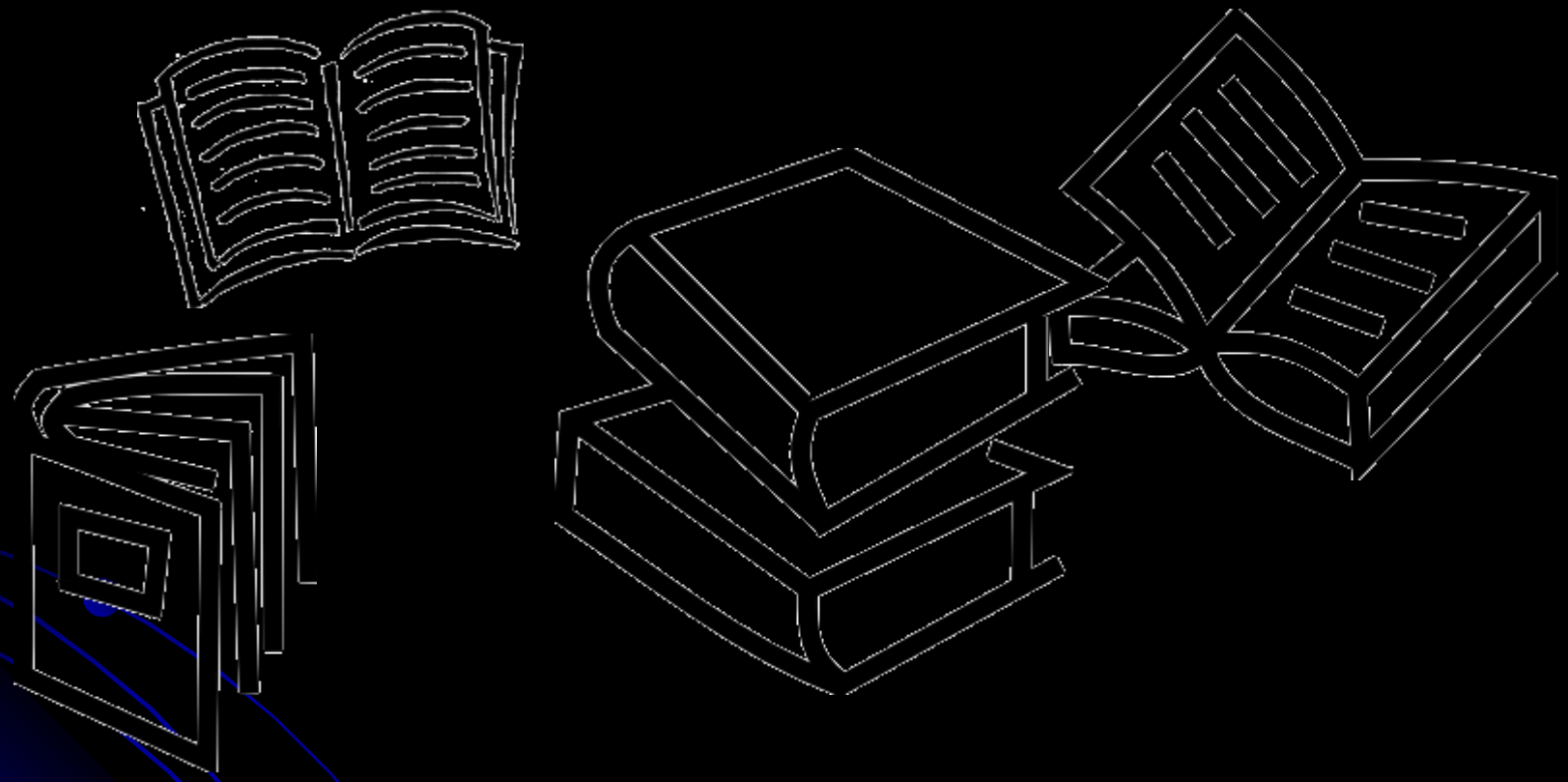
The Role of Academic Libraries - A User's Perspective



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Outline of Presentation

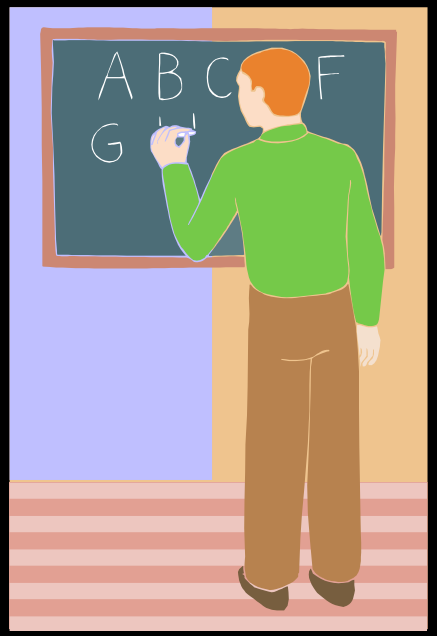
- Background
- Profile of Activities of Academic Users
- Changing Role of Library in these Activities
- Information Revolution
- Challenges and Opportunities in the Global Digital environment
- Conclusions

Background

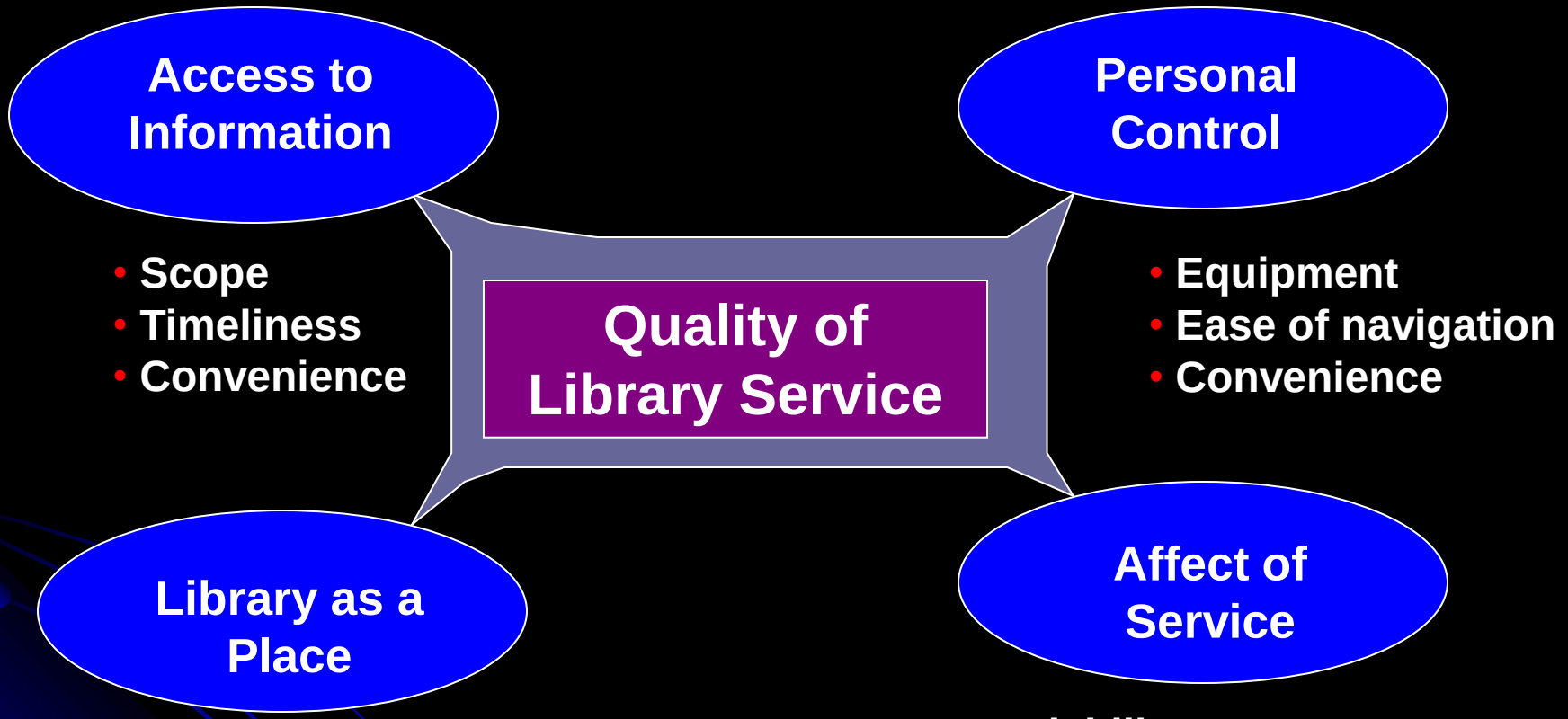
- Academic libraries are widely seen as vital in the support of academic activities, traditionally concerned with teaching, research and community service
- Moreover, it is almost universally accepted that the information revolution is having a profound impact on academic activities and therefore also on the role of academic libraries
- Academia itself is also changing, further fuelling the demand for specialized services
- These issues will consequently be considered from the perspective of an academic user

Traditional Academic Activities

- Teaching
  - Undergraduate classes
  - Supervision of postgraduate research
- Community service
  - Consultation
  - Short courses in industry and internationally
- Research activities
  - Writing/editing papers, research reports, books
  - Peer review of academic papers for journals, peer review of research proposals
  - Presentations at conferences



Library Services



- Scope
- Timeliness
- Convenience

- Equipment
- Ease of navigation
- Convenience

- Refuge
- Symbol
- Utilitarian space

- Dependability
- Accuracy
- Willingness to help
- Promptness
- Caring individualized attention

Function	1992 LIBRARY
Integrated Library System	Provided MARC, patron, and circulation records
Information available	The print collection; Inter-library loan for anything else; CD Abstracts & Indexes
Access to information	Walk-in to OPAC, PC's, stacks
Study space	Quiet areas
Information Instruction	Bibliographic Instruction, by instructor request
Information printouts	Dot matrix printer
Organizational	Bureaucratic; Functional; Hierarchical
Orientation	Local
Computer access	OPAC; Online access to DBs
Financial	"Parent" dependent
Consortia	Test and buy databases

Marcum, JW (2003) Visions: The Academic Library in 2012, D-Lib Magazine, 9(5), ISSN 1082-9873

Academic Activities in Flux

- The traditional model of the academic equally contributing to teaching, research and community service is under pressure
- Universities have become massified (1980s) and universal
- The bottom line is specialization (teaching, research, other) and with it more specialized information needs, with direct implications for libraries

Function	1992 LIBRARY	2002 LIBRARY
Integrated Library System	Provided MARC, patron, and circulation records	Web-based: meta-data; resource links; cross data-base searching
Information available	The print collection; Inter-library loan for anything else; CD Abstracts & Indexes	Print collection plus online data-bases; Document delivery; extensive E-resources
Access to information	Walk-in to OPAC, PC's, stacks	Remote, wireless
Study space	Quiet areas	Group study areas
Information Instruction	Bibliographic Instruction, by instructor request	Information Literacy; hands-on "learning"
Information printouts	Dot matrix printer	Laser printer
Organizational	Bureaucratic; Functional; Hierarchical	Services oriented; Teams
Orientation	Local	Regional, consortial
Computer access	OPAC; Online access to DBs	Information Commons
Financial	"Parent" dependent	Participate in fundraising
Consortia	Test and buy databases	Negotiate special DB's

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And ten years from now?

… The winds of change are blowing …

Academic libraries are facing two major challenges:

- A global digital environment, and with it
- Increasing competition

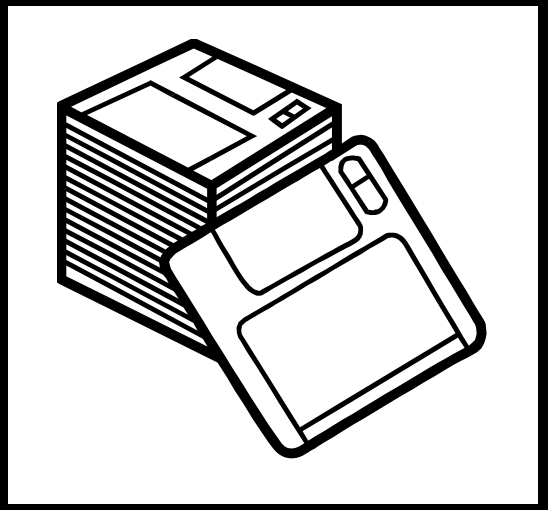
How are these issues affecting their relationships with their customers?

The Information Revolution

Above all, information technologies will grow at an explosive rate. And information technology is the technology that we need to consider. Ultimately everything of value will become an information technology …

Ray Kurzweil, New Scientist, 24 September 2005

Bits and Bytes



1 bit (**bi**nary digi**t**), one of two states, e.g. 0,1 or "on-off"

1 byte = 8 bits = 1 character, such as A, b, 3, z

1 kilobyte (kB) = 1000 bytes

1 megabyte (MB) = 1000 kB = (digital photo)

1 gigabyte (GB) = 1000 MB (Encyclopedia Britannica, 20 volume OED)

1 terabyte (TB) = contents of a large library or a stack of A4 paper (text) 10 km high

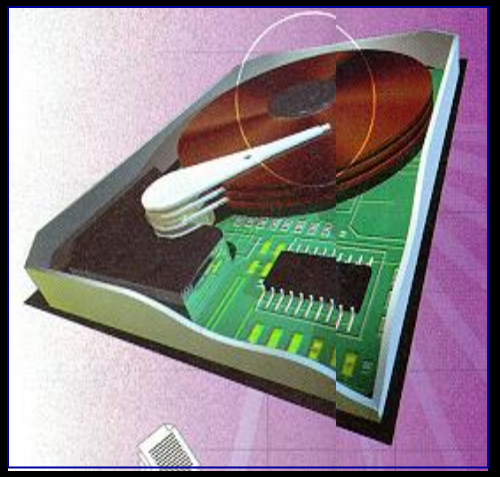
1 exabyte (EB) = 1000 TB

Storage of data

- 1956: IBM unit the size of a dishwasher holding 5 MB of data (1500 typed pages)
- 1980: First 5.25” HDD (5 MB), $600/MB
- 1985: First CD-ROMs (650 MB), 74 minutes of music
- 2001: Can store more than 8 copies of the 32 volume Encyc Brit on area the size of a postage stamp ($0.01/MB)
- 2005: PC HDDs of 200-1000 GB, good for 1000s of holographic vacation photo’s! ($0.0006/MB)

Large data repositories

- Human genome project (several GBs)
- Mastercard International serving 22 000 member institutions in 20 countries (TB)
- Walmart with 20 000 000 customers
- AT&T with 100 million customers, carrying 200 million calls daily
- NASA EOS (50 GB/h)
- Mobil Oil exploration (100 TB)
- Study by University of California estimates current annual data production between 1-2 EB

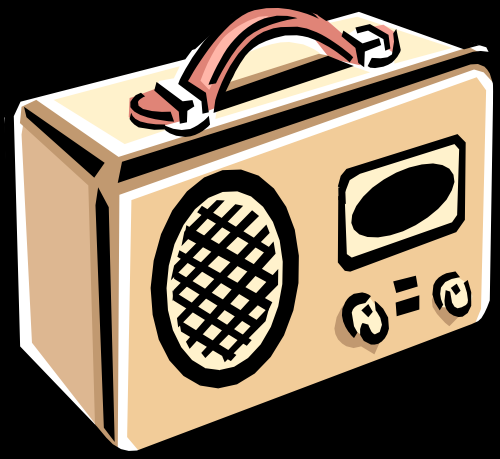


Measuring the Data Mountain

Around five exabytes (5 million gigabytes) of information was created in 2002, up from about two exabytes in 1999, according to a survey reported in the December 4th, 2003 *Economist*. This is the equivalent of half a million libraries the size of the US Library of Congress, or about 800 megabytes per person per year. Almost all new information (92%) is stored on magnetic media, primarily hard disks. The remaining 8% is in the form of still and moving film images, and paper-based information and optical media (CDs and DVDs). Overall, the amount of information is growing by 30% per year, with the USA the single largest producer. (See http://www.economist.com)

Communications

Reading 500 words/ minute (50 bits/s)

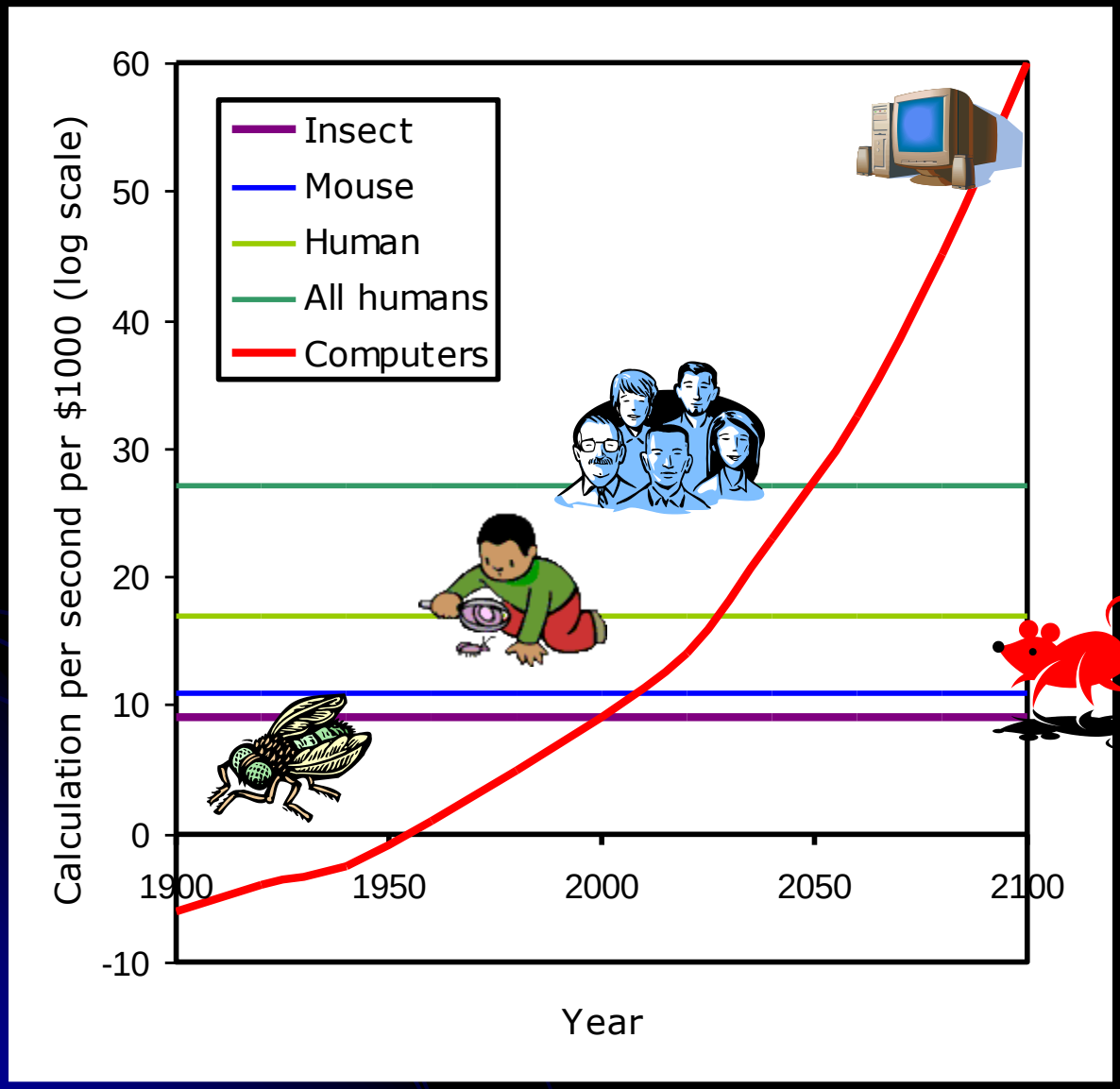


Audio: (50 kbits/s)

Playing 24 games of chess blindfolded over 6 hours (0.2 bits/s)

Video: (50 Mbits/s)

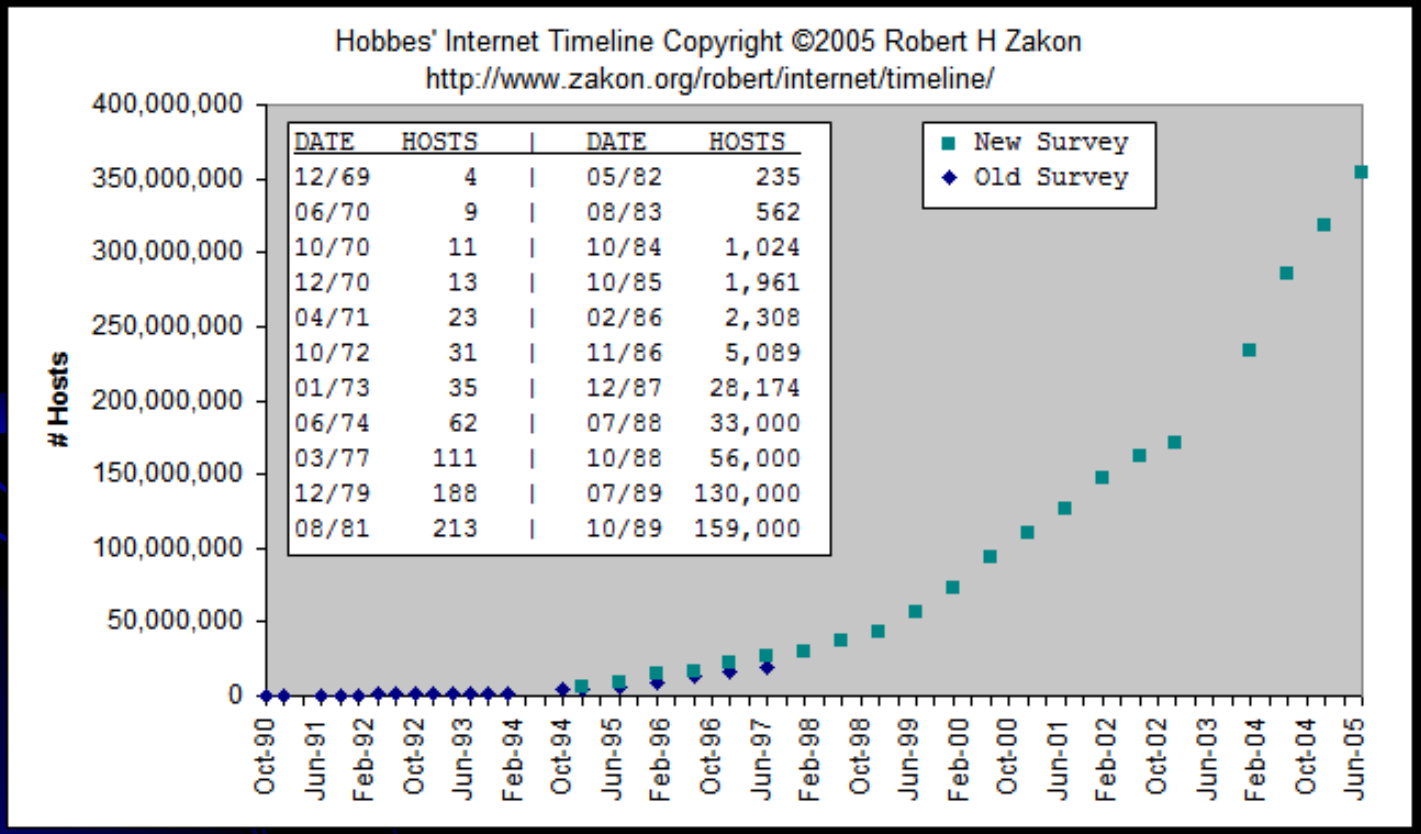
Exponential Growth in Computing Power



- By 2020, $1000 expected to buy 10^{16} calculations per second (cps), compared with the 10^{9} cps today
- By 2040 or 2050 one cm^3 of nano-circuitry would be 100 million times more powerful than the human brain
- Ultimately 1 kg computer (laptop) late in 21st century will be 10 quadrillion times (10^{16}) more powerful than the human brain

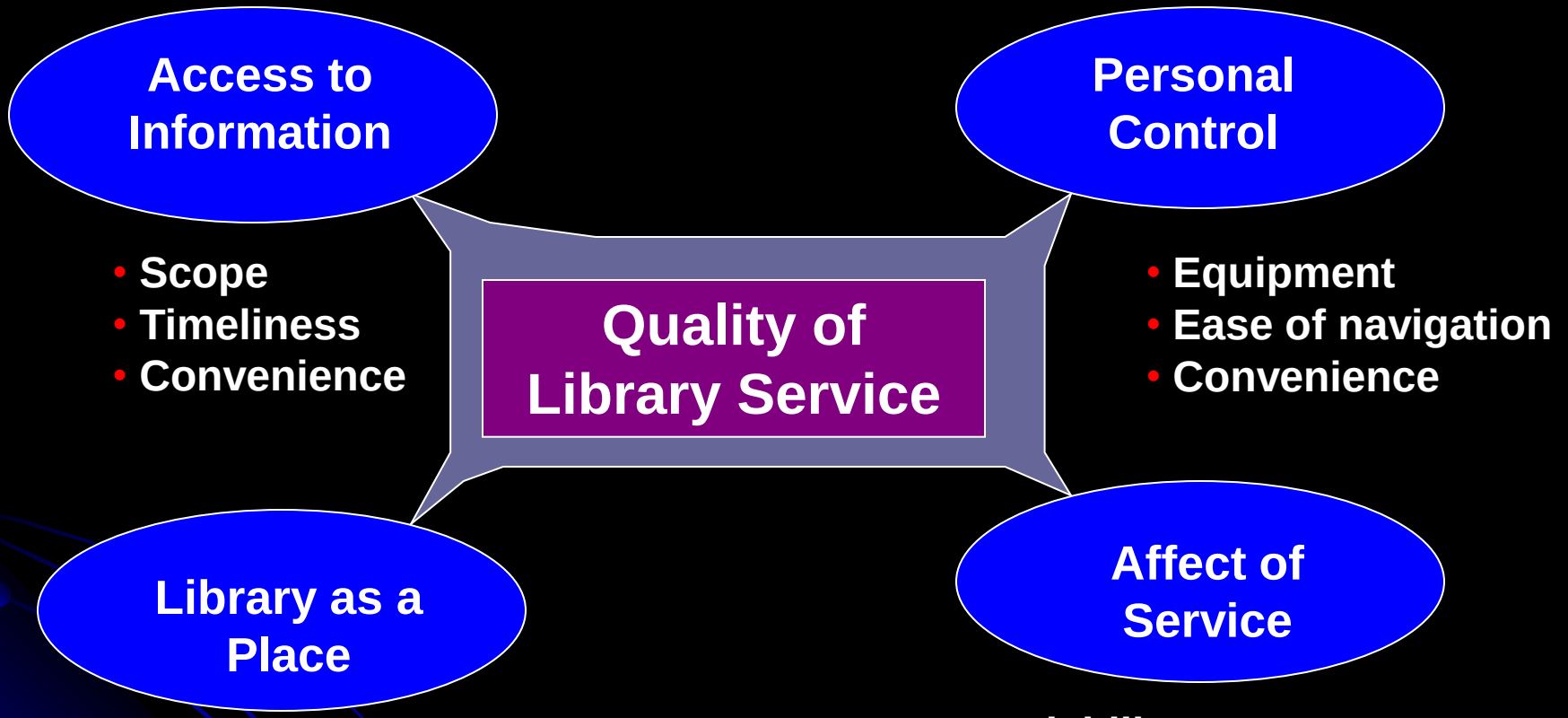
Effect on Libraries

Directly or indirectly, this has meant that life in the information world has changed dramatically over the last ten years, particularly with the rise of the paperless library and the Internet



DATE	HOSTS	DATE	HOSTS
12/69	4	05/82	235
06/70	9	08/83	562
10/70	11	10/84	1,024
12/70	13	10/85	1,961
04/71	23	02/86	2,308
10/72	31	11/86	5,089
01/73	35	12/87	28,174
06/74	62	07/88	33,000
03/77	111	10/88	56,000
12/79	188	07/89	130,000
08/81	213	10/89	159,000

Library Services Revisited



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Access to Information

- Gone are the days when Francis Bacon could claim "I have taken all knowledge to be my province" (from a letter to Lord Burleigh, 1592).

- Pity the harried scientist today, who never has enough time to read all (s)he can. Despite not having enough time to read what is available, scientists have perennially complained about poor access to journals (the “coin” of the realm).

- “Intelligent access” is key – e.g. tapping into the rather small number of journals that can properly be classified as significant.

A Paradigm Shift - the Paperless Library

- More than 2000 publishers worldwide are specializing in scientific, technical and medical publications, publishing more than 1.2 million articles per annum in more than 16 000 journals (of which about 75% are now online).
- Entirely new business models are developing as a result – so-called big deal, open access publishing and open access archives
- Big deal – institutional subscribers pay for access to collections of online journal titles through site licensing agreements
- Open access – author/employer typically footing the bill for paper published
- Open archives – universities or international laboratories support institutional repositories

Report by Organization for Economic Cooperation and Development (OECD) by John Houghton (Victoria University in Australia) and Graham Vickery of OECD

Pressure on Libraries

- The paperless library has not yet translated into lower cost of access – on the contrary. These price increases have crowded out purchases of other materials, such as books and monographs.
- Despite rising costs, libraries are pressured to cut budgets, leading to further reductions in journal subscriptions.
- Finally, there is a growing demand for higher levels of service and more material

Global Competition

- Within a few months of its launch in Nov 2004, Google Scholar has established itself as a rival to powerful multinational companies such as Thomson and Elsevier that offer huge (and, for libraries, hugely expensive) databases of scholarly material (The Infinite Library, University of Toronto Magazine)
- To 'google' something has become a verb. Other providers following suit (Yahoo, Amazon, etc.)

Library as a Place

- Use of the Web is the 1st choice for faculty and students engaged in research and represents a departure van research patterns of a decade ago.
- This presents a great challenge, the outcome of which will ultimately be determined by the relationship between libraries and the Internet.
- The physical library may need to focus on its role as a place for interaction, learning, and community, rather than being a warehouse of information.

Library Service

- Service is the edge that libraries presently have over their competitors, such as Google (Scholar, Print, Answers), Yahoo and Amazon
- For example, students who have access to digital information only, have access to a very fragmented and incomplete portion of recorded human knowledge. Many of them do not realize this and information literacy could be one of the services provided by libraries.

Conclusions

- Access to information is of paramount importance to academics, and the academic library is (still!) the principal information broker.
- Rapid changes in information technology will inevitably change the role of libraries as information brokers
- This poses a potential threat, but also huge opportunity in a major growth industry