

what is contributed by a subject when 'knowing' an object (Note 2, p. 261).

So—to 'know' things involves processing information about those things within the physical symbol system of the human mind, and within the context of a world view which the human subject brings to the perception of an object. Cognitive science deals with these elements and processes of 'knowing'.

If *I* have understood the author (and those he cites) correctly, then the conclusion must be that the cognitive view (movement, paradigm, orientation, science) is of very great relevance to the development of an 'information science'. If we can understand and, more to the point, *gain access* to the processes and constituents of personal knowledge and world views, we ought to be in a better position to present information effectively, to organize systems for ease of use, and to understand information-seeking behaviour.

De May goes some way towards helping us in this task. His treatment of artificial intelligence as a problem within the cognitive view is stimulating and, to a novice in the field, instructive. The way in which he presents alternative and often competing models of science (positivism, logical positivism, science of science, and the Kuhnian paradigm) is similarly accessible and informative—one mark of the author's ability is his skill in presenting other writers' ideas in better English than some of the originals!

In Part 2 the idea of the 'paradigm' is further developed in the context of bibliometric studies which are integrated in a way which gives further substance to its definition as a social phenomenon and insights into the development of scientific 'world views'.

Finally, in part three, the author brings together his ideas on artificial intelligence, the paradigmatic model, world views, and perception (in which field he makes a novel contribution) into a stimulating discussion of the role of puzzle-solving in science and the dynamics of conceptual systems.

'The cognitive paradigm' is not a *typical* work of information science but it ought to be on the shelf of every teacher and researcher in the field and on the reading list of any student or practitioner seriously interested in how those they serve are likely to set about 'knowing'.

TDW

Ching-chi Chen and Peter Herson.

Information seeking: Assessing and anticipating user needs. New York: Neal-Schuman Publishers Inc., 1982. 205 pp. ISBN 0 918212 50 2. £16.00.

In spite of the general character of its title, this book is, in fact, the report of a single investigation: 'A regional investigation of the citizen's information needs in New England', supported by the Office of Libraries and Learning Technology of the US Department of Education.

The research draws upon the earlier studies carried out in Baltimore (Warner *et al.*, 1973), Syracuse (Gee, 1974), Seattle (Dervin *et al.*, 1976) and California (Palmour *et al.*, 1979) but had distinctive features:

1. Other studies had confined themselves to a single state or city: the New England study covered six New England States—Maine, Vermont, New Hampshire, Massachusetts, Connecticut and Rhode Island.

2. Previous investigations dealt mainly with non-work problems which gave rise to information-seeking behaviour.
3. The study tested the validity of telephone interviewing, whereas previous studies had used either face-to-face interviewing or self-completed questionnaires.

Other differences existed to which the authors draw attention, but these appear to the reviewer as the most significant differences.

Given the body of previous research in the USA there can be little surprise at the main findings of the investigation, which are reported in two central chapters. Chapter 3 sets out the results for 'Information-seeking patterns' in general and includes a ranking of the 'major situation categories'. Technical job-related problems lead the list with 13.5 per cent of all situations, followed closely by 'consumer issues' (13.3 per cent) and less closely by problems connected with getting or changing jobs (10.0 per cent).

There are demographic-related differences in the distribution of problem types; for example, problems related to education rank higher in the 16–24 age group than in other groups, consumer issues rank first for those with high school education or less, whereas technical job-related problems rank first for the two groups with higher educational levels, and a similar pattern of results was found in relation to household income levels.

As in most other user studies:

Regardless of situation categories and their placement within the fabric of work and non-work needs, respondents were united in a heavy emphasis on interpersonal information providers. Past experiences, communication with friends, neighbors, and co-workers, provided the basis for dealing with many information needs arising from everyday living (p. 53–54).

Whereas:

Respondents are most likely to consult libraries or professional people out of a plan and with intent. Because institutional providers are not always readily accessible, the public is more likely to utilize them after some forethought (p. 63).

The issue of library use and non-use is taken up in Chapter 4 and two quotations can be given which supply the essence of the conclusions here:

Libraries ranked only ninth among information providers used by the 2400 respondents and were considered as most or least helpful in only three per cent of the situations in which they were consulted (p. 84).

and when respondents were asked to identify the *unsatisfactory* aspects of the *most* helpful provider, when this *was* the library:

46.6 per cent emphasized the relevance and accuracy of the response as the major weakness of the source. In addition 59.9 per cent of those regarding the library as least helpful were disappointed with precisely the same point . . . (p. 102).

Clearly, there is much scope for improvement in library services in New England and in their final chapter Chen and Hernon identify four areas within a broad marketing strategy for libraries to work on:

1. Market penetration.

2. Information services development.
3. User group expansion.
4. Diversification.

This is an excellent report on a very good piece of research: I have only one methodological quibble and that is to take issue with the statement that a mail questionnaire 'would not yield a high return rate'. The chief reason for low return rates in mail surveys is inadequate method, and methods for ensuring high return rates do exist and have existed for some time (*see*, for example, Robin, 1965). The response rate in this survey was 40 per cent, which is not a very good rate even if it did result in 2400 usable responses, because it means that the researchers are unable to say anything about the majority of the population.

Whether the telephone survey *in this situation* was better than a mail questionnaire is a different question. In that it ensured response from at least *some* people who would not have answered a questionnaire it was probably better, but a face-to-face interview survey would have been even better. In crude terms the telephone survey is undoubtedly less costly, but interview surveys typically produce response rates of over 90 per cent, so what is the comparative cost per completion and, more important, what is the value of the information foregone in a low response rate?

TDW

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John Van Maanen, J. M. Dabbs and R. F. Faulkner.
Varieties of qualitative research. Beverly Hills: Sage, 1982. 152 pp. ISBN 0 8039 1869 1. £14.35.

This book is Volume 5 in the series *Studying organizations: innovations in methodology* and consists of two reports on qualitative research investigations, a paper on 'Making things visible' which reviews various techniques such as time-lapse photography and computer graphics as aids to the detection of recurrent patterns in organizational activity. This paper, unlike perhaps the majority of writings on qualitative techniques, makes the point that:

We cannot participate in everything around us and must depend upon outside observation and objective measures for many of our models, analogs, or metaphors.

From the point of view of this writer, a fourth paper on the analysis of