Decline and Fall of the Machine Tool Industry

When the Machine Stopped: A Cautionary Tale from Industrial America
By Max Holland

Reviewed by Partha Bose

The state of U.S. manufacturing has been a source of considerable concern for several years. U.S. companies that were once synonymous with manufacturing excellence, innovation, and quality are either gasping for survival or have already gone down a greasy slide to extinction.

The erosion of the United States in the world machine tool industry does not just concern the machine tool builders. It should alarm anyone interested in national security and international competitiveness. The crucial role that machine tools have played in national security crises should be obvious to any keen reader of history. And as a National Research Council committee pointed out recently, the domestic machine tool industry also plays an important role in technology transfer: sophisticated approaches that grow out of individual defense contractors' R&D efforts find their way to nonmilitary production equipment. This form of technology transfer, the committee believes, is one of the most important functions of a domestic machine tool industry; it cannot be transferred to foreign suppliers, no matter how competitive they might be. By relying exclusively on foreign sources of machine tools, U.S. companies also risk getting technology that is a few years old.

Several attempts have been made to evaluate the causes of the U.S. machine tool industry's decline. However, by focusing on the entire gamut of the U.S. industry, most analyses do little besides bemoan the decline or raise cries of jingoism. This book is a welcome departure.

When the Machine Stopped is the story of the birth and demise of a quintessential American success story: the Burgmaster Company. Started in a garage in 1944 by Czechoslovakian immigrant Fred Burg, Burgmaster epitomized American capitalism and, more important, ingenuity. In the two decades that followed, Burgmaster emerged as the backbone of the U.S. industrial renaissance. While Ford, Boeing, and GM became household names, companies such as Burgmaster, Cincinnati Milacron, Brown & Sharpe, and the Ingersoll Milling Machine Company provided the machines that produced the aircrafts and cars these companies built. When a machine tool was not producing an aircraft, a car, or some other product, it was producing another machine tool that would.

Burgmaster excelled, according to Holland, because of a time-tested business philosophy: the Burgs knew their business. An astute understanding of the business translated into technological innovations. For example, Fred Burg designed and manufactured the turret drill because he believed the industry needed it. Similarly, numerical control, this century's single most important development in machine tool technology, was left to such companies as Burgmaster to adapt economically. The Burgs also managed the business on a simple but useful principle: a company is as good as its workers. Worker involvement translated into productivity and high quality.

In 1965, Burgmaster was acquired by Houdaille Industries, a New York conglomerate in a variety of businesses, from automotive bumpers to construction materials. The Burgmaster acquisition was part of a trend; large diversified companies were
acquiring machine tool builders to produce the machines that manufactured their products. By the end of the 1960s, companies such as Litton, Textron, Teledyne, and Gulf & Western had all become major players in the machine tool industry.

With acquisitions came a total change in management philosophy. Geographically distant corporate executives replaced hands-on managers. The corporate ladder became populated not with the engineers and designers who best knew the products and customers, but with lawyers and accountants who were guided by such concepts as “profit centers” and “return on investment.” The acquisition constricted Burgmaster’s ability to innovate and respond to competition. This malaise was not limited to Burgmaster, but similarly afflicted almost every one of the acquired machine tool builders. Bottom-line orientation cut off investments in product development and R&D. In addition, the uncertain economic climate during most of the 1970s made capital investments in new technology unacceptable.

The Japanese machine tool industry had been devastated after World War II. Postwar reconstruction witnessed such a heavy inflow of U.S.-built machine tools that many Japanese machine tool builders went into other lines of business, for example, building textile and printing machinery. Some that remained became service and repair facilities for the imports. Others went into “reverse engineering”: a Japanese builder would buy a foreign machine, dismantle it, measure all the parts, draw up blueprints, and then build a new machine. Although not all builders resorted to this path, several learned to build better machine tools this way.

In the 1970s, the Japanese threw down the gauntlet. Companies such as Yamazaki, once linked to Burgmaster, as well as Morey and Okuma, were beginning to sell better produced, more accurate, longer-lasting machines. A variety of buyer-incentive programs, protectionist measures, and gentle prodding by MITI leapfrogged the Japanese machine tool builders; they changed from a melange of extremely unstructured mimics to a structured group of technological innovators. Their ability to innovate was a result of their shopfloor practices, which included the promotion of high technology and the maintenance of good labor relations—exactly the qualities that had once made Burgmaster great. They were dogged in their pursuit of U.S. markets and developed new marketing strategies for that pursuit.

For companies like Burgmaster, the economic climate and corporate structure of the 1970s were devastating. Curtails in defense spending had robbed them of sales, and conglomerate had limited their capital spending in new technologies. Although Burgmaster and Houdaille could have responded to the Japanese challenge by modernizing their plant or redirecting marketing strategy toward standardized machines, instead Houdaille became the first large industrial concern to be targetted for a leveraged buyout led by Kohlberg, Kravis, and Roberts. Holland’s description of the buyout forms a significant and fascinating portion of this book. By describing the players as much as the game, he makes high finance comprehensible and his narrative entertaining.

Management after the buyout was a nightmare. When the deep recession hit in 1981, instead of attending to the competitive pressures of the business, the company concentrated on managing its debt. Burgmaster was not alone: an inability to compete, an overvalued dollar, and a lack of product innovations evaporated almost a quarter of the U.S. machine tool builders before 1986 voluntary restraint quotas slapped a limit on imports.

Desperate, Houdaille decided to petition Washington for help in 1981, charging unfair collusion between Japanese government and industry. This was a last-ditch effort by Houdaille to survive. Although the petition failed, Holland documents how close the United States came to accepting it, and how much lawmakers were motivated not by an understanding of the industry but by Japan bashing. The petition raised interesting issues less about Japan’s trade practices than about U.S. industrial policy, or the lack of it.

In September 1985, Houdaille divested seven divisions in an effort to lower its debt. Three were sold to a private investor, three underwent leveraged buyouts, and one, Burgmaster, was liquidated.

The demise of Burgmaster provides a convenient platform from which to examine such broader issues as technological innovation, domestic and foreign competition, trade policies, conglomerate takeovers, and leveraged buyouts. Each of these issues is important because of its intricate link to the decline of the United States as an industrial power in general, and to the decline of the machine tool industry in particular. In enhancing the scope of the story to include these outside forces, Holland avoids the most common trap for authors...
writing about events in business and politics: recounting an event that is already well known.

By focusing on Burgmaster, Holland shows how larger issues affect the firm's business dynamics. At times his description of shopfloor and machine tool terminology might seem too involved, but the story cannot be told any other way. Holland is, in addition, uniquely qualified to tell this story. He is a Washington DC-based journalist and contributing editor to The Nation, and he had an enviable source: his father, who worked for the Burgmaster Company for twenty-nine years.