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Is Manufacturing Falling Off the Radar?

By **LOUIS UCHITELLE**

PELLA, Iowa

JUST outside this prairie town, seven vast buildings, each painted brick red, are lined up along a highway bordered by grain fields. These single-story structures have no smokestacks or any other indication that they are, in fact, very busy factories.

Three shifts of workers produce machines that bale hay, dig trenches, reduce tree branches to wood chips, grind stumps into sawdust, and drill tunnels to run electric wires and pipes underground. Most were the creations of Gary Vermeer, a farmer, tinkerer and inventor who died two years ago, at the age of 91.

The company he founded bears his name, but for all its American roots, the Vermeer Corporation put its newest factory — and the wealth that goes with it — not here but in the capital of China. And Mr. Vermeer's daughter, Mary Vermeer Andringa, the chief executive, presides over a manufacturing operation that relies increasingly on government support.

As [President Obama](#) urges Congress to enact a package of tax cuts and new government spending intended to revive growth and create jobs, one crucial corner of the American economy — manufacturing — has largely fallen off Washington's radar screen.

Vermeer earns nearly one-third of its annual revenue from exports — counting on the United States government for trade agreements, favorable currency arrangements and even white-knuckle diplomacy to make exports happen. In China, that wasn't enough. For several years, it had been running into competition from Chinese manufacturers of horizontal drills, supported by their government in the form of free land, tax breaks, cheap credit and other subsidies. With its share of the market falling precipitously, Vermeer in 2008 opened a plant in Beijing, taking a Chinese partner and drawing help for the venture from the Chinese. "I am a very big proponent of making the United States a great place from which to export," said Ms. Andringa, 61, who

is also chairwoman of [the National Association of Manufacturers](#). But she added: “If we wanted to stay in the Chinese market, we needed to be there. That was the reality.”

Manufacturing is not simply a market activity, especially not in the 21st century: manufacturers rely increasingly on governments, here and abroad, to prosper and expand. Vermeer, family owned, thrives with such help, as do big multinationals like [Dow Chemical](#). In each region of the world, multinationals produce much of what they sell locally. European and Asian governments support this strategy, and the American government is cautiously getting into this game. The president, in his speech on Thursday, nodded in this direction.

“We’re going to make sure the next generation of manufacturing takes root not in China or Europe, but right here, in the United States of America,” he told a joint session of Congress.

Vermeer tries to march to that edict, employing 140 engineers, 7 percent of its staff, in a constant effort to upgrade the various machines it exports. But it runs into an obstacle. For all the desire to make things in America, manufacturers increasingly rely on imported components, diluting the label “Made in America,” and Vermeer is no exception.

“We would prefer to buy everything in the United States, but some of our transmissions come from Europe,” Ms. Andringa says. “They are not made here in the sizes and capacities that we need.”

In Dow Chemical’s case, thanks to a \$141 million state grant, roof shingles that generate [solar power](#) are rolling out of a pilot plant near Dow’s headquarters in Midland, Mich., and a full-scale factory is under construction nearby. The federal government is also paying nearly half the cost of building a \$362 million Dow plant in the Midland area, whose “clean” rooms will soon produce batteries for [electric cars](#).

“An advanced manufacturing policy is what this country must have,” says Andrew N. Liveris, the chairman and chief executive of Dow Chemical, arguing, in effect, that manufacturing needs government support to expand its dwindling share of the nation’s economy. That is particularly so when demand for new products like solar shingles and batteries is not yet enough to justify the investment. (Three solar companies recently filed for bankruptcy.)

Mr. Liveris, 57, himself a chemical engineer and co-chairman of President Obama’s newly formed [Advanced Manufacturing](#)

Partnership, a group of outside advisers, would even “pick winners” — that is, select some manufacturers for continuing support. “I would not let free markets rule without also addressing what I want manufacturing to be 20 or 30 years from now,” he says.

The Obama administration hasn’t tried to formulate policy that far into the future. But, last year, the president called for a doubling of exports by 2015 — which would require total factory output in America to rise several times faster than it has in recent years. One way to accomplish that would be to have multinationals repatriate some of their overseas production — which Mr. Liveris, for one, is not planning to do.

Despite its goals for manufacturing, the administration lacks an explicit plan for achieving them. “The United States today is alone among industrial powers in not having a strategy or even a procedure for thinking through what must be done when it comes to manufacturing,” says Thomas A. Kochan, an industrial economist at the Massachusetts Institute of Technology.

MANUFACTURING’S muscle helped make the United States a world power, but its contribution to national income is dwindling. And while corporate leaders like Mr. Liveris and Jeffrey R. Immelt of General Electric — who is chairman of the **President’s Council on Jobs and Competitiveness** — are beginning to express concern over manufacturing’s relative decline, the multinationals they command have contributed to the problem by gradually shifting production abroad. About half of Dow Chemical’s \$58 billion in revenue last year came from overseas operations.

A tipping point may already have been reached. Manufacturing’s contribution to **gross domestic product** — roughly equivalent to national income — has declined to just 11.7 percent last year from as much as 28 percent in the 1950s, according to the Bureau of Economic Analysis. In this century, the 20-percent-or-more club draws its members mainly from Asia and Europe.

It isn’t that fewer autos or plastics or steel products or electronics are coming out of American factories. Quite the contrary: output continues to rise, reaching \$1.95 trillion last year. But other sectors of the economy have grown faster in recent decades, and that dynamic has reduced manufacturing’s share.

In particular, the finance, insurance and real estate sectors — driven especially by investment banking and home sales — rose from less than 12 percent of G.D.P. in the mid-1950s to more than 20 percent before the onset of the financial crisis, and even now remain nearly that high. In China, in sharp contrast, manufacturing’s share of national output is more than 25 percent. While the United States has a far larger economy — \$14 trillion in G.D.P. versus China’s \$6 trillion — it has less factory

production.

Exactly when China took the lead, ousting the United States from a position held for more than a century, isn't easy to pin down. The bureau says it may have come in 2009, when Chinese manufacturers generated \$1.7 trillion of "value added," versus America's \$1.6 trillion. (When a \$100 sheet of steel, for example, is shaped into a \$125 auto fender, the value added is \$25.)

Relying on World Bank figures, some economists suggest that China moved into first place in manufacturing last year. Others say that based on measurements of actual purchasing power, the moment has not yet arrived but will come soon.

It may seem remarkable that America's fall — or impending fall — from first place in manufacturing isn't generating all that many headlines, certainly not when compared with the controversies over the [national debt](#) or persistent unemployment. One reason may be that the nation's political leaders don't see manufacturing as a problem. Put another way, they don't necessarily regard making an engine, a computer or even a pair of scissors as having as much value as investment banking or retailing or a useful Web site.

"You have a culture within the elites of both political parties that says manufacturing does not matter, and industrial policy will do more harm than good," says Ronil Hira, an assistant professor of public policy at the Rochester Institute of Technology.

But the stark reality of manufacturing's shrinking share of national output is beginning to force these questions: Does manufacturing matter? And is the financial sector, which rose as manufacturing declined, an adequate substitute? The financial crisis may have answered that last question with an emphatic no. Certainly, many experts maintain that manufacturing's contribution to the national health is significantly underappreciated.

Recovery from the [recession](#), they say, would not be so sluggish if there were still enough manufacturers to jump-start an upturn by revving up production and rehiring en masse at the first signs of better times. What's more, each new manufacturing job generates five others in the economy. Shrinking the relative size of manufacturing has undermined that multiplier effect.

The damage doesn't end there. The intractable trade deficit is attributable in part to manufacturing's shaken status. And in many areas, craftsmanship in America has been eroding. Forty percent of the nation's engineers work in manufacturing, for example, and that profession's numbers have been declining. That is a particular problem because innovation often originates in

manufacturing, frequently in research centers near factories, which aid in the creation of products and the tweaking of them on assembly lines.

As multinationals place factories abroad, they are putting research centers near them, with as-yet-undetermined consequences. At the very least, this trend challenges the view that the United States has the best scientists and research centers and is thus the research-and-development pacesetter.

“If you let manufacturing go, over time that will have a negative gravitational pull on innovation,” says Ron Bloom, who served as the administration’s senior counselor for manufacturing. He resigned in August and has not yet been replaced.

In fact, as American multinationals become ever more global, they are placing sophisticated research centers near their overseas factories, partly to keep R.& D. close to assembly lines and partly because of enticing government incentives.

From China, Dow Chemical now exports products invented at its research center near Shanghai. “Overseas,” Mr. Liveris said, “I get tax incentives, and I get incentives to go to certain locations where they offer us utilities, infrastructure and land. I get access to human capital. I get all sorts of support to help train that human capital.”

Against that backdrop, he and a few other top executives of multinationals exhort the Obama administration and Congress to grant incentives and subsidies intended to halt the 60-year decline in manufacturing’s contribution to national income. Mr. Liveris recently published a book on the subject.

He says vigorous government support, like the subsidies that Dow receives for its solar roof shingle operation and the electric battery factory, might eventually halt manufacturing’s slide. But he adds that his company and others will not embark on a reverse migration, a significant “in-shoring” of what has already moved abroad. Too many consumers are concentrated today in Asia and Europe.

“We put things overseas,” Mr. Liveris says, “because markets were growing there and we wanted to be close to them, and that will never change.”

THE skyline at the Dow Chemical complex in Midland is made up of smokestacks, giant pipes and multistory factory buildings. The site where Herbert Dow first extracted brine from underground wells to make bleach is organized now as 32 production

units employing 3,600 people and spread over three square miles. Out of this complex come products like brake fluid, plastic tubing, paint, battery components and solar roof shingles.

Much of what is made at these factories is sold in the United States, and more could come off the assembly lines if domestic demand rose or exports grew, says Earl Shipp, a Dow Chemical vice president, during a tour of the sprawling complex. Dow is now a significant exporter from the United States, but it is also a significant exporter from its factories overseas.

Consider China. “We have launched several products sold around the world that were designed and invented in China and are now made in China,” Mr. Liveris says. He cites as examples a protective coating with properties that neutralize the corrosive effects of formaldehyde and an epoxy-based laminate used in printed circuit boards.

The solar roof shingles being produced in Midland, by contrast, are intended only for America. That is partly because roofs on single-family homes in this country slope differently from those elsewhere, according to Jane M. Palmieri, general manager of Dow Solar Solutions.

Still, Dow’s research in Midland led to the invention of a layered roof shingle that converts sunlight into enough electricity to heat water for a home. If there were enough demand in, say, Europe, Dow might initially export a European version from the United States.

“At some point, as demand rose, we would go overseas,” Ms. Palmieri says. “We would want to keep the production facility in good proximity to our end-use market.”

The battery factory nearing completion a few streets away is a different tale. It is to produce enough batteries each year to operate 30,000 fully electric cars. But the batteries aren’t likely to be exported immediately. The reason is that Dow is manufacturing them in Midland in a joint venture with other companies, licensing the technology from the Kokam Company in South Korea. Elsewhere in the world, Korean, European, Chinese and Japanese companies are already making and selling similar batteries, using different technologies.

“Battery production went overseas when electronics did, and we are only now bringing it back,” says David Pankratz, the Dow vice president of operations for the joint venture, adding that the government pushed for this to happen.

That sally into industrial policy, some economists say, is like closing the barn door after the horse has escaped — the horse in this case being America’s possession of the world’s biggest mass market. That ended in the late 20th century with the rise of millions of consumers in Asia and Europe with ample disposable income or access to credit.

The upshot is that governments in these markets pile on subsidies to gain or keep as much production as possible. Whirlpool, for example, makes most of its microwave ovens in southeastern China, with help from local subsidies.

When companies engaged in this kind of strategy in the 1980s, there was often much more criticism than today.

“The reason you no longer get much of an outcry over this exodus has to do mainly with jobs,” says Heather Boushey, a senior economist at the [Center for American Progress](#). “Less than 12 percent of the American work force is in manufacturing today, down from 30 percent in the 1970s. So there isn’t the same level of public concern.”

This article has been revised to reflect the following correction:

Correction: September 12, 2011

An earlier version of this article misstated the source of a \$141 million grant to Dow Chemical for a roof shingle plant. It was the state of Michigan, not the federal government.