Productivity Commission - Review of the Australian Automotive Manufacturing Industry, November 2013

This submission is written from the perspective of professional engineering and its benefit to the nation. I live in Queensland and I am not employed in the automotive manufacturing industry, either directly or via an associated company or organisation. I also do not personally know any employees in that industry. This submission is my own view as a professional engineer.

Therefore, this submission is not about 'the workers' as they are usually spoken of in politics or the media. By the workers, people usually mean 'blue collared' workers. This is the mass of people we see pouring out the front gate of a factory somewhere, usually on the evening news. This group is important, because they have hopes and dreams and families to support like any other group, however their employment is only possible because of the role of other groups. The other groups are the professional engineers and drafters who put the manufacturing process in place, and design the object being manufactured.

Over the last twelve months, I have read countless articles by economists and other media pundits talking about the uncompetitive auto manufacturing industry and the need to redistribute workers. We are told, take workers from the globally uncompetitive industries, retrain them and distribute them to the globally competitive industries. Consider the following comments from Jessica Irvine, The Courier Mail's national economics editor, on 10 April 2013 in relation to the auto manufacturing industry, "Far better to refocus our efforts now and retrain affected workers with the skills needed in the new economy...Already, the mining sector is an important employer...The aging population will need an army of age care and health workers."

Ms Irvine is partially correct; it would be possible to retrain an automotive factory worker installing windscreens or other such components, to be a health care worker in an aged home. Or perhaps he or she could move from Victoria or South Australia and go to Western Australia or Queensland and hose down conveyors in a wash plant somewhere. I am glad Ms Irvine points out in her article that, "Not everyone will make the leap." No doubt, few would find this leap attractive, but it is possible. Of course, it may not be all bad, if the workers were more skilled and had a trade, they could find work as a fitter or an electrician and life could continue as before, simply in new location.

However, there is a problem with this line of thinking; that the solution is all about retraining and moving workers. The problem is the technological equivalence of the work. Media writers do not seem to mention or understand this angle. The engineer or drafter who works on the design of an automatic or manual gearbox does not want to drive a dump truck or mop up the floor of an aged care facility. These positions are not equivalent. The professional engineer designing the gearbox does not want to be become the professional engineer in charge of mobile equipment maintenance in a mine either, even though they look after millions of dollars of haul trucks. These positions are not equivalent either. Engineering design and engineering asset management are two different things, even though they both use professional engineers.

So, what does the gearbox design engineer, or the robotic welding engineer, or the engine combustion engineer, or the fuel systems engineer, or the production planning engineer, or the car body designers, or any of their associated support drafters do? Well, if the auto industry goes, so does their technological existence as well. The engineering and design technology is lost, both from

them and from Australia. More than likely, they will not find a home to redistribute to. There will be a net loss to the system.

People generally do not value engineering. One of the mandates that the Institution of Engineers Australia has, is to explain to the Australian public what professional engineering is all about. People drive motor cars but do not have a clue what *profession* actually produces the goods. They merely think, Holden or Ford or Toyota does that. However, they do not make the association of motor vehicles with the profession of engineering. Not in the same way that law and solicitors go together or hospitals and medical practitioners go together. So economists and newspaper pundits writing about the loss of auto manufacturing fail to see any loss of technology. Their solution is to put the thing to the sword and move 'the workers' from one industry to another. Easy. Engineering never gets a mention. Thankfully, this Productivity Commission project does make mention of it, and the value of engineering does seem to be recognised.

Do not confuse science with engineering either. Innovation happens in both. Pure sciences, like chemistry and physics, will tell you about atoms and electrons and that those electrons can jump from one atom to another. But it is engineering that will organise the continuous generation of streams of electrons to become what we call electricity, and deliver it to your home to run your refrigerator. In the same way, pure science will provide the understanding of the chemistry of combustion, but it is engineering that designs the combustion system in the vehicle, the engine, and then the road network to transport you somewhere.

Therefore, the real loss in the departure of the auto manufacturing industry is the intellectual engineering knowledge that leaves the country, and not the mass of 'workers', who maybe, at lower skill levels could indeed be retrained. Once the knowledge is gone, it's gone. It won't come back. If that happens, no company would be bothered with setting up a continuous vehicle manufacturing facility in Australia sometime in the future.

Finally, I do not believe that the retention of each strand of engineering technology *must* be based on the cross fertilisation that may or may not occur between adjacent areas. If it happens, it is an added benefit. Each technology is a country or national competence is its own right.

Much is made of global competitiveness. I think we, as a nation, need to be globally competitive. It seems the auto manufacturing industry in Australia may no longer be globally competitive. I don't know how to win this one. Other industries also have great difficulty with global competition, the structural bolt manufacturing industry has gone, the petroleum refining industry is not competitive, the steel industry is maybe not, aircraft heavy maintenance is maybe not either and of course the refrigeration manufacturing industry is not and is going overseas. Everything is cheaper in China or wherever. The only things that I can think of that Australia is globally competitive in are, you guessed it, coal, iron ore and now LNG. But of course, all of these have their own threats as well. Nothing is a sure thing. And we cannot all work in these industries even if we could drive a haul truck...they're going driverless in any case. Australia's strength in raw materials, is its weakness. Weakness because it is difficult to get other industries off the ground.

It is worth mentioning in passing that the engineering service industry, process and mining design engineering is also badly affected by global pressures. Engineering design hours go to overseas locations in lots of hundreds of thousands of hours at a time because engineering design rates are

cheaper. Australian expatriates are even sent overseas to train the local engineers and drafters in what is proper Australian practice. This practice has been going on for more than ten years and it grows each year. So the engineering service sector is also becoming increasingly unviable.

In regard to Ford, the headlines blurt out that the company is leaving Australia, yet it is my understanding that only the manufacturing arm is closing down. The design and engineering arm will remain in operation, but the question could be asked for how long? While their work may be world class, without a manufacturing division or other large commitments to anchor them, these employees will be the lonely orphans at the bottom of the world. Orphans tend to be forgotten or in a moment of fresh rationalisation, they suddenly seem too oddball to remain a standalone entity any further. I would predict that in a few years this arm would close as well, as staff retire or move on and technical knowledge is gradually returned to the head office country or some European design centre. I really cannot see them recruiting fresh staff or engineering graduates as time goes by, unless it is to feed them to their overseas operations. I may be wrong, but I just can't see it.

Nothing that is written in this submission should be construed to mean that I am in favour of a bottomless bucket of money with free handouts, even with certain conditions, for the auto manufacturing industry. I do not have the skill set to provide economic advice for Australia in the face of the global environment. But I do have the skill set to point out the engineering and intellectual loss to the country.

All it will take is for a war to occur and global supply chains to be disrupted and Australia will soon discover all the things it can no longer design or build because the engineering design skills and industries have been lost. Before someone points it out, I have read enough to understand the decline in manufacturing in the Western world.

However, history still has a lesson here for us. The kick-off aluminium smelter in Australia, at Bell Bay in Tasmania, was set up by the Commonwealth and State Governments because the nation had trouble getting aluminium during the Second World War. If all the aforementioned industries eventually leave, the position will be far worse than anything presented during that war when Australia was still largely self sufficient and could still design and manufacture in its own right. Currently, if the boat with the structural bolts on it goes down, the nation can't bolt anything together.

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