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Northwestern University Transportation Center

October 26, 2011

Atlee Valentine Pope

The U.S. Manufacturing Environment

The more we change,
the more we stay the same….

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Today's World

- U.S. Agriculture
  - 2.2 million farms
  - 834,000 people working in agriculture
- Farmville
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Our world is changing at breath-taking speed,
….how does this impact the manufacturing sector?

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State of U.S. Manufacturing

Some years ago, an émigré Russian engineer, offered an observation about his adopted country: “America seems very rich,” he said, “but I never see anyone actually making anything.” ….

-- NY Time Op-Ed, Paul Krugman, May 2011

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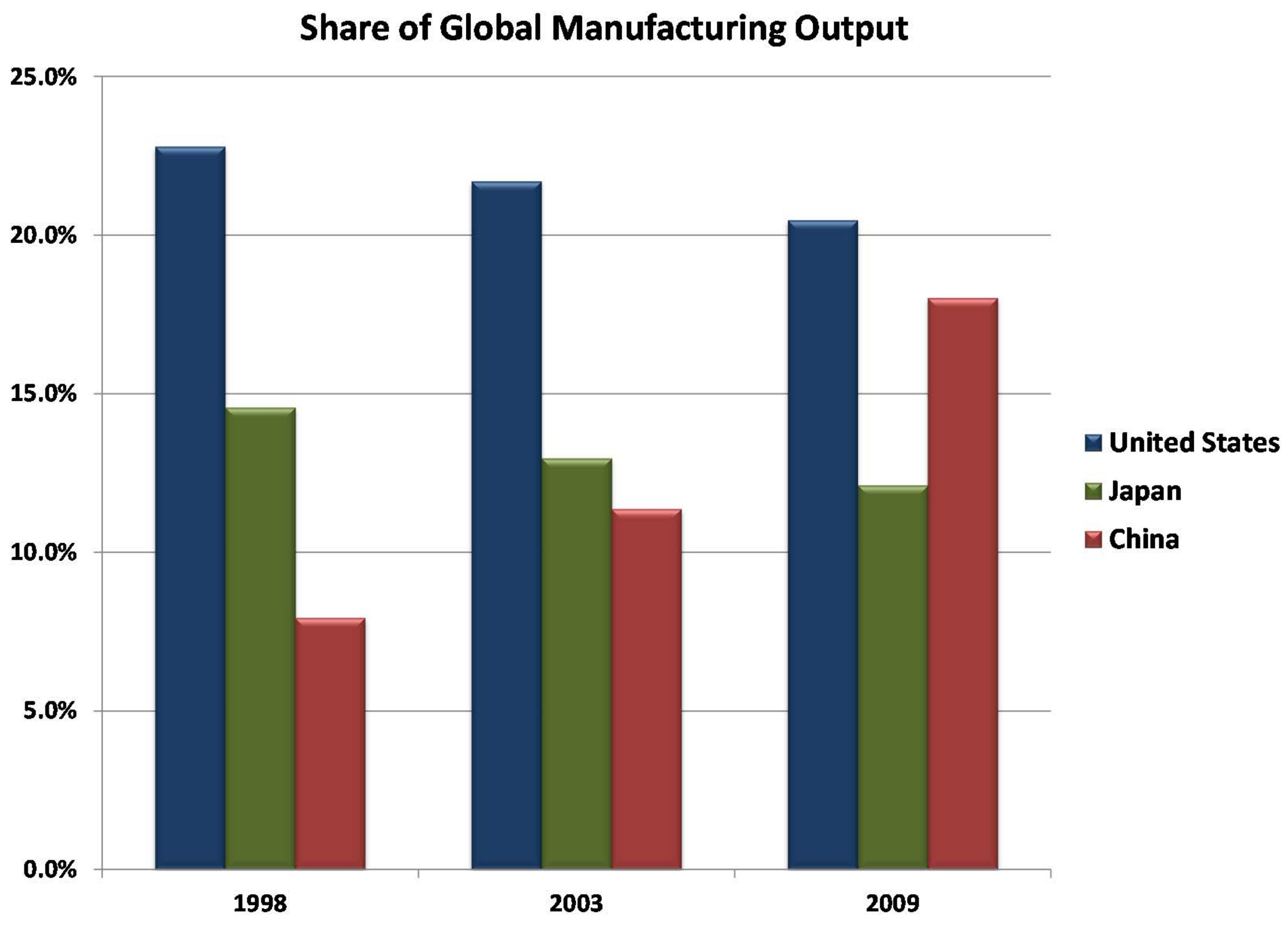
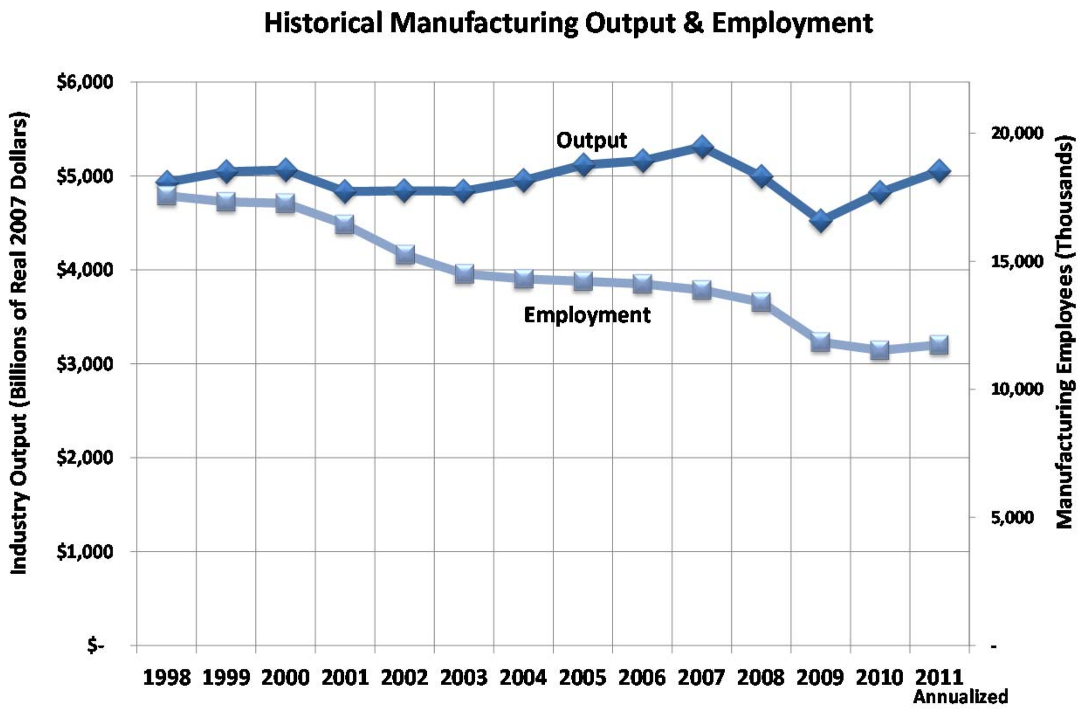
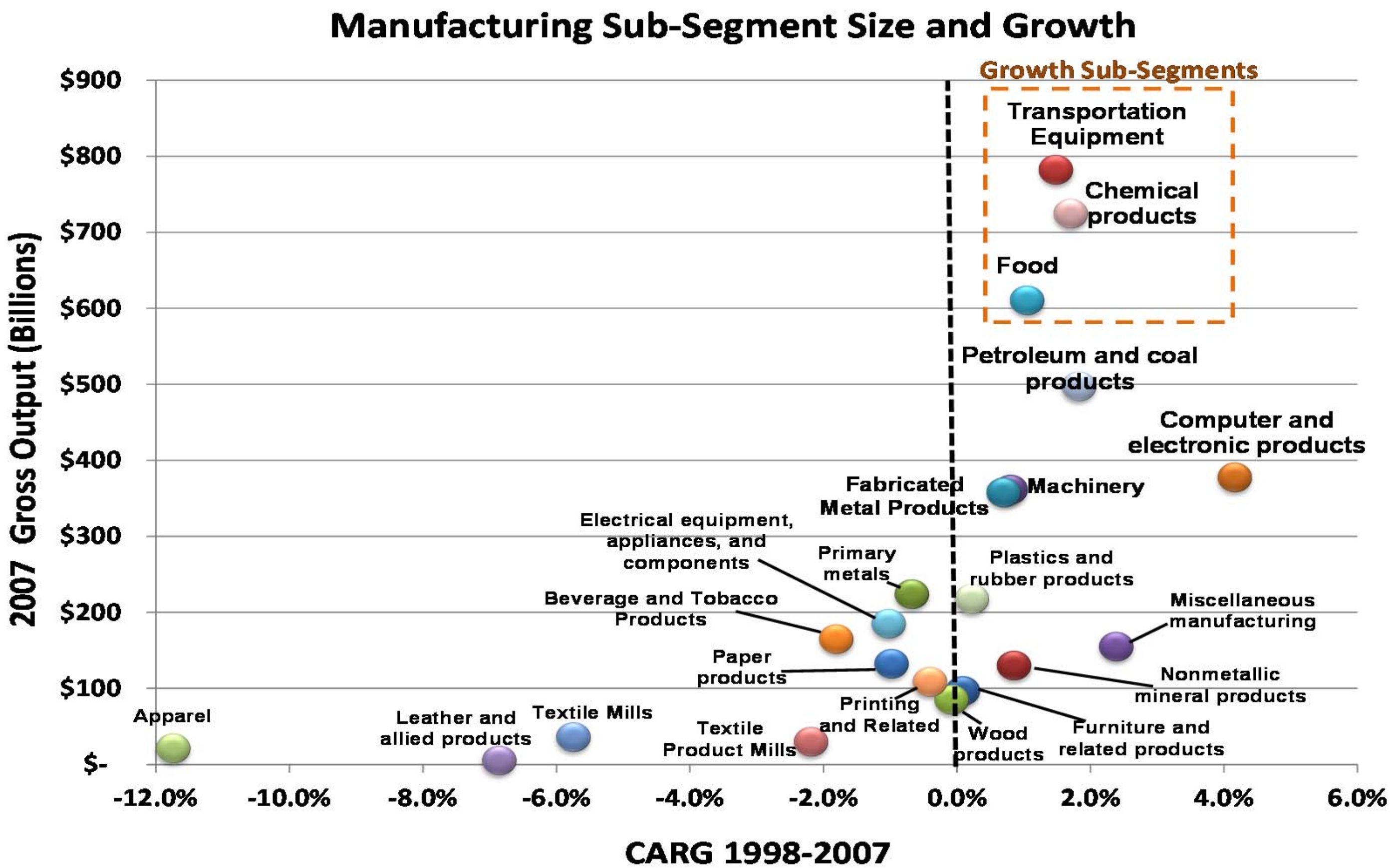


Source: United Nations Statistics Division



Analysts who argue that manufacturing is in decline are really referring to long-term decline in manufacturing employment. Manufacturing output has remained constant due to productivity gains of 2% per year

Source: Bureau of Economic Analysis, Bureau of Labor & Statistics, Federal Reserve



The **3 largest segments are also the fastest growing**; these segments also account for **18% of all ton-miles hauled** in the US.

Source: Bureau of Economic Analysis, Bureau of Transportation Statistics Commodity Flow Survey

Transportation Equipment: *Proximity to Customers*

BMW
Greer, South Carolina

Hyundai, Alabama
Opened 2003

Volkswagen
Chattanooga, TN
2011

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U.S Automotive Production

		2010			2011 YTD (Jan-Sept)	
		Light Trucks, SUVs & Cars Production Total	Share of Annual U.S. Production	Share of Manufacturer's Global Production Volume	Light Trucks, SUVs & Cars Production Total	Share of Annual U.S. Production
US	General Motors	1,719,541	22.6%	20.3%	1,437,140	23.5%
	Ford	1,660,921	21.8%	33.8%	1,370,034	22.4%
	Chrysler	838,497	11.0%	53.4%	776,533	12.7%
	Big 3 Total	4,218,959	55.4%	28.2%	3,583,707	58.5%
Foreign	BMW	159,331	2.1%	10.8%	203,340	3.3%
	Daimler AG	126,301	1.7%	9.3%	106,523	1.7%
	Fuji (Subaru)	158,022	2.1%	26.5%	167,510	2.7%
	Honda	954,502	12.5%	26.6%	583,764	9.5%
	Hyundai	454,165	6.0%	8.1%	462,051	7.5%
	Mazda	54,411	0.7%	4.4%	30,175	0.5%
	Mitsubishi	29,362	0.4%	2.8%	32,119	0.5%
	Nissan	511,498	6.7%	13.1%	431,903	7.1%
	Toyota	945,432	12.4%	11.3%	523,766	8.6%
	Foreign Total	3,393,024	44.6%	12.5%	2,541,151	41.5%
	Total	7,611,983			6,124,858	

Notes: The US production numbers above represent 66% of what those companies manufacture in North America. Approximately ~4M vehicles are made in Canada and Mexico which are imported to the US. For 2011 US sales are estimated to be 12.5M.

Sources: Organisation Internationale des Constructerus d'Automobiles (OICA), Wards Auto Group

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Food Processing: *Proximity to Inputs*

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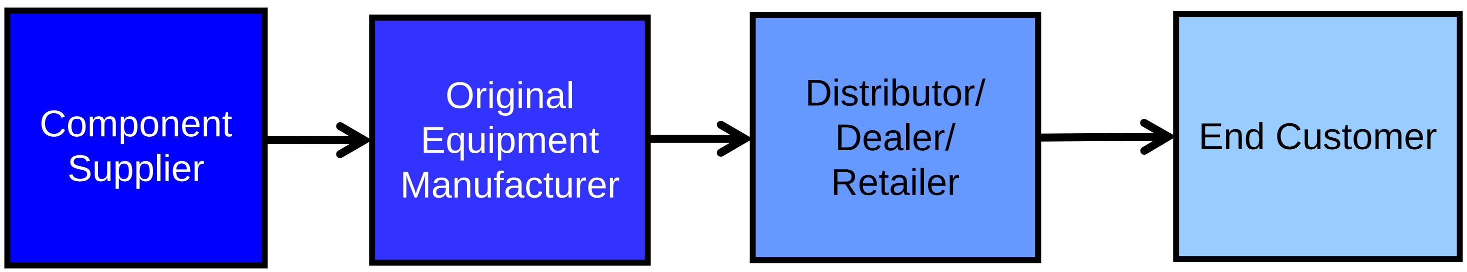
…Customers Demand More…

Pressures Down the Customer Chain



Better…Cheaper…Faster.

Business to Business Demands

- ***Customers' needs differ***
  - – Heterogeneous products
  - – High volume, smaller quantity shipments

- ***Customers have more sources/pathways***
  - – Lead-time competition
  - – Commoditization
  - – Pricing pressures

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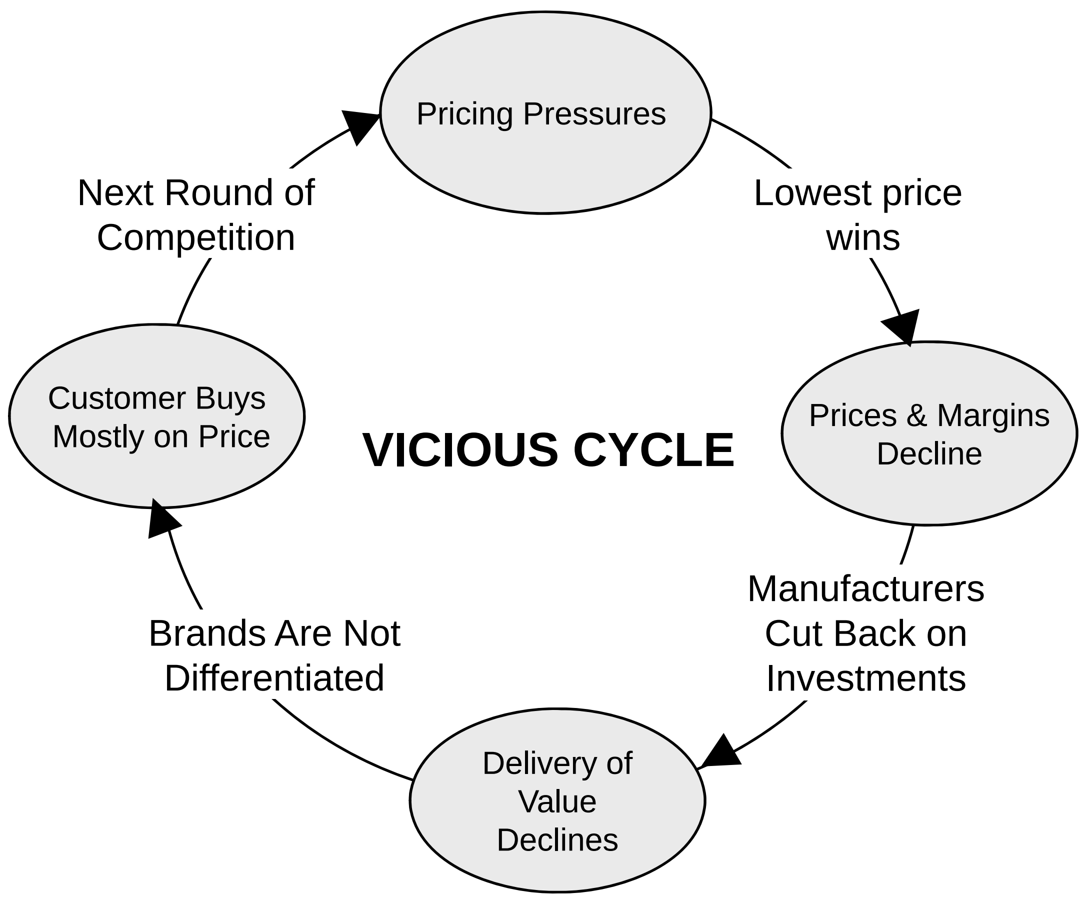
The Vicious Cycle of Pricing



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3 Ways to Capture Value

Help your customer..

- Gain Volume
- Get to a Higher Price Point
- Take Costs Out

Innovations

Help Customers-	Initiative	Example
Take Costs Out	Inventory Management Advanced Forecasting	Just-in-Sequenced (JIS) production for auto seats in 40 minute intervals.
Gain Volume	Engineered to Order Project Management	Customized electronic equipment delivered on-site for quick installation in telcom cell network
Get to a Higher Price	Redesign Channel Role & Responsibility	Website order triggers assembly of customized window screen that is drop shipped to homeowner.

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The hyper-connected world….

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Hyper-connectivity

Terms like “made in America” or “made in China” are phasing out. The proper term, is “made in the world.” More products are designed everywhere, made everywhere and sold everywhere.

-Pascal Lamy, Chief of the World Trade Organization

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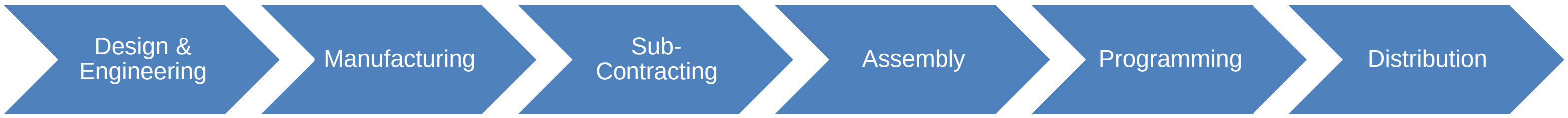
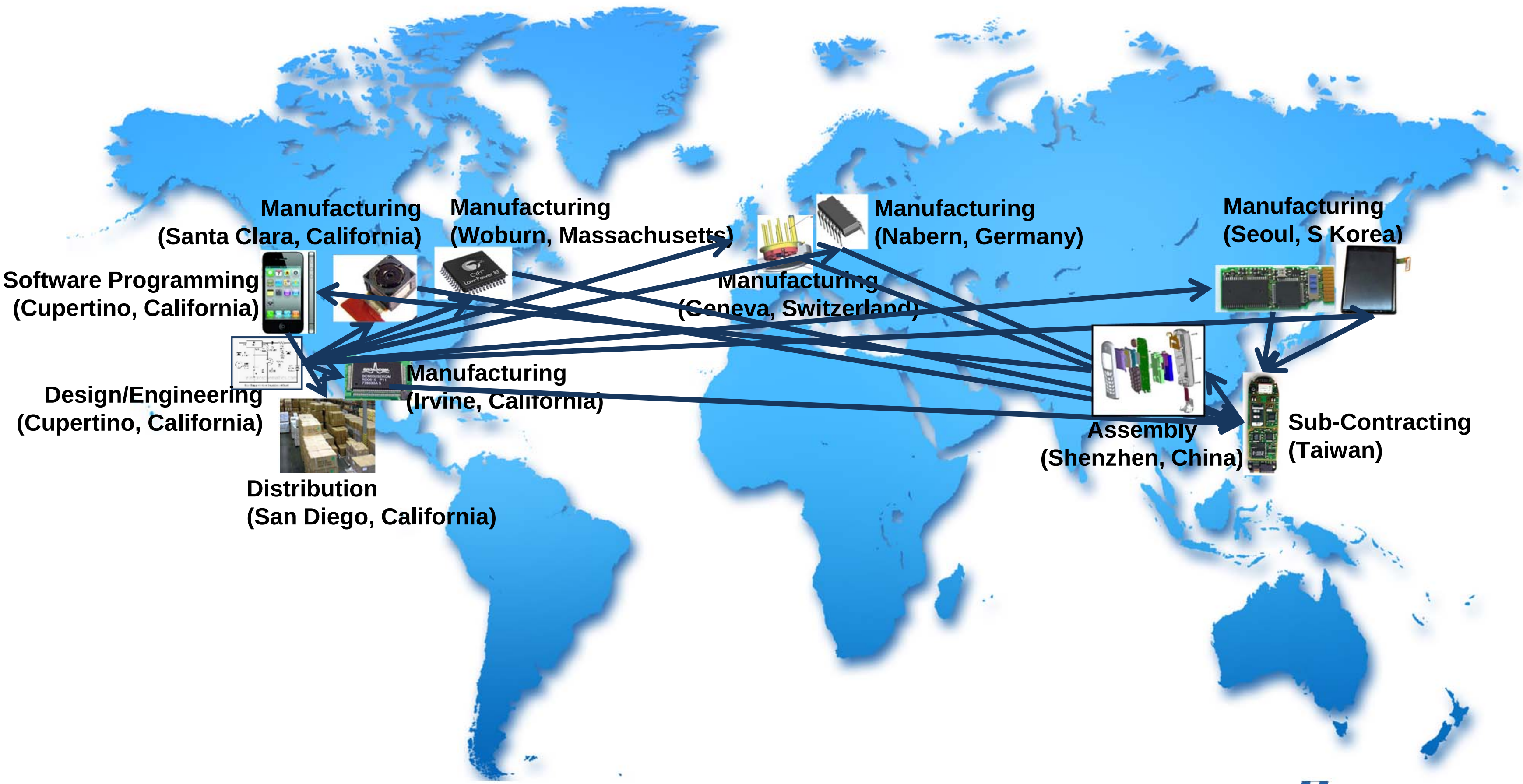
Cell Phone Supply Chain 2002

Design & Engineering → Manufacturing → Sub-Contracting → Assembly → Programming → Distribution

Smart Phone Supply Chain 2011





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What Is This List?

- Dawning
- Huawei
- Changchun
- ZTE
- CSR
- Tencent
- WuXi
- BYD
- MAD
- Hermes

What Is This List?

- Dawning (Supercomputers)
- Huawei (Telecommunications Equipment)
- Changchun (Chemicals)
- ZTE (Telecommunications Equipment)
- CSR (High-Speed Rail)
- Tencent (Gaming)
- WuXi (Pharmaceuticals)
- BYD (Batteries)
- MAD (Architecture and Design)
- Hermes (Fashion)

- **These Chinese companies are featured among <u>Fast Company</u>'s "Fifty Most Innovative Companies in the World".**
  - Dawning's Nebulae chip is the third fastest in the world.
  - BYD batteries power 40% of the world's cell phones.
  - MAD designed Toronto's Absolute Towers.

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Huawei Timeline

- 1988: Huawei founded
- 1996: First non-China contract won in Hong Kong
- 2004: Non-China sales surpass China sales
- 2008: Orders top $23 billion, 75% outside China
- 2009: Named world's top patent filer by WIPO
- 2009: Surpasses Alcatel Lucent and Nokia Siemens for #2 ranking in the world among telecommunications suppliers

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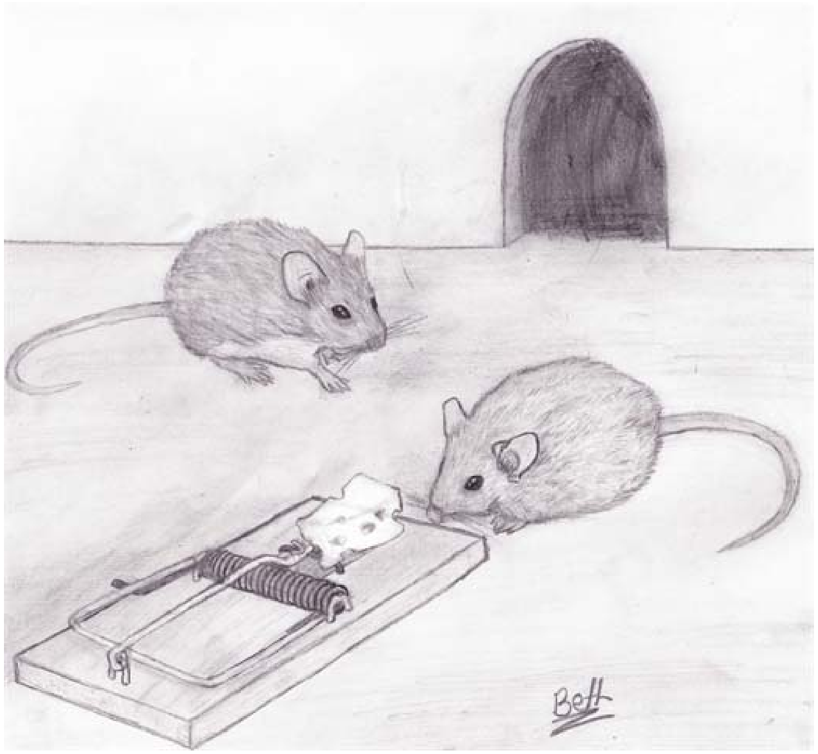
An Innovation Opportunity for Global Corporations



- Develop or acquire “fast-follower” competencies which are prevalent in many Chinese firms
- Learn how to evolve leading-edge technologies to reach the larger middle markets of developing (and developed) economies
- Don’t be caught in the “first mouse trap” as new competitors from emerging markets reach western markets

Source: George F. Brown, Jr. and David G. Hartman, *The Second Mouse Gets the Cheese*, Sales and Service Excellence, May 2011.

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Summary

Summary

- U.S. manufacturing output is not disappearing – it should remain constant.
- Healthy U.S. manufacturing segments are ones that are close to customers and to inputs.
- Manufacturers are constantly innovating to create value for their customers and take the spotlight off of pricing demands.
- For the U.S. manufacturer, the hyper-connected world has ushered in new opportunities, *and* new challenges.

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