

Future Challenges to Manufacturing



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Professor Ron Johnston

Executive Director

Australian Centre for Innovation

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

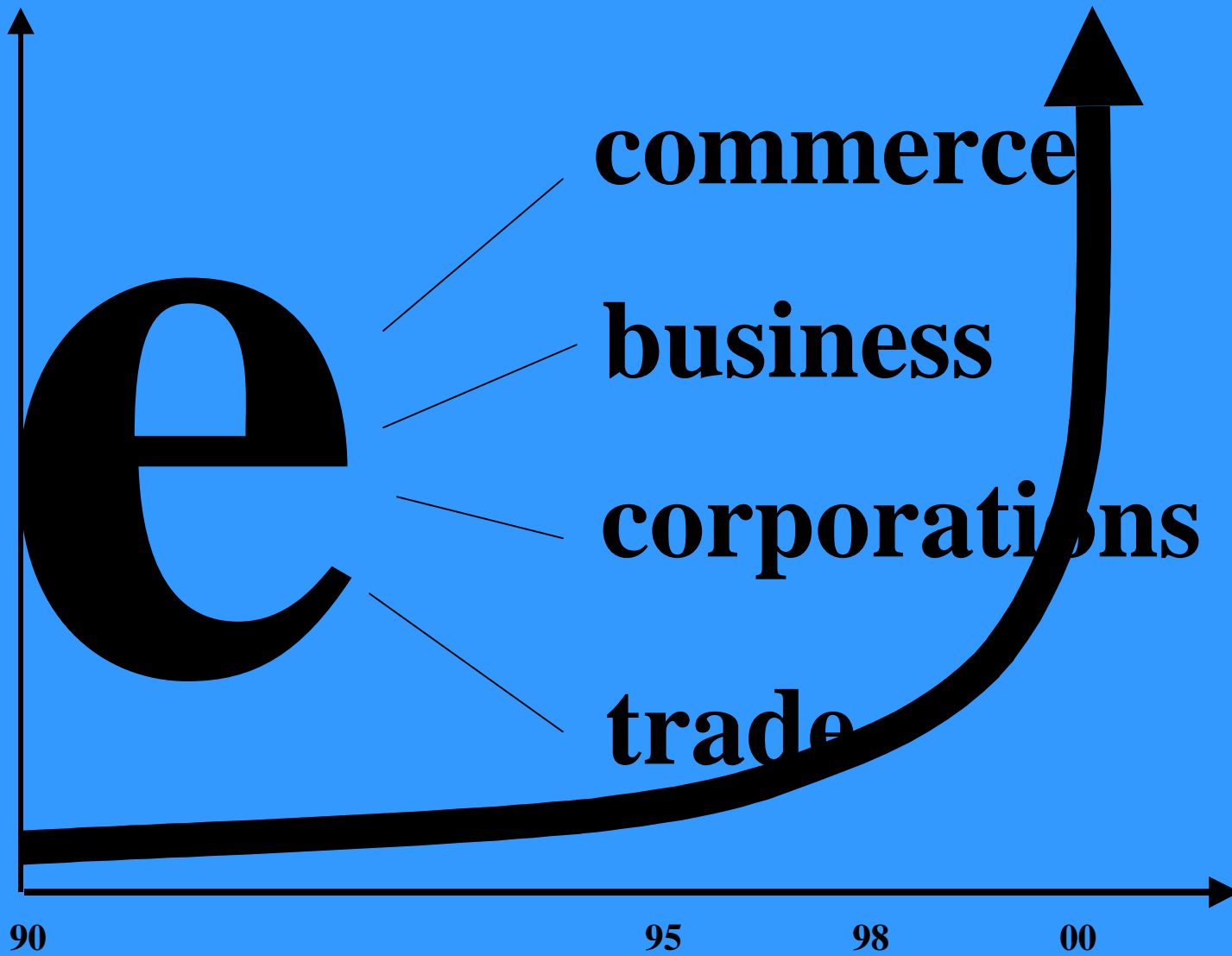
- rapid advances in technology
- globalisation
- the emergence of the knowledge economy
- the transformative impact of the Internet
- growth in outsourcing
- privatisation of government owned enterprises
- new emphasis on supply chain management
- growing importance of the environment

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.



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.