
INFORMATION SOURCES AND SYSTEMS

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Introduction

Sophocles said, "Wonders are many, but there is no wonder wilder than man". Man is unique in many ways. Darwin defined Man as an evolved being. Pavlov called him a "Cogito ergo sum". (I think therefore I am.) Due to biogenetic revolutions Man was enabled to think, remember and talk. Thinking is the root of all human epistemology. The ability of Man in thinking and decision making has given him the power to rule the universe.

Information

Karl Popper, the German philosopher, said that the Homo Sapiens lives in three worlds. They are the natural world, the mental world and the information world. Information is the innate quality of Man. It is both in him as well as outside him. The inside information of Man is his mental world. This personal information when it comes out of him, becomes public. Public information is the social memory and information world. The words, information, knowledge and wisdom are freely used as synonyms. Their boundaries dovetail into each other and they are inseparable without loss of meaning. They are parts of the same brick. Information, in the words of J.H. Shera.

"is the stimulus which we perceive throughout senses. This information may be a single isolated fact or it may be whole cluster of facts; but still it is a unit; it is a unit of thought. It can have any dimensions. It is that intellectual entity which we receive, the building block of knowledge."

The million mutinies that take place in the crucible of human brain are expressed through *Dhvani*, *Sangna*, *Pada* and *Dhrusya*. As Marshall McLuhn said medium is the message. All the four modes are

important. It is difficult to say one is superior than the other.

Dhvani (Sound) : Man makes sound both for pleasure and pain. He expresses his feelings and ideas with sound. They take the form of vocal and instrumental music.

Sangna (Gesture) : This is body language. Man express different things through different organs and movements of his body. Performing Arts such as Dance, Acting, Mimicry, etc., have come into vogue.

Pada (Language) : *Pada* is the vehicle both for oral and written languages. Human groups invented different languages in different parts of the world. It is language, more obviously than anything else, that distinguishes man from the rest of the animal world. Language is the most important tool that man has invented. It is a multipurpose instrument. Most of our information/knowledge in the form of *Sastras* and *Sahitya* are based on language.

Dhrusya (Picture) : This is a pictorial language. The *Rupa* (Reflection) of things both imaginary and real are produced. A photograph and a painting are also texts and sources of information. Sculpture, painting, photography, etc., have borne out of this mode of human thinking which are known as Fine Arts.

The *Chatushashti Kalalu* (64 Arts, Appendix) invented by man through the millennium of history contain and constitute the sources of traditional information.

Communication

Language became the dominant mode of communication. There is a linear historical trajectory in the usage of language. They are the oral, the written or print media and the electronic media. The change from speech to writing to electronics increases the space, the linguistic act can cover and decreases the time that takes to transmit.

Oral Sources

The oral communication is limited to smaller and restricted groups. It may take place between one to one, one to many, many to one and many to many. The oral sources may consist of : 1. Conversations. 2. Group Discussions; 3. Seminars / Conferences / Workshops; and 4. Invisible Colleges.

- i) Conversations : People during their leisure hours at home, in offices or during their morning or evening walks pass on information involuntarily between each other. This can happen even in office corridor talks.
- ii) Group Discussion : This is another informal source of information. Groups of Scientists, etc. discuss informally about their work which is in progress. Group discussion is a recognized source of information.
- iii) Seminars/Conferences/Workshops : They are yet another sources of oral information. Discussions at Seminars, Conferences and Workshops are often on particular themes or subject area(s). On these occasions various people come into contact with each other and during their personal discussions exchange information which is otherwise not available.
- iv) Invisible Colleges : Peers in various subject fields or Managers of Organisations or Institutions, etc. can form Invisible Colleges. Information before it can take a formal form passed on among themselves. Latest data, results, innovations, etc. are exchanged freely amongst themselves. P.E.N. Clubs are an example in the Humanities.

The Written Sources

All the documents of the pre-Gutenberg era are written documents using various formats such as bricks, skins, vellum, papyrus, *Bhurjva*

and *Talapatras*, metals, cloth and paper. We have under these sources the manuscript books of all hues, inscriptions, etc. They are of great aid and use for historical research about the Ancient World. Examples of these kind of sources are The Book of the Dead and the Magna Carta.

The Printed Sources

One of the most significant events in the history of Man was the invention of movable type in the 15th century by Johan Gutenberg. For the first time in history there was no limit to the number of copies of books that could be produced. Printing revolutionised the entire world. From the 15th century onward, there has been a flood of printed matter resulting in an affluence of recorded information. The printed sources consist of books, periodicals, pamphlets, reports, theses, standards, patents, trade literature, proceedings, newspapers, etc. The volume of these materials is doubling every 10 or 15 years.

The printed sources unlike the oral sources help in the process of communication of information for the present as well as the future. They constitute the bulk of social memory. The printed sources enabled man to overcome the limitations of space and time in information dissemination.

The Electronic Sources

S.R. Ranganathan classified documents into four categories, viz., 1) Conventional Documents; 2) Neo-Conventional Documents; 3) Non-Conventional Documents; and 4) Meta Documents. The Non-Conventional category of documents constitute largely the electronic sources of information. "Information explosion" made it essential to compress the information and transmit it faster. Technological developments in printing and communication brought into existence a variety of electronic media making the world a Global Village. These sources consist of Audio, Visual, Audio-Visual and Multimedia. These are available in formats such as discs, tapes, phonorecords, microforms, fax, E-mail, voice mail, CD-ROMS, vedio texts, video cassettes, etc. The volume of the electronic sources of information is on ascent for the last one quarter of century.

A System

Anything organized for a purpose becomes a system. A system is a group of interrelated components which function together to achieve a goal. The parts or components can be grouped into four categories, viz., input, process, output and control. The first three components are essential and the fourth component, control, will always be present in compli-

cated systems. The systems can be classified as either open or closed; simple or intricate; natural or manmade; predictable or unpredictable and physical or conceptual.

Information System

The term "information system" refers to methods, materials, media, producers and recipients involved in an organized way to effect information transfer within a specific field, activity or organization. An information system consists of a complex collection of information documents, persons who produce and use them, institutions which process them and a set of behavior patterns, customs, traditions by which these persons and institutions interrelated (Weisman, 1972).

A library, an archives, a museum, an art gallery, a documentation centre, etc. are types of information systems. Many other systems of information services have been evolving especially since the end of World War II, among them information centres, data bases, referral centres, information analysis centres, computerised data bases, networks, CD-ROM systems, etc. Some of the information systems are global in nature and scope, some are regional and some more are national. Some of these are like Super Highways of Information and some others are like National Parks of information where information is put to sale and vendored.

Personal Information System

In this system, information is exchanged at personal level instead of through public channels. Information is handed over because of personal intimacy. *Gurus* pass on information to *Sishyas*. In the traditional medical practices a *Vaidya* passed on information to his apprentices concerning various medical herbs and symptoms of diseases. Peers in a subject can form an invisible college and through their correspondence exchange information and keep themselves abreast with things. The paradigm of the personal information system is limited in scope and use.

Art Gallery

Roland Barth says that a photograph is a text. Hence, photographs, paintings, illustrations, etc. contain information which is essential to understand various movements and developments in the human evolution. Paintings of a Leonardoda Vinci, a Rambrant, a Picasso created movements and changed history. The art galleries collect various paintings, photographs and fine art artefacts of individual artists and organise, display and create a system of information which could be used as in other information systems.

Archives :

There are different types of archives such as Public Archives, Private Archives, Business archives, Industrial Archives, Film Archives, etc. These are all original primary documents. Density of information in archives is high. Archives are processed and organised according to a system for the use of creating agencies as well as others. These are unique documents for social scientists and historians.

Manuscript Libraries :

These libraries preserve the hand written books of ancient and medieval ages. They are in different formats. Some are on papyrus, some are *Talapatras*, some more are on paper. These are rare books and available only in single copy or limited copies. The books in these libraries are organised according to the format of their materials. The libraries generally publish catalogues of their holdings for the retrieval of information by the users.

Libraries :

Libraries acquire, are largely monofocal. They provide documents to the users. On the other hand, information centres are bi-focal. They supply to the users both documents and information. The information centres store information generated internally as well as the information collected from the outside agencies. Information transmission/dissemination is undoubtedly the central activity of all information centres. There are many such information centres in the country today with their own systems. To mention a few : NIC, NISSAT, IAIS, National Science Information Centre, etc.

Documentation Centres :

Documentation centres build up micro information sources in specific areas. They establish bibliographical controls and provide special services such as GAS, SDI, translation and bibliographic information. They also procure and supply copies of documents from other countries. Their goal is to provide nascent information and pin-pointed and comprehensive services to the users. They save the time of the users. We have in India national documentation centres such as INSDOC, NASSDOC, etc.

Computerised Data Bases And Networks

With the advent of IT, the International Data bases are computerised. Creation of data bases, their computerisation and the application of

modern technology have paved the way for establishing the library networks. Networking is system of linking one or more computers and terminals, so that they can communicate with each other and share facilities. Data bases without networking will stand alone and remain as islands of information. There are many International and National Networks in the fields of general information and library information. Some of the global networks are INIS, AGRIS, DEVSIS, INSPEC, MEDLARS, UNIDO-IIS and SPINES. Some of the networks in India are : I-NET, ERNET, NICNET, CGNET, SIRNET, PETRONET, RAILNET, INFLIBNET, DELNET, CALIBNET, etc.

Electronic Media System

Revolutionary changes have been taking place in telecommunication and satellite communication systems. Reading the world has become much easier rather than reading the word. Radio, telephone, telephone paging, TV and cable TV systems bring information into the homes of people faster and quicker.

E-Mail issued for producing digests, electronic journals, bulletin boards and remote log-in facilities. Fax and voice-mail systems are also used these days to transmit bibliographical data and information.

CD-ROM system is the latest arrival on the scene. CD-ROMs of 12cm single-sided discs are capable of storing about 600 megabytes of digital information which is equivalent to 1500 floppy discs or 2,00,000 pages of A4 size typescript. A CD-ROM system comprises : 1) a compact disc player/drive; 2) search software; 3) an interface card to the operating system of a microcomputer; and 4) a micro-computer.

The electronic media systems have made the world an electronic village.

Conclusion

1. The format of the documents is fast-changing. The paperless society forecasted by Lancaster is dimly visible.
2. The reading habits of readers are also undergoing changes greatly. Multimedia sources are fast becoming important.
3. Acquisition and preservation of new formats of reading materials are gaining ground in libraries. They are creating newer problems which the libraries had not faced earlier.
4. The cost of paper documents, both monographs and serials, has been increasing abnormally. This has become a hurdle in the acquisition of documents in the libraries. Cheaper

materials which will last longer should be the medium for carrying the human messages.

5. Information systems are multiplying. User's acquaintance with the systems should improve.
6. User education should become an important agenda of the libraries and information centres.

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APPENDIX

THE CHATUSHASHTI KALALU (THE SIXTY FOUR ARTS)

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|---------------------|---------------------|
| 1. Akshara Lakshana | 33. Hasta Chalana |
| 2. Alankara | 34. Nayana Sangna |
| 3. Ithihasa | 35. Bhasha Viseshha |
| 4. Mimamsa | 36. Bramana |
| 5. Tarka Sastra | 37. Poshana |
| 6. Shtre Lakshana | 38. Vidveshana |
| 7. Purusha Lakshana | 39. Vuchchutana |
| 8. Asva Lakshana | 40. Aakarshana |
| 9. Gaja Lakshana | 41. Anjana |
| 10. Go Lakshana | 42. Adhrusya |
| 11. Kanya Vada | 43. Dhruvu Matha |
| 12. Visha Vada | 44. Bhetala Matha |
| 13. Bala Vada | 45. Ayudha Bhyasa |
| 14. Rasa Vada | 46. Vastu Sastra |
| 15. Dathu Vada | 47. Shilpa Sastra |
| 16. Brahma Vada | 48. Bharata Sastra |
| 17. Mrusha Vada | 49. Yoga Sastra |
| 18. Mudhra Karma | 50. Chitra Kriya |
| 19. Kshatra Karma | 51. Ratha Rohana |
| 20. Bhuta Sitapata | 52. Gaja Rohana |
| 21. Asva Vydhya | 53. Asva Rohana |
| 22. Gaja Vydhya | 54. Mohastambhana |

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| 23. <i>Pasu Vydhya</i> | 55. <i>Vayu Stambhana</i> |
| 24. <i>Nara Vydhya</i> | 56. <i>Agni Stambhana</i> |
| 25. <i>Indra Jala</i> | 57. <i>Jala Stambhana</i> |
| 26. <i>Mahendra Jala</i> | 58. <i>Kadga Stambhana</i> |
| 27. <i>Gokarna</i> | 59. <i>Ghatika Siddhi</i> |
| 28. <i>Gaja Karna</i> | 60. <i>Paduka Siddhi</i> |
| 29. <i>Trunava Dhana</i> | 61. <i>Mantra Siddhi</i> |
| 30. <i>Sabhdhava Dhana</i> | 62. <i>Parakaya Pravesa</i> |
| 31. <i>Bhujava Dhana</i> | 63. <i>Dhura Dhrusti</i> |
| 32. <i>Ghanleva Dhana</i> | 64. <i>Dhura Shravana</i> |

(Source : **Vijnana Sarvasvamu** (Telugu), vol. 14, 1979, 0. 18)