INFS 111
INFORMATION IN SOCIETY

SESSION 7– THE INFORMATION TECHNOLOGY REVOLUTION

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Session Overview

The advent of information technology revolutionized the generation and distribution of information. This session is concerned with the evolution of communication systems from oral tradition through writing to publishing and telecommunications.

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Session Objectives

By the end of this section, you should be able to:

- Trace the development of communication systems for transmission of information.

- Explain how the differences in information transfer through various communication systems have affected the use of information in society.

- Explain the importance of standardization and information communication and transmission.

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Session Outline

The key topics to be covered in the session are:

- Topic One: ICT and the Information Field

- Topic Two: The first ICT Revolution: Writing

- Topic Three: Information Storage

- Topic Four: The Second ICT Revolution: Movement of Messages

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Reading List

Debons, Anthony. (2008). *"Information Science 101."* Plymouth, UK: The Scarecrow Press Inc.

Lester J. and Koehler W. C. (2007). *"Fundamentals of Information Studies: Understanding Information and Its Environment"*. Second Edition. New York: Neal-Schuman Publishers.

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Topic One:

ICT AND THE INFORMATION FIELD

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ICT and the Information Field Processes

- Common misperception that digital technology revolution was the beginning of ICT revolution (Lester & Koehler, 2006). Human voice as an instrument (technology) for exchange of information goes back 30,000 years.

- ICT and the information field concerned with four processes;
  - Information creation and capture
  - Information transmission
  - Information storage
  - Management and control of information flow

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Information Creation and Capture

- Memorization

- Writing

- Photography

- Audio recording

- Digitization etc.

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Information Transmission

- Physical carriage of information
- CDs, books, letters, broadcasts
- Carried by carrier pigeons
- In one's head
- Through the post office
- Broadcast over the airways: by satellite, radio and television
- Through cable

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Information Transmission Cont'd

- Telephone, telegraphy, internet
- Over the ages mankind used many methods to transmit information;
  - Voice
  - Signal ties
  - Flags
  - Electrical and optical signals
  - Human language

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Information Storage

- Information storage is dependent on two factors:

  – How urgently we need the stored information to be retrievable.

  – The initial packaging of the information;

    • Information storage went from pigeon holes to book shelves

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Management and Control Information Flow

- **Informatics**
  - Creation of systems to facilitate management and control of information flow.

Topic Two:

THE FIRST ICT REVOLUTION: WRITING

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Managing Information

- To manage information, it must be shared. There are two steps:
  - First step
  - Second step

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First Step

- Transfer of information from one medium to the other.

- Involves two methods:

1. Oral tradition
   a) Story telling
   b) Recounting of national and ethnic epics
   c) Theatre
2. Writing

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Second Step

- Writing.

- Captures ideas in a more permanent way.

- Constitutes first great information technology revolution.

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Care Paintings

- Paleolithic (Stone Age) paintings are first known recorded information. Dates back to between 30,000 and 32,000 BC
- Representations of animals and nude 'Venus' (female figure)
- Found in caves at Chauvret-Pont-d'arc
- Lascaux
- Grotte Cosquer
- Elsewhere in Europe
- Europe
- South America
- Australia

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Care Paintings Cont'd

- Meaning of the paintings are subject to conjecture

- magic spells.

- Prayers to the gods.

- Mere documentation of a hunt.

- All represent efforts to communicate to contemporaries.

- Perhaps the gods.

- Descendants or later generations.

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Care Paintings Cont'd

- Static information records;
  - Unsharable over space
  - Non-portable
- Symbolized in the architecture of religions,
  - especially medieval cathedrals.

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Formal Writing Systems

Cuneiform:

- Dating back 3,500 BCE developed by the Sumerians.

- Wedge-shaped writing.

- Financial records/ inventories.

- Complex containing more than 2000 symbols later reduced by more than half.

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Formal Writing Systems Cont'd

Hieroglyphics:

- Dating back to about 3,000 BCE developed - by the Egyptians also called 'Writing of the Gods' - has three symbols;

  – Pictographs – representations of objects

  – Ideographs – representation of ideas

  – Alphabet - representing phonetic

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Formal Writing Systems Cont'd

Summerian writing preserved

- Complex records

- Mythology

- Gilgamesh epics (first known written literature in ancient Mesopothamia)

- Code of Hammurabi, 1795 to 1750 BCE
  - Well known Babylonian laws compiled by the sixth Ruler Hamumurabi

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Formal Writing Systems Cont'd

Egyptian writing preserved

- History of Egypt

- Egyptian Book of the Dead, 1240 BCE
  - Funerary text to prepare the dead through the journey in the underworld to the realm of light

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Formal Writing Systems Cont'd

Chinese writing

- Dates back to 1,200 BCE

- Oracle Bone inscriptions (Shan Dynasty)
  - discovered in 1899

- Bronze inscriptions
  - Dates back to 1,000 BCE

- Shi Huangdi
  - Standardized Chinese Script in 221 BCE

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Topic Three:

INFORMATION STORAGE

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Introduction

- Information storage and writing are intertwined.

- First organized library;
  - Sumerian clay tablets discovered by Archeologists (Casson, 2001)
  - The library at Alexandria

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The Ptolemaic dynasty

- Restoration by UNESCO

- Library metamorphosis
  - Changed perception about the role of libraries
  - Change in the form of the book
    - Clay tablet
      - Scroll
      - Codex
      - Digital

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The Ptolemaic Dynasty Cont'd

- Books may be
  - Handwritten
    - Brush
    - Pen
    - Ink-jet printer
- Information Age has come with new formats of books, hard disk, hand held book reader etc.

Topic Four:

THE SECOND ICT REVOLUTION: MOVEMENT OF MESSAGES

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Movement of Messages

- Technology to move messages
  - Facilitating ability of human beings to convey documents and books;
    - Post offices
    - Courier services

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Movement of Messages Cont'd

- Speeding up signals;
  - drums (sound wave)
  - smoke (light waves)
  - signal ties
  - light houses
  - semaphore
  - Flags etc.

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Problems with Human Movement of Messages

- Transmission of signals over short distances.

- Difficulties in sending complex messages accurately.

- Time consuming process.

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19th C Improvements in Movement of Messages

- Beginning of the 19th century
  - No paved roads
  - No railways
  - No telephones
  - No electric utilities

- Goods, services and people used
  - Horse power on land
  - Wind power on water
  - Walking

19th C Improvements in Movement of Messages Cont'd

- Steam locomotive by George Stephenson 1814

- Photography by Joseph NicephoreNepceans Louis Jacques MandeDagueerre 1820s

- First typewriter by W.A.Bust 1829

- Braille printing by Louis Braille 1829

- Telegraph invented by Samuel Morse 1837

- Morse code by Samuel Morse 1838

- Bicycles introduced by Kirk Patrick Macmillan 1839

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19th C Improvements in Movement of Messages Cont'd

- Mid 19th century
  - First prepaid postage stamp used in England 1840
  - Fax machine by Alexander Bain 1843
  - First commercial telegraph line established between Baltimore, Maryland and Washington DC 1844
  - Fiber optic by John Tyndall 1845

19th C Improvements in Movement of Messages Cont'd

- Later part of 19th century
  - First telephone by Alexander Graham Bell 1876
  - Fountain pen by Lewis Edson Waterman 1884
  - Radar discovered by Heinrich Hertz 1887
  - Internal combustion engine (diesel engine) by Rudolf Diesel 1892
  - Radio by Guglielmo Marceni 1895 range of 100 metres

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20th Century Innovations in Movement of Messages

More information related inventions occurred;

- First airship launched by Count Ferdinand Vonzeppehin 1900.

- Aeroplane by the Wright brothers 1903.

- Radio voice transmission by Lee De Forest 1906.

- Coler photography by Auguste and Louis Lumieze 1907.

- gyrocompass for aircraft navigation by Elmer A. Sperry 1908.

- Talking motion pictures by Thomas Edison 1910.

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20th Century Innovations in Movement of Messages Cont'd

- First electrical ignition system for the auto mobile industry by Charles Franklin Kettering 1912.

- Cathode ray tube, the precursor to television was developed by Vladimir Kosma Zworykin 1929.

- Mechanical television which preceded television as we know it now by John Logie Baird 1929.

- First broadcast of a television programme made by BBC 1930.

- Car radio by Paul Gavin 1929.

- Fm radio by Edwin Howard Armstrong 1933.

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20th Century Innovations in Movement of Messages Cont'd

- First photocopier by Chester F. Cavlson 1937.

- Ballpoint pen by Ladislo Biro 1938.

- First software controlled computer by John Atanasoff and Clifford Berry 1942.

- Cellular phone first conceived in 1947.

- Video tape recorder (VTR) by Charles Guisburg 1951.

20th Century Innovations in Movement of Messages Cont'd

- Modem in 1958

- Audio cassette in 1962

- Video disc in 1963

- ARPANET in late 1960s

   -Advanced Research Projects Agency (ARPA).

- Internet in 1980s

- WWW in 1991

- VCR introduced in 1970

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20th Century Innovations in Movement of Messages Cont'd

- Microprocessor in 1971

- Ink-jet and laser printer in mid 1970s

- MS-DOS and IBM-PC in 1981

- CDs n CD players in 1982

- DVD players first marketed in 1996

- First mp3 players came in 1998

References

- Deloitte Touche Tohmatsu. (2006). *"Technology, Media & Telecommunications."* TMT Trends: Predictions, 2006, A Focus on the TechnologySector. London: Deloitte & Touche. Available: www.deloitte.com/dtt/cda/doc/content/us_tmt_techpredictio ns2 006_020206(1).pdf).

- Lyman, P and Varari, H.R. (2003*). 'Executive summary'. How much information?* Berkeley: University of California. School of Information Management and Systems. Available at www.suins.merkeley.edu/refrence/profile/how-much.info-2003/execsum.

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References

- US Census Bureau, (2006:737) No.1116.Media usage and consumer spending; 2000-2008. No.1117.Utilization of selected media:1980-2003; No.1265.Advertising Estimated Expenditure1990-2004. Washington DC. Department of Commerce. Available at www.census.gov/prod/2005pubs/obstatab/infocomm.pdf

- Organization for Economic Coorporation and Development (2006) OECD Broadband Statistics to June 2006. Available at www.oecd.org/docment/9/0,2340,en-2649-34223-37529673-   1-1

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