

IDENTIFYING FAKE NEWS TOOLKIT WORKSHOP

<http://www.janelawson.co.uk/gallery/how-we-got-to-where-we-are-ii/>

Saturday 4th August, Portico Library

CARL SAGAN'S BALONEY DETECTION KIT

From *The Demon-Haunted World*, 1996

"What's in the kit? Tools for sceptical thinking. What sceptical thinking boils down to is the means to construct, and to understand, reasoned argument and – especially important – to recognise a fallacious or fraudulent argument. The question is not whether we like the conclusion that emerges out of the train of reasoning, but whether the conclusion follows from the premise or starting point and whether that premise is true."

Among the tools:

Wherever possible there must be independent confirmation of the "facts."

Encourage substantive debate on the evidence by knowledgeable proponents of all points of view.

Arguments from authority carry little weight – "authorities" have made mistakes in the past. They will do so again in the future. Perhaps a better way to say it is that in science there are no authorities; at most, there are experts.

Spin more than one hypothesis. If there's something to be explained, think of all the different ways in which it could be explained. Then think of tests by which you might systematically disprove each of the alternatives. What survives, the hypothesis that resists disproof in this Darwinian selection among "multiple working hypotheses," has a much better chance of being the right answer than if you had simply run with the first idea that caught your fancy.

Try not to get overly attached to a hypothesis just because it's yours. It's only a way station in the pursuit of knowledge. Ask yourself why you like the idea. Compare it fairly with the alternatives. See if you can find reasons for rejecting it. If you don't, others will.

Quantify. If whatever it is you're explaining has some measure, some numerical quantity attached to it, you'll be much better able to discriminate among competing hypotheses. What is vague and qualitative is open to many explanations. Of course there are truths to be sought in the many qualitative issues we are obliged to confront, but finding them is more challenging.

If there is a chain of argument, every link in the chain must work (including the premise) – not just most of them.

Occam's Razor. This convenient rule of thumb urges us, when faced with two hypotheses that explain the data equally well, to choose the simpler.

"Always ask whether the hypothesis can be, at least in principle, falsified. Propositions that are untestable, unfalsifiable are not worth much. Consider the idea that our Universe and everything in it is just an elementary particle – an electron, say – in a much bigger Cosmos. But if we can never acquire information from outside our Universe, is not the idea incapable of disproof? You must be able to check the assertions out. Inveterate sceptics must be given the chance to follow your reasoning, to duplicate your experiments and see if they get the same result."

Control experiments are essential.

Variables must be separated. e.g. if you're seasick and you're given an acupuncture bracelet and some medication and you feel better you won't know which of these two variables made the difference.

Often the experiments must be done "double-blind," so that those hoping for certain findings are not in the potentially compromising position of evaluating the results.

The most common fallacies of logic and rhetoric include

- Ad hominem – attacking the arguer and not the argument.
- Argument from authority – e.g. President Richard Nixon should be re-elected because he has a secret plan to end the war in south-east Asia but because it is secret there is no way for the electorate to evaluate it on its merits.
- Argument from adverse consequences - e.g. God must exist because if he didn't things would be much worse than they are; or we must find this person guilty otherwise men will be encouraged to murder their wives. (A more cynical formulation by the Roman historian Polybius: "Since the masses of the people are inconstant, full of unruly desires, passionate, and reckless of consequences, they must be filled with fears to keep them in order. The ancients did well, therefore, to invent gods, and the belief in punishment after death.")
- Appeal to ignorance – the claim that whatever has not been proved false must be true, and vice versa e.g. there are loads of other worlds but we don't know any that house intelligent life so we're still central to the universe; or there's no compelling evidence that UFOs aren't visiting the Earth, therefore they are. This impatience with ambiguity can be criticised in the phrase: absence of evidence is not evidence of absence.
- Special pleading, often to rescue a proposition in deep rhetorical trouble – e.g. how could God punish everyone eternally because of Eve making Adam eat the Apple? Well it's because you don't understand the subtle doctrine of free will.
- Begging the question, also called assuming the answer – e.g. we must institute the death penalty to discourage violent crime; or the stock market fell yesterday because of a technical adjustment and profit-taking by investors.
- Observational selection, also called the enumeration of favourable circumstances, as the philosopher Francis Bacon described it.
- Cherry-picking – e.g. a county boasts of the sportsmen it has produced, but is silent about the serial killers.
- Statistics of small numbers – e.g. they say one out of every five people is Chinese. How is this possible? I know hundreds of people, and none of them is Chinese.
- Misunderstanding the nature of statistics – e.g. President Eisenhower expressing astonishment on discovering that fully half of all Americans have below average intelligence.
- Inconsistency – e.g. planning for the worst of which a potential military adversary is capable, but ignoring scientific projections on environmental dangers as being not proven. Attributing the low life expectancy in the Soviet Union to the failures of communism, but not attributing the high infant mortality rate in the US to the failure of capitalism.
- Non sequitur – e.g. our nation will prevail because God is great.
- Post hoc, ergo propter hoc (it happened after, so it was caused by) - e.g. I know of a 26-year-old who looks 60 because she takes contraceptive pills; or before women got the vote there were no nuclear weapons.
- Meaningless question – e.g. what happens when an irresistible force meets an immovable object? Because both those things cannot exist simultaneously.
- Excluded middle, or false dichotomy – considering only the two extremes in a continuum of intermediate possibilities – e.g. if you're not part of the solution, you're part of the problem. Black and white thinking.
- Short-Term versus long-term – a special and important subset of the excluded middle – e.g. we can't afford programs to feed malnourished children and educate preschool kids. We need to urgently

deal with crime on the streets. Or: why explore space or pursue fundamental science when we have such a huge budget deficit?

- Slippery slope – e.g. if we allow abortion in the first weeks of pregnancy, it will be impossible to prevent the killing of a full-term infant.
 - Confusion of correlation and causation – e.g. “the survey shows that more college graduates are homosexual than those with less education; therefore education makes people gay”.
 - Straw man – e.g. caricaturing a position to make it easier to attack - e.g. “scientists suppose that living things simply fell together by chance.”
 - Suppressed evidence or half-truths – e.g. an amazingly accurate prophecy of the assassination attempt on President Reagan is shown on telly; but was it recorded before or after the event?
 - Weasel words – e.g. the separation of powers of the US Constitution specifies that the US may not conduct a war without a declaration by Congress. So presidents of either party may be tempted to arrange wars and call them things like police actions, armed incursions, protective reaction strikes, pacification or safeguarding American interests. Euphemisms for war are one of a broad class of reinventions of language for political purposes. Talleyrand said, "an important part of politicians is to find new names for institutions which under old names have become odious to the public".
-

