

How America Can Win the Future in Manufacturing

(IW – Jeffrey L. Chidester: 8-12-14) For developed nations, economic growth is predicated on innovation. This has been the conventional wisdom for some time, and it remains true today. But there is a difference between a nation that produces great innovations and a nation whose industries, both old and new, continue to adapt to and profit from these innovations.

This nuance – and our response to it – may hold the key to America's manufacturing future. America's contributions to the world of innovation need not be recounted here – it's the story of Thomas Edison, Henry Ford, and Steve Jobs, of the airplane and microprocessors, of Google and Facebook.

For over a century, America has produced individuals and ideas that have transformed how we interact with the world around us, and it remains the global leader today. Yet, while America continues to lead the way in disruptive innovations, its insatiable drive to open new frontiers sometimes overlooks the importance of innovating within *current* industries.

If we lose in innovation, we lose in manufacturing.

By contrast, as Dan Breznitz [recently wrote](#), Germany, not the U.S., is the global leader in leveraging innovation in service of existing industries. The results have been staggering – and they offer critical lessons for American manufacturing. According to Breznitz, "German innovation involves infusing old products and processes with new ideas and capabilities or recombining elements of old, stagnant sectors into new, vibrant ones."

This activity is driven by Germany's so-called "mittelstand" – a series of small- and medium-sized enterprises (SMEs) which together account for roughly 60% of German jobs. While these companies tend to be family-owned and prefer conservative growth strategies, they are nonetheless highly innovative. Yet they innovate in a different way.

"Rather than thinking outside of the box, the mittelstand has always been for enlarging it," said the OECD's Andreas Woergoetter. "They prefer incremental over radical innovation." These innovative SMEs are the reason Germany's manufacturing sector has thrived.

Today, 22% of Germany's workforce is employed in the manufacturing sector compared to less than 11% in the United States. This despite the fact that German industrial workers average wages two-thirds higher than their American counterparts.

The German example shows that developed economies can still flourish in the manufacturing sector if given the right toolkit. It is also a cautionary tale: If we lose in innovation, we lose in manufacturing.

Much like Germany, the future of American manufacturing will rise and fall on the innovative capacity of its SMEs.

The Solution? Big Trends, Small Firms

This is not to say America's SMEs are not innovating; quite the opposite.

Brooklyn-based MakerBot, the leader in consumer 3-D printing, was launched in 2009 with seed funding of just \$75,000.

SmartThings, founded in 2012, has been a major player in the so-called "Internet of Things" market.

And Anki, a San Francisco-based startup, was heralded as a pioneer in consumer robotics by Apple CEO Tim Cook during the keynote of the 2013 Worldwide Developers Conference.

"Some of our most innovative ideas have emanated from small- and medium-sized firms," said Rebecca Bagley, President and CEO of NorTech, a Northeast Ohio-based organization focused on expanding economic opportunity through innovation. "The problem is that the vast majority of SMEs do not have access to the latest technological trends."

Keeping current with the latest trends often requires large capital investment and strategic commitment, both of which are difficult sells for SMEs.

So the question: How do we bring these latest technologies to more of our manufacturing SMEs? A recent bipartisan commission co-chaired by Governors Haley Barbour and Evan Bayh offers a solution.

In a [report released last month](#), the Milstein Commission on New Manufacturing, organized by the University of Virginia's Miller Center, proposed a "Big Trends-Small Firms" initiative to confront this challenge.

The idea is to have the Commerce Department's Manufacturing Extension Partnership (MEP) track the latest technology trends, then diffuse these technologies back to the manufacturing base.

"If we can somehow equip these firms with the means to leverage the newest technologies, it could have a transformative impact on American manufacturing," says NorTech's Bagley.

Some have argued that the German system – anchored by its famed Fraunhofer Society (a network of 67 research institutes devoted to applied science), as well as a robust apprenticeship model – cannot be replicated.

But America's other global competitors are not standing idly by.

Taiwan's Industrial Technology Research Institute and Canada's Industrial Research Assistance Program have built effective models for expanding the innovative capacity of their own SMEs.

This initiative will not return us to a golden era of American manufacturing. But it is an achievable, bipartisan measure that would keep our manufacturing base trending in the right direction.

Our global competitors have confronted this challenge. It's time for us to do the same.

(Jeffrey L. Chidester is Director of Policy Programs at the University of Virginia's Miller Center.)