

*Making Things Better: Competing in
Manufacturing*

February 1990

OTA-ITE-443

NTIS order #PB90-205469



Recommended Citation:

U.S. Congress, Office of Technology Assessment, *Making Things Better: Competing in Manufacturing, OTA-ITE-443* (Washington, DC: U.S. Government Printing Office, February 1990).

For sale by the Superintendent of Documents
U.S. Government Printing Office, Washington, DC 20402-9325
(order form can be found in the back of this report)

Foreword

U.S. manufacturing is in trouble. That spells trouble for the Nation, because manufacturing provides well-paid jobs, pays for most privately funded research and development, and dominates international trade. In industry after industry, U.S. manufacturers have lost out to competitors who are able to make things better—products with better features and more reliable quality, at lower cost. The key to this better performance is technology, which includes not only new products and advanced manufacturing equipment but also efficient organization of work and effective use of people. Once, U.S. manufacturers led the world in technology. Now, in one field after another—first radios and TV, then automobiles, now semiconductors—Japanese manufacturers are passing us by. Other Asian countries like Korea and Taiwan are coming up fast, and Europe is mounting new challenges.

In a sense, these changes are welcome. Since World War II, U.S. policy has aimed to strengthen the economies of advanced nations and help poorer ones develop, so it should be no surprise that the world is now full of able manufacturers. It was not part of the plan for the United States to fall to second rank, but that is what is happening.

This report considers ways to promote the restoration of American leadership in manufacturing technology. Some of the things that most need doing are up to industry—especially in handling people, from managers to engineers to shopfloor workers, and in forming stable, productive relationships between different segments of an industry complex. Government also has a critical role to play. The first essential is to create an economic environment that supports manufacturing and encourages long-term investment in technology. This means higher national savings rates and a declining Federal deficit. Other less traditional activities (at least for the U.S. Government) also deserve consideration—for example, collaboration with industry on supporting R&D for strategic technologies.

For many years, national security was almost the only acceptable reason for government support of commercial technologies and industrial excellence, but as the Cold War winds down, this reason becomes less compelling. In an era of more secure peace but tougher economic competition, national security is taking on new meanings. To preserve our long tradition of industrial success and rising living standards requires continuing innovation and successful adaptation of existing technology, and that is a task for industry, government, and American citizens.

This report is the second in a series of three in OTA's assessment of Technology, Innovation, and U.S. Trade. The assessment was requested by the Senate Committee on Finance; the Senate Committee on Banking, Housing and Urban Affairs; and the House Committee on Banking, Finance and Urban Affairs. The first report in the series, *Paying the Bill: Manufacturing and America's Trade Deficit*, concluded that the stubbornly high U.S. trade deficits of the 1980s and many other signs pointed to genuine weakness in American manufacturing and lags in technology, compared to our best competitors. This report looks for some of the reasons for the weakness, and suggests policies aimed specifically at repairing it. The last report will examine the trade and industrial policies of Japan, other East Asian countries, and Europe; and their possible relevance to the competitive position of the United States.


JOHN H. GIBBONS
Director

Assessment on Technology, Innovation, and U.S. Trade Advisory Panel

Lewis Branscomb, *Chairman*
Harvard University

Michael *AhO*
Council on Foreign Relations

Ralph Gomory
The Sloan Foundation

Howard Greis
Kinefac Corp.

Joseph Grunwald
University of California, San Diego

Thomas Hout
Boston Consulting Group

Ramchandran Jaikumar
Harvard Business School

Franklin P. Johnson, Jr.
Asset Management Co.

Lester C. Krogh
Minnesota Mining and Manufacturing

Paul R. Krugman
National Bureau of Economic Research

Alvin P. Lehnerd
Steelcase Inc.

Ann Markusen
Rutgers University

Ray Marshall
University of Texas

Regis McKenna
Regis McKenna, Inc.

Richard S. Morse*
Consultant

David Mowery
University of California, Berkeley

Paula Stem
The Stern Group

Brian Turner
AFL-CIO

Gus Tyler
International Ladies Garment Worker Union

Lewis C. Veraldi
Ford Motor Co.

Ezra F. Vogel
Harvard University

*Deceased

NOTE: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the advisory panel members. The panel does not however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents.

OTA Project Staff-Making Things Better: Competing in Manufacturing

Lionel S. Johns, *Assistant Director, OTA
Energy, Materials, and international Security Division*

Audrey B. Buym, *Manager
industry, Technology, and Employment Program*

Julie Fox Gorte, *Project Director*

Katherine Gillman, *Deputy Project Director*

Robert Weissler, *Senior Analyst* Robin Gaster, *OTA Fellow*

Samuel F. Baldwin George Eberstadt Joan Gutta

Sebastian Remoy Philip Shapira

Contributors

Brenda Brockman Robert Wade
Dorothy Robyn

Contractors

| | |
|-------------------------------|---------------------------------------|
| Elinor Horwitz | Robert R. Miller |
| David Sheridan | D. Hugh Whittaker |
| Yoshitaka Kurosawa | Quick, Finan, and Associates, Inc. |
| Industry and Trade Strategies | Massachusetts Institute of Technology |
| Tokaji and Hirsch, Inc. | BSI Consulting, Inc. |

Administrative Staff

Christopher N. Clary, *Office Administrator*

Diane D. White, *Administrative Secretary*

Publishing Staff

Katie Boss, *Publishing Officer*

Cheryl Davis, *Desk-top Publishing*

Dorinda Edmondson, *Desk-top Publishing*

Christine Onrubia *Graphic Designer*

Susan Zimmerman, *Graphics*