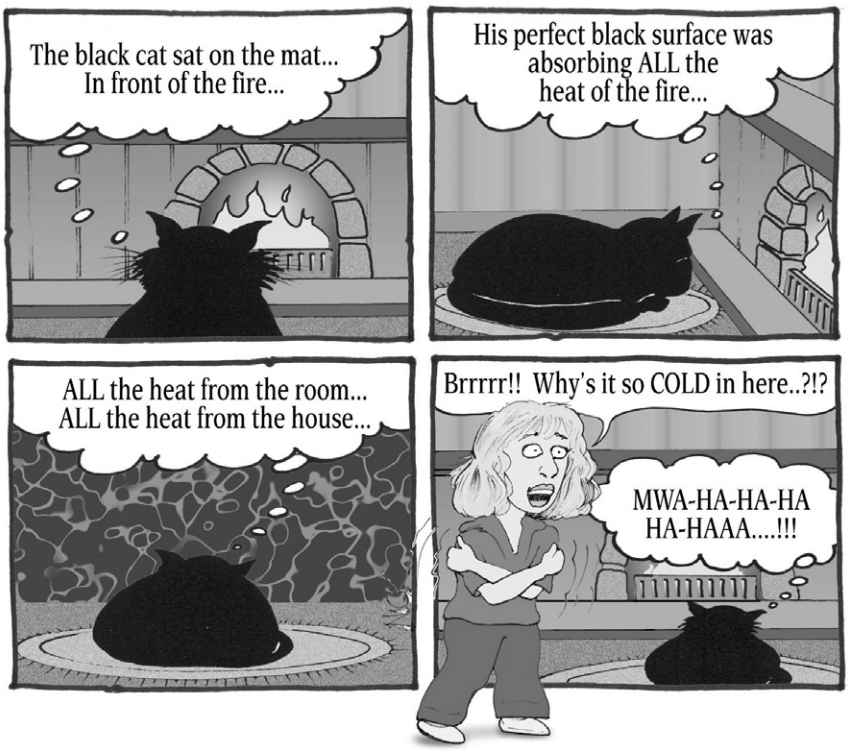
There are no accurate data for the true elevations of the lakes before the eruption, but today's mean elevations are found on the latest topographical maps. My calculation starts with these known values.

Today, Lake Tarawera is 299 m above mean sea level (asl), and Lake Rotomahana is 337 m asl. Therefore, today, Lake Rotomahana is about 38 metres above Lake Tarawera.

Taking today's level of Lake Tarawera to be three metres above its pre-eruption level gives a nominal pre-eruption height of 296 m asl for that lake. This demands at least 297 m above mean sea level for the pre-eruption height of Lake Rotomahana because its water flowed into Lake Tarawera.

It follows from these facts, and one confident estimate, that, (a) Lake Rotomahana could not have risen more than 40 metres from its pre-eruption level to today's level, (b) The base of the Terraces, if still *in situ*, could not be more than 40 m below the

NEARING ZERO by Nick Kim



The White Terraces of Lake Rotomahana, as painted by Charles Blomfield prior to the Tarawera eruption.

surface of today's Lake Rotomahana, and the top of the terraces may be as little as 10 m below the surface if they are still *in situ*. A shallower depth than this would be yielded if the original height of Lake Rotomahana were higher above Lake Tarawera than the one metre I have assumed. A shallower depth would also result if the pre-eruption level of Lake Tarawera were higher than I have assumed. A variation of one or two metres in my calculation is possible from the known small variations in mean sea level and the seasonal levels of the lakes.

In-situ Pink and White Terraces at 60 m depth in today's Lake Rotomahana would require the pre-eruption level of Lake Tarawera to be about 20 m lower than it is today to enable Rotomahana's water to flow into it. Given the photographic evidence, this is not credible. These calculations rule out the possibility that GNS scientists have discovered in-situ remains of the Terraces at a depth of 50-60 m in Lake Rotomahana.

So, what have the scientists found at these depths? There are several possibilities. They could be lower sections of the Terraces that were below lake level prior to the eruption and never seen by humans. They could be remnants of other silica terraces that formed before earlier eruptions in prehistoric times and were buried in the lake long before humans arrived. They could be fragments of the Terraces displaced into the crater by the explosion. They could be other step-shaped objects exposed in the crater by the explosion. Or they could be something else entirely. The evidence presented by the scientist is not sufficient to settle this question. The published images are far from convincing.[6] They are open to a variety of interpretations.

Efforts to determine the fate of the Pink and White Terraces began immediately after the eruption. At that time the site of the original Lake Rotomahana was a huge explosion crater more than 100 m deep and more than a kilometre wide, with a small hot lake at the bottom, and surrounded by walls of ejected mud. It took about 10 years for this hole to fill with water to the level of the lake we know today. Investigators had plenty of time to find the Terraces if they were in the slightest discernible in the crater, and there were plenty of investigations. Scientists, surveyors, photographers and newspaper reporters were on site assessing and recording within a few days of the eruption. The landscape was dramatically changed, but they knew roughly where to look for the Terraces. Over ensuing months some daring investigators ventured into

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Compiled by Annette Taylor

Magnetic claims challenged

ONLINE claims that magnetic wrist and ankle bands have therapeutic benefits have had to be removed following a complaint to the Advertising Standards Authority (*NZ Herald*, 24 December).

The complaint, brought by NZ Skeptics committee member Mark Honeychurch, said the Magnetic Magnets' website made unsubstantiated therapeutic claims and were likely to mislead consumers.

Magnetic Magnets is a New Zealand-owned company and sells exclusively online. Its website claimed the product "releases Far infrared wave, which can help relieve tension and improve the blood circulation. Releases negative ions to purify blood, activate cells and promotes the balance of the body's PH."

Mr Honeychurch said there was no evidence provided to back up the claims, and an online search "seems to suggest that no reliable link has ever been found between magnets and the kinds of health improvements that are claimed".

Magnetic Magnets provided information from websites, including Wikipedia, and an email from a customer backing up the product's effect.

The ASA complaints board said the evidence provided was insufficient to support the claims made. It found the advertisement was likely to mislead consumers and did not present scientific information in an accurate manner.

The board noted at the time of the December 11 decision, the website was unchanged, but after being contacted by APNZ the claims were removed. It now says far infrared waves "generate heat", and that "heat therapy can be beneficial to those with arthritis and stiff muscles and injuries to the deep tissue of the skin".

Something to flash the pearly whites about

A complaint about a pro-fluoridation advertisement has been rejected by the Advertising Standards Authority (*Waikato Times*, 1 January).

The advertisement showed a family holding a billboard that said "I vote for fluoride being added to water." It was placed in the *Times* by the Ministry of Health and Waikato District Health Board last September. It also stated that fluoride "makes a huge difference in reducing tooth decay, particularly for children", "is safe", and "provides an affordable benefit to everyone."

Fluoride Free Hamilton coordinator Pat McNair laid a complaint with the authority claiming all three of the statements in the advertisement were false.

"The ad was designed to mislead the public prior to a referendum by way of propaganda," she said in her objection.

The complaints board ruled all three statements had been substantiated, none would deceive or mislead consumers and the advertisement "had observed the requisite standard of social responsibility".

It also noted the DHB had "a duty to provide information to the public", and would be seen as an expert in the area due to its role.

Mrs McNair told the *Times* she stood by her complaint and that the complaints system was flawed.

"By its own admission (although the ASA is theoretically an independent body) it cannot rule against another Government authority if they are broadly considered to be 'experts' in the field and the ASA has been publicly warned to 'tread carefully' in this area," she said.

The dismissal of the complaint was a good outcome for DHB, said its communications director Mary Anne Gill.

Tribunal clears iridologist

An iridologist has been partially cleared of the inappropriate treatment of a cancer sufferer after a tribunal ruled she had acted out of compassion for a "manipulative" patient (*Dominion Post*, 2 November).

Te Horo natural health practitioner Ruth Nelson, 72, was alleged to have failed to provide proper care in her treatment of Yvonne Maine, who died from skin cancer in 2010 (*NZ Skeptic 109*).

A 20 cm lesion on Mrs Maine's head had eaten away skin and

bone to reveal her brain when she finally sought mainstream medical treatment in July 2009. She had palliative surgery, but died 10 months later.

In a case brought by the Office of the Health and Disability Commissioner, Nelson was defending allegations her treatment breached eight provisions in the Code of Health and Disability Services Consumers' Rights. The Human Rights Review Tribunal has upheld one breach – that Nelson "did not comply with her duty to provide services to Mrs Maine with reasonable care and skill".

They said the elderly iridologist should have refused to treat Mrs Maine when first faced with the rotting, oozing lump on the Feilding grandmother's head in February 2008. Her failure lay in not refusing to have anything to do with Mrs Maine's cyst from the time it was shown to her, and that failure was not the result of indifference, carelessness or negligence.

The tribunal did not accept the version of events given by Mrs Maine's daughters, Carla Taylor and Julieta Williams. In their testimonies they said Nelson told their mother she could cure the cyst, and warned her off going to hospital. It may be that Mrs Maine lied to her daughters to avoid them pursuing further medical treatment, the report said.

Carla Taylor said she was disappointed with the result. She had hoped the inquiry would lead to the formation of a naturopathy body with binding codes and standards, to which registration should be compulsory.

Neon gets all-clear

Eight-year-old Neon Roberts, whose New Zealand-born mother fought against cancer treatment in Britain, has received an all-clear by doctors (*NZ Herald*, 23 December).

Sally Roberts tried to prevent the treatment for his brain tumour and went on the run with the boy, believing radiotherapy would "fry his brain". The British High Court ruled Neon should be treated with conventional therapy and live with his father, Ben, at his London home.

In December they told the *Daily Mail* he was in remission. "We are delighted to be able to share our family's joy that all Neon's scans, including one last week, have shown no sign of the cancer returning," Mr Roberts said. "We couldn't have wished for a better Christmas present."

Britain declares Scientology a religion

Scientology has been officially recognised as a religion in Britain after the country's highest court swept aside 158 years of law to rule that worshipping a god is not essential to religion (*NZ Herald*, 13 December).

Five Supreme Court justices redefined religion in law in order to enable Scientologists to conduct weddings. The judgment followed a five-year legal battle by Louisa Hodkin, a 25-year-old Scientologist seeking the right to get married at the Church of Scientology chapel in central London. She and her fiancé hailed the ruling as a victory for freedom of worship.

Meanwhile, the Government is taking legal advice amid fears that the judgment could lead to organisations branded as cults receiving tax breaks. In 2006 Michael Gove, now the Education Secretary, used parliamentary privilege to call Scientology an "evil cult".

Conference combats sorcery

Participants at a conference in Papua New Guinea on how to stop sorcery-related violence had to reach for their handkerchiefs throughout the three-day event (Radio New Zealand, 4 December).

It's estimated that 150 people – mostly women – are killed every year in PNG after being accused of sorcery but under-reporting and a lack of data mean that number is probably wildly inaccurate.

Churches, civil society and NGO's were well-represented at the conference which met in the Eastern Highlands provincial capital in December, but others lamented the lack of government presence.

The gathering generated robust debate over sorcery's reality and underlined the urgency with which action on stopping atrocities related to sorcery accusations must be taken – "but, as yet, there's no agreement on how that should be done," Annell Husband reported. "What's become painfully clear is the scope of the problem with which PNG is grappling and how a one-size-fits-all response in a country of such cultural diversity is unlikely to be successful."

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the crater to look for evidence of them. In July 1886 guide Alfred Warbrick, accompanied by *Auckland Evening Star* reporter Jim Philp, climbed down a rope. Warbrick thought he identified a portion of the Pink Terraces under a series of mud banks, but there was nothing conclusive.

There was no doubt that the Terraces had vanished. The debate was always about whether they had been completely blown to pieces, partly damaged, or just buried in mud, and it was never resolved. The recent high-tech findings have not added much to this debate, telling us little more than we learnt from the first investigators, who had the advantage of not having to search under water. Certainly the arithmetic of the lake levels is strong evidence that the GNS scientists are mistaken about what they have found.

On 20 September 2012 The *Daily Post* in Rotorua published an article by me presenting this case,[7] followed by an invited response from Dr Cornel de Ronde the following day. Dr de Ronde was scornful of my arithmetical argument, insisting that his high-tech data is superior and conclusive that the Pink Terraces are unmodified at 50-60 m deep in the lake. The *Daily Post* published my letter of defence on 2 October 2012.

The GNS blogs and YouTube links are still on the websites in their original form, showing how easily popular fallacies can become entrenched in the public record – in this case, because scientists rushed to the mass media with hyperbole and haste unbecoming of their profession, and failed to do some basic preliminary research and simple arithmetic.

References and notes

1. Julian's blog: **juliansrockandiceblog.blogspot.co.nz/2011/02/final.html**
2. YouTube video by Cornel de Ronde: How We Found the Pink Terraces. Julian's blog February 2011.
3. **www.aucklandcitylibraries.com/DigitalLibrary/resourcepages/heritageimagesonline.aspx** (search: maps only advanced search: NZ Map 5694d, 1859). Caution: Hochstetter's map is more of a sketch map than an accurate survey map. Compare Keam's sketch map (derived from photos) posted on Julian's blog 10 June 2011.
4. Keam, RF 1988: Tarawera: The volcanic eruption of 10 June 1886, page 400. Published by the author.
5. Keam 1988: *ibid*. pp. 31, 192.
6. For example: **img.scoop.co.nz/stories/images/1106/26f24baacdbdb8cb98ab.jpeg** Note some unexplained anomalies in this GNS image and caption: The convex edges of the scalloped objects in the image face south, but the original White Terraces faced west or northwest. There was probably a small tongue of the White Terraces spreading somewhat more southerly, but certainly not anywhere near 180 m wide. (Refer to Hochstetter's 1859 map and several pre-eruption photos of the White Terraces available online that clearly indicate the Terraces' orientation in relation to surrounding landscape features such as Mount Tarawera and the distant southern skyline.)
7. **www.nzherald.co.nz/rotorua-daily-post/opinion/news/article.cfm?c_id=1503435&objectid=11075825**

Bill Keir is a freelance journalist and member of the Auckland Astronomical Society. **Cornel de Ronde's response in the** *Rotorua Daily Post* **('Fault found in Terraces scepticism') can be read at www.nzherald.co.nz/rotorua-daily-post/opinion/news/article.cfm?c_id=1503435&objectid=11075824**

are you sure?

Christmas: the annual ordeal

***Matthew Willey** finds it difficult to get into the spirit of the holiday season.*

IT'S over now. But Christmas for me is an annual ordeal. I loathe it.

But even typing this admission, I hear the intake of breath from you who are more tolerant of the festival than I am. I anticipate your reply, having been at the receiving end of your disapproval for years: scrooge, killjoy, grumpy old curmudgeon. But let me explain. Just for once I ask that, rather than reaching for these easy labels, you fun-loving Christmas partygoers set aside few minutes to hear me out.

Think about what you might need to do to opt out of Christmas. Try to imagine that. If you think that Christmas is a benign anniversary, think again.

Back in my heady, optimistic thirties (ah, youth!) I made the decision to cancel Christmas. I announced that I would not be celebrating Christmas, and asked that cards, presents etc should be expressed in donations to charity or not at all. Gifts and cards would certainly not

be returned. My house would not be decorated. No. I would not have a Merry Christmas. I saw too much to dislike in this seasonal indulgence and would have nothing more to do with it.

"Just when I thought I was out ... they pull me back in," says poor, tormented Michael Corleone as he tries to leave the mafia. Unlike me he is heir to a vast crime syndicate, but like me he finds that making a clean break, and becoming an honest man are not easy things to accomplish. But he didn't try giving Christmas the boot. In trying to leave Christmas, you are fighting several formidable organisations, not just one. To refute it you set yourself up against Christianity, tradition, consumerism, Charles Dickens, and your mum. This list is in order of formidability; I leave it to you to decide in which direction it runs.

Krampus, a demon who carries off naughty children in many European Christmas traditions. Why can't we have more of this sort of thing?

So let's run through those adversaries and see why I have, after years of campaigning, convinced not one person to join me in this boycott.

Christ of course was not born on Christmas Day. It's completely arbitrary by popular admission. January the 6th was an equally unlikely contender which has been largely dropped. It is well established that the festival is a midwinter celebration to which Christianity has simply cut and pasted its own deity. I'm not saying we should get jiggy with the pagans and celebrate Yule and dance around an evergreen staff with their unvaccinated children. No. On this I would get some easy backing from the Puritans who would, even though Christians, support me in my quest to have the festival excised from the calendar. There are plenty of Christians who look at the dubious aspects of Christmas and share my distaste. I'm not sure how happy I am about this, but I'll take what backing I can.

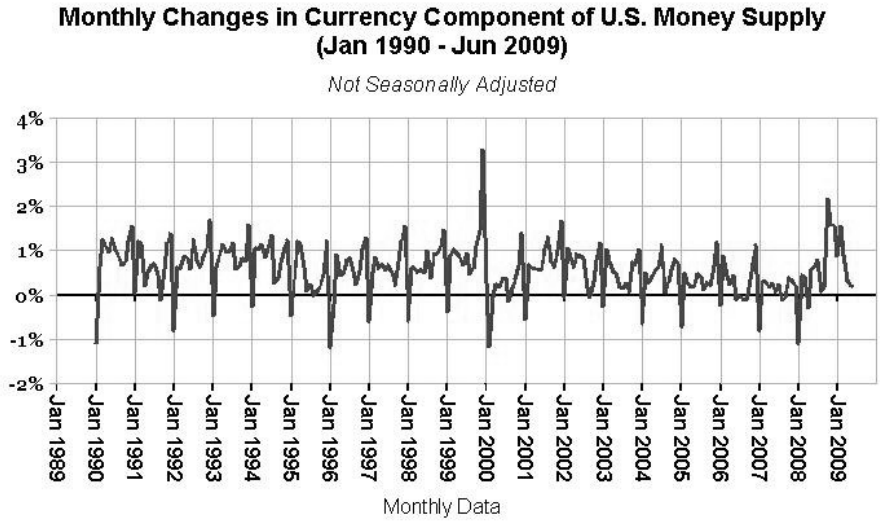
More than the weight of religion which (as side-lined Christians plaintively point out) is but a fraction of the event, tradition is the killer. There is a window furnishings showroom near where I live, and in huge letters, white on black, a fundamental truth is declared: CUSTOM BLINDS (their 'caps lock'). The festival is lodged like shrapnel in the spine. Standing alone, and saying I do not want to be a part of this is akin to King Canute's take on the tides. I have hundreds of years of history to undo and I am not sure I can do it by refusing to send Christmas cards. Christmas is a relentless juggernaut, awesome when seen from the outside and terrifying to stand in front of. Simply announcing that one is no longer participating is just pissing into the wind.

In Western European societies such as New Zealand, Christmas has been exquisitely constructed as a viral memetic advertising campaign. It was memetic before Richard Dawkins came up with a word for it. The tradition of Christmas is insidious, adapting to new cultures and taking on fresh expression where it lands. I love Tim Minchin, of course, but anyone who has actually drunk white wine in the sun knows an hour or two later that they have dug themselves a deep hole. Tim's family also sound quite nice, another reason to think he is working from a fairly small data set.

Rebecca Watson spoke to the Wellington Skeptics about the whole Christmas thing, and a good night was had by all. Her central thesis was that we can enjoy Christmas more as nonbelievers, because we don't have guilt or the obligation to go to church on the day in question. We can even drink white wine in the sun if we like. In fact, we had a moral obligation to lead the way with our nondevotional

enjoyment, and I certainly tried that for a while. But the elephant in the room is consumerism, and it fills me with horror that we do this to ourselves every year.

Riding it all, driving the psychology of relentless participation, is a creation that would have its maker turning in the grave. Criticise Christmas and the pantomime character of Ebenezer Scrooge is wheeled out. I'm trying to have an honest discussion about the merits of the festival, and in my face, like a fierce rebuttal sponsored by K-Mart and McDonalds and Sony and Apple … is Ebenezer Scrooge. If you don't go along with the tradition of Christmas, you are likened unto Scrooge. Scrooge is the industrial-strength strawman that makes us fear saying anything negative about the festival. Were he alive today, Dickens would be richly rewarded as an advertising genius, for his services to industry. I can't think of a richer irony.



The US Money Supply, month on month. The erratic heartbeat is Christmas.

Every year, the consumption of goods goes into overdrive. On a planet of limited resources, where normally rhetoric dictates that we should consume less, recycle more, save rather than spend, exist on less; suddenly the message is consume, my people, consume. Rampant squandering of economic and manufacturing resources go into producing goods that are offered as gifts to uncaring recipients. Children tear the wrappers from gift after gift whilst adults thank each other for stuff that will go into opshops in the coming months. Meanwhile the money supply crashes, personal debt rises, suicides rates climb and, stuffed with Christmas food and white wine in the sun, more people of my age go into cardiac arrest. The dust settles in January and the world has less of everything to go around, except for carbon dioxide.

But the adversary that keeps removing the stake from between the ribs of Christmas, and letting it live for another year is family. Even if you have a parent who is patient enough to listen to these well-founded arguments, they will not stop sending you socks, books and cards, despite determined pre-announced nonreciprocity. And if you are unfortunate enough to have children your fate is sealed. Oh, I could inflict upon them the fate of the single Jehovah's Witness at our secondary school, who attracted horrified and uncomprehending attention by announcing that there would be no Christmas for her. But that kind of scrutiny, and the cheery effort she made to hide her pain, is emotional baggage I have no stomach for.

So despite all of my good reasons for not doing so, I lie to my children about a mythical figure who presents to them goods made at the North Pole, with Grandma's writing on the label, and wake with them at 5.30 in the morning. I watch their little faces light up at toys from China that will be forgotten by lunchtime under a tree that I helped them decorate and which consumes futile power in the bright summer evenings. I will do my best to ignore their excited squeals and the dozens of photographs I take of them, I assure you, are for the record only. I will try not to eat too much at lunchtime, and later look forward to when I can put the ghastly tinsel back in the box. This year I had to give in a little, yield ground. But look at how the odds are stacked. Perhaps next year, finally, people will listen. Perhaps next year will be the year the tree stays in the attic.

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.

A journal, but not as we know it

***Siouxsie Wiles** takes a look at a new medical journal – available at all good supermarkets.*

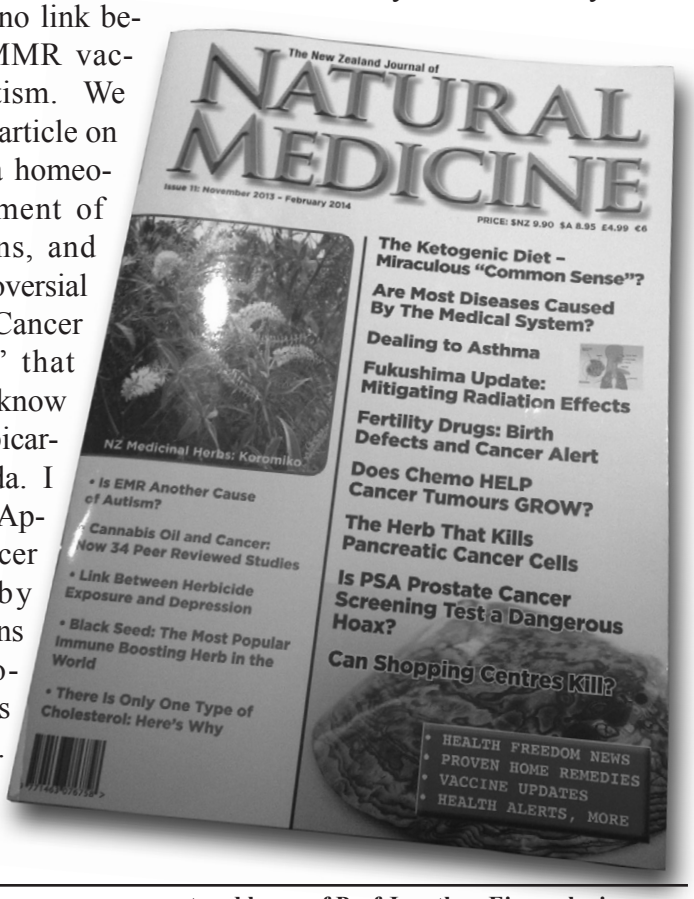
I'M a scientist. I know that the word journal has several meanings, but when I use it I'm referring to a collection of scholarly works that have been peer-reviewed. So when I first laid eyes on *The New Zealand Journal of Natural Medicine* (*NZJNM*) you can forgive me for assuming that the inclusion of 'journal' in the title was intended to convey the air of a scholarly publication. That it was for sale ($9.90) at a New World supermarket in Auckland was my first clue to the *NZJNM*'s true nature.

The *NZJNM* claims to feature "100 pages of the most vitally important health information you may ever read". The magazine was launched in May 2011 and is published quarterly by the Full Court Press Ltd, based out of a PO box in Pt Chevalier in Auckland. It is edited by Katherine Smith and Jonathan Eisen. If the name Jonathan Eisen rings a bell, he is the editor of *Uncensored* magazine, and is active on the 'chemtrails' front.* To see where he stands on health, this is how Jonathan begins his editorial for issue 11 (November 2013 – February 2014):

"Medical 'science' is killing us."

What follows are, in my opinion, 100 pages of misinformation and hysteria. We have articles on the dangers of vaccination (infertility and shaken baby syndrome) and claims that "controversial doctor" Andrew Wakefield has been proven right, that the MMR vaccine can cause autism. Umm, no. Andrew Wakefield has in fact been struck off by the UK General Medical Council, and there is a huge body of evidence that there is no link between the MMR vaccine and autism. We also have an article on Vitamin C, a homeopath's treatment of ear infections, and some "Controversial Alternative Cancer Treatments" that we may not know about. Like bicarbonate of soda. I kid you not. Apparently cancer is caused by yeast infections and bicarbonate of soda is the solution. Although this seems to contradict another statement later in the same article that "our bodies contain everything we need to heal ourselves from every possible disease, but hectic lifestyles, poor diet, high levels of stress, and our faulty medical system have repressed our natural ability to heal".

Another author begins: "I do not want to pretend that this is an impartial investigation. Instead, I am now fully convinced that most diseases are indeed caused by the medical system".



***Or it may be because, like me, you are interested in the open access movement and know of Prof Jonathan Eisen who is an evolutionary biologist from the University of California, Davis who cofounded the Public Library of Science (PLOS).**

So writes Walter Last, a natural healing enthusiast, who I assume is the same person who has a website selling $30 books on how to overcome cancer, diabetes and asthma using self-healing, whatever that is.

Scattered amongst the articles are the adverts, for courses on "children massaging children" ($350 for a two-day course), for homeopathy and iridology, as well as products like paint and hoodies that can shield you from electromagnetic radiation and Genopathic® remedies that are "specifically formulated to target and change electromagnetic frequencies within the body's blood and nervous system". Sounds dangerous!

Much of the content of the magazine seems to come from well-known international online purveyors of misinformation but there is some New Zealand-specific content. No doubt inspired by the recent referendum to reinstate fluoridation in Hamilton, there is an article on the dangers of fluoride along with the obligatory accompanying photo of a bag of sodium silicofluoride with a big toxic biohazard sign. Frankly, I think the whole magazine should have a big toxic sign, or at the very least a health warning plastered over the cover. I normally don't make New Year's resolutions, but for 2014 it's going to be to get the *NZJNM* either renamed or off the supermarket shelf. Who's with me?!

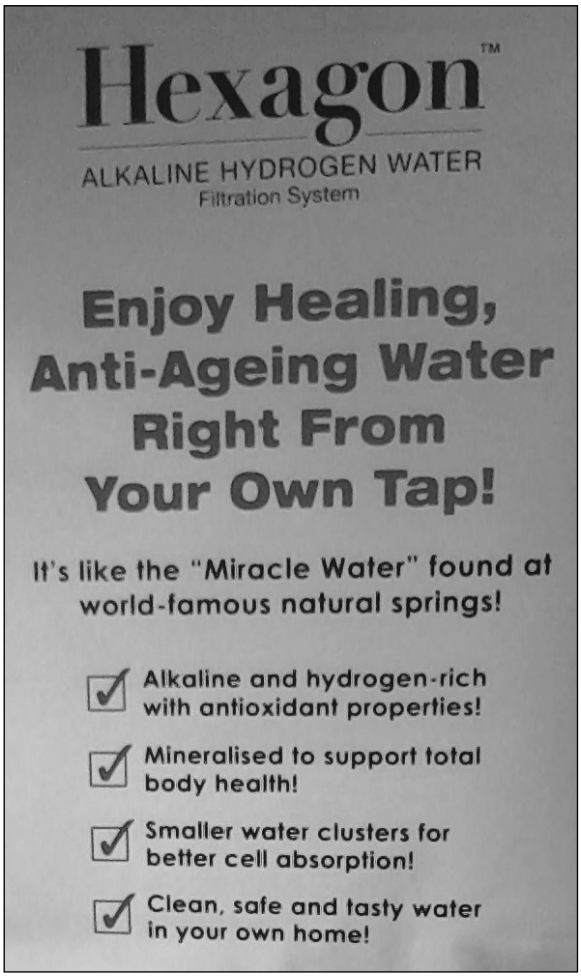
Dr Siouxsie Wiles is a research scientist with a background in medical and environmental microbiology. She has made a career out of combining her twin passions of bioluminescence and microorganisms.

Anti-ageing water from your tap

Rob Julian

"Alkaline and hydrogen-rich" water is being touted as the latest cure-all.

THERE is a sort of health shop in the Johnsonville Mall on the outside of which is this handsome sign:



Which is intriguing. How can water with extra hydrogen be alkaline? Hydrogen does not dissolve readily in water so the extra hydrogen can only be in the form of hydrogen ions, (H^+aq) which would lower the pH and make it acidic. (It is possible that the "extra hydrogen" would be in the form of deuterium or tritium, which would increase the molar mass a bit, but that would make it radioactive.)

But further, how are they going to make it alkaline without adding something like sodium bicarbonate which would make it taste bitter?

It is unclear what the "anti-oxidant" properties are. Presumably the word

is added because anti-oxidants are fashionable. Anti-oxidants entered the nutritional vocabulary in the 1990s and are said to remove free radicals produced by cell metabolism with oxygen. They are mainly vitamins (E and C) but there is the suggestion that magnesium salts can perform the function. There is little evidence that taking vitamin and mineral supplements do anything healthwise at all.

The sign highlights that the water is "anti-ageing" and I guess this is true. If one stops drinking sufficient water, the ageing process will accelerate dramatically. But some do say that ageing is accelerated by free radicals which brings us back to the question of what are the anti-oxidant properties?

What makes it truly miraculous is that somehow the water molecules are stopped from "clumping" which makes it easier to be absorbed in the gut. The only small problem with this is that water is only water because of the hydrogen bonding between the molecules. If you interfere with this, as can be done by adding ethanol, then the boiling point decreases – the alcohol molecules get between the water molecules and interfere with the 'clumping'. (This is only by a couple of degrees so do not worry that your whisky is going to boil if you add water.) If the weak bonding between the water molecules were removed altogether, the water would instantly vaporise and boil at room temperature. Which would be a little disconcerting if one were trying to drink it.

One can view their promotional video on **www.youtube.com/watch?v=mR76bX4UASk** And the very first thing they do is "remove chemicals" – by filtration. Obviously they don't classify water as a chemical. The filtration also removes bacteria. And it gets rid of chlorine with activated charcoal, which could be scientifically valid, if it really does so. And in any case, the water is only chlorinated in order to kill off the bacteria which the filtration system is meant to deal with. The water is then "mineralised" and made more alkaline before passing through the "ion exchange resin" which "balances calcium and magnesium levels" (whatever that means) to give the water a softer more pleasant taste. There is no justification in terms of adding magnesium salt as an anti-oxidant.

The dialogue then descends into what can only be described as gobbledegook about mineral springs where "activated hydrogen" reacts with "activated oxygen" to produce harmless water and somehow, when you drink this it "removes harmful free radicals from the body". They don't explain either what they mean, or how it occurs.

Finally it is aerated and then passed over a magnetic field. No explanation is given as to why this produces "healthy" water, other than to say this is what happens in nature with water being affected by the Earth's magnetic field.

What is really depressing is that people must be taken in by this fanciful nonsense masquerading as "a breakthrough in Science". If people were not taken in and buying the product, then Hexagon wouldn't be selling it. And if they weren't selling it they wouldn't be promoting it.

It is depressing because every New Zealander has taken science at least up to Year 10 and most of them beyond that. One would have hoped that no one who has been through the secondary school science curriculum would be taken in by such a promotion.

Yet people still believe in homeopathy, iridology, and Young Earth Creationism. They classify carbon dioxide as a pollutant, and think that carbon emissions are the smoke coming off industrial chimneys and sooty car exhausts.

On viewing the Youtube video I noticed there are a whole host of videos suggesting that alkaline water of pH 9.5 is best for health and can be purchased in Health Food Stores. And that you can make your own by adding lemon juice to warm water. Excuse me? Lemon juice makes water alkaline? Lemon juice has a pH of 2. Yet presumably people believe this pseudoscience. In most schools, Year 10 students will test the pH of a variety of substances, vinegar, saliva, tap water, soap, sodium bicarbonate and so on. Lemon juice is always acidic.

But I guess as science teachers we can only keep on trying.

Rob Julian is a high school chemistry and physics teacher living in Wellington. He has tutored and lectured science courses at university, been involved in designing science curricula, and is a former National President of the New Zealand Science Teachers Association.

On the CUSP

Steven Galbraith

Completely Unnecessary? Hardly. New Zealand's own Completely Unnecessary Skeptical Podcast is celebrating its fourth birthday and has established a niche for itself in the country's digital airwaves.

EVERY month or two, usually on a Sunday morning, my daughter and I are ejected from our house for an hour or two so my wife can have some peace and quiet. I'm sure this is not unusual. However, rather than putting her feet up and having a quiet cup of tea, she spends the time ranting into a microphone with a couple of friends. Welcome to the world of skeptical podcasting!

The Completely Unnecessary Skeptical Podcast (CUSP) started in January 2010 with Pilot Episode Zero. Since then there have been a further 32 episodes recorded and made available on the website **thecusp.org.nz**

The average podcast episode gets downloaded around 1000 times, with 15817 downloads in 2013 up to the time of writing (11 December). The most popular episode of all time was number 2 on Destiny Church, which was downloaded 4053 times – we have no idea why.

It is hard to believe the podcast has been running for four whole years. The teething problems (particularly with microphones and audio) took quite a while to get sorted out, but finally the sound quality is now professional. I probably shouldn't mention the times when large chunks of audio were not recorded ...

At the microphone: Craig Shearer.

Over the years there have been various contributors, including Chrissie Taylor and Colin Frewin, but the three most regular participants are Nathan Grange, Craig Shearer and Siouxsie Wiles.

The podcasts cover a wide range of skeptical topics, with particular focus on those with particular relevance to New Zealand. The format of the podcast is first to discuss any listener feedback, comments or corrections, then to have a discussion of new items. A regular feature is "Siouxsie Rants about the *Ponsonby News*". This free magazine, made available to households in several central Auckland suburbs, is overflowing with crazy remedies, diets and other health fads, and it rarely fails to provide something new to be outraged by. The podcast sometimes features an interview with a celebrity skeptic, and ends with a skeptical quotation and the word of the day.

I thought it might be entertaining to have a chat with the cast about some aspects of making a podcast. This interview was conducted on Sunday 8 December, 2013, after the recording of episode 32. The interviewer was Steven Galbraith (SG). The podcasters were: Nathan Grange (NG), Craig Shearer (CS) and Siouxsie Wiles (SW).

SG: Why do you do a podcast?

NG: Why don't we do it?

CS: Because none of us have had the guts to pull out.

NG: Because people are still listening to us and still want us to do it I guess. That's the main reason.

SW: Mmmmmm . . . .

NG: And it's fun.

CS: Not that we've really had any proof that anyone wants us to do it.

NG: Well, we've had a few people write in. One person we've never heard of before emailed us today.

CS: It is fun.

SW: It's fun.

NG: It is fun while we are here and recording it. Then you go home and think "my God I'm never doing that again."

SG: You're referring to the editing presumably.

NG: Yeah. That too.

SG: How much time do you spend on the editing?

NG: Not as much time as I used to. Normally takes me less than a week now. Actual time, a couple of hours. I do it at lunchtime. Back in the old days I used to go through each track for each person and take out all the blank spaces, which made more sense back then because it was really noisy. But now the recording quality is a bit better. Now all I do is basically listen to it a couple of times and then export it.

SG: What are your personal highlights?

NG: Interviewing Paul Daniels. I know you guys don't think he's cool, but I do.

CS: Did we interview Paul Daniels?

SW: He interviewed Paul Daniels. [Episode 6]

NG: Yeah, probably has done. We haven't done many recently. But we have interviewed Rebecca Watson, George Hrab, Lawrence Krauss as I said, Paul Daniels, Vicki Hyde. Although anyone can interview Vicki Hyde ...

Siouxsie Wiles and Nathan Grange record an episode while Siouxsie and Steven's daughter Eve looks on.

CS: What else?

NG: Had Lawrence Krauss. [Episode 23]

CS: Yeah, Lawrence Krauss was good.

SW: I think I just like having a place to rant. It has been really fun. Although it's getting a little ... I need to find ...

CS: New sources. Expanded sources of rant.

SW: ... because the *Ponsonby News* is just very tiresome.

SG: So what you are saying is that the highlight is the interviews. It's giving you an excuse to talk to people who you'd like to talk to.

SW and CS: <laughter> ... who we love ...

NG: It was a good interview. [Episode 0]

SW: What I would like is us to get a little bit more organised next year and introduce people in NZ to people they might not have heard of.

SG: Are you an effective team?

<laughter>

SG: Do you think you work well as a team?

NG: I think we do.

CS: Yeah, I think we do.

SG: What do you each bring?

NG: Siouxsie brings all the information and science and stuff, and all the articles.

CS: I bring the microphones along.

NG: And I do a few jokes.

CS: And I bring the biscuits.

SW: We provide the table.

SG: What have you learned from doing the podcast?

SW: For me, I'm learning about skepticism as a community, and the stuff that is out there and the people that are active in it. Just some of the nonsense that is out there. Like listening to stuff about what creationists believe and things. All of this stuff I just didn't really know existed. Living in my own little science bubble. Kind of interesting to find out.

CS: We even educated Siouxsie today about the crocoduck.

SG: I've never heard of the crocoduck.

CS: <shaking head> People who don't know about the crocoduck ... you will have to look it up.

NG: How are you ever going to prove evolution if you don't know what a crocoduck is? Come on guys! Get with the programme!

SG: Nathan, your answer to this question?

NG: What have I learned? I've learned random things from the news articles and stuff that we've had come on, and we've talked about.

CS: It encourages me to read news articles more than I would have done probably.

NG: Nothing concrete that I can put my finger on. 'Cos I was already very knowledgeable, before we started.

<laughter>

NG: I pretty much knew everything coming in. I still know everything.

SG: Do you think being a podcast star has boosted your ego?

NG: No no no no. I'm still very humble.

CS: And does it help you get laid?

NG: Only once.

<great laughter>

SG: That wasn't a question on my list!

NG: I'm still very humble. It's one of my greatest qualities. I have to say, I have been "recognised" a couple of times. Once a guy came to skeptics in the pub, and we were casually talking about the podcast, and he said "You're that Nathan, from the podcast!" And I was quite pleased with myself.

SW: You had a warm glow.

CS: Was that the time you got laid?

<laughter>

NG: No.

SG: Plans for the future? Improvements?

CS: I think we need to promote ourselves more.

SW: We need to promote ourselves more, and be more organised.

CS: Yes. We need to be more organised before we promote ourselves.

SG: I think that's a good place to end. Thank you very much.

Steven Galbraith is an associate professor in the Department of Mathematics at Auckland University.

forum

'Climategate' emails show case not closed

KEITH Muir (*NZ Skeptic 109*) ends "I rest my case." But he never makes a case; he only quotes opinion. This is unacceptable in Law or Science.

The alarmists fought hard to keep their data secret; but (less the amount they destroyed) it is now largely available on the internet. Skeptics should look up the data, the tables and graphs. These show clearly, the Earth is not warming, the ice caps are not melting. All the predictions of the climate alarmists have failed.

Muir quotes insurance companies (via *Scientific American*) claiming that extreme weather events have increased. Well it is in the interest of insurance companies to make such a claim, but is it true? Published work shows that tornadoes, cyclones, floods and droughts etc have decreased in number and severity.

The Great Global Warming Scam fell to pieces with the release of the Climategate emails in 2009. This is a selection from

Climategate; it should be sufficient to expose the dishonesty but read the whole of the first tranche release, and see how the IPPC summit was ruined.

Phil Jones to Wei-Chyung Wang and Thomas Karl:

> "Think I've managed to persuade UEA to ignore all further FoIA requests if the people have anything to do with Climate Audit."

Kevin Trenberth on how to deal with climate skeptics:

> "I am sure you know that this is not about the science. It is an attack to undermine the science in some way. In that regard I dont think you can ignore it all, as Mike suggests as one option, but the response should try to somehow label these guys as lazy and incompetent and unable to do the huge amount of work it takes to construct such a database. So my feeble suggestion is to indeed cast aspersions on their motives and throw in some counter-rhetoric. Labeling them as lazy with nothing better to do seems like a good thing to do."

Tom Wigley to Phil Jones:

> "Here are some speculations on correcting sea temperatures to partly explain the 1940s warming blip. If you look at the attached plot you will see that the land also shows the 1940s blip (as I'm sure you know). So, if we could reduce the ocean blip by, say, 0.15 deg C, then this would be significant for the global [average]."

Mike Mann to Phil Jones:

> "Be a bit careful about what information you send to Andy [Revkin of the *New York Times*] and what emails you copy him in on. Hes not as predictable as we'd like."

How can Keith Muir imagine that the so-called climate scientists are to be taken at face value when their dishonesty is so well documented? They got away with it because of the failures of editors and science journalists. Unfortunately skeptic groups must take blame too. The truth was out there, but many people turned a blind eye. [abridged]

Jim Ring
Nelson

Homeopaths stronger than ever?

Re: 'Homeopaths agree to dilute their claims' (*NZ Skeptic* Spring 2013) – If homoeopaths do indeed dilute their claims, does that mean their claims become stronger the more they are diluted?

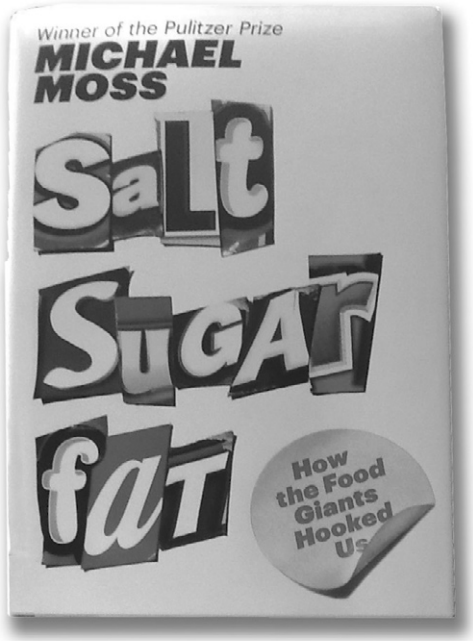
Graham Sharpe
Wellington

book review

Food industry exposé shocking and inspiring

Janelle Wallace** reviews* **Salt Sugar Fat: How The Food Giants Hooked Us, by **Michael Moss**. Random House Publishing, 2013.*

PULITZER Prize-winning investigative reporter Michael Moss' book takes a compelling look at the US food industry and its drive to increase profits no matter what the consequences might be for the health of the nation. His research covers many angles from the politicising and manipulation of the Dietary Guidelines, to the technology used to determine the "bliss point" of foods, through to the advertising and selling of products despite the health risks.



The production and consumption of processed and convenience foods in New Zealand are increasing, as is the incidence of obesity and diabetes. Messages about healthy eating stand little chance when they have to compete with big advertising budgets and the desire for gratification.

Read this book to see what has happened in the US. It will shock you, educate you and ultimately inspire you to reassess your own food choices and those of your family. A trip to the supermarket will never be the same again.

Janelle Wallace is a retired dietitian living in Hamilton.

In which we encounter a very strange idea about water

Alison Campbell learns some interesting facts about water chemistry.

FOLLOWING recent events in Hamilton I've found myself involved in several debates on the merits of fluoridated water lately. This was posted on the Fluoride Free Facebook page back on 2 November:

> Did you know that water is becoming harder and harder for our bodies to absorb ? Water molecules are clumping together in clusters. In order for our bodies to absorb the water, we have to expend energy to break the clusters down. Nature breaks water clusters down through the spinning action in rivers and streams. As we continue to add chemicals to our water and process water through water filtration and treatment plants, we are making the water more difficult to absorb. Did you know that by structuring water, you break down those clusters and can actually receive the nourishment on a cellular level?

We're too late for the special offer as it closed on 4 November (yes, of course something's being sold) but if you're really keen, you can learn more about 'structured water' at **www.watercns.co.nz/Structured-Water.html** and **worldpuja.blog.fc2.com/blog-date-201306.html**

According to that second site, the discoverer of 'structured water' has concluded that:

> nature heals water through structuring it. As water passes through rivers and streams on the way to the ocean, the water molecules are repeatedly spun clockwise and counter clockwise. It's nature's way of healing the water and removing the toxins and restoring water to it's [sic] natural high energetic state.

Presumably a washing machine would do much the same thing? Maybe they're selling a bench-top version for one's water supply to go through? (Not exactly.) Actually, since many towns and cities draw their water from rivers, you'd think it would be all nicely healed before we even start.

> He also learned about the damage we are doing to water through electromagnetic energy, (caused by electric current, cell phone towers, microwave radiation, etc), chemicals such as floride [sic] and chlorine, and energetic contamination.

Pity we can't do much about the rather significant source of EM radiation up in the sky…

> Because many towns and cities reuse and recycle tap water by sending it through chemical filtration, water is becoming harder to absorb and is in fact carrying toxins that can't be filtered out with the current water treatment and filtration systems.

The folks at that website would presumably have conniptions at the mere thought of Singapore, which recycles its wastewater – including sewage – to the tune of 430 million litres a day. (Been there, toured the plant, drank the water.)

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bioblog

Apparently the 'unhealed'/unstructured (destructured?) water is better at carrying these nameless toxins because its molecules have somehow acquired the wrong shape:

> When the hydrogen molecule sits at a 90 degree angle to the oxygen molecule, it can easily transport disease and block the absorptive flow. Structuring water increases the hydrogen angle. That increase reduces molecular clustering, softens the water, and reduces the transportation of harmful particles.

The angle between the two hydrogen atoms in a water molecule is 104.45 degrees, and I suspect it will be news to chemists that it's possible to change that angle to any measurable degree and still have the thing we call 'water'. After all, the properties of water – including the fact that it's liquid at the temperatures we normally encounter – are dependent on the molecule's geometry.

Also, do these folks have any idea of the relative size of water molecules and pathogenic organisms?

We even get to homeopathy (sort of):

> Scientists have already proven that water absorbs the energetic footpring of where it's been, and that water filtration and treatment plants are not removing that. Water absorbs and takes on the enegies of whatever it is exposed to.

In which case, we'd all be being dosed, all the time, by pretty much anything that's ever ended up in the water. Including … emotions?

> When water is exposed to the energy of anger or hatred it changes the structure of the water itself. These changes can be seen when the water is frozen and examined under a microscope. As water is cycled and recycled in our towns and cities, we are absorbing all of the energies in that water. Structuring water removes the harmful energetic imprinting on water.

I don't know what sort of microscope he's using, but I think I want one!

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.

If undelivered, return to:

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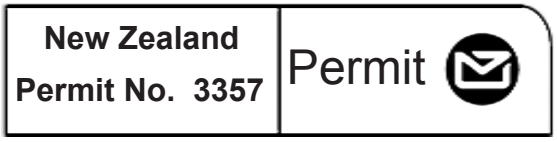

Breaking News! Skeptics Guide to the Universe coming to NZ Skeptics Conference 2014!

Planning is now underway for the NZ Skeptics Conference 2014 in Auckland, featuring the hosts of the Skeptics Guide to the Universe podcast – Dr Steve Novella, Rebecca Watson, Bob Novella, Jay Novella and Evan Bernstein. Musician and podcaster George Hrab will also be here, plus a great line-up of Kiwi speakers.

The 2014 conference will be held 5-7 December – yes, it's late in the year, but having the SGU hosts will be worth it. The SGU will run their usual conference activities such as a live recording of an episode of the show, a private recording, SGU dinner and various other sessions and activities.

More details coming soon on the NZ Skeptics website!

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