
Library and Information Science: A Systems Perspective

Vivek Patkar

vivekpatkar03@gmail.com

NACLIN 2025

Pune, December 3-5, 2025



DELNET

**Developing Library Network
New Delhi**



&



**ALL INDIA SHRI SHIKSHA MEMORIAL SOCIETY'S
College of Engineering**
Approved by AICTE, New Delhi, Recognized by the Government of
Maharashtra and Affiliated to Savitribai Phule Pune University
www.aissmscoe.com

Science

- The suffix “Science” is added when any discipline expands to cover several subjects
- Life Science, Mathematical Science and Data Science are examples
- Three phases of science development:
 - Amateur phase
 - Academic phase
 - Professional phase

LIS Development Path

- **“School of Library Economy” by Melvil Dewy in 1880s**
- **“Laws of Library Science” by S. R. Ranganathan in 1930s**
- **“Documentation Science” in 1960s**
- **“Information Science” with ICT support in 1980s**

What is LIS?

- ❖ One view: The LIS falls in between social science (people) and computing (technology) with spotlight on information object
- ❖ LIS forms unique discipline because of
 - systematic handling of manifested information
 - encompassing infrastructures like libraries and technologies, and
 - interaction with information seekers at its core

LEVEL 5

SYSTEM

DETERMINISTIC FACE

STATISTICAL FACE

LEVEL 4

INTEGRATION

ECOLOGY

LEVEL 3

PATHWAYS

HIERARCHY

DIVERSITY

LEVEL 2

STRUCTURALITY

SPECIFICITY

VARIABILITY

EVOLUTION

LEVEL 1

OPERAND
SET

INVARIANCE

TRANSPORT

CHANCE

INFORMATION

LEVEL 5

INFOSPHERE

LEVEL 4

ASSIMILATION

SETTING

LEVEL 3

ROUTES

GRADING

MULTIPLICITY

LEVEL 2

STRUCTURALITY

EXCLUSIVITY

MUTABILITY

REVOLUTION

LEVEL 1

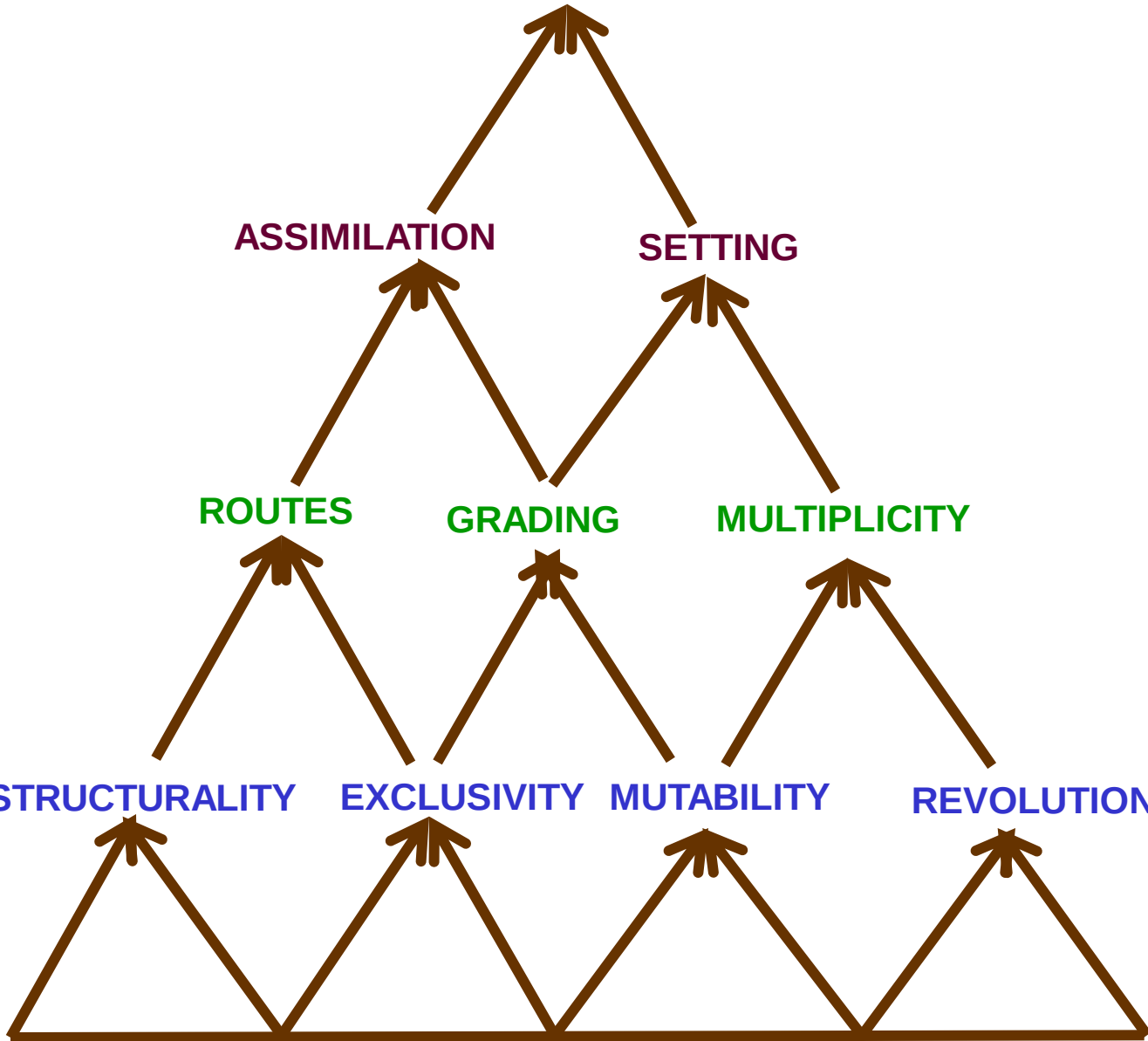
CONTENT

INTRANSIENCE

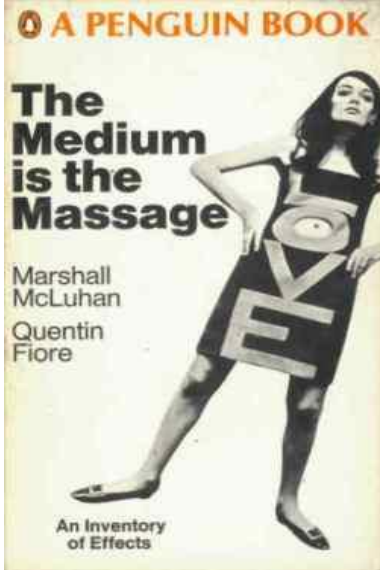
TRANSMISSION

CHANCE

ORDER



Example 1: Chance & Order



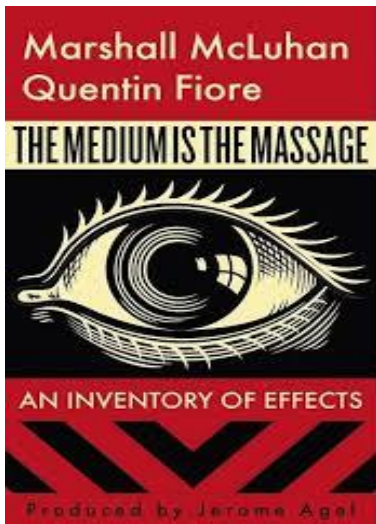
Original title:

“The Medium is the Message”

By printing mistake:

“The Medium is the *Massage*”

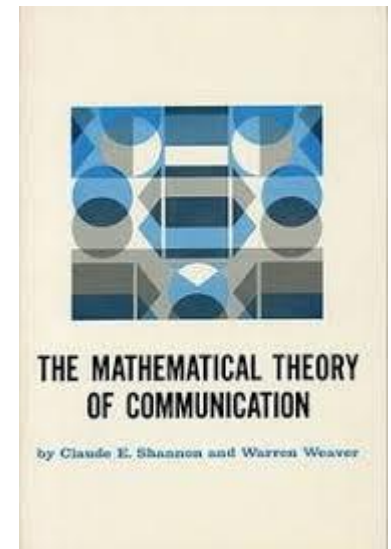
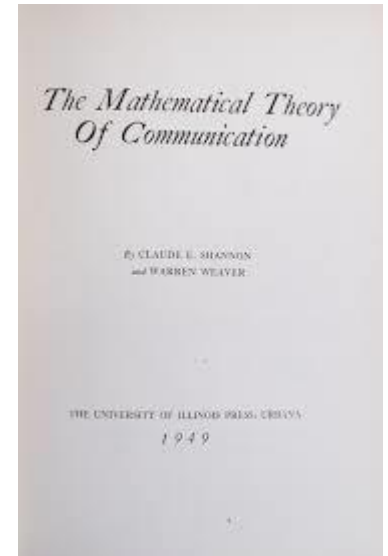
Mistaken title was retained as various media massage human sensitivities and new media open the ‘mass age’



The best seller in 1967; Infosphere was revolutionised well before the Internet & social media era!

Example 2: Transmission & Mutability

- **A message can suffer the mutability when transmitted through electro-mechanical means**
- **This can happen due to a combination of transmission and chance**
- **Theory of communication got developed to address the issue**
- **Mutability in this case is purely mechanical or structural one; it is not considering the meaning or semantic aspect of the message**



Example 3: Route, Exclusivity & Structure

- ❖ **Security of a digital network is of prime concern**
- ❖ **Route selection is a combination of structurality and exclusivity**
- ❖ **Designing special hardware & software architecture and security checks within a network is imperative**
- ❖ **Use of digital signature and multi-layered authentication is a part of it.**
- ❖ **Development of blockchain technology is another effort**



Implications and Actions

- The elements of **variety**, **mutability** and **revolution** are linked to unfolding of the Internet and web technology that has influenced the modern library services
- **Web 1.0**: the read-only or one-way communication to push information
- **Web 2.0**: two-way communication portal
- **Web 3.0**: AI-based one-to-many communication
- **Web 4.0**: IoT-based wider communication

Implications and Actions ⁽²⁾

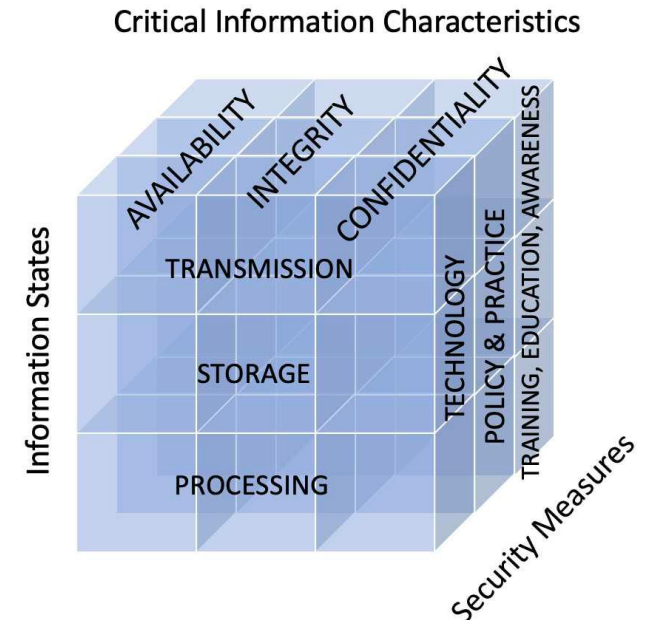
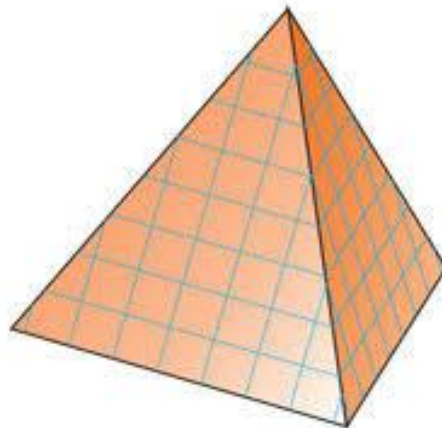
- **Transmission** of information can meet an opposing force termed as 'ontological friction' in real life. It is to be adequately addressed to **maintain exclusivity and avoid mutability**.
- Erection of a firewall in the digital network is its example.
- Quantification of ontological friction is one area of research.

Implications and Actions ⁽³⁾

- * **Assimilation** is defined by the elements of **routes** and **grading** in the **Infosphere** pyramid.
- * For instance, accumulated and graded information on a given topic can flow to the consumer by **routes** such as books, scholarly articles, blogs, newspapers etc.
- * The element of **setting** at this level shows an ecosystem of graded and multiple form of documents. A special library is its example.
- * Modernisation of such libraries and national archives need particular attention.

New Designs

- ‡ The 2-D pyramidal view of building an infosphere can be altered or extended.
- ‡ Addition of the AI dimension is welcome.
- ‡ New forms could be like:



Impact of AI

- † The popular AI product like ChatGPT can inhibit original human thinking, drafting and summarising skills.
- † A need is arising to preserve such vanishing skills in a functional manner as far as possible.
- † The institutions like the library, archives and museum will have to take a lead in this regard.

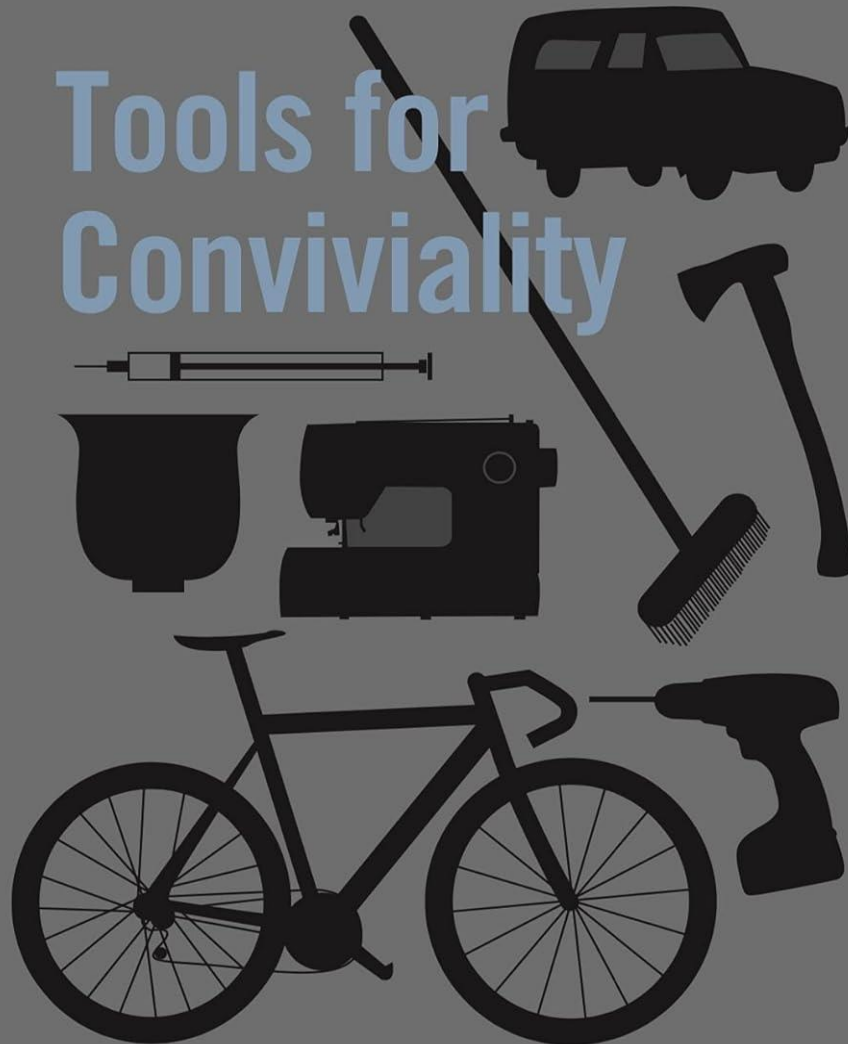
Convivial Tools

- **Conviviality underlines the principles promoting human values of independence, emancipation, and healthy social interaction.**
- **Ivan Illich in his famous book, "Tools for Conviviality" (1973) expresses his concern about the influence of a tool or technology on a given user.**
- **Who controls whom?**



IVAN ILLICH

Tools for Conviviality



Core of the Conviviality

- **A tool or technology impacts us in two distinct phases.**
- **In the first go, technological advances offer appreciable remedy or solution to our vexing problem.**
- **In the second phase, technology becomes so complex and institutionalised that common person has to accept it without understanding its basic and functional mechanism.**

According to Illich a tool or technology is convivial if it

- 1. can be chosen unreservedly,**
- 2. is an active articulation of personal life, and**
- 3. is not controlled by some professional elite or vendor.**

- ❖ **AI technology is not convivial because it is basically designed for dehumanisation.**
- ❖ **So, building comprehensibility of technology's operating principles for the user assumes a crucial role.**
- ❖ **Development of explainable artificial intelligence (XAI) is one attempt to inform the common user in lay terms the logic and reasoning employed by a machine.**
- ❖ **LIS professional should prefer such tools to design and deliver services.**

Misinformation Vs Disinformation

- § Misinformation is generally considered as mistaken information. It is not generated intentionally; it may arise by chance due to the malfunctioning of the selected transmission system.
- § Disinformation on the other hand is created with specific intention.
- § Messages on the social media platforms and propaganda and advertisements are sometimes classified as disinformation.

Criteria to distinguish information, mis and disinformation, particularly on a web:

- ❑ authority,
- ❑ accuracy,
- ❑ objectivity,
- ❑ currency, and
- ❑ coverage

Examination of Web 1.0 to Web 4.0 needs examination from this perspective.

- ❖ Integration of information at the data level, meaning level, and decision-making level is to be maintained to avoid distortion in the information.

Competence

Demonstrated ability to apply knowledge, techniques, and attitudes to achieve observable goals



Skill

Precise and definite abilities, either hard or soft

Requisite LIS Competencies:

- **Infosphere management (situation specific)**
- **Organisation of knowledge & information**
- **Reference and user services**
- **Technological knowledge including AI**
- **Research and evidence-based practices**
- **Data and records preservation**
- **Communication/Media usage**
- **Lifelong learning and continuing education**
- **Information ethics handling**

The LIS Professional's Tasks

- ✓ Increase the credibility of an infosphere
- ✓ Do not cause distortion in information
- ✓ Prevent its entry
- ✓ Eliminate it if that has happened
- ✓ Identify and use convivial tools
- ✓ Develop critical thinking

Facilitate:

Homo sapiens  Homo cyberiens

Explore systems perspective to further the LIS theory and practice; use high-tech, high-touch tools to upgrade the LIS services.

Thank you,

Dr. Vivek Patkar

vivekpatkar03@gmail.com

The sources used for this presentation are gratefully acknowledged.