



## **The future of Australian manufacturing: 'traditional' or 'advanced' ... or both?**

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Thank you for inviting me here today. It is an honour to be here as a guest of the Vernier Society.

Can I say at the start that I am an admirer of all the Vernier Society does for Australian engineering and manufacturing.

Our two organisations have long and indeed overlapping involvements in Australian manufacturing. In the 1940s many of your founding members were also members of the Victorian Chamber of Manufacturers. In the 1980's, the VCM became the Australian Chamber of Manufacturers, and in 1998 joined forces with the Metal Trades Industry Association – which like the VCM traced its history back to the 1870s – to form the Australian Industry Group.

While Ai Group now has a membership drawn from a wide range of industrial sectors, the majority of our members are manufacturers or in manufacturing supply chains and manufacturing and engineering lie at the heart of our organisation. Like the Vernier Society, Ai Group seeks to promote Australian manufacturing and engineering.

### **Introduction**

But enough of history. In my short talk today ahead of our discussion, I would like to discuss the future of manufacturing in Australia.

My argument in a nutshell is that we have a strong manufacturing base on which we can further build and grow the industry. We have great people and we have great businesses. We should certainly be building more successful businesses and we can do this if we lift our game in the economic fundamentals and if we take a more proactive and decisive approach to industry policy.

As I was preparing for this address, I revisited a couple of speeches I gave in the closing months of 2016.<sup>1</sup> In these I looked at different perspectives on the future of manufacturing in Australia. In them I reinforced the importance of the idea of 'advanced manufacturing' and the potential that manufacturers could derive from the directions with which advanced manufacturing is associated. However, I also suggested there were clear risks for Australia if we see a future only for 'advanced manufacturing' at least if 'advanced manufacturing' is defined as juxtaposed to 'traditional manufacturing'. And very frequently, that is how it is seen.

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<sup>1</sup> *"Traditional" and "Advanced" Manufacturing: A False Dichotomy*, 2016 Steel Convention: Innovation in Steel ([click here](#)) and *The Future of Manufacturing: A Forgotten Dimension?*, The Future of Manufacturing Forum, UTS Business School, December 2016 ([click here](#)).

Before I build on that theme today, I'm very pleased to say that the tone of discussion about the future of the industry has changed quite markedly over the past few years.

Three or four years ago we were still in the shadow of a period that included the incredible mining investment boom and the start of the mining export boom when the value of our currency had an extended run above parity with the US dollar. At that time there was a distinct sense of gloom in discussions around manufacturing.

Perhaps that is not surprising at a time when the manufacturing workforce had fallen precipitously: between February 2008 and November 2015, the industry lost well over 180,000 employees – a fall of over 17%.

While employment numbers move around a bit, give or take a few thousand, we are now at the same level of employment as we were four years ago. And that is despite some considerable headwinds in the form of higher energy prices and of course the closing down of the automotive assembly industry. Alongside the stabilisation of employment numbers, Ai Group's Australian PMI®, which is our monthly measure of the sector's performance, has recorded a strong run of expansion; profits have lifted – albeit at the same sort of gentle pace as other incomes in the economy – and there has been a distinct growth in manufactured exports.

In parallel with this turnaround, discussions have taken on much more positive tones. Thanks in part to the efforts of groups like yours and ours and the Advanced Manufacturing Growth Centre, the Innovative Manufacturing CRC, AMTIL and others, we are hearing much more of the wonderful things that are going on in Australian manufacturing.

Some of this turnaround – both in experience and in the tone of discussions – is due to the more competitive level of the local currency. But another proportion – indeed the larger proportion – is due to the successes of Australian manufacturers in building their businesses, in innovating, in developing their workforces, in adding new products and services and in lifting their competitiveness in what is a very competitive world.

## **The Future**

In turning to the future of Australian manufacturing I warn you at the outset that I am optimistic about the potential for Australian manufacturing.

However, I'm far from complacent and very conscious of the need to address some fundamentals. But I am very confident that if we can address these, we can lock in the very important contributions that manufacturing does make – and can keep making – to our economy and to our communities.

Manufacturing can:

- keep adding to the value of our economic output;
- provide challenging and satisfying jobs for hundreds of thousands of Australians and of course incomes for their families and the communities in which they live;
- help meet consumer demands both in the domestic and export markets;
- supply high quality inputs into, and add value to the output of our other industries;
- bring in income from abroad whether through exporting from here or by investing and leveraging Australian capabilities and IP in other countries; and
- keep developing a whole range of expertise – in areas like design, engineering, research and development that can be deployed in other industries.

### *The external environment*

We know that to keep making these contributions, Australian manufacturers need to meet the challenges of an extremely competitive and rapidly evolving external environment.

I want to draw attention to a couple of elements in the external environment that are bearing on manufacturing and manufacturing investment. We can find others but for today I'm thinking of the impacts of the emerging economies and technological transformation.

I was going to include the issue of addressing Australia's greenhouse gas emissions and what we need to do to restore our energy advantage but that was getting close to doubling the length of my talk so I'm leaving that for another day.

#### Emerging economies

We have just lived through the high-growth phase of the largest-ever industrial revolution. China is now the world's second largest economy and with more to go, it has already transformed global manufacturing. And there are other emerging economies on the runway – not the least are India, Indonesia and Bangladesh.

All populous and all industrialising. And it's not all in Asia – think Poland and Mexico for example.

All of this is increasing global supply and pushing down global prices.

This is causing considerable displacement in many established industrial centres and is a major underlying contributor to a wide variety of anti-globalisation – and indeed anti-business – sentiments and positions.

But the same global developments are also generating new market and investment opportunities. We hear much of the rising Asian middle class for instance. And many Australian manufacturers are well positioned to take advantage of these opportunities.

#### Technological transformation

Another major force in the external environment is the seemingly never-ending advances in the efficiency of capital equipment and industrial processes; in applications of digital technology; in the use of data and in automation.

As is always the case with these sorts of transformational forces, they are bringing not only hope and opportunity but also a fair share of insecurity and anxiety and giving rise to questions about how to better harness these developments in ways that promote, rather than detract from social cohesion.

### **What needs to happen for manufacturing to thrive?**

Unquestionably, one path into the future for Australian manufacturing is that of 'advanced manufacturing'. There are varying conceptions, but they all seem to have several of the following aspects in common:

- High value-add: often servicing niche markets perhaps with highly customized product and service offerings;
- Knowledge intensity: perhaps characterised by sophisticated design, considerable IP and automated processes and digitally enabled businesses and supply chains;
- Investment in, and close engagement with the workforce;
- Innovative: with investments in research and development, readiness to add new products and services, responsive to changing opportunities, and with the ability to evolve business models;

- Global outlook and global opportunities – scanning the horizon, engagement in and with supply chains, global servicing, investment opportunities abroad.

There is a rapidly growing number of Australian manufacturers who either self-identify or would be identified as advanced manufacturers according to these criteria.

Their successes have attracted the interests of governments and we now have the Advanced Manufacturing Growth Centre, the Industry 4.0 Advanced Manufacturing Forum and the Entrepreneurs' Programme now includes offerings with a distinct advanced manufacturing flavour. It also seems that each state and territory has a special place for 'advanced manufacturing' in its thinking about the future.

And these efforts too have had considerable success with many manufacturers spurred to lift their capabilities and broaden their horizons.

Rather than talk in the abstract I want to inject a couple of examples.

#### *Viewco*

Viewco is a family-owned and operated door and window fabricator in Wagga in NSW. It has around 40 employees and is focused on its local market and Canberra with an eye to the growing opportunities in Western Sydney.

Ai Group staff were kindly invited to a presentation by Viewco at an event organised by Architectural Window Systems (AWS). AWS makes aluminum extrusions for glass doors and windows for residential and commercial buildings. They sell their extrusions to small and medium-sized fabricators across the country and they also assist in developing the capabilities of these fabricators. Last week AWS took a step towards adding another dimension to this network by bringing the fabricators together and facilitating an exchange of information and experience sharing.

Viewco is a member of the AWS network.

Over the past few years Viewco has been on what many would call an Industry 4.0 journey. As is often the case, Viewco was not aware of Industry 4.0 or the Internet of Things, until much later but it nevertheless went about building data systems and connecting them as part of its broader transformation. The application of digital technologies and data analytics at Viewco has been, and continues to be, a one-step-at-a-time process.

It has been part of a broader transformation that has also included coming up to speed with international developments in like industries; investigating opportunities for research collaboration; and tapping into the insights and knowledge of its workforce. In relation to the latter, a feature of Viewco's presentation was the number of times we heard "and this idea came from the floor".

#### *Watkins Steel*

My second case study involves Brisbane-based Watkins Steel.

Des Watkins Snr – originally a fitter by trade – began steel fabrication while working in the QLD Police Force. In 1968 he began work under his house specialising in making handrails for residential buildings.

By 1978 they had built their first factory at Northgate in Brisbane and became more involved with structural steel. By 1988 they had doubled in size only to double again by 1998 and relocating for a second time. Ten years later they had once more doubled in size and shifting once again this time under the Managing Directorship of Des Watkins Jnr.

There were tough times in the steel industry in the post-GFC environment and with the dollar high they found themselves competing with rapidly increasing and less expensive, if variable quality, Chinese structural steel.

Not content to take this lying down, Watkins Steel committed to a program of business transformation and in 2014 commissioned its first Voortman advanced robotic line introducing automation into the business.

Over the last few years they added their first 3D Laser Scanner and a Robotic Total Station and then a second and then a third 3D Laser Scanner. They began to experiment with Mixed Reality with the Microsoft HoloLens and commissioned the second-line of Voortman Advanced Robotics.

Today Watkins Steel identifies its point of difference as its combination of the latest 3D technology and advanced robotics to produce small structural steel, metalwork, urban artscapes, architectural structures, and refurbishments. A long way from Des senior's handrails.

### *Advanced Vs Traditional Manufacturing?*

Neither Viewco nor Watkins Steel operate in manufacturing industries that typically would be identified as 'advanced'. We much more readily identify in this category industries like specialist machinery, medical appliances and pharmaceuticals. In contrast, Watkins Steel and Viewco are metal bashers and door & window fabricators – very much in the 'traditional manufacturing' camp.

I chose these examples not because they are exceptional. I could just as readily have drawn examples from the food processing, cosmetics and even the textile industries.

For some time, I have been keen to break down the demarcation many draw between "advanced" and "traditional" manufacturing. To my mind we should get rid of it because there is a strong temptation to view the external forces I referred to earlier as ringing the death knell on many of Australia's traditional manufacturing industries.

It is just a short step from this position to rename the categories as 'sunrise' and 'sunset' industries and to concentrate our business efforts and government policies on developing a narrower range of competitive advantage.

But this is not a view I share. It is a path that relies too heavily on the wisdom of the well-meaning public officials and the foresight of management consultants and does not leave enough room for the unique and the serendipitous.

Surely a better path is to inspire all manufacturers to become advanced manufacturers.

### **What can governments do to facilitate this direction?**

My final area today is to ask what governments can do to facilitate these directions in manufacturing?

As ever, governments first of all need to get the fundamentals right. Sustainable budgets; efficient taxation; strong and responsive education and training systems; competitive markets; selective and high-impact infrastructure; best-practice regulation; and trade

agreements that remove obstacles for our exporters and investors. These are the raw ingredients for businesses to invest, to employ and to create value.

If governments did all this well and nothing more, our manufacturing industries would thrive in the rising tide of economic growth and community prosperity. Productivity, incomes, job satisfaction, opportunities and broader living standards would all rise. It would be wrong to think progress is not being made in many of these areas:

- there are welcome noises in education & training;
- budgets are strengthening (though are still overly-reliant on a narrow range of volatile revenue sources);
- there is ongoing progress in our trade agreements;
- governments have rediscovered the appetite for investment in infrastructure;
- there is even another wave of interest in improving the efficiency of regulation;
- and the NSW government is attempting to reopen debate on the thorny questions of substantial improvements to taxation and federal finances.

While positive, in more than one area we need to turn noises and reviews into actions and outcomes.

In others – particularly in energy policy which I am leaving for another day – we are not making anywhere near the progress that is needed both in terms of our climate change commitments and on bringing down the still far too high energy costs and the rapid loss of our comparative advantage.

Overall, I would rank our efforts in getting the fundamentals right as a comfortable pass (at least if we leave energy out of the calculations). Not a credit and certainly not the high distinction for which we should strive.

In addition to getting the fundamentals right, there is a range of areas for proactive government industry policy.

As far as innovation goes, we have been making considerable headway in building more substantial links between our excellent research capabilities with our business community. At the same time however, we have undermined the effectiveness of backing for business R&D expenditure with what I see as tight-fisted tinkering with the R&D Tax Incentive.

In recent years we have been making progress in assisting businesses lift their capabilities. Whether this is in informing and encouraging greater awareness of the potential for the adoption of digital technologies; in building trade skills or in offering the tailored strategic advice that is delivered through the Entrepreneurs' Programme, they are all positive initial steps. As an aside, Viewco is one of the many manufacturers that has lifted both its capabilities and its horizons through its participation in the Entrepreneurs' Programme.

We have also built networks that bring businesses together and help inform them of a greater range of opportunities. I'm thinking of the various Growth Centres and the Industry 4.0 Advanced Manufacturing Forum for example.

Not everyone is comfortable with these sorts of interventions – and they are certainly not favoured by some of the central agencies. But my own view is that we need more and not less of them. Sure, we can learn and improve on these efforts. We can also join up the various efforts of the federal and state governments and indeed we can also join them up with the work of organisations like the Vernier Society and Ai Group.

## **Concluding comments**

We now have close at hand many of the building blocks of a strong industry policy.

We are closer to this now than we have been for several decades. Decades during which our industry policy was mainly just about getting the fundamentals right and otherwise leaving the rest to the market.

There is certainly a lot to be said for getting the fundamentals right and for the powers of markets. There is clearly a very strong case to say that the attention paid to the fundamentals by governments in the 1980's, 90s and into the early years of this century bore fruit in the form of 28 years of uninterrupted economic growth. Although the flow of benefits does seem to have faltered in more recent years.

More recently we have seen – from around the globe – plenty of reasons to believe that there are clear risks to economic and social outcomes if we just stop there and leave all the adjustments to the market.

We have not seen the worst of it in Australia, but nor have we been inoculated from the fallout of economic and social transformation.

Among the takeouts from this experience, there is a very important role for more proactive industry policy. It can build resilience and it can accelerate the development of business and workforce capabilities. It can lift productivity, incomes and competitiveness. And in doing so it can also do much to ameliorate the severity of adjustment and dislocation in the face of the sorts of transformations.

Done well, proactive industry policy can avoid the hazards of picking winners (and, by implication, of relegating losers), and it can do this in ways that leave plenty of room for the serendipitous nature of so much business success.