

## Too orangey for crows

Kris King – August 13<sup>th</sup> 2011

<http://www.rantinaminor.co.uk/2011/08/too-orangey-for-crows/>

When I was young, maybe about 5 or 6 years old, my mum was always telling me not to put so much orange squash in my glass before filling it with water. In a time when actual proper orange juice was still considered something of a luxury, putting in a bit more squash than I should have would give it a decent, fuller, more orangey taste – it was like giving myself a treat! Mum would always tell us that “too much is bad for you”, which, of course, is true, but it masked her real feelings that using more meant that it would run out sooner and she’d have to buy another bottle. Like many children, this would have been my introduction to the concept of dilution; the idea that the more you water something down, the weaker it gets, and it seemed so obvious to me that a large amount of something should overwhelm a small amount of something else. So how is it that the *only* people in history, it seems, who never grasped this concept were the proponents of homeopathy?

In order that my American friends can get through this post without thinking I used to fashion drinks out of what appears, on the face of it, to be unprocessed pumpkin and butternut soup, I suggest they [follow this](#) link first to check out what most British people mean when they talk about “squash” (or cordial). Done that? Excellent, we may continue on our journey. For those of you who may be unfamiliar with the pseudo-scientific “alternative medicine” that is homeopathy (and when I say “alternative medicine” I obviously mean “alternative TO medicine”), allow me to explain why this potentially life-threatening fake science could do with a good, sturdy kick in the balls that sends it (and the associated body of bogus, self-styled medical “experts” who peddle it to the credulous) forever back to the la-la land of magic potions and fairy dust where it belongs.

The basic concepts that underpin [homeopathy](#) were developed by Samuel Hahnemann, a German physician, in the late 18th century and they are, without question, absolute shite. The first is the “law of similars”, often referred to by the expression “let like be cured by like”, and while the notion that what causes certain symptoms may be cured by something that causes the same symptoms seems reasonable, this feeling generally only lasts for about a quarter of a second in the mind of most rational human beings before it is immediately replaced by the sense that anyone who could fall for it is a bit dim. The idea that homeopathic remedies are only ever purchased by highly suggestible, overly trusting types, is reinforced when you realise that the “law of similars” (not actually a law, merely an unproven assertion by Hahnemann) means the most common homeopathic sleep remedy contains that well-known relaxant: caffeine.

“But, surely like *does* cure like? When you’re vaccinated they give you a dead version of the thing they’re trying to inoculate you against, don’t they?” No they don’t, and anyway the point of vaccinations is not to really necessarily *cure* you but to give your immune system an introduction to something unpleasant so that it knows what it looks like, and can remember to kick it’s nasty little arse the next time it sees it. Besides, if it *were* a “dead” version of what you’re already suffering from, it’s not going to help much is it? Giving your body a shot of something that is already rampaging through your system like a 4 year old tearing through Toys-R-Us (other toy-based chain stores are available) after drinking an entire bucket of Sunny Delight (other nuclear-orange “drinks” are available), would be like giving a man on fire a bag of ashes so that he can recognise fire next time (other, better analogies are available).

It is with homeopathy’s second basic principle where things start to get interesting (and by “interesting” I mean “hugely bloody absurd”). It is known as the “law of infinitesimals”, and states, in essence, that the active ingredient in a remedy becomes more potent with repeated, successive dilution. Feel free to read that sentence again and recall your own experiences with orange squash as you do. Homeopathic remedies are created by taking the supposedly curative component and diluting it by a factor of 100 (C) in water. Then, they take a sample of that dilution and dilute it, again by a factor of 100. And then again, and again, and so on until whatever recommended dilution factor is reached. Hahnemann suggested 30C (i.e. dilution by 10 to the 60th power); if you can’t comprehend how big that it is, don’t worry – it’s unimaginable to most people. Suffice to say that 6C gives you

one part active ingredient to a **trillion** parts water.

The average person is, much to the delight of pseudo-science proponents, religious institutions, and all other varieties of snake-oil purveyor, fairly ignorant of many of the common principles of physics. As such, most will not be aware that their particular delusion of choice is thoroughly undermined by these principles to the point of completely negating the concepts upon which their favourite form of fluffy twaddle is built. For instance, in the case of homeopathy, the greatest enemy is a thing called the [Avogadro constant](#); in its simplest terms, and without trying to befuddle the man in the street, it states the largest quantity of a substance one can dilute another into before there is ostensibly none of the diluted substance left. Homeopathic remedies of 12C or greater exceed this limit, meaning that, by definition, not *one single molecule* of the active ingredient remains; in essence, a bottle of a 12C (or higher) dilution homeopathic "medicine" is simply a bottle of water. Nothing more.

Even without this fundamental scientific principle, it should be obvious to *anyone* that diluting a substance makes it weaker, to the point where the entire idea of homeopathy can be comprehensively debunked by a 6 year old with a glass, a supply of water, and a bottle of Kia Ora (other brands of soft drink with somewhat [dodgily racist 1980's advertising](#) are available). How gullible, or wilfully ignorant, do you have to be to rationalise away your common sense in order to believe that adding millions of metric fuck-tons more water (on some scales, quite literally) to a substance makes it **more** powerful? It'd be like believing that a cute kitten, perilously surrounded by a pack of rottweilers, may very well be in mortal danger, but if you were to put it in the middle of a Wembley Stadium full of rottweilers then it would suddenly harness its inner-kitty ninja skills enough to be able to take them all on, leaving them for dead with nary a ruffle in its own fur.

Naturally, because of the increasingly upward trend for scientific literacy in almost every corner of the globe (except America, apparently, where only [4 in 10 people believe in evolution](#), and alleged "journalists" like Bill O'Reilly are unable to even explain either the cause of [ocean tides or the existence of the moon](#)), modern homeopaths have had to come up with a justification for the insanely stupid dilution = potency argument that will keep their supporters from fleeing to an actual doctor, with actual qualifications, and actual, provably efficacious treatments. Their explanation for how it works is so far beyond ludicrous that any reasonably intelligent person would be forced to respond simply, "Holy jumping Jesus H fucking Christ on a pogo stick, do you actually *believe* that? Do you want to buy a bridge?" Homeopaths believe, are you ready for this, that water has **memory**.

I'll give you a minute or two for that staggeringly inane idea to sink in before I continue ripping this bullshit apart. Homeopathic practitioners contend that the original active ingredient leaves a "vibration", or "memory" of itself in the water, and it's by this mechanism that the remedy functions. Let's ignore the fact that the smallest unit of memory, a neuron, is a single cell that contains many thousands of times more molecules than the single molecule of water homeopaths claim is capable of holding the memory of a long-lost bit of good stuff that happened to live near it for a while. Let's ignore the fact that such a claim, along with the other retarded statements made by homeopathy in order to crowbar itself into the rational universe and out of the impossibly nonsensical realm in which it resides, would utterly defy many of the fundamental laws of physics and chemistry which have, for hundreds of years, demonstrated their veracity time and time again.

Let's ignore the fact that homeopathy is completely unsupported by an insurmountable body of scientific evidence. *Not one* single study, in over 200 years, has demonstrated homeopathy to be anything other than pseudo-scientific quackery. *Not one* proponent of this horse-shit has been able to show its efficacy beyond that of the placebo effect. "Well, it works for me!", they exclaim smugly. Excellent, good for you! All you've done there is proven the need for double-blind trials and peer-review in medical testing, you fucking idiot. Just because you feel better for having done something, it doesn't mean that something was what made you feel better. You feel better precisely because you *believe* that you should; that's the placebo effect, a natural bias that the scientific method does its best to eliminate. Hugging a cancer patient will make them feel better, but it doesn't mean that a simple embrace is able to destroy tumours.

It doesn't matter if homeopathic remedies make thousands of people feel better; as the saying goes, "the plural of 'anecdote' is not 'data'". Most remedies are taken by people for conditions which get better on their own anyway (coughs, colds, flu etc.) and, for those that don't, there's a good deal of weight behind the idea that positive thought is of notable benefit to recovery from physical problems. If you're filling your mind with great big fistfuls of stress and misery over your present illness, it's not got enough energy to devote to doing much about healing it, really, has it? But that doesn't mean that convincing yourself some dressed-up, over-priced placebo is the answer, because it's not. It's

not doing anything to fix the problem at all, it's merely tricking you into thinking that it is ...

Sure, you might get lucky and find that the one iota of positive thought it inspired in you is enough to help your body fight off your cold a fraction sooner than it otherwise would have, but in all other instances it's doing fuck all to help. Worryingly, it's often doing a good deal of harm, in some cases to a fatal degree, as people abandon proven, evidence-based medicine for these supposed "alternative" solutions. More often than not, the reasons for this tends to be ideological, as misguided nitwits go for the "natural" option over the "evil drugs pushed by big pharmaceutical companies" under the mistaken belief that, just because a large company makes tremendous profits from the products they've spent millions on during research and development, that somehow nullifies the efficacy of a drug that has been rigorously tested through years of processes that involve constant application of the scientific method.

Fortunately, it seems, a large number of people are waking up to the truth about the effectiveness of so-called "alternative" treatments like homeopathy, particularly the NHS who, for some completely unknown reason, had previously been spending over [£4m a year on homeopathic medicine](#), including funds for four homeopathic hospitals in London, Bristol, Liverpool, and Glasgow. Thankfully, this borderline criminal waste of public money on unproven, useless nonsense, rather than demonstrably worthwhile treatments, is not likely to last much longer, leaving the more ill-informed members of the general public no choice but to burn their own money on such crap instead. And that's exactly how it should be ... if you're ignorant, wilfully or otherwise, of how medicine works, then perhaps you should, you know, leave such decisions to the professionals.

Ultimately, though, the choice *is* yours. If you're the kind of person who prefers to accept the unproven assertions of the dangerously unqualified sorts who like to pretend they're doctors, then homeopathy is for you (other, actual medicines are available).

