

Re-thinking “manufacturing”

This paper, prepared for members of The Australian Government Consultative Committee on Knowledge Capital and Communication, considers the way manufacturing has been so prominent in Australia’s economic and political history. Without downplaying manufacturing’s historical importance, it asks whether the idea of “manufacturing “ as a well-defined part of economic activity, is still useful in shaping economic policy, because it leads to a distorted view of policies such as “A future made in Australia”, and can drive political pressure for a return to protectionism.¹

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A very-much abridged history of Australian industry policy

The rise and fall of manufacturing has loomed large in Australia’s economic history. The development of manufacturing, and its protection, were central aspects of the political settlement around Federation.

As a recorded share of GDP and employment, manufacturing rose to a level of about 25 percent in the 30 years from 1940 to 1970 – the wartime period and the postwar boom – before slowly falling to about 6 percent at present.

The historical importance of manufacturing becomes evident if we consider the economic conditions of the late nineteenth century. Australia’s boom of prosperity, initially stimulated by the gold rush, had run its course, ending with the 1890s depression. Would the new federated nation be able to recover that prosperity?

As the constitution was being developed, there emerged a strong debate around protectionism. This was about far more than the conflicting interests of New South Wales and Victoria. It was about the future shape of Australian society. Economic historian Ian McLean points out that we could have decided simply to make the best of our agricultural and mineral resources in the world’s markets, and gone along the way Argentina developed, or we could have developed a society with a large domestic market and a substantial middle class. We took that latter path.

Manufacturing was to play the prime part in that future. The countries that were prosperous in the late nineteenth century, and where that prosperity was shared around, were countries with big manufacturing industries, and there was little doubt about the direction of causality. Maybe Ricardo’s theory of comparative advantage was being taught in our universities, but no one was talking specifically about the opportunity cost of tariff protection. There was no doubt that manufacturing was a driver of enduring prosperity. Manufacturing was also a base for shared prosperity, because large manufacturing establishments provided ideal conditions for trade unions.

¹ This paper draws on an article I wrote for *Dissent*, “Manufacturing and its place in the value chain” in 2013, with updates from current sources. It is available on my website www.ianmcauley.com

Manufacturing got a boost during the Pacific War, and was to remain at the core of the country's postwar reconstruction. An iconic photograph of the time is of Prime Minister Ben Chifley standing beside the first Holden to come off the assembly line at the Fisherman's Bend works in 1948.

In the public mind manufacturing came to be associated with the postwar period of full employment and rising prosperity. In the public consciousness it loomed larger than reality: if economists surveyed the population, asking what proportion of the workforce was employed in manufacturing, the answer was usually 50 percent or higher. The background picture of a TV broadcast about the economy was usually of busy workers in a factory.

"Made in Australia" was not only about the practicality of employment and economic diversification. It was also a symbol of economic progress, confirmation that Australians were just as clever and industrious as Europeans and Americans (and perhaps even the Japanese).

The history from 1970 onwards is well-known. The first sign of the unravelling of that settlement was the Whitlam government's 25 percent tariff cut in 1973, although this should be seen in the wider context of the collapse of the Bretton Woods system, the growth of manufacturing in low-labour-cost "developing" countries catering for world markets, and the Hawke-Keating government's program of industry restructuring. The ending scene, perhaps, was the last Australian-made Holden being driven off the assembly line in 2017.

Resurgence of the manufacturing debate – outdated classifications

Because of manufacturing's historical prominence it is easy to get its decline out of perspective. Although its relative position in the economy has slipped heavily, the number of people employed in manufacturing is now only about 25 percent lower than it was in the 1960s, and that's in spite of classification issues (outlined below) that probably overstate the decline.²

Manufacturing of earlier times included large, vertically-integrated firms, many of which were turning out consumer products "made in Australia". Today's manufacturing firms are more typically involved in specialized parts of global industries, with less prominence in the public mind.

In one of his first statements after becoming prime minister (for the second time), Kevin Rudd said "I never want to be prime minister of a country that doesn't make things any more".

In fact Australians were making many things. They were building houses and roads, they were transforming agricultural and horticultural outputs into meals, some in the (unrecorded) home economy, some in restaurants. Auto mechanics were repairing cars, essentially re-making them. We were making many things, but not necessarily in what is classified as the manufacturing sector.

² In 1960 about 1.2 million Australians were employed in manufacturing. Now it is about 0.9 million.

Perhaps Rudd was misled by official statistics, because many activities, once classified to “manufacturing”, were happening in other sectors. For example the manufacture of cupboards now takes place in the building industry. And those historical figures of 25 percent employment and value-added in manufacturing relate to a time when manufacturing firms performed almost all activities, including payroll administration, building management, warehousing and so on “in house”. Many of these activities have shifted off to the services sector, which is where they are now classified.

Of course classification accounts for only a small part of the decline of manufacturing, particularly mass-production manufacturing, but the more general point is that Rudd, like many others, seems to have been misled by reliance on statistical classifications. We see this in the second part of that same statement where he said “There’s a big future for Australian manufacturing under this government” implying that manufacturing is the only sector where people make things.

If classification matters resulted in no more than the occasional politician’s mis-statement that wouldn’t matter, but classification can bind our thinking in ways that are unproductive. The way policymakers frame issues influences their decisions, and those frames, in turn, are influenced by classification.

For example, few journalists, politicians, or economic commentators would be challenged if they were to state that textiles, clothing and footwear – industries often gathered in the acronym “TCF” – cannot possibly be economically competitive in Australia.

Indeed, we are highly unlikely to see again the manufacture of everyday clothing in Australia. In fact when we look at labels on the clothes we buy we notice that manufacture has shifted from countries that were once considered to have low labour costs, to other countries with even lower labour costs. Some aspects of manufacturing are competitive only at a particular stage of a country’s development.

But policymakers should be wary about broad classifications such as “manufacturing”, or even detailed sub-categories. In the Australian and New Zealand Standard Industrial Classification, “manufacturing” breaks down into 15 sub-categories, one of which is “textile, leather, clothing and footwear manufacturing”. That is broken down further into 5 smaller categories, including “clothing and footwear manufacturing”, and at the final level is “footwear manufacturing”.

That description can include everything from sandals through to orthopaedic shoes and safety footwear. Chemical and fire-resistant boots, and boots for mountaineers, made in small batches to exacting standards and which sell for several hundred dollars, come into the same category as plastic flip-flops (“thongs”).

The ANZSIC classification is about the basic function of the manufactured product – “goes on feet” in the case of footwear – with little regard for the sophistication of the processes that go into the product. Mountaineers, for whom the quality of a boot can be a matter of life or death, pay more than \$1000 for boots made in Italy or Germany, made by craftspeople paid European wages.

Our manufacturing classification is based on what comes out the factory door, rather than on what goes on inside the factory. What are people doing, what mix of cognitive and physical skills are they employing, how much judgement do they use in their work? Our commonly-used ANZSIC statistics don’t enlighten us on these questions.

This contrasts with the Australian and New Zealand Standard Classification of *Occupations* (ANZSCO) which has a hierarchy of six levels of classification. The top level of the hierarchy has 8 categories, broadly gathered by skills. There are 1419 occupations at the most detailed level of disaggregation : “cyber security architect”, “librarian”, “electrical engineering draftsman” and 1416 others. But the ABS collects and publishes data only on the highest levels of the hierarchy. That’s not the fault of the ABS. Rather it’s because our policymakers and researchers are accustomed to output classifications, and that’s where the demand for data lies. Our policymakers, researchers and journalists are influenced by classifications that are past their use-by date.

Theoretically we could get a detailed (but statistically noisy) picture of our economic structure if we had a matrix cross-classifying ANZSIC and ANZSCO categories, showing which industries were utilizing what skills. (Sometimes the industry of occupation is evident from the description – for example “goat farmer” and “member of parliament” need no cross-classification.)

But the main point is that we can probably learn more about our economic structure if we focus on occupation rather than industry. A “software engineer” could be employed in almost any industry, for example. We probably learn more about our economic structure by tracing the employment of software engineers, than by collecting fine data on employment by industry in a dated classification system.

Manufacturing and its overstated place in the value chain

Some see the present government’s Future Made in Australia as a policy to re-establish a large manufacturing sector.

That has set off concern among some quarters, that we may be heading back to the days of manufacturing industry protection. Even the Productivity Commission has felt the need to issue a gentle warning about the pitfalls of industry-specific policies.

In fact the policy itself is limited in its scope. It is mainly concerned with opportunities for further processing of our abundant raw materials, to obtain more value-added from our exports. That has been a perennial concern of Australian governments, Coalition and Labor. The raw materials now include sunlight and wind, displacing coal and gas that were the concerns of earlier policies. But the principles of physical concentration and value-adding are the same as in earlier times.

At the broadest level the policy is about the position of “manufacturing” in a long value chain, but it’s not clear what part of that value chain is “manufacturing”. Many mining operations, such as copper, are physically integrated with further processing: is BHP’s smelting of copper at its Olympic Dam site to be classified as “mining” or “manufacturing”?

More basically, does the classification matter?

Many things are done in the value chain from raw material to customer, and for many products that value chain does not finish with the customer receiving the “finished” product: there are often after-sales services involved in the set of transactions contributing to customer satisfaction. The software that accompanies the physical product may be just as important to the customer as the product itself.

In that long value chain “manufacturing” – the processes of bending, milling, drilling, casting, sewing, cutting, welding, assembling and a host of other activities – is simply one part of the chain bringing value to customers.

Most of these processes have become much lower-cost over the years. Phases of technological development have seen the displacement of labour from these processes. Robots have displaced labour in processes which were once considered to be intrinsically labour-intensive, such as car assembly. Three-dimensional printing could be displacing labour in bespoke or small-batch manufacturing. Artificial intelligence may be able to automate processes in sewing clothing, one of the manufacturing processes still relatively untouched by automation. Some manufactured products have become much simpler to put together: consider, for example, the number of production steps in making vacuum-tube based electronic appliances compared with those using standardized integrated circuits.

At the same time, processes once considered peripheral to “manufacturing”, such as design, plant engineering, production control, logistics and pre- and post-sale customer service, have become the source of much more value-added. And these functions are not unique to what is called “manufacturing”: industries such as horticulture bear more resemblance to mass-production factories than they do traditional food-growing industries.

Some of these processes once had to be co-located with manufacturing: the engineer would do a set of calculations and sketch a design, physically give it to a draftsman, who would take the drawing to the factory superintendent, who would pass it to the machine operator, a well-qualified tradesperson. That’s all changed radically: these functions, right down to determining the settings on a machine, can usually be done anywhere. As for the machine itself, it probably doesn’t matter whether it is located in a low or high labour-cost country. What may matter far more is its location in relation to customers. Shipping costs and delivery times may be far more important than the costs of manufacturing processes.

The only cases when the location of physical manufacturing activity counts are when there are special and hard-to-come-by skills in operating equipment. The manufacture of antibiotics, for example, calls on craft skills in brewing. Steelmaking is still located in countries where there are people with the deep knowledge of the processes – knowledge that is not easily transferred. But these are the exceptions that confirm the rule, because in these cases the important factor is the human capital, not the physical capital or grunt labour power.

Conclusion – re-framing and re-thinking

It is possible that the thinking of policymakers, researchers, journalists and the voting public has not caught up with the physical world.

Perhaps we stop thinking about “manufacturing”, and focus more on what Australians are contributing along value chains, without being distracted by classifications that belong to another age? Changing the frame that shapes thinking changes policy.