

## The Chief Scientist & Engineer's view

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### Rationality in a post-truth world

This is a timely topic. According to Wikipedia<sup>1</sup>, while the term “post-truth” is 25 years old, the term largely came into heavy use during elections in several countries in 2016. These elections were characterised by strong populist trends. As this Wikipedia entry notes: “The term ‘post-truth politics’ was coined by the blogger David Roberts in a blog post for *Grist* on 1 April 2010, where it was defined as ‘a political culture in which politics (public opinion and media narratives<sup>2</sup>) have become almost entirely disconnected from policy (the substance of legislation).”

### CSE sees a version of this involving science issues

The Chief Scientist & Engineer (CSE) has been asked by Government to review or provide comment on many matters where the issue is ostensibly a science one but it is often one where the science issues are accompanied by very strong emotions. I suggest these are examples of the science version of post-truth problems.

We often note that these issues are typically wicked problems. According to Wikipedia,<sup>3</sup> “a *wicked problem* is a problem that is difficult or impossible to solve because of incomplete,

contradictory, and changing requirements that are often difficult to recognize. The use of the term ‘wicked’ here has come to denote resistance to resolution, rather than evil. Moreover, because of complex interdependencies, the effort to solve one aspect of a wicked problem may reveal or create other problems.”

Examples of wicked problems the Chief Scientist & Engineer has been asked to deal with include the following:

- Review of Coal Seam Gas activities in NSW
- Review into the Decline of Koala Populations in NSW
- Energy Security Taskforce — The energy crisis in Australia
- Independent Review of Rail Coal Dust Emissions
- Advisory Committee on Tunnel Air Quality
- PFAS/PFOA Contamination, often from military bases
- Sea-level-rise advice
- The rat population of Lord Howe Island
- Medicinal Cannabis.

In all of these, we found that people can be enormously distressed about many aspects of the issue. Moreover, unlikely coalitions can emerge, e.g. in the case of Coal Seam Gas we had a strong coalition between Lock the Gate and the National Farmers Federation.

<sup>1</sup> [https://en.wikipedia.org/wiki/Post-truth\\_politics](https://en.wikipedia.org/wiki/Post-truth_politics)

<sup>2</sup> <https://en.wikipedia.org/wiki/Narrative>

<sup>3</sup> [https://en.wikipedia.org/wiki/Wicked\\_problem](https://en.wikipedia.org/wiki/Wicked_problem)

### **What characterised the CSG issue in NSW?**

As an example, let’s consider the CSG Review. Extracting coal seam gas in NSW is relatively straightforward technologically, but it needs to operate within a strong regulatory framework to deal with the community concerns. The main community concerns about proceeding with it were:

- land access issues
- land value issues
- could the industry be regulated effectively given its distributed nature?
- fear of fracking chemicals and resultant health concerns (particularly in the light of the movie *Gasland*)
- would fracking induce seismicity?
- would fracking chemicals cause contamination?
- subsidence
- surface, groundwater, and aquifer contamination
- aquifer wrecking by drawing down water
- gas coming into drinking water—lighting the Condamine
- produced water including radioactive salts; would it wreck the soil?
- air-quality impacts
- bad behaviour on the part of CSG companies, e.g. unauthorised access to land (hence *Lock the Gate*), trucks tearing up narrow country roads, etc.
- trustworthiness (or lack of) of CSG companies and governments.

### **A lot of the objections were rational ... but based on odd premises**

The Office of the Chief Scientist & Engineer (OCSE) carried out extensive community consultation as part of the Review. Many of the arguments proffered to the Review were rational but a large number were based

on odd, mistaken or only partially correct premises. When we discussed the matter with those consulted, it became clear that their starting “facts” often came from poor media stories. People are often too time-poor to spend time sifting fact from fiction or partial fact. They are often sceptical about government sources, citing bad past experiences with chemical spills, PFAS, dangerous side-effects of drugs they were not warned about, Three Mile Island, etc. They are more inclined to think “there is something to” press stories emphasizing dangers.

It would seem we are in a “post-factual” world (see Barber 2017). And the largely positive (at least with positive outweighing negative) contributions of science (e.g. sanitation, antibiotics, refrigeration, telecommunication, motorised transport, the internet, etc.) are taken for granted or forgotten. Maybe just as we take democracy for granted!

### **So what did we do in the Review?**

In carrying out the Review we tried to get a handle on these matters. Some of the things we did included the following. We:

- listened to as many different groups as we could, striving always to be respectful
- commissioned a study of the community psychological issues
- considered the literature worldwide including the grey literature
- held extensive community consultations—everywhere affected and with all key stakeholder groups
- established processes for managing potential conflicts of interest.
- recruited staff: engineers, scientists, writers, media expert
- commissioned parallel reports from multiple experts on a range of topics relevant to the issue

- held workshops of top experts from different fields and cognate fields to identify and tackle the issues — with robust discussions to really stress test matters
- developed a detailed sampling approach to understanding whether regulatory compliance was adequate (it wasn’t)
- published all reports we commissioned, including parallel reports we commissioned from different experts which often were partially conflicting
- always answered press queries
- responded to all invitations for the CSE to give speeches on the matter
- pointed out everyone’s rights under the Government Information Public Access Act (GIPA), noting everyone has open access rights with respect to government documents and data in NSW
- encouraged open data mechanisms so that compliance with all environmental conditions imposed on CSG and mining companies can be monitored by everyone. Specifically we recommended the creation of the Whole-of-Environment Data Repository for this (see Recommendation 10 in the Report of the Review, CSE 2014)
- were careful with our use of language, for example:
  - ◊ no “chemical” — bad. As in ‘nasty chemicals’
  - ◊ no “renewable energy” — good. (Though that is getting more mixed with wind farm objections.)
  - ◊ no “clean, green”.

### **So where does this leave us? What should we do?**

In my time as Chief Scientist & Engineer it has been very important to me that the work

coming out of the Office is “just the facts, ma’am”, not advocacy, not spin.

Some things I’ve learned along the way:

- Science doesn’t stand still and it’s about finding an intelligent way through the problem given the state of knowledge at present, acknowledging and emphasising there is always more to find out.
- It is important to pose the problem well in an effort to try to understand the *real* problem.
- It is important to get multiple views from the experts; don’t rely on one expert only on any given topic.
- Empower people to ask questions — promote openness and always recommend open data and better communication.
- Encourage governments to be preemptive in anticipating community concerns. They need to encourage well-founded and robust discussion before policies are finalised.

In other words, science, at least to some extent, can be a vital part of governments regaining trust when dealing with wicked problems. Science can help governments reconnect politics with policy in a post-truth and post-factual world.

### **References**

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