

CORRELATION AND CAUSATION

On being 'hounded' by several journalists about all "the lies and deceit" that are in his film "An Inconvenient Truth", Al Gore looked the journalists in the eye and said "You have to lie these days to get what you want".⁽¹⁾

When scientists are investigating natural phenomena, they are very interested in cause-and-effect relationships. To help them find such relationships, scientists try to identify a correlation between two or more things. If there is such a mutual relationship, scientists might be able to identify a cause-and-effect relationship. Correlation is a pre-requisite condition for a cause-and-effect relationship, but correlation, by itself, does not mean that there is causation.

For instance, scientists might find that rising wine prices are correlated with rising occurrences of kidnapping by pirates in the Indian Ocean. However, it is unlikely that scientists will find that the rising price of wine is causing the pirate activity or, conversely, that pirate activity is causing the price of wines to increase. Consequently, correlation does not necessarily mean causation is happening, but if causation is identified, it will always be accompanied by correlation.

One rule of causation is that the cause must happen before the effect. For example, scientists might identify a correlation between wet footpaths and rain showers. They then can develop two theories. First, wet footpaths cause rain showers or, second, rain showers cause wet footpaths.

However, once observing that rain showers occur just before the footpaths become wet, scientists can discard their first theory. Because the rain occurs first it must be the cause, and the effect might be the wet footpaths. More work would then have to be completed to provide support for this second theory.

The importance of understanding the difference between correlation and causation, and also the rules of causation, cannot be overemphasised. A lack of such understanding can lead to many errors, as evidence in Al Gore's film "An Inconvenient Truth".

An Inconvenient Truth

In the film, Al Gore displays a slide of two graphs that shows both the movements of the CO₂ concentration in the atmosphere and the temperature movements from the 1950 average global temperature figure, over the past 400,000 years (to 1950). Rather than overlaying these two lines on one graph to make his point, he uses two graphs to separately display the temperature movements' line below the movements of the CO₂ concentrations.

He spends some time eloquently discussing the very tight correlation between the two lines attempting to convince the audience that this is proof that increased CO₂ concentrations always results in increasing global temperatures.

Without thinking or checking Gore's work, most of the audience would leave the theatre convinced that Gore is correct, and that this correlation "proves" the greenhouse theory. Nothing could be further from the truth.

On closer examination of the data underlying these graphs, the movements in atmospheric CO₂ concentrations lags the movements in temperature by about 800-1100 years².

On confirming this timing lag, you can say with certainty that the theory of increased CO₂ concentrations always results in increasing global temperatures is wrong for this 400,000 year period. In contrast, the theory that rising temperatures cause rising CO₂ concentrations, although not proven, is certainly not falsified by this finding. This result might support the theory that as oceans warm, they release CO₂, and as they cool, they absorb more CO₂.

If the Green activists' folklore is to be believed, both Al Gore and Dr. James Hansen, his scientific advisor for the film, knew that if the audience detected this time lag their fallacious reasoning in misusing correlation would be discovered. Consequently, the two lines in the graph were deliberately not overlaid on one graph, but were shown separately, making the time lag visually undetectable by the audience.

Examples of Lack of Correlation

Since 1700, 150 years before the industrial revolution, CO₂ concentrations have been steadily increasing. This increase has been so steady that many scientists have been surprised as historically there had always been more volatility.

If the greenhouse theory was valid, we should have seen an equally steady rise in the average global temperatures. However, this did not occur. The coldest temperatures in the Little Ice Age occurred in 1700. After the end of the Little Ice Age in 1850, fifty per cent of the time has been spent in cooling periods, the last of which started in 1998 and continues today (2020). During that 170 year period, carbon dioxide concentrations have steadily increased. So once again there has been no correlation.

It should be understood that cooling was not necessary to falsify the greenhouse theory, as interpreted by the Green activists. That the warming **stopped** while CO₂ concentrations steadily increased, was enough to falsify the theory. This falsification was recognised by Dr. Phil Jones and his staff at the Hadley Climate Research Unit (CRU) in the UK, and the lack of warming was described in private emails to other Green scientists in the US as a "travesty".

Jones staff then suggested ways that the data could be manipulated to reduce the cooling that they had measured. Their ideology interfering with their science was shown to the world when their private emails were put on the internet. The Greens' public relations machine also tried to minimise the damage caused by

this latest cooling period. The Greens' lexicon experts advised that the term "*cooling periods*" should be avoided, and be referred to as "*interrupted warming periods*" in any Green publications or Press releases. In this way, all citizens would continue to hear the word "*warming*" being repetitively used even during a cooling period.

If examined in detail, the past two thousand years show no correlation between CO₂ concentrations and global temperatures, as the world moved through the Roman warming period (200BC – 400AD), the Dark Ages cooling period (400AD – 800AD), the Medieval warming period (800-1300) and finally the Little Ice Age (1300-1850).

This should not surprise us, as the tight correlation, over 400,000 years, used by Gore was an exception with the rest of our geological history showing no correlation between temperature and CO₂ concentrations.

Most of the time during these earlier periods, CO₂ concentrations moved between 5 and 20 times higher than present CO₂ concentrations, so any cause and effect should have been easily identified. In one of the past glacial periods, CO₂ concentrations were eleven times more than the present CO₂ concentrations³. Not too much heat was generated by the CO₂ concentrations in that glacial period!

Conclusion

Green activists will not hesitate to mislead people who do not understand the difference between correlation and causation, or the rules of causation. As discussed above, Al Gore has deceived millions of people using this technique in his film "An Inconvenient Truth". To be able to critically examine the Greens' claims about global warming, knowledge of such concepts is necessary.

The lack of correlation meaning there is no causation, is yet another fatal flaw in the greenhouse theory supported by the Green Movement and their scientists.

Notes:

1. Others are quite happy to admit that the theory and their public relations' releases have many flaws:
 - When the Media recounted what Gore had said about lying to Dr. Hansen, and then asked him if he still supported his mentor Gore, apparently Hansen became angry, and replied "*Don't be stupid we all lie today, how else are we going to force Americans to change their lifestyle*".
 - Christine Stewart, Canadian Minister for the Environment, talking to reporters and their editors said "*No matter that the science of global warming is all phonyclimate change [provides] the greatest opportunity to bring about justice and equality in the world*" which was then reported by Terence Corcoran, "Global Warming: The Real Agenda", *Financial Post*, 26 December 1998.

2. Caillon, N., Severinghaus, J.P., Jouzel, J., Barnola, J.-M., Kang, J. and Lipenkov, V.Y. 2003. Timing of atmospheric CO₂ and Antarctic temperature changes across Termination III. *Science* **299**: 1728-1731.
3. The Ordovician-Silurian glaciation (450-420 million years ago). Source: Plimer, Ian, "Heaven+Earth, Global Warming: The Missing Science", Connor Court Publishing, Ballan Victoria Australia, 2009, page 426.