

Are U.S. Machine Tools Becoming Extinct?

by Richard Freeman

With the decline of the U.S. machine-tool design sector, which is gathering force, the United States economy does not stand a chance of survival.

The truth of this was brought home by the April 22 bankruptcy filing by Ingersoll Milling Machine Co., of Rockford, Illinois, the machine-tool design company which has a highly developed capability possessed by only a few others in the world. The bankruptcy delivered a near crippling blow to the U.S. aerospace-defense industry. Ingersoll made a custom-made, technologically-advanced machine tool critical to the production of parts for the F-35 Joint Strike stealth fighter program, a multinational program in which the United States is the lead producer. Lockheed Martin Aerospace, one of the world's largest aerospace-defense companies, had, in 2002, won the \$18.9 billion contract for the U.S. side of production of the F-35; it immediately contracted in the Summer of 2002, for Ingersoll to produce the custom-made machine tools needed to produce the parts for the F-35. The Ingersoll bankruptcy pulled the rug out from under Lockheed Martin Aerospace: Ingersoll is only one of two U.S. machine-tool design companies that can produce this custom-made machine tool, and by law, Lockheed Martin Aerospace must buy this machine tool from a domestic U.S. manufacturer.

But beyond the problem it has created for the defense

industry, the U.S. machine-tool sector has plunged for nearly a quarter-century, to depths not seen in nearly seven decades, punctuated by a very steep decline since 1997.

The machine-tool design principle drives forward economic growth, and for that reason, it goes to the heart of what differentiates man from the beasts. Economics starts with man in the image of God: the capacity of the sovereign individual mind to make revolutionary, validatable discoveries in science, as well as in Classical art and music. In the scientific realm, these ideas are incorporated as designs for machine tools and other advanced machinery. At the same time, the cognitive powers of mankind are developed through rigorous Classical education, in which the student relives in his mind fundamental discoveries. The advanced machine tools are conjoined to the workforce whose cognitive powers have been awakened. Through this process, revolutionary scientific discoveries are transmitted into the physical economy, permitting man to transform and master nature.

But during the past 25 years, an opposite process has been under way in the United States: the extinguishing of the machine-tool design principle, which, in turn, has eliminated that force that generates progress. Unless reversed, this seals America's doom.

The Ingersoll Story

The Ingersoll Milling Machine Company represents the positive thrust of the machine-tool design principle—though it has its flaws, too. The Ingersoll Company was founded by Winthrop Ingersoll in 1891, who had bought a tiny machine-tool company in Cleveland, Ohio and moved it to Rockford, Illinois. The company prospered, and in 1953, Ingersoll built the world's largest milling machine for use in its own plant. Unfortunately, Ingersoll had an anti-union policy.

By the early 1990s, Ingersoll employed 2,200 workers in Rockford: 1,700 at its Milling Machine division, which made huge machines for aircraft customers such as Boeing and Airbus Industries, and an additional 500 workers at its cutting-tool division. It also employed 70 workers in Midland, Michigan, and it has a German subsidiary, Ingersoll Maschinen und Werkzeuge, which will remain open.

Ingersoll was a pioneer in high-velocity profiler (HVP) machines. During the 19th Century, machine-tool spindle speeds of 100-750 revolutions per minute (rpm) were common. Ingersoll built machines capable of rotating at 20-40,000 rpm. The HVP machines have fluid-bearing spindles that run on an externally pressurized fluid (oil) film. Unlike conventional mechanical ball-bearings, it does not wear under normal operating conditions, resulting in a long bearing life. It could also make deep cuts on extra-strength aluminum alloys, which are usually tough to machine, but which are commonly used in the aircraft industry. In one operation carried out on an aluminum alloy, the Ingersoll second-generation HVP machine reduced machining time from 10 hours to 70 minutes.

Ingersoll counted among its biggest customers Boeing,

Airbus, Lockheed Martin, Northrop Grumman, John Deere, and Caterpillar. But these manufacturers of aircraft, farm equipment, and other heavy equipment have taken a steep tumble over the past three years, and have cut back their purchases of machine tools.

Ingersoll took fierce cost-cutting measures, which included ill-advised asset sales. In 2000, in an effort to raise cash, Ingersoll sold its metal-cutting division to an Israeli company, and also instituted a 10% wage cut. It reduced the workforce at its Milling Machine division, from a high of 1,700, down to 300. But none of these measures could, or did work, because the fundamental problem was that the collapse of the U.S. physical economy caused industries to cut back on machine-tool purchases, which slashed business for Ingersoll.

Ingersoll did have one specialty: It was capable of manufacturing sophisticated machinery used in the production of both metal and composite parts for an aircraft's airframes and engines. Only five companies in the world possessed this capability, and only two in the United States: Ingersoll and Cincinnati Machine. In Summer 2002, Ingersoll received an order for three such custom-designed machines from Lockheed Martin Aerospace, and was in the process of building two of them. These two custom-designed machines, when completed, would stand more than two stories high and extend 70 feet by 20 feet.

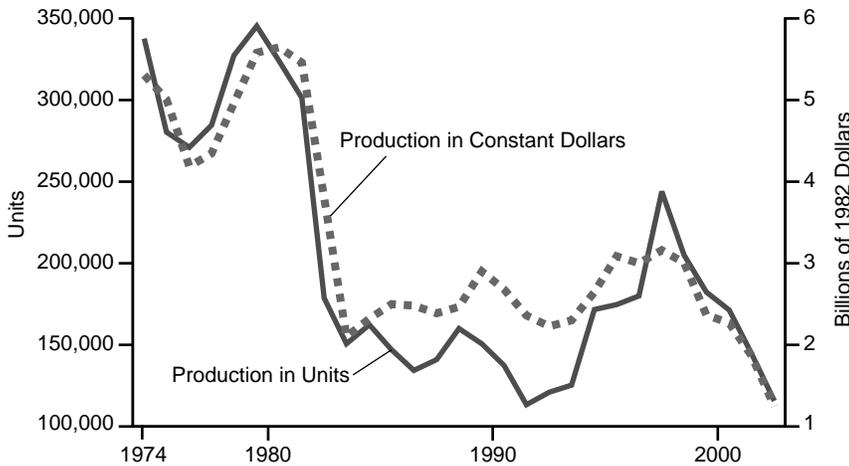
The Ingersoll bankruptcy left these two machines incomplete, but Lockheed Martin Aerospace desperately needs them: Lockheed Martin Aerospace is scheduled to produce the first 22 F-35 Joint Strike Fighters in Spring 2005, and can't do so without the Ingersoll machines. Lockheed Martin Aerospace has reached a tentative agreement for Cincinnati Machine, Ingersoll's competitor, to complete the two Ingersoll machines.

Further, on Aug. 20, Federal Bankruptcy Judge Manuel Barbosa approved a deal by which an Italian company, Camozzi Holding SpA, would buy Ingersoll for \$15.7 million, which is fraction of what Ingersoll is really worth. The intent is to run Ingersoll on a "mean and lean" basis, which means austerity and cost cutting. Tino Oldani, a representative for the Camozzi group, said he will try to get Ingersoll's annual sales up to \$100 million within four years, which would be only a quarter of the level of Ingersoll's sales during the 1990s. If rescued from bankruptcy, Ingersoll's capability will only be a fraction of what it once was.

A Picture of Destruction

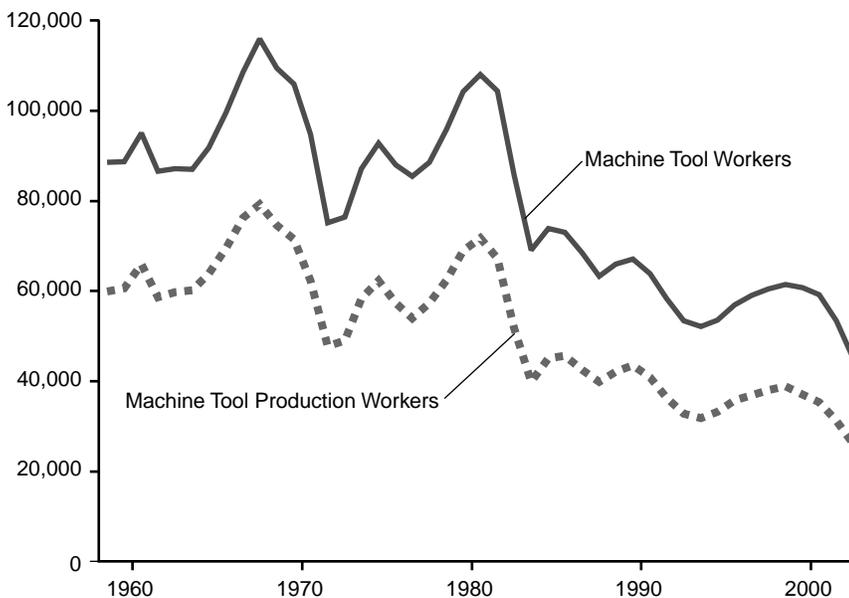
One can hardly pick up a newspaper, without regularly reading of a machine-tool company that has met the same fate as Ingersoll. During the past 18 months alone, 30 U.S. machine-tool companies were sold—usually to forestall bankruptcy; filed for Chapter 11 bankruptcy protection; or were outright liquidated. According to the Association for Manufacturing Technology, the U.S. machine-tool industry trade association, there are now a mere 320 functioning

FIGURE 1
U.S. Machine Tool Production Collapses



Source: Association for Manufacturing Technology; U.S. Department of Commerce; *EIR*.

FIGURE 2
Machine Tool Employment Plunges



Source: U.S. Department of Labor, Bureau of Labor Statistics; *EIR*.

companies that build machine tools in the United States—down from 400 in 1998—and a few hundred more companies in closely related fields.

The machine-tool-building company is usually small, having between 15 and 200 workers; only a few companies in the United States have more than 1,000 workers. These

companies represent genuine entrepreneurs, in which new ideas are developed, tested in the machine-tool process, and then incorporated in the design of new advanced machine tools.

The process of destruction of this vital national capability traces from the imposition, by the financier oligarchy of London and Wall Street, of a post-industrial society policy upon the United States in the mid-1960s, which withered production and built up a gigantic speculative financial bubble. In this downward process, there are two principal nodal points: First, President Richard Nixon's insane move to take the dollar off the gold-reserve standard on Aug. 15, 1971, which introduced floating exchange rates and opened the speculative floodgates. Second, Federal Reserve Board Chairman Paul Volcker's October 1979 decision to dictate a policy of "controlled disintegration of the economy" as a virulent form of the post-industrial society. Volcker started forcing up the prime interest rate, so that it reached 21.5% by December 1980, which destroyed industry in general, and wiped out two-fifths of the machine-tool industry within five years.

Figure 1 shows U.S. machine-tool production, both in units and in constant 1982 dollars. In 1979, the machine-tool industry produced 345,218 machine tools. Last year, it produced 115,573, one-third of the 1979 level. Note that since 1997, there was a further steep decline.

Figure 2 shows that in 1967, the U.S. machine-tool industry had 79,000 production workers. In 2002, it had 22,000 such workers, only one-third of the 1967 level.

The U.S. policy decision to be a consumer, rather than a producer nation, has meant that U.S. manufacturing and infrastructure contract, and cut back

machine-tool use. Machine tools are only used when an economy is expanding. But the carnage in the machine-tool industry means that when industry needs critical machine tools—as Lockheed Martin Aerospace needed machines from Ingersoll—such indispensable machine-tool design capability will no longer be there.