

Environmental Steganography

The concept of efficiency was devised for the benefit of engineers as a means of comparing the performance of similar processes. It was perhaps inevitable that Human Nature would quickly recognise the power of of an “*Efficiency Number*” as a sales and marketing tool. The principle has been developed into a highly refined technique in which the highest efficiency number is achieved by including favourable factors and omitting any which might reduce it. It is a short step between “*Pockling the figures*”, to outright deception.

In order for any deception to achieve maximum effectiveness, the half truths and downright lies must be skilfully woven into a background tapestry of truth and plausibility. This steganographic approach has been applied extensively in the environmental and energy industry.

Classical Thermodynamics has always been a mysterious subject. Its origins are attributed to Mr Carnot. My first formal introduction to Mr Carnot was when I entered first year of the Higher National Certificate Physics course at Glasgow College of Technology. Mr Carnot developed an equation which demonstrated that there was a maximum efficiency which no thermodynamic cycle could exceed. This became known as the “*Carnot Efficiency*”. In essence the efficiency increased by arranging for the difference between the extreme temperatures of the thermodynamic system to be as large as possible.

Since “*Cold*” can’t be any colder than -273°C , the only way to go on increasing the difference is to make the “*Hot*” as hot as possible. This ridiculously simplistic approach has nevertheless become the mainstay of engine design.

The General Public want simple answers to difficult problems, and it really doesn’t matter whether the answer is correct, misleading, or just plain wrong.

Mr Carnot’s Gospel was based on unprovable assumptions and an unachievable cycle. Mr Carnot might as well have said that no efficiency can exceed 100% which everyone knew already. In reality the thermodynamic cycle is only a small part of the overall efficiency of any system. It is important to implement that aspect as well as possible, but there is little point in doing so if other inefficiencies or side effects of greater magnitude are introduced in the process. Mr Carnot must nevertheless be congratulated for his genius in deriving an equation which guaranteed his eternal memory, - assuming nobody wakes up to the real issues.

Taking only one aspect of the case of the internal combustion engine as an example, the determination to

increase the temperature of the reaction resulted in the production of Nitrous Oxide and other toxic byproducts. Furthermore, the benefit of the increased reaction temperature is partially offset by the increased temperature of the exhaust gases. The idealised thermodynamic theory was effectively “*Carnot Curse*” on Humanity.

I was never terribly convinced by the explanation of the subject of Thermodynamics. Perhaps appropriately the lecturer, like many Ministers of Religion, invariably wore black. Mr McGuigan seemed to be incapable of smiling. His sarcastic manner might have been modelled on the television presenter David Frost, who was enjoying considerable media attention at that time. There was a passing facial resemblance between the two individuals. On reflection, I suspect that David Frost might have had some difficulty out-sarcasticing Mr McGuigan in a face to face showdown. Mr Frost enjoyed the benefit and support of the media and didn’t have to rely on his innate sarcasm skills to the same extent as Mr McGuigan. The subject matter of Classical Thermodynamics prompted challenging questions from the students to which there may have been no convincing answers.

Religion, based on nothing more than arbitrary assumptions and dogma, propagates by controlling its disciples. This is achieved through the systematic application of a stupefying formulation of promises, threats, ceremony, tradition, and status. Irrespective of the religion being theistic or atheistic, identical methods are employed. The Gospel, whatever it might be, is delivered with no opportunity for the audience to ask questions for clarification. Dissenters are anathema.

It could have been that sarcasm was a prerequisite for presenting Classical Thermodynamics. In the absence of a Pulpit, the only recourse for Mr McGuigan may have been to suppress potential questions by any means possible. He was well up to the task.

I did get the better of Mr McGuigan one day, much to the amusement of the other students, but that was just stochastic noise. Mind you, he wasn’t to be outdone and failed me. Oh dear! Small minded academics are somewhat predictable in that respect.

Glasgow College of Technology was brand new at the time. As students, we weren’t fooled by the pretentious name and referred to it as Glasgow Tech which was more than it deserved. The College should have been grateful. Clearly the lack of status must have irked certain members of staff, because it later altered its name to Glasgow Caledonian University. Of course, nothing improved, It’s just part of the game called “*Change the names to protect the guilty.*”

It's rather like going from Calder Hall, to Windscale, to Sellafield... Or is it the other way round? Meltdown is meltdown. Leakage is leakage. They're still guilty.

I don't entirely mind the Nuclear (Usually pronounced "NEW-CUE-LER" by BBC presenters for some inexplicable reason.) Power Industry. Some Physicists like to claim that they were responsible for presenting the world with "*Energy for generations to come.*" In fact, pretty much all that Physicists did was identify an exothermic reaction which was happening whether anyone wanted it to or not.

Nuclear Power was presented in the form of the simple fission of Uranium without mention of the several decay chains which include unstable isotopes of biologically essential elements. The public swallowed the "*Nuclear Poison*" with little thought.

No mention was made of the appallingly poor efficiency of the Nuclear fuel burn which is typically 1.5% This may reach 2.5% or so in breeder reactors. The efficiency - or rather inefficiency - of converting the heat into electricity plus the transmission losses between generating station and the end user bring the figure for overall efficiency well below that of the fuel burn itself.

Steam locomotives had been achieving higher overall efficiencies than Nuclear reactors for many years prior to the advent of the latter. Furthermore, by the 1950s methods of achieving clean combustion with poor quality coal and biofuel had been devised, developed, and proven. Disposal of the ash from coal combustion couldn't have been simpler. The ash could even be used as aggregate for civil engineering purposes.

In contrast, for Nuclear Power to appear economical, the cost of mining, transporting, and refining the Uranium ore, could scarcely be mentioned. The question of decommissioning life expired plant and the far more serious issue of disposing of the radioactive byproducts didn't appear to have warranted any thought at all.

Drawing attention to Fission never gave the world any energy which couldn't have been derived more cleanly, sustainably, and cheaply, by other means.

What the Physicists delivered was "*Global pollution for generations to come.*"

Had it not been for the genius and hard work of thousands of gifted engineers of all specialisms who actually made the Nuclear reaction moderately manageable and surprisingly safe, Nuclear Power would never have gone further than the Atomic Bomb. Engineers work to specifications which are usually hemmed in by budgets. Their pride is in achieving for £1 what any Administrative Professional couldn't hope to achieve even for

£1,000. Once accountants and company directors are allowed to ignore the probabilities of earthquakes and the likely magnitude of tsunamis, with the objective of maximising their profits, one is well advised to interpret expressions such as "*Possibility of an Accident*" as "*Inevitability of a major disaster*". The people who make decisions which lead to Nuclear Disasters are the ones who should shoulder the blame when it all goes to worms. Of course they never do, since members of that type of profession are experts when it comes to avoiding fallout of any sort.

I wonder what new name they'll come up with for Fukushima?

Governments seem to thrive on disguising their real intentions. I am particularly suspicious of one project currently well under way in Britain.

A plan has been approved for a private company to mine Polyhalite from 1.5Km below the North York moors. The fact that a private company is carrying out operations provides the UK Government with absolute deniability. Polyhalite is important in the production of fertilisers. One could hardly devise a superior "*Green*" camouflage for a "*Dirty*" project.

From the pithead the ore will be conveyed as a slurry through a 40Km pipeline, to a processing plant at the coast from where it will be exported around the world.

This is tremendous news for the UK Economy, local employment, and agriculture.

But wait...

The deposits of Polyhalite have been reported to extend out under the sea, so it makes no sense to sink the pit shaft 40 Km inland in a National Park when it could be sunk right beside the shore permitting processing to commence sooner at far lower cost.

It is utterly absurd to mine out towards the sea from inland, then transport the ore 40 Km to the pithead underground, and finally convey it for a further 40Km through a pipeline to a processing plant more or less 1.5Km directly above where the ore is being mined.

The company claims that peace and quiet will once more reign on the moors after the shaft has been sunk. This is extremely unlikely. Mining requires a steady supply of input materials such as concrete and steel, machinery, ventilation, and electrical equipment... The list goes on. How is all of that going to get to the pithead in silence?

The proposed mining strategy is to use "*Stoop and room*" extraction methods. That technique places a limit of about 30% on the amount of available ore

which can be mined. In contrast, a “Broadwall” mining technique permits nearly 100% of the ore to be removed.

There is no commercial organisation on the planet which would employ an inefficient approach to business when there was a vastly superior alternative such as exists in this case.

The funding availability for the Polyhalite Mining venture contrasts starkly with the Pit Closure programme initiated under Margaret Thatcher’s Administration some 30 years ago and ruthlessly pursued to its conclusion. Under that policy, countless fully operational, profitable coal mines, some with known reserves extending to the present day were discarded. Had that coal been mined it would have reduced Britain’s dependency on Nuclear power. There has never been any logic to the closure of fossil fuel power stations on the grounds of their Carbon Dioxide production and imposing an alternative which is infinitely more toxic.

It is equally impossible to rationalise the destruction of a Nationally important infrastructure industry using dubious “Profitability” measures as the justification for doing so, while over the same period generating unfettered Government funded growth in the Education system. In the absence of a stable industrial base, the Education system has little merit beyond warehousing those thrown into unemployment. A useful, tangible product has been replaced by certificates which many have discovered to their cost have less value than the paper on which they are printed.

Anyone who has set out to establish their own business will appreciate how difficult it is to raise funding even for ventures of minimal risk. The Polyhalite mine project was announced in 2013. As of 2018, the mine is expected to cost £3Bn and will not be ready for production until 2021. Despite the extended time horizon with all the attendant commercial risks, there does not seem to have been much difficulty in obtaining the necessary investment. How can that be?

Could this Polyhalite Mine Project be intended to conceal some ulterior motive?

Careful consideration suggests one likely possibility.

For many years the British Government has been seeking a place to dump Nuclear Waste. There is no prospect of a publicly declared scheme which uses the British Mainland ever obtaining the approval of the General Public.

Stoop and Room makes complete sense if there is revenue to be had from storing Nuclear Waste.

Locating the pithead out of sight in a National Park avoids the Public Gaze. A pipeline from the coast through which “Pigs” can transport radioactive material without the need for an escort of Marines would be ideal.

Best of all, the General Public are given a realistic - almost perfect - “Front” business. Objections, such as they are, can be bought off cheaply with the creation of an appropriate “Charitable Foundation”.

Radioactive waste generates a tremendous amount of heat. A pipeline carrying a supply of water from the coast would be ideal for cooling the waste. If things got out of hand, the entire pit could be flooded. Water is a good moderator and will tend to suppress the reaction.

There is a potential drawback should the mine need to be flooded. The water would be expected to become radioactively contaminated. Given time, the irradiated water with its dissolved radioactive salts, would percolate through fissures and could reasonably be expected make its way to the surface. The heating effect of radioactive waste would accelerate the process. This scenario is much more likely since the introduction of “Fracking” which is intended to accelerate the flow of liquids by fracturing the rock formations. Experiments carried out burning coal deposits underground have already demonstrated the rapidity with which pollutants can make their way to the surface. The impact of radioactive groundwater on the North York Moors is likely to be rather more serious than byproducts from coal combustion.

However, every cloud has a silver lining. The good news is that everyone who is anyone lives South of Watford. Nobody of any importance at all lives in North Yorkshire. There is a collateral bonus. The Yorkshire Miners were the most militant opponents of the aforementioned, economically and socially destructive Pit-Closure programme. From a Capitalist mindset it would be difficult, if not impossible, to identify any group of people more deserving of the toxic byproducts of the Nuclear Industry.

Still, this is all conjecture. The British Government would never play such a radioactively dirty trick on the Nation.

... Would they?

What would I know? I’m a farm labourer. Besides, the last time I lived in Yorkshire was over 35 years ago and I am unlikely to return there. I have to keep my eye on the cattle, which is infinitely more important than worrying about how or where to store someone else’s Nuclear Waste.

J W Cahill

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