Information behaviour of scholars

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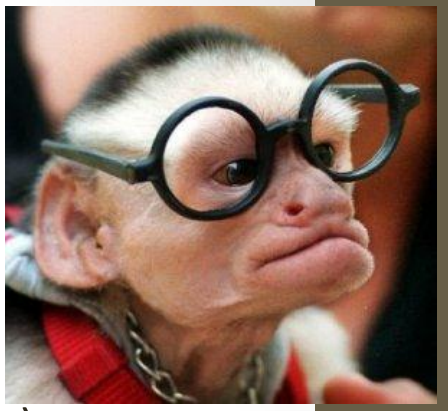
Why scholars?



- Field of science is often viewed by general population as special
  - „nerds, freaks, weirdoes, or evil doers“, „geniuses“ (Lipps)
  - Convoluted, difficult to understand, complex, uninteligible to lay people or even to other scientists
  - Discouraging or esoteric
- What do scientists/scholars do?
  - Critical Thinking, Evidential Reasoning and Judging Authority
- Other characteristics:
  - Social activity
  - Huge knowledge base, constant need for information
  - Controversy
  - Disciplinary differences

Interest of scholarly information behaviour

- Science is information-intensive field
  - „One of the most important things that researchers do is to find, use and disseminate information.“ (C. Gray, RIN, 2011)

„Understanding the nature of information practices and their relation to the production of scholarship is important for both theoretical and applied work in library and information science (LIS). Research on scholarly practices provides a foundation for the development of information systems, services, and tools to support scholarship and science, especially as we strive to manage the escalating stores of digital literature and data for use by current and future researchers.“ (Palmer&Cragin, 2008)

(How/why) do scholars differ?

- „Unlike most people, scientists usually love their jobs.“ (Lipps, 1999)
- Current view: no very sharp distinction between researchers/other information users, for a number of reasons, e.g.:
  1. Information behaviour is governed by general principles, like 'accessibility' and 'familiarity',
  2. Discipline/domain – context – is very important and generalizations are difficult/impossible – researchers from different fields are very different in information behaviour terms,
  3. Changes in technology have removed some previously existing differences.

Research paradigms

- Looking for information – long tradition
  - 1902: C. Eliot (on what is needed and can‘t be found in a library)

- Different periods, paradigms, focusses
  - Differences in research topics, approaches, directions of studies
  - Generally – development of paradigms: system-centered, human-centered (cognitive, affective), social-epistemological
  - Main focus of studies regarding user groups:
    - Occupational groups
      - **Scientists**, engineers, doctors, lawyers, journalists, …
    - Social groups
      - Consumers, voters, students, library users, TV viewers, …
    - Demographic groups
      - Age, gender, ethnic, race, geographic, …

Research of scientists

- Among first focusses of studies of HIB
  - The Royal Society Scientific Information Conference, London, 1948

- After WWII.: Studies of document use, of system use
- 60-ies: Studies of „serious“ information needs („task-oriented studies“)
  - Studied: Groups, use (information artefacts, information settings)
- 70-ies and onwards: Other focusses join in („non-task oriented studies“)
  - Studied: Individuals, information behaviour, feelings, thoughts
- 90-ies onwards: a lot of focus on every-day life information situations and on individual characteristics
  - „not so fashionable to study scientists anymore“

Examples of early research:
W. J. Paisley: *Information needs and uses* (1968)

- Tried to set up a conceptual framework for the research of users of scientific information
- Information needs and uses depend on numerous systems related to various aspects of the life of individual scientist/technologist
  - Did not study scientist as a member of some particular group
  - Every scientist stands at the centre of many systems that touch every aspect of his/her work
- Scientists as users should be studied in relation to:
  - Legal and economic system
  - Formal information system
  - Personal variables (cognitive structure, motivation, etc.)
- **The model of *(almost) concentric circles***

- Lack of concepts that would specify how the types relate to each other

Model - Paisley

1. *The scientist within his culture*
   - The largest circle
   - The culture (tradition and ambient spirit) that determines the scientist's community
2. *The scientist within a political system*
   - i.e. in some period in US more scientists hired by the military establishment than by food-research agencies
   - or., scientific nationalism – foreign research being ignored
3. *The scientist within a membership group*
   - The scientist locates himself within professional membership system
4. *The scientist within a reference group*
   - Similar specialization, training

5. *The scientist within an invisible college*
   - Subsystem of 4 (reference group)
   - Group of scientist who share information directly
6. *The scientist within a formal organisation*
   - Policies within employing organisation open or block channels of information
7. *The scientist within a work team*
   - Subsystem of 6
   - The most important, vibrant sharing of information
8. *The scientist within his own head*
   - *The system of motivation, intelligence, creativity, cognitive structure*

- Two additional depersonalised systems cut across
  - The scientist within legal/economic system (i.e. copyright issues)
  - The scientist within a formal information system (i.e. libraries)

Examples of early research (2):

H. Menzel: *The information needs of current scientific research* (1964)

- Demand studies not preference studies.
  - Requests for information or documents that were actually made by scientists in the course of their activities.
- Also investigated user studies and defined information seeking behaviour from three angles:
  - When approached from the point of view of the scientist or technologists, these are studies of scientists' *communication behaviour*;
  - When approached from the point of view of any communication medium, they are *use studies*;
  - When approached from the science communication system, they are *studies in the flow of information* among scientists and technologists.

Example of later research:
J. Palmer: *Scientists and information* (1991)

- Agricultural scientists
- ‚Information style‘
- Five groups:
  - 'non-seekers', for whom information access was not a priority
  - 'lone, wide rangers', preferring to work alone, reading and scanning widely, and relying serendipitous information discovery
  - 'unsettled, self-conscious seekers', concerned about missing important information
  - 'confident collectors', amassing their own information collections, rather than routinely searching for information
  - 'hunters', with regular information-gathering routines, and a focus on currently relevant information

Palmer: Types of information habits

- Based on appearance, body language, and intonation in response to questions:
  - 'information overlord', operating an extensive and controlled information environment
  - 'information entrepreneur', creates an information-rich environment, using many sources and strategies
  - 'information hunter', organised and predictable information gatherer, in narrowly focused areas
  - 'information pragmatist', occasional gatherer of information, only when need arises
  - 'information plodder', rarely seeking information, relying on own knowledge or personal contacts
  - 'information derelict', seeming to neither need nor use information

Key information concepts in scholarly context (1)

- Information and information need
  - Needs/demands
- Relevance, pertinence, aboutness
  - Topical/psychological/situational relevance
- Salience
  - Things which stand out
  - Potential to be noticed

- Example: Tenopir&coll. *Perceived Value of Scholarly Articles* (2011):
  - Most important criteria: article topic, online accessibility, source of article;
  - Highest rated article profiles:
    - article written by a top-tier author, in a top peer-reviewed journal, available online at no personal cost to the reader;
    - article written by a top-tier author, in a peer-reviewed journal not in the top tier, available online at no personal cost to the reader

Key information concepts in scholarly context (2)

- Information overload, avoiding information
  - Like all people, also scholars experience information overload and react to it:
    - Selective exposure to information (sources), filtering behaviour
  - Reponses to too much information (Miller, 1960):
    - Omission
    - Error
    - Queuing
    - Filtering
    - Approximation
    - Multiple channels
    - Escaping
- Examples:
  - C. Perrow: *On not using libraries* (1989)
  - S. Prabha & coll.: *What is enough?* (2007)

Disciplinary differences

- Differences in information and communication behaviour
- Science vs. Social science (Humanities)
  - 70-ties, 80-ties (e.g. INFROSS, DISISS):
    - Social scientists (and humanists) used books and journals, informal communication channels, preferred printed to digital sources, used a lot of local and national materials, not so much need for foreign language materials.
  - Later:
    - Science: preference of articles, preprints, value informal information sources (e.g. conferences, personal contacts), don‘t like libraries/librarians.
    - Social science, humanities: important sources beside articles are books (also printed).
    - In terms of technological preferences no more differences.
- See: Palmer&Cragin (2008) *Scholarship and disciplinary practices*

The importance of context (1)

- Context: wievpoint, point for interpretation
- Personal, changeable, complex, dynamic
- Documents have contexts & queries have contexts
- T. Wilson – we have so far paid too little attention to the importance of *context* in trying to understand what users want:
  - "Paradoxically, user studies has been concerned with almost everything apart from the use to which information is put by the... information seeker.„ … "The reason for this seems to be a desire to draw policy conclusions... from data on aggregated behaviour rather than a desire to *understand* the user„ ... "The 'user' may be found in many... contexts; and 'user studies' need to distinguish among these contexts... Any partial view demands rigorous definition of *which* context applies."

The importance of context (2)

- User‘s communication/information contexts (appropriate for 'user studies') (Wilson, 2000):
  - the user as *communicator*,
  - the user as *information-seeker*,
  - the use of *formal information systems,*
  - the user as a *recipient* of information services,
  - the user as a *user* of information.
- Nicholas (2000): Key to understanding information needs lies in understanding of problems and situations in which they arise

Digital scholarship, e-science (1)

- Many (all?) areas of science are becoming increasingly reliant on new ways of collaborative, multidisciplinary work
  - „e-Science is about global collaboration in key areas of science and the next generation of infrastructure that will enable it.“ (J. Taylor)
- “Scholarly information infrastructure”
  - technology, services, practices, and policy that support research in all disciplines (C. Borgman)
  - „the Grid“
  - Web 2.0/3.0

Digital scholarship, e-science (2)

- Cyberinfrastructure and eScience
  - Infrastructure enabling forms of scholarship that are information- and data-intensive, distributed, collaborative, and multi-disciplinary.
- eResearch – collective term for variants such as eScience, eSocial Science, and eHumanities

See Borgman (2007, 2009, 2010)

- Influences on scholarly information behaviour

How do scholars behave with information? (1)

- Long observed approaches
- Information seeking is not always an intentional, conscious activity.
- Browsing, scanning
  - *„Browsing is the activity of engaging in a series of glimpses, each of which may or may not lead to closer examination of a (physical or represented) object, which examination may or may not lead to (physical and/or conceptual) acquisition of the object.“ (Bates, 2007)*
  - *Scanning*: aimless looking at what we have in front of us (Case, 2008)
- Serendipity (information encountering)
  - When we find information (something interesting) without looking for it
    - without premeditated, planned, directed activity

How do scholars behave with information? (2)

- Berrypicking
  - *evolving* query,
  - „A berrypicking search involves getting a bit of information here, another bit there, just like picking berries in a forest.“ (Bates, 2007)
  - Use of many different sources and varying searching techniques

Conceptualizations of scholarly activities

- Common information-related practices („primitives“) in all scientific disciplines
  - examples of contemporary scholarly information behaviour
  - Actions / thoughts / feelings?
- Examples:
  - Ellis 1989, Ellis, Cox and Hall 1993; Meho&Tibbo, 2003
  - Unsworth, 2000
  - Brockman&col., 2002
  - Minnesota University Libraries, 2006
  - Rowlands&col., 2008
  - Palmer&col., 2009

Information-seeking patterns
(Ellis, 1989, 1993, Ellis, Cox and Hall 1993; Meho&Tibbo, 2003)

- Natural, social and humanist sciences

- Starting – activities at the start of information seeking
- Chaining – following references, citations, etc.
- Browsing – scanning areas of interest
- Differentiating – filtering material by source and quality
- Monitoring – keeping up-to-date by checking sources regularly
- Extracting – systematically working through a source

- Ending – concluding steps

- Accessing
- Networking
- Verrifying

Scholarly primitives (Unsworth, 2000)

- Humanities
- Intention: „to suggest a list of functions (recursive functions) that could be the basis for a manageable but also useful tool-building enterprise in humanities computing.“

- Discovering
- Annotating
- Comparing
- Referring
- Sampling
- Illustrating
- Representing

Information nature of scholarly work (Brockman, Neumann, Palmer, Tidline, 2002)

- Emphasizing the differences in information work in the humanities vis-à-vis other disciplines
- A broadly based conceptual framework of the information nature of scholarly work, accounting for processes of:
  - reading
    - background, comprehensive, continual (simultaneous and associative), "reading around" a period or a person, chaining to enable reading
    - reading – not a single or homogeneous activity
  - collaborative networking
    - maintenance of collegial networks for correspondence and collaboration
  - researching and searching
    - collections as capital, many states of primary materials, multitude of sources, access tools for speed and scope, diverse skills/strategies, generic searching problems, browsing across collections and tools
  - ways of writing

Scholarly information activities (Minnesota University Libraries, 2006)

- Study aimed at defining appropriate infrastructures and services at the Minnesota University Libraries
- organising “scholarly primitives” into four groups of scholarly information activities
  - discover,
  - gather,
  - create,
  - share.
- Visualization of the activities, relationships between
  - *Primitives*,
  - Common *tasks*,
  - Support from *data*,
  - Potential *tools and services.*

Information behaviour of the researcher of the future (Rowlands&coll., 2008)

- ‚Google generation‘
- New patterns in today‘s researchers' information behaviour:
  - Skimming (looking at one to two pages at a time)’
  - Navigating (looking around at what is available, i.e. ‘the electronic sweet shop’);
  - Power browsing (reading abstracts and titles, even indexing terms, rather than full text);
  - Squirrelling (downloading material to `read’ later);
  - Cross-checking (collecting information from different sites).

Scholarly information practices (Palmer&col., 2009)

- Five broader "core scholarly activities":
  - Searching, collecting, reading, writing, collaborating.
  - Further refined to twenty granular "scholarly primitives"
- Four "cross- cutting primitives":
  - Monitoring, notetaking, translating, data practices

- Granular "scholarly primitives":
  - Found to be particularly common in the humanities:
    - browsing, collecting, re-reading, assembling, consulting and notetaking;
  - Equally applicable to all disciplines:
    - chaining, accessing, assessing, disseminating and networking.

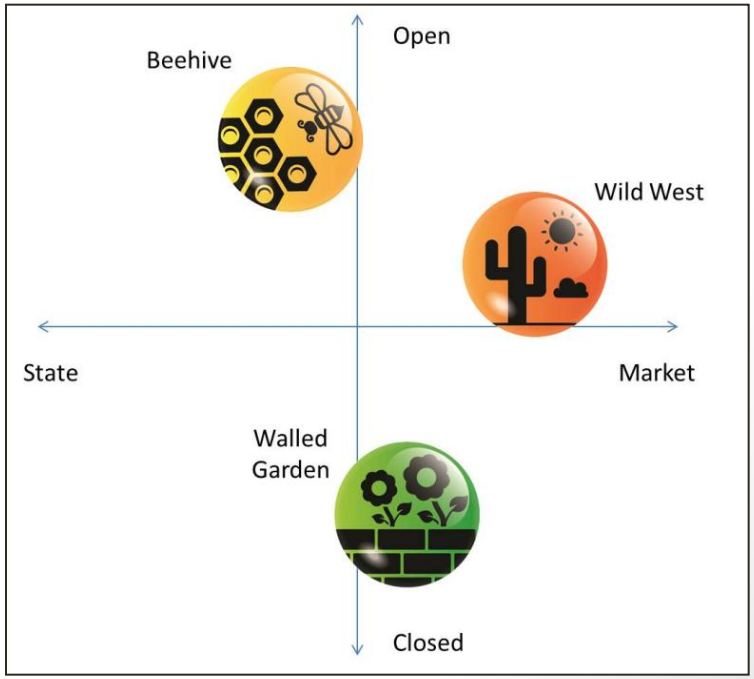
Some implications for information tools and services (1)

- Wilson (2008): early and contemporary research:
  - Practitioners/academics
  - Need for theoretically grounded work / need for guidance on service development
- Relevant and not so relevant (library) services to scientists
- Relevant:
  - Access to e-resources (to office/home PC)
    - Relevant, although not always felt as a ‚library service‘

- Relevant (cont.)
  - Collaborative information environment
    - Preferably customizable according to discipline and academic status (graduate student, faculty), deeply collaborative, and rich with opportunities for end-user contribution and sharing.
  - Own resources (‘capital’)
  - Data curation
  - Open access publishing
  - Discovery tools: bibliographic databases (catalogs)
- Not so relevant / non-relevant:
  - Physical library, traditional library services, cross-search engines

Some implications for information tools and services (2)

- ALA/ACRL:
  - „Top 10 trends in academic libraries“
    - Impact of technology, development of new services, new skills for librarians
- BL, JISC, RIN, RLUK, SCONUL: Scenarios for academic libraries in 2050:



References

- Too many to put here, see attached sheet.