Chapter 4

Social And Cultural Awareness and Responsibility in Library, Information and Documentation Studies

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Abstract

This paper will try to demonstrate that knowledge concerning social and cultural awareness and responsibility (SCAR) is not *opposed to efficiency in information systems development. On the contrary, such knowledge is a prerequisite for developing effective systems. An information system is supposed to provide relevant information and help fulfil the "information needs" of users and potential users. The concepts of "relevance" and information needs" in information science should be defined in a way that reflects social responsibility. Approaches that are not open to consider SCAR in user needs and relevance criteria cannot be regarded as being efficient.*

Questions related to SCAR are not only relevant for the methodology of information science as a research discipline, but involve—more or less—all kinds of knowledge production. Some theories of knowledge deny this thesis about the role of values, goals, and consequences in scientific activities,

while other epistemologies approve it. The hermeneutic insight, that there is no neutral platform from which knowledge can be evaluated, implies that the seemingly neutral epistemologies are wrong: they are never *neutral, they just do not acknowledge and discuss their basis, values, and consequences. Epistemological questions should never remain invisible or unconscious.*

Social Responsibility As A Scientific Criterion

In traditional thinking issues relating to values, policies, goals, and consequences are seen as contradictory to scientific methods and objectivity. As Heine Andersen (1, p. 87) points out:

> Following Hume's "gulf doctrine" (2, p. 470), Moore's analysis of the naturalistic fallacy (3), and Weber's demand for value freedom (4, p. 149), the social sciences wanted to become value free and neutral regarding any political or moral positions, just like the hard sciences. Any footprints left in scientific results and theories from political and moral viewpoints were considered signs of error, which should be eliminated by strict observance of methodological rules for testing and intersubjective control.

This paper will put some arguments against this received view. I'll argue that problems in library and information science cannot be regarded as neutral, and thus cannot be researched properly by methodologies that claim neutrality and value-freedom. This is mainly due to issues related to concepts such as "user needs" and "relevance" and also to the basic teleological nature of information systems. I'll also put forward the more far-reaching claim that the social sciences and probably all sciences at their deepest levels rest on pragmatic and ethical arguments.

These claims may sound excessive. It is important to understand, however, that they are not implying methodological relativism or methodological anarchism (like, for example, the view put forward by Feyerabend, 5). Scientific methods are important, and some methods are simply better than others to certain tasks. The claim of the importance of pragmatic and ethical criteria is not the denial of the important role of observations, experiments, logic, mathematics, and related empirical and rationalistic means of scientific proof. It would be extremely unscientific to uphold a knowledge claim against hard evidence of such kinds. In the final analysis this would make science meaningless and superfluous, because any decision could as well be justified politically without proper

scientific investigation. In the view of pragmatic philosophy this is simply not a proper pragmatic solution. (The pragmatic philosophers, such as John Dewey, argued for basic research, not just for applied research. This is important to understand because this use of pragmatism is opposed to more common-sense views of what pragmatism is).

The only reason why pragmatic criteria may be accepted rests on the view or insight that knowledge never has an absolutely sure basis. Knowledge cannot be deduced from an absolutely secure foundation of observations or logical intuitions. There is no final proof, for example, that atoms exist. In the beginning of the 19th century there was a debate whether they existed or whether they were simply models that scientists used to explain their observations. According to Ess (6) pragmatism answered the question about the existence of such matters with a hypothetical statement: there are atoms in the universe if positing their existence in an optimal way simplifies and renders fertile our sensory experiences as well as our theoretical reflections on them as compared to what would result if we did not posit their existence. In other words; there are atoms if the atom-hypothesis "works". Nature, after all, pushes back against our theorizing, and if a hypothesis fails to do the work for us that we want it to do, i.e., explain and predict or accurately describe reality, that is a rational ground for becoming suspicious that the hypothesis might be based on problematic ontological assumptions.

Today it would in my mind be foolish to claim that atoms do not exist. Not because of any single experiment or observation in the history of science, but because their existence is verified in so many different ways and in the end because our whole culture is today based on a technology that takes this claim for granted. In this way the final criteria of knowledge claims are related to their utility in a broader, ecological perspective.

It is important to realize that our knowledge claims are built in theoretical systems of mutual dependencies. The more fundamental a claim is, the stronger evidence should be demanded of the person who proposes it. Scientific methods imply in themselves knowledge claims about the proper way of carrying out investigations, such as the claim, for example, that experimental methods are the best way to obtain knowledge. Like other kinds of knowledge claims, they are partly based on experience and rational intuition. In the end, however, they also rest on pragmatic arguments concerning the aims of research. Basic research (as opposed to applied research) is not directly aimed at some pragmatic purpose. However, science as a cultural phenomenon has during history proved its pragmatic value for societies, and certainly modern societies expect to have a

return for their investment in basic science. It is almost a paradox that the search for truth regardless of pragmatic interests has proved that this is in the larger perspective the best way to solve pragmatic problems, that cancer, for example, is better fought by pure research revealing the nature of normal and abnormal growth in cells than by trying one cure after another.

The primary social responsibility for scientists is the search for truth. The search for truth implies active work for the freedom of proposing and investigating theories and hypothesis. Although research cannot be free from different kinds of interests, scientific research presupposes the willingness to accept inquiries and arguments that are in opposition to one's narrow interests. It also involves the obligation to defend the freedom and the seriousness of scientific communication and the readiness to questions one's own assumptions and to help others to question one's own assumptions (and certainly not try to prevent criticism).

A serious threat to the quality of and responsibility for research is connected to available time limits. When researchers are working under stress (or are lazy) they cannot properly examine the methods, theories, concepts and findings on which their own work depend. In such cases they claim a false expertise and may indirectly be responsible for disseminating and supporting false knowledge, for developments along blind alleys, and possibly for suggesting solutions that are harmful rather than beneficial for the users of research. In this way serious and hard work also is a moral obligation for scientists.

Why Observations Are Not Evidence Enough

Empiricism and (logical) positivism are epistemologies and philosophies of science, which claim that all knowledge is based on experiences and observations. It follows that all knowledge claims should be verifiable by observations. It also follows that general knowledge claims are based on induction from a pool of single observations and that our complex concepts are composed of primitive concepts, which are based on perception of simple physical properties.

The American philosopher Wilfrid Sellars (1912-1989) maintained that classical empiricism is a myth based on the doctrine of the given (7, p. 828). Contrary to the classical foundational views of empiricism and rationalism, the modern views in the philosophy of science emphasize the interdependency between observations and theoretical frameworks,

the specific problems addressed and the research methods used. As Lloys writes:

> Perhaps the greatest advance in understanding the nature of explanation made in the post-positivist and post-Kuhnian era is the general realization that methodologies, theories, and explanations are related to each other via extra-logical, historically variable constellations variously described as "background knowledge," "traditions," "paradigms," "research programs," "fields," or "domains." We can call all of these "framework concepts." (8, p. 32)

In order to illustrate the insufficiency of observations, a hypothetical story by Imre Lakatos is relevant:

> The story is about an imaginary case of planetary misbehavior. A physicist of the pre-Einsteinian era takes Newton's mechanics and his law of gravitation, (N), the accepted initial conditions, I, and calculates, with their help, the path of a newly discovered small planet, p. But the planet deviates from the calculated path. Does our Newtonian physicist consider that the deviation was forbidden by Newton's theory and therefore that, once established, it refutes the theory N? No. He suggests that there must be a hitherto unknown planet p´ which perturbs the path of p. He calculates the mass, orbit, etc., of this hypothetical planet and then asks an experimental astronomer to test his hypothesis. The planet p´ is so small that even the biggest available telescopes cannot possible observe it: the experimental astronomer applies for a research grant to build yet a bigger one. In three years' time the new telescope is ready. Were the unknown planet p´ to be discovered, it would be hailed as a new victory of Newtonian science. But it is not. Does our scientist abandon Newton's theory and his idea of the perturbing planet? No. He suggests that a cloud of cosmic dust hides the planet from us. He calculates the location and properties of this cloud and asks for a research grant to send up a satellite to test his calculations. Were the satellite's instruments (possibly new ones, based on a little-tested theory) to record the existence of the conjectural cloud, the result would be hailed as an outstanding victory for Newtonian science. But the cloud is not found. Does our scientist abandon Newton's theory, together with the idea of the perturbing planet and the idea of the cloud, which hides it? No. He suggests that there is some magnetic field in that region of the universe, which disturbed the instruments of the satellite. A new satellite is sent up. Were the magnetic field to be found, Newtonians would celebrate a sensational victory. But it is not. Is this regarded as a refutation of Newtonian science? No. Either yet another ingenious auxiliary hypothesis is proposed or . . . the whole story is buried in the dusty volumes of periodicals and the story never mentioned again. (9, pp. 100–101).

A similar insight has been given by Duhem (10) regarding the role of experiments in science. While Bacon (11) claimed that a 'crucial experiment' establishes the truth of one of a set of competing theories and that such experiments in the empirical sciences are particularly important for terminating an investigation, Duhem denied these claims. He maintained that crucial experiments are impossible in the physical sciences because they require a complete enumeration of all possible theories to explain a phenomenon—something that cannot be achieved. However, despite Duhem's argument, scientists frequently regard certain experiments as crucial in the sense that the experimental result helps make one theory among a set of competitors very probable and the others very improbable, given what is currently known. Duhem's argument is, however, a weakening of the empiricist position and emphases the role of other methods than just pure experiences. Duhem's view was supported by the philosopher, W.V.O. Quine, and "the Quine-Duhem thesis" states that *any* seemingly disconfirming observational evidence can *always* be accommodated to *any* theory.

The relevance of observations is not given, but is determined by theoretical questions in the research field. A. F. Chalmers writes in his presentation of Kuhn's theory about scientific paradigms:

> A normal scientist must be uncritical of the paradigm in which he works. It is only by being so that he is able to concentrate his efforts on the detailed articulation of the paradigm and to perform the esoteric work necessary to probe nature in depth. It is the lack of disagreement over fundamentals that distinguish mature, normal science from the relatively disorganized activity of immature *pre-science*. According to Kuhn, the latter is characterized by total disagreement and constant debate over fundamentals, so much that it is impossible to get down to detailed, esoteric work. There will be almost as many theories as there are workers in the field and each theoretician will be obliged to start afresh and justify his own particular approach. Kuhn offers optics before Newton as an example. There was a wide diversity of theories about the nature of light from the time of the ancients up to Newton. No general agreement was reached and no detailed, generally accepted theory emerged before Newton proposed and defended his particle theory. Not only did the rival theorists of the pre-science period disagree over fundamental theoretical assumptions but also over the kinds of observational phenomena that were relevant to their theories. Insofar as Kuhn recognizes the role played by a paradigm in guiding the search for and interpretation of observable phenomena, he accommodates most of what I have described as the theory-dependence of observation in Chapter 3. (12, p. 92, emphasis in original)

If observations are not enough, if they are not just given but depend on theoretical assumptions and frameworks, then theories and observations become interwoven in systems of mutual interdependence. As a consequence questions related to social factors in science, values in science, and pragmatic factors in theory acceptance have become important in the philosophy of science (see e.g. 13, 14, 15).

Specific questions are formulated on the basis of historical knowledge of what has previously been successful strategies. They are also formulated with considerations about what is practicable and what will be accepted and appreciated. Of course the individual researcher will be influenced by his own competencies and evaluations. A central question is whether there are connections between narrow scientific discourses and broader social and political discourses. Are there connections between scientific problem-formulations, arguments, findings, and those pragmatic and political questions that the received view sees as antithetical to science?

Political Views on Truth: The Concept of Ideology

Truth has political consequences and so has research. Some people or groups of people may wish to hide certain truths because the publication of them would harm their interests. They may or may not have the power to determine whether research in such questions should be stopped or avoided. In some cases people have the power simply to repress the truth, to disseminate propaganda in favor of their own views or simply to produce fraud (16). In many cases, however, things are subtler, and people in power may, for example, think that the propaganda they disseminate is the truth. People in power will very often try to argue that their views and explanations are the best ones, and that their way of being informed makes their judgments better.

The word *ideology* was first used just after the French Revolution by Antonine Destutt de Tracy (17, p. 1–4). He was one of a group of philosophers whom the revolutionary Convention put in charge of the newly founded *Institut de France* to spread the ideas of the Enlightenment. Napoleon briefly supported the Institut until his personal despotism made such support inconvenient for advancing his own power and policies. De Tracy rejected both “innate ideas,” whether from God or biology as well as “established authority” whether religion or the state, as the sources

and foundation of knowledge. One can say that de Tracy was arguing that what we think and how we act is due to our upbringing and environment, to our interaction with the physical and social world. This view leads to the belief that, given the right environments, anyone can think and act as a responsible and intelligent citizen, and that, therefore, democracy is both a just and a workable form of government.

The notion of ideology was thus positive and progressive in its origin, but Napoleon quickly came to see matters differently, and the term came to be pejorative. As Napoleon's government evolved towards an empire supported by established religion, he faced inevitable criticism from liberals and republicans, people who wanted a democratically based republic, not a despotic emperor. Napoleon attacked the Enlightenment proponents of democracy, charging that they mislead the people by elevating them to a sovereignty they were incapable of exercising. Napoleon blamed these "ideologues" as he called them, for his defeat in Russia.

The Enlightenment philosophers had wanted to found a just system of government on a study of how human beliefs, needs and desires are shaped by various physical and social environments. Napoleon refers to this idea as "clouded metaphysics." For him, a system of government should be founded not on social theorizing, but rather on "knowledge of the human heart and . . . the lessons of history." It does not really matter what this vague phrase meant, since we know perfectly well what view Napoleon defended: the need for controlling, despotic, and imperial power in his own hands as emperor.

Gee (17) calls this form of argument "Napoleon's move" and sees it as exemplary in terms of one key way in which the term ideology has been used ever since in attacks on views one does not like. Napoleon used "ideology" as a term of abuse for a social policy which was in part or in whole derived from a social theory in a conscious way.

Napoleon's belief was explained by Karl Marx by Napoleon's position at the top of a particular social structure and his will to retain and enhance his power within that structure. According to Marx, it is the failure of the powerful in a society to realize that their views of reality follow from, and support, their positions of power, that creates ideology. Ideology is an "upside-down" version of reality. Things are not really the way the elite believe them to be; rather their beliefs invert reality to make it appear the way they would like it to be. Marx's move underscores the point that there is no escape from theory. The real question is: "What theories ought we to believe in and act on?" not "Whose experience is best?" since this latter question can only be answered on the basis of some theory. This does not, however, imply, as Marx stated, that anyone

who disagreed with his particular theory are simply engaged in "false consciousness".

It is a tendency of human beings to perceive their own benefits as being natural and to agree with findings, theories, ideas, methodologies etc. that confirm the legacy of those benefits. There is a tendency to support ideas, ideologies, and theories that are beneficial. Such mechanisms are very often unconscious. Psychological research has shown that people tend to collect information that verifies their beliefs and to neglect information that contradicts their beliefs (see e.g., 18). This is also true for scientific research and "paradigms." One famous case is the discovery of Sir Cyril Burt's research flaws which revealed that the scientific community sharing Burt's view about the importance of the genetic factor in intelligence ignored the fact that Burt's publications did not fulfilled fundamental requirements of sound scientific methodology (19).

Professional communities may be narrow in their perception and understanding of specific kinds of problems. That is why some groups are working for broader recruiting into important jobs such as university teachers/professors, directors of firms, and members of political parties and parliaments. The philosophy behind this endeavor is that a broader recruitment regarding gender, social class, and other characteristics can ensure more democratic decisions, broader collective horizon, broader criteria on what counts as quality, and in the end also better quality in the decisions that are made.

We may conclude this section by stating that there are obviously different groups in society with different interests in what kind of knowledge should be produced and disseminated. Such groups tend to develop different views and ideologies. The most dominant views tend to support the most influential and powerful groups. Each view tends to provide arguments in favor of itself and to dismiss other views as merely "ideology." An important part of such argument is that a certain view is true because it is based on a certain method (e.g., a privileged form of observation or a privileged form of interpretation). The political battle moves one step up to questions of scientific methods and epistemologies.

The Political Roles of Epistemologies, Methodologies, and Philosophies of Science

There exist many research methods, many textbooks, many knowledge claims, and many theories about the best way to obtain knowledge. Such

theories tend to be connected to a "Zeitgeist." Today the word "post-modernism" is widely used in this context and is also applied to research methods. In the 1970s, forms of Marxism and critical theory were influential. Before that logical positivism and empiricism were commonly used. (The main bulk of research may, however, remain totally unaffected by theoretical discourses on research and methods).

Epistemologies can be seen as interpretations and generalizations of (successful) scientific research. Classical empiricism and classical rationalism were two competing interpretations of the scientific method following the scientific revolution inaugurated by Copernicus and consummated by Newton. Those epistemologies tried to establish a secure basis for obtaining knowledge. They were foundational theories: seeking a firm foundation and secure procedures for obtaining knowledge.

In my own interpretation, epistemological theories may be classified according to their preferred information sources:

Simplified relevance criteria in four epistemological schools (From Hjørland, 20)			
Empiricism	*Rationalism*	*Historicism*	*Pragmatism*
Relevant: Observations, sense-data. Induction from collections of observational data. Intersubjectively controlled data.	*Relevant:* Pure thinking, logic, mathematical models, computer modeling, systems of axioms, definitions and theorems.	*Relevant:* Background knowledge about pre-understanding, theories, conceptions, contexts, historical developments and evolutionary perspectives.	*Relevant:* Information about goals and values and consequences both involving the researcher and the object of research (subject and object).
Non-relevant: Speculations, knowledge transmitted from authorities. "Book knowledge" ("reading nature, not books"). Data about the observers' assumptions and pre-understanding.	*Low priority* is given to empirical data because such data must be organized in accordance with principles which cannot come from experience.	*Low priority* is given to decontextualized data of which the meanings cannot be interpreted. Intersubjectively controlled data are often seen as trivia.	*Low priority* (or outright suspicion) is given to claimed value-free or neutral information. For example, feminist epistemology is suspicious about the neutrality of information produced in a male dominated society.

As can be seen from this table, the question of "Social And Cultural Awareness and Responsibility" goes to the heart of epistemological theories. While "empiricism" and "rationalism" try to avoid such issues, pragmaticism explicitly considers them a central part of scientific method. Historicism takes a stand in the middle in considering contexts (and thus tends to reflect cultural awareness). It should be mentioned that this classification of epistemologies is a crude one. It should also be mentioned that some epistemologies may be better suited for some domains, while other epistemologies may be more relevant for other domains. One should not, however, confuse positivism (or empiricism) with science. Positivism is a theory about science as well as other domains, and it is today generally regarded a problematic theory of science.

While empiricism and rationalism are foundational, historicism and pragmaticism are anti-foundational theories. They do not try to establish absolute procedures or methods for gathering knowledge, but they find that some epistemologies may be harmful and should be corrected. Koch (21, 22) introduced the concept of *epistemopathology* as a harmful theory on how to establish knowledge. This is very much the same idea that was developed by the Swedish-Danish physician and philosopher Poul Bjerre (23). In their view, a person or a research program may be healthy or ill. Medical science should not primarily develop theories on how to develop health but how to cure specific kinds of illness. In much the same way epistemology should not prescribe how to make good science, but should instead keep to the more modest aim to avoid certain kinds of mistakes in research.

Different research methods, methodologies, and epistemologies are not neutral. They are not neutral regarding their ontological presuppositions. The experimental method is, for example, considered very successful in "psychological" social psychology. This method has, however, a very special understanding of the word "social." As shown by Danziger (24), this method can only be used for investigating social effects that are proximal, local, short-term and decomposable. The method presupposes a limited and special understanding of social ontology. Nor are methods neutral regarding the kind of knowledge produced and the kind of interest served. Of course, the political aspects of selecting research methods are much more indirect and hidden and difficult to reveal than is the direct engaging in or avoidance of specific research questions.

How are the relations between research methodology and political conviction to be formulated? Andersen's is perhaps the first empirical investigation of this question. He writes:

> The predominant trend in the social sciences during the past few decades, however, has obviously been to ascribe the empirical-analytical positions and ideals from the "hard" natural sciences with a stigma of right-wing conservatism, and to associate the "soft" ideals from the humanities and hermeneutics with the left" (Andersen, 1, p. 100).

It should be mentioned, however, that this picture is not static. When logical positivism flourished at the beginning of the 20th century, it was seen by many as progressive, whereas holistic views (e.g., gestalt psychology) were at that time often seen as being reactionary. What may serve conservative interests in some cultures may serve progressive functions in other cultures. Before the Reformation, the Pope defended a realist philosophy that implied that only he and the Catholic Church were qualified to interpret the Bible. He fought against the nominalist view that an individual person could do his own interpretation. At that time nominalism can be seen as having a progressive tendency. However, in the 20th century this may be reversed. People are more isolated from interpretative communities and exposed to mass media. The tendency to neglect a deeper reality behind the surface of immediate perception may now serve a status quo. The classical philosophical problem concerning realism versus nominalism represented in the Middle Age (and represents also today) an important political question. So, a conclusion may be that the political role and consequences of different methodologies and epistemologies are not constant but are culturally relative.

How then, can we explain the present tendency, in at least some countries, to ascribe to the empirical-analytical positions and ideals from the "hard" natural sciences a stigma of right-wing conservatism, and to associate the "soft" ideals from the humanities and hermeneutics with the left? I shall try to explain this in the way I understand these connections.

One example from librarianship might be to see the services of libraries from the perspective of enlightenment versus a commercial perspective. In the latter case, users are considered customers, in the former case, they are perhaps considered to be like explorers or "researchers." These perspectives will suggest very different research questions and research methods. The customer perspective will tend to be associated with best-seller statistics, empirical surveys of "information needs and uses," and related methods, while the enlightenment perspective tends to focus less on empirical studies of users' behavior and more on trends and qualities in the published literature and the production of information associated with historical and theoretical studies and hermeneutical interpretations.

More generally, empirical-analytical positions and ideals from the "hard" natural sciences tend to be associated with a stigma of right-wing conservatism because these methods tend to describe a status quo in society, while the "soft" ideals from the humanities and hermeneutics tend to be associated with the left because they tend to question the assumptions about "the given". They tend, for example, to question the relations between what is quality and what is most visible in the market. They also tend to examine information needs, relevance criteria, user behavior etc. as determined by socio-cultural factors, whereas the more positivistic methods tend to associate such concepts with individual characteristics (often indirectly supposed to be connected with physiological characteristics), thus preferring methodological individualism for methodological collectivism/holism.

In other words, even on the methodological plane, there exists a connection between the liberal view that each person is mainly responsible for his own fate and positivist methods. On the other side is the socialist view that each person's fate is mainly determined by economic, political and social forces, and "critical" methodologies such as hermeneutics and discourse analysis. If this is the case, how can we obtain objectivity in science? Many (post)modern epistemologists do not find that science should aim at objectivity. There is a tendency to associate the positivist positions and ideals with attributes such as "hard" and "objective," whereas ideals from the humanities and hermeneutics are associated with "softness" and "subjectivity". This is in my opinion a wrong and harmful confusion.

First, it is important to realize that subjectivity is not the logical opposite of objectivity:

> We shall not dwell at such length on the notion of subjectivity, insofar as it refers to the opinions, beliefs, and feelings of conviction of this or that individual. Let us mainly note that this is not in any way the logical opposite of objectivity. People said to be "reasonable" or "sensible" will often give their (subjective) agreement to a well-corroborated (objective) statement such as "when an apple becomes detached from a tree, it falls down and does not fly towards the stars." In that sense, obviously, any probabilistic statement, insofar as some individual expresses his support for it, can always be said to be subjective. But this does not exclude a priori its objectivity. An objective law, such as the law of universal attraction, insofar as I believe it to be "true" can also be said to be subjective, since it does, in fact represent my personal opinion. (25, p. 26–27).

Best (26) conclude his review of Harding (27): "As Harding ably shows, the politicization and pluralization of knowledge is not necessarily a threat to (strong) objectivity, but one of its preconditions." This quotation is important. It says that what are often regarded as soft, subjective methods are in reality a precondition for "strong objectivity." Harding seeks to replace the "weak objectivity" of the male-dominated scientific world—a pseudo-objectivity riddled with value-laden theories, political biases, domineering interests, commodified research, and blinkered ethical vision—with the "strong objectivity" that comes only from a 'robust reflexivity" attained through a rigorous self-scrutiny of one's socio-epistemological starting point. Harding notes that the very concept of "value-free knowledge" is oxymoronic since the goal of being disinterested is an interest in itself, and it allows science to separate fact from value and abrogate responsibility for its actions. Since "value-free"" theories are impossible, Harding argues, one might as well acknowledge the values that inform one's research, be it to make money or to improve the lives of the sick, debate their comparative validity, and struggle to have science informed by progressive interests.

An Example From LIS Research: Algorithms For Information Retrieval

LIS research is very heterogeneous. It spans issues related to computer science to classification to cultural studies and the study of information behavior of high school students. Few people have examined the ethical basis of LIS-research, Frohmann (28) being an important exception. I shall try to explicate the consequences of the epistemological principles outlined above by discussing an example from the "hard" end of the spectrum of LIS studies.

We all use Internet search engines and are rather impressed by their capabilities. How does the question of social and cultural awareness and responsibility relate to their principles and design? Is this not a purely technological problem where questions of values and goals are misplaced?

In general, when an algorithm retrieves something, other things are left behind. Now, if an algorithm ranks a page high, other pages are ranked low. In both cases the algorithms provides priority to what should be visible and what should remain invisible to the user. In practical reality the programmers of the algorithm have made a decision about what should be available to the user. This is a highly political decision with many levels.

One level is whether the retrieval process should be controlled and understood by the users, or if it should be performed behind the back of the user. "Classical" bibliographical databases allowed such user control to a large degree, but were not considered "user friendly." Most researchers, however, consider that both kinds of systems are not "user friendly" but are unfriendly in different ways. They do not recognize that the concept of user-friendliness is not a neutral concept, but involves a dilemma between an immediately easy search versus a search in which the user has to invest some time learning the system, but in return is able to gain a more conscious and controlled search.

Another issue is related to unequal access to different kinds of information. According to Lawrence and Giles (29), search engines on the Internet are typically more likely to index sites that have more links to them (more "popular" sites). They are also typically more likely to index US sites than non-US sites (AltaVista is mentioned as an exception), and more likely to index commercial sites than educational sites. This may or may not be the result of deliberate decisions made by the systems designers and owners. From a scientific and democratic point of view, it is of course essential to reveal such bias in information systems which, by the way, also may have a strong presence in ordinary scientific information systems. In the social sciences, for example, journals from the developing countries seems to be neglected in the dominant databases (30).

Even if the issues mentioned above were taken into consideration, research in IR would still be based on epistemologies that claim neutrality, but are not neutral. Julian Warner (31) takes a step toward considering inherent weaknesses in current approaches to Information Retrieval. I think he is right in making the point that the IR-tradition has been built on the assumption that the system should provide a set of records that satisfy a query. What an IR system in his view should do is to enlarge the users' capacity for informed choice between the representations of objects in the given universe of discourse. "Such an enhanced capacity for informed choice broadly corresponds to exploratory capability. It should also be regarded as analogous to a sense of cognitive control over, or ability to discriminate between, representations of objects" (31, p. 36).

The capacity of different forms of classification to contribute to such discriminatory powers should be considered relative to other kinds of subject access apart from traditional classification codes (32). As we try to demonstrate in our research review, there is no reason to presume that a given access point should have a fixed (constant or universal) informational value across different domains, discourses, or paradigms. Whereas

traditional IR-research considers a match between query words and words in document-representations to be independent or constant in languages, the domain analytic approach considers the semiotic systems to be adapted to different tasks. For example, in constructing an algorithm for IR, we do not consider the same algorithm to be equally efficient for different kinds of questions. Certain kinds of questions are better served by algorithms utilizing descriptors and title words, while other kinds of questions are better served by algorithms utilizing reference retrieval. In chemistry, for example, it may be the case that questions concerning methods to produce chemicals are better served by reference retrieval while questions about specific substances are better served by algorithms based on controlled vocabulary (cf., Seglen, 33). In other words: different algorithms must utilize different access points, and different access points are more suited to some kind of questions, whereas other access points are more suited to other questions. Different algorithms thus are differently suited to different kinds of questions. One may ask if a given algorithm is thus better suited for some kinds of questions compared to other questions, and to demand to know in what way algorithms are making policy choices. What kind of policy different algorithms are serving can only be uncovered by research.

This conclusion is very much in line with findings of Introna & Nissenbaum (34), who argue that search engines raise not merely technical issues but also political ones. Their study of search engines suggest that search engines systematically exclude (in some cases by design and in some cases accidentally) certain sites, and certain types of sites, in favor of others, systematically giving prominence to some at the expense of others. They argue that such biases, which would lead to a narrowing of the Web's functioning in society, run counter to the basic architecture of the Web as well as the values and ideals that have fuelled widespread support for its growth and development. They consider ways of addressing the politics of search engines, raising doubts whether, in particular, the market mechanism can serve as an acceptable corrective.

Conclusion: I have argued above that algorithms are never neutral and that it is wrong to regard questions about the development of information systems as neutral. Some kinds of bias are unavoidable, but this should not be regarded as problematic as long as social and cultural awareness and responsibility are considered in their construction. The important thing is to bring pragmatic and ethical criteria into the heart of LIS.

Relevance and Users' Information Needs: Who Is In Control?

The concepts of *relevance* and *users' information needs* are central concepts in LIS. No research or practice can be carried out without considering what is relevant and what the users' information needs are. One cannot buy a document for a library or index one in a database without involving problems related to these concepts. They can, however be defined and understood in very different ways with very different consequences for social and cultural awareness and responsibility. The two concepts are deeply related, because when we claim that some documents or information is relevant to a user, we automatic claim that the user needs this information—and vice versa.

The dominating trend in LIS is to measure relevance and information needs and to base these measures on the individual or on a (potential) user group. By doing so, the concepts have become psychologized. Superficially this may sound progressive. A deeper reflection will reveal, however, that this need not be the case. Indirectly such an approach supports dominant views and commercialism at the expense of enlightenment and critical understanding. Relevance is an objective concept that is not identical with the subjective concept of relevance assessments. A user may, for example, change his view of what is relevant to a certain problem based on deeper knowledge of the issue in question. This distinction between objective and subjective relevance and needs is very important but is mostly neglected in the literature (possibly because it is so easy to make empirical research based on user surveys) (35).

When a user searches for information about some issue, he or she is confronted with many knowledge claims and information sources. As argued in the previous sections, these knowledge claims cannot be seen as neutral, but reflect different values, interests, and "paradigms." What the user needs then is not so much a direct answer to his or her needs as to be informed about different possibilities. He or she needs some kind of metadata that makes it possible to navigate consciously in the ocean of information utilizing even small cues that may help determine the quality and inherent values in the available information.

Traditional views of users and relevance criteria tend to see the user as an isolated person in relation to the information searched for (dualism), and the information as factual and true. More social and culturally

oriented views see the user as part of different discourse communities and thus more or less influenced by different viewpoints, which always affect what information is sought. In this case the user's ability to formulate questions is more or less determined by influences from discourse communities and paradigms. Because of this, information systems cannot just be seen as neutral tools *to answer* questions, but should also be seen as tools to help *formulate questions* (and not just the way this is approached in typical studies of *query expansion*). Social and cultural awareness and responsibility imply the need for a mapping of basic views and values related to a potential question. In other words the users needs help to identify basic paradigms and epistemologies in the information sought. This changes the study of user needs and relevance from "cognitive science" to social and philosophical studies of knowledge production and dissemination (as, for example "discourse analysis").

Conclusion: Traditional research in LIS focuses on the users' relevance criteria and information needs. This seems to bring the user in control in relation to his or her own information supply. However, because such studies overwhelmingly are based on assumptions about human beings related to behaviorism, this impression is not correct. Information needs are not essentially "empty containers" that can be identified by studying the individual. Students normally cannot express their educational needs and thus their information needs. Such needs are normally determined by teachers and by the educational policy in a society. Information needs are needs to solve some problem for which knowledge has been produced. There may exist consensus regarding the relevance of given information to given problems, or there may exist different theories or paradigms with conflicting views. In order to give the user influence over his own information provision, such knowledge should be communicated to him. If this is not done, the user can only formulate questions from his present position without knowing alternative possibilities. The user may falsely be convinced that his question was adequate because it was able to extract an answer from the system. These answers may, however, all be limited to a view or paradigm already contained in the question—without the user being aware of this.

Conclusion

This paper has demonstrated that questions relating to *Social And Cultural Awareness and Responsibility* are central to Library, Information and Documentation Studies. They are deeply related to the basic func-

tions of libraries, documentation, and information systems. They are deeply related to the core concepts of the discipline, and they are deeply related to any discourse about methods for knowledge production and dissemination.

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