

Innovation and Technology Commercialisation

Week 5: Innovative Manufacturing

Don Scott-Kemmis



Innovation & Technology Commercialisation

Pressures on Mature Manufacturing

- US consumers spent less on new autos in 2007 than on 'brokerage and investment counselling' - in 1979 they spent ten times as much.
- In 1979 the share of the auto industry in US GDP was more than twice that of the securities and information services industries together - by 2005 it had declined to < 25% of their share.
- In March 2008 GM & Ford together were worth 5% of the value of Exxon.

Changing Face of Manufacturing

- Location Global value chains
- Operations Servicification, design /make /serve
- Players Supply chains, co-production
- Drivers Non-price factors
- Technology ICT in particular

Transformations

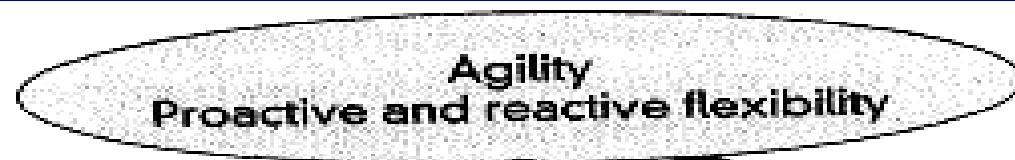
- Craft **to** Agile Manufacturing
- Workers & thinkers **to** employee involvement
- Physical **to** Virtual
- Make **to** design/ make / serve
- Building and running effective networks

Transformations

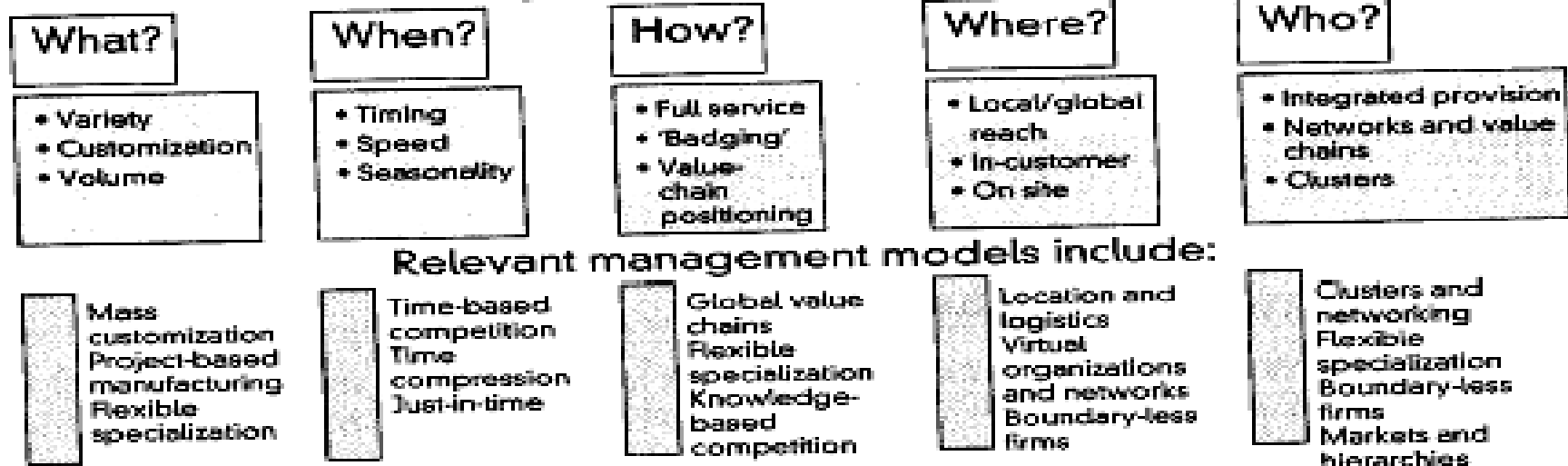
- Craft **to** Agile Manufacturing
- Workers & thinkers **to** employee involvement
- Physical **to** Virtual
- Make **to** design/ make / serve
- Building and running effective networks

Mass Production

- Scientific management
- Standardisation
- Division of labour
- Flexibility
- Change - capacity for/ costs of
- Selection environment- customers and competitors



Different configurations based around questions of:



Various tools and techniques can be drawn upon to help achieve these configurations - e.g. flexible technologies, ICT tools, cellular layouts, networks, etc.

Figure 4.1 Building manufacturing ability.

Transformations

- Craft **to** Agile Manufacturing
- Workers & thinkers **to** employee involvement
- Physical **to** Virtual
- Make **to** design/ make / serve
- Building and running effective networks

Transformations

- Craft **to** Agile Manufacturing
- Workers & thinkers **to** employee involvement
- Physical **to** Virtual
- Make **to** design/ make / serve
- Building and running effective networks

Involvement/ Workplace Transformation

- Division of Labour
- Optimisation
- Labour
- Skill
- Brain & creativity
- CI: cumulative, systems, capability
- How to motivate, involve?
- Management skills

Stages in High Involvement Innovation

- **Natural:** intermittent, not strategic
- **Structured:** systems & training
- **Goal Oriented:** Link to goals, monitoring
- **Empowered:** Devolve responsibility & how
- **Best practice:** Embedded, systematic & strategic

Transformations

- Craft **to** Agile Manufacturing
- Workers & thinkers **to** employee involvement
- Physical **to** Virtual
- Make **to** design/ make / serve
- Building and running effective networks

Things to Knowledge

- Think about the iPod:
 - Manufacturing system
 - Product system
- Product/process/position/ paradigm
- Servification
- Integration: CAD, CIM, IM

Transformations

- Craft **to** Agile Manufacturing
- Workers & thinkers **to** employee involvement
- Physical **to** Virtual
- Make **to** design/ make / serve
- Building and running effective networks

Networks

- Collective efficiency
- Collective responsiveness
- Collective learning

- Managing complex relationships with changing technology and market demand