Future Challenges to Manufacturing

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The place of manufacturing in economic activity is being transformed

FROM

mass production of standardised goods for mass markets

TO

comprehensive customer-driven service underpinned by manufactured goods
Transformation of manufacturing

FROM
Mass production
Long pipeline
Sell from stock
Cost of inventory
Physical assets

TO
Mass customisation
Shrinking supply chain
Made to order
Capital working
Intangible assets
Drivers of change in manufacturing

• rapid advances in technology
• globalisation
• the emergence of the knowledge economy
• the transformative impact of the Internet
• growth in outsourcing
• privatisation of government owned enterprises
• new emphasis on supply chain management
• growing importance of the environment
The Internet has generated vast new economic spaces

• As a technology, the Internet is just a tool.

BUT

• As a gateway, it is the entry to unpopulated spaces, which can be colonised by a nearly unlimited array of activities with no inherent relation to the technology itself.
commerce
business
corporations
trade
Learning from the last Revolution

When faced with great uncertainty, look for a winning analogy (Edison)
New Businesses

• electric telegraph
• farm equipment
• public health
• postal service
• daily newspapers
• commercial banking
The fundamental gamble with a transformative technology

There is likely to be high first-mover advantage

BUT

Commercial success is almost impossible to specify in advance
Some ‘new manufacturing’ strategies

General Electric

• from selling jet engines to selling ‘power by the hour’;
• assumes responsibility for maintenance and repair;
• requires a continuing relationship with its customers
• learns from its customers
Some ‘new manufacturing’ strategies

Ford

- shedding physical assets (return of capital, spinning off production)
- investing in intangible assets – knowledge and brands (Jaguar Volvo, Land Rover)
- exit asset-intensive, low-margin activities
- replace company-owned manufacturing with outside supply-chain management
Key characteristics of new manufacturing

- ‘smart’, ‘high learning’
- flexibility, agility
- high social capital
- global
- ‘virtual factories’
- molecular diagnostics and repair
- sustainable
Charter for sustainable manufacturing

- reduce the material intensity of goods and services;
- reduce the energy intensity of goods and services;
- reduce the dispersion of toxic materials;
- enhance the recyclability of its materials;
- maximise the sustainable use of renewable resources;
- extend the durability of products;
- increase the service intensity of goods and services.