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8. Network structures in the global economy

1. The network enterprise
2. Changes in space and time concepts
3. Decentralized structures and processes

Inquiry

- Does the IT revolution make possible *centralization* or *decentralization* of power and production, or both?
- Have informationalism and globalization decreased or increased social polarization?
- Is informationalism associated with a new non-hierarchical organizational logic?
- Does research in *indirect interaction, decentralized emergent behavior, and self organization* shed light on social changes being effected by IT?

Objectives

8a. Explain the roles of IT and networks in the globalized economy

8b. Explain how IT fosters decentralized structures in the economy and in society

8c. Discuss future human experiences with technology

0e. Support opinions by evidence

0g. Document sources used

1. The network enterprise

- *Thesis:* informationalism promotes a "new organizational logic" that challenges the previous top-down logic
- *Mass production* is converted to *flexible production*
- Crisis, not of the large corporation, but of its traditional form of hierarchical, vertical integration and functional management
- Organizational form: *network*, not *hierarchy*

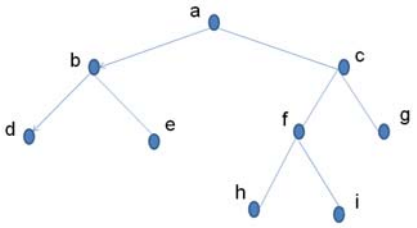
Toyotism

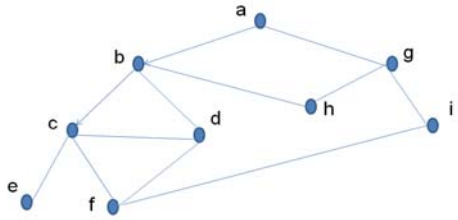
- Management-worker cooperation
- Multifunctional labor
- Total quality control
- Reduction of uncertainty
- Flat management hierarchy
- Just-in-time delivery of resources to production process

Organizational forms

- Inter-firm networking
- Corporate strategic alliances for specific aims, coexisting with competition
- Shift from vertical bureaucracies to the horizontal corporation
  - flat hierarchy
  - organization around process not task
  - team management
  - customer-satisfaction-driven
  - retraining of employees
  - decentralization

Hierarchy vs. network





Tree (hierarchy) with vertical relationships: each node has *one* parent and possibly multiple children

Graph (network): horizontal connections may predominate

The Cisco model

- Cisco Systems' "global networked business model" for production of Internet backbone products
- Relationships with key constituencies
- Manner of sharing information and systems
- Relationships and communication exist in "networked fabric"
- Core of business operations: Cisco web site
- Cisco supplies manufactured product but contracts out the manufacturing

Other users of the Cisco model

- Dell Computer has a similar web-based customization model
- Dell stock rose 9400%, 1995-1999
- John Deere (agricultural machinery)
- Bechtel (warehousing logistics)
- Renault (auto production)
- Cisco model is becoming the predominant one

Information technology and the network enterprise

- Network organization requires change of mentality, not just a technical change
- A change in corporate cultures
- Whole layers of managers become unnecessary
- Network enterprise is enabled by wide-area networks (WANs) enabling collaboration between users at remote sites
- Internet is the ultimate WAN

The network enterprise

- *Organization*: "a system of means structured around the purpose of achieving specific goals"
- Goal of
  - *bureaucracy* is to reproduce system of means
  - *enterprise* is to evolve and shape system of means
- *Network enterprise:* "specific form of enterprise whose system of means is constituted by the intersection of segments of autonomous systems of goals"

Culture, institutions, organization: East Asia

- East Asian business systems tend to be based on networks, not on firms or individuals
- Developmental states base legitimacy on ability to promote development (growth, change), promote national identity.
- *Example*: Japan, MITI

East Asian business cultures

- *Japan:*
  - *zaibatsu*, horizontal conglomerates of mutually owned firms since pre-WWII (Mitsui, Mitsubishi, Sumimoto)
  - *kairetsu*, vertical networks
- *Korea:* Hyundai, Daewoo
  - hierarchical networks (chaebol) of large firms controlled by holding companies
  - authoritarian pattern
- *China:* family based business enterprises are managed in authoritarian and centralized way, but system is overall flexible and decentralized

Multinational enterprises

- Basic organizational form of global informational economy is international networks of firms and their sub-units
- Kinds of networks, based on multinationals:
  - supplier
  - producer
  - customer
  - standard coalition
  - technology cooperation

The logic of networks

- "The logic of the network is more powerful than the powers in the network"
- "The network enterprise ... seems to be flourishing …"
- "The large, multi-unit corporation, hierarchically organized around vertical lines of command seems to be ill-adapted to the informational, global economy" (Castells, 2000)

The spirit of informationalism

- *Max Weber:* Protestantism provided the ethical "spirit of capitalism", i.e., entrepreneurship and profit-seeking
- For first time, the basic unit of organization in the economy is not a *subject* (individual or class or corporation), but a *variety* of subjects, a *network*
- The ethical foundation for the network enterprise, or spirit of informationalism, is "a multi-faceted, virtual culture" that evolves, the culture of creative destruction running at the speed of light

Networks restructure society

- Power relationships are made susceptible to major change by network organization of society
- Power is held by people at the interfaces between networks
- Global capitalist society is structured around a network of financial flows
- Dominant functions in society are organized in networks, subordinate ones are fragmented

2. Changes in space and time concepts

Transactions vs flows

- *Example of a flow:* A stream of symbols, images, transactions, messages, as between a computer and its environment
- Traditional model of most business is based on the *transaction* as the basic unit and objective
- In the era of connectedness, *relationships* expressed as *flows* are the objective

Society is built around flows

- Flows are endless streams; they express processes that dominate social life
- Interaction flows presuppose simultaneity and space coupling
- *Flows:* "purposeful, repetitive, programmable sequences of exchange and interaction between physically disjointed positions held by social actors"

A space of flows

- Space = society; "Space is the material support of time-sharing social practices", having symbolic meaning
- "Space organizes time in the network society"; "Space is crystallized time" (Castells, 2000)
- In the informational economy, the traditional space of *places* is replaced by a space of *flows*

Advanced services, information flows, global city

- Networks are in a spatial hierarchy, concentrated in certain metropolitan areas
- Regional and local centers reflect differences of intensity and scale
- The whole system becomes globally interconnected
- The hierarchy is not permanent or stable

The new industrial space

- "Milieus of innovation" benefit from synergy of interaction (not composition) of elements present
- These may include industrial technopolises, Tokyo, Paris-Sud, London-M4, Milan...
- Milieus of innovation have global networks of production and distribution
- The new space is organized around flows of information

The end of cities?

- Not just work-at-home, but "telecommuting from telecenters" seems to be emerging, using suburban facilities
- Not the end of the office, but diversification of work sites
- Online transactions will not eliminate shopping centers, but supplement them
- Emerging higher education forms combine onsite and distance education

Transformation and urban form

- Informational mega-cities: 10 million plus, where control of media, power politics, symbol production capacity are centered
- In mega-cities there is global connectedness but local disconnection
- Mega-cities are the nodal points and power centers of the global space of flows
- Downside: urban decay, environmental problems

Flows and their support

- Kinds of flows
  - information
  - technology
  - organizational interaction
  - images, sounds, symbols
- Layers of support for the space of flows
  - circuit of electronic interactions
  - nodes and hubs
  - spatial organization of managerial elites

A society is embodied time

- Time is local (specific to a context) and global
- Time, history, and society
  - modernity places clock time in command over space and society
  - network society is leaving behind “linear, irreversible, measurable, predictable time”
- Time is transformed into simultaneity and timelessness (e.g., hypertext)
- Time sequence depends on social context
- Time is compressed due to fast turnover made possible by communication technologies

Time as the source of value

- New financial products, e.g., futures, derivatives, increase relative value of nominal capital to deposits and assets
- Pensions and insurance are put at risk in financial gambling
- "The annihilation and manipulation of time by electronically managed global capital markets are at the source of new forms of devastating economic crises, looming in the twenty-first century"

Changes in the experience of time

- Flex-time and the network enterprise
  - Skilled workers manage their own time
  - Accept flexible schedules: "just-in-time labor"
- Shrinking and twisting of working lifetime (about 30 years)
- *Hypothesis:* "The network society is characterized by the breaking down of the rhythms … associated with the notion of a life cycle"
- Individuals are choosing different times to procreate and thus determining their own life schedules

Time, space and society

- Timeless time goes with the space of flows
- Time discipline, biological time, and sequenced time go with places
- "We have entered a purely cultural pattern of social interaction and social organization," since culture has superseded nature in dominance
- Hence flows of messages and images are basic thread of social structure
- Information age is "marked by the autonomy of culture vis-a-vis the material basis of our existence"

3. Decentralized structures and processes

An era of decentralization

- Collapse of (ultra-hierarachical) states based on centrally planned economies
- Shift in corporate organization toward decentralized management structures
- Distributed models of the human mind
- Theories of literary meaning as constructed by readers, not authors

(Resnick, 1999)

"Authorities" that shaped the Internet

- DARPA's "design" was as a decentralized (self-organizing) system
- Internet Assigned Number Authority (IANA) – a volunteer group that gave way…
- To government-sponsored "cooperative agreement," 1993
- … followed by government-authorized Internet Corp. for Assigned Names and Numbers (ICANN)

Could the Internet have been designed?

- "There was no one we could have pointed to as charged with 'creating' the set of rules we now know as the Internet"
- "My instinct is that it could not have [been built another way], that only an 'authority-free' process of this kind could have constructed this system…"

Decentralized "design"

- *Example artifacts:*
  - The Internet
  - Natural language
  - Human society and culture
  - Evolution of life
- Are any *centralized* processes capable of producing equally good results as current *decentralized* processes?

Decentralized decisions and their results

- *Example:* A low-price WalMart replaces downtown despite townspeople's preference for having a downtown – "an unexpected or unintended result is not the same as a coerced result"

Concepts

Asian tigers
bureaucracy
customer-centric enterprise
decentralization
deregulation
electronic stock trading
emergent behavior
flat management hierarchy
flex time
flexible production
flow
G7 countries
globalization
hierarchy
International Monetary Fund
just-in-time delivery
liberalization of trade
mass customization
network enterprise
OECD
organization
privatization
productivity
profit squeeze
profitability
self organization
self reflection
total quality control

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