Opening Remarks

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The Financial Crisis and Manufacturing

Things look bad ...

“The ongoing credit crisis and Hurricane Ike sent U.S. manufacturing to its lowest rate since 1982, the middle of another recession.”

Frank Ahrens, washingtonpost.com (11/3/08)

Or do they?

“Manufacturing now appears on a fundamental and relative basis like a sound bet to play a crucial role in this future.”

Thomas J. Duesterberg, Industry Week (11/1/08)
Possible US Growth Scenarios

**Business as usual** One possibility is that the trade deficit remains high. The rest of the world keeps shipping goods and services to the US while it continues to lend the US the money to pay for the imports.

**Global restructuring** Alternatively, the trade deficit shrinks because US consumers cut back on imports and the rest of the world has to adjust to a global economy that lacks the US's customary demand and borrowing.

**Innovative growth** The final possibility is that the trade deficit shrinks because the US exports more **innovative goods and services** to the rest of the world.
NAE Grand Challenges
http://www.engineeringchallenges.org/

Make solar energy economical: “... engineers must find ways to improve the efficiency of the cells and to lower their manufacturing costs.”

Engineer better medicines: “... more effective and reliable manufacturing methods are needed for vaccines ...”

Despite the decline in manufacturing’s contribution to the US Gross Domestic Product (GDP), innovations in manufacturing will continue to be important, and (maybe) even more so in the future.
What Do We Need To Do?

Manufacture products economically that people need
→ PV cells, pharmaceuticals, …

Manufacture these products sustainably
→ energy-efficient manufacturing
→ environmentally friendly manufacturing
Quote of the Day

Manufacturing takes place in very large facilities. If you want to build a computer chip, you need a giant semiconductor fabrication facility. But nature can grow complex molecular machines using nothing more than a plant.

Ralph Merkle, 1952 -