

REFERENCES

1. POPPER, KARL. *Objective knowledge: an evolutionary approach*. London: Oxford University Press, 1972.
2. BROOKES, B. C. The foundations of information science. Part 1: philosophical aspects. *Journal of Information Science*, 2(5), October 1980, 125-133.
3. SERRAI, ALFREDO. *Tempi di annuallia bibliotecaria*. Rome: Bulzoni, 1981, pp. 78-98.
4. GALLINA, PAUL LEONARD. Karl Popper's 3 worlds and some considerations for information science. In: *Proceedings of the 11th Annual CALS Conference, Halifax, May 24-26 1983*. Perth, Ontario: Canadian Association for Information Science, 1983, pp. 195-203.
5. NEILL, S. D. The reference process and the philosophy of Karl Popper. *RQ* 24(3), Spring 1985, 309-319.
6. SWANSON, D. R. Librarians and the growth of knowledge. *Library Quarterly*, 50(1), 1980, 112-134.
7. DERVIN, BRENDA. Useful theory for librarianship: communication not information. *Drexel Library Quarterly*, 13(3), July 1977, 16-32.
8. DERVIN, BRENDA. *The information needs of Californians - 1984*. Report No.2: context, summary, conclusions, implications, applications. Sacramento, California: State Library, 1984.
9. DERVIN, BRENDA and FRASER, BENSON. *How librarians help*. Sacramento, California: California State Library, 1985.
10. DERVIN, B., ZWEIZIG, D., BANISTER, M., GABRIEL, M., HALL, E. and KWAN, C. with BOWEN, J. and STAMM, K. *The development of strategies for dealing with the information needs of urban residents: phase 1 - the citizen study. Final report on Project No. L00351A, Grant No. OEG-0-747308 for US Office of Education, Office of Librarians and Learning Resources*. Washington, DC: US Office of Education, 1976.
11. DERVIN, BRENDA. *An overview of sense-making research: concepts, methods and results to date. Presented at the International Communications Association Annual Meeting, Dallas, May 1983*. Seattle, Washington: School of Communications, University of Washington, 1983, p. 18.
12. DERVIN, BRENDA. The everyday information needs of the average citizen: a taxonomy for analysis. In: KOCHEN, MANFRED and DONOHUE, JOSEPH C., eds. *Information for the community*. Chicago: American Library Association, 1976, pp. 19-38.
13. DERVIN, BRENDA. Useful theory for librarianship: communication not information. *Drexel Library Quarterly*, 13(3), July 1977, 16-32, p. 20.
14. DERVIN, BRENDA. More will be less unless: the scientific humanization of information systems. *National Forum*, 63(3), 1983, 25-27.
15. DERVIN, BRENDA. Useful theory for librarianship: communication not information. *Drexel Library Quarterly*, 13(3), July 1977, 16-32, p. 23.
16. DERVIN, BRENDA. Mass communicating: changing conceptions of the audience. In: RICE, RONALD E. and PAISLEY, WILLIAM I., eds. *Public communication campaigns*. Beverly Hills: Sage Publications, 1981, 71-87, p. 74.
17. *Ibid.* p. 75.
18. DERVIN, BRENDA, JACOBSON, THOMAS L. and NILAN, MICHAEL S. Measuring aspects of information-seeking: a test of quantitative/qualitative methodology. In: BURGOON, M., ed. *Communication yearbook 6*. Beverly Hills, Sage Publications, 1982, 419-444, p. 424.
19. *Ibid.* p. 425.
20. DERVIN, BRENDA. *An overview of sense-making research: concepts, methods and results to date. Presented at the International Communications Association Annual Meeting, Dallas, May 1983*. Seattle, Washington: School of Communications, University of Washington, 1983, p. 4.
21. *Ibid.*
22. *Ibid.* p. 25.

Special librarians, in industrial and scientific research organisations, dealing mainly with journal and report literature, have had to be concerned about smaller packages of knowledge. Thinkers such as Ramganathan, Farradane, Taylor and Belkin have worried more about access to smaller items of information than have so-called traditional librarians, whose collections have been accessible using large-scope subject categories as in LCSH and the general classification schemes.

The early cataloguers were not unaware of the problem of individual point of view. Cutter wrote: 'It is true that no system of classification can bring together all related works. The arrangement that suits one man's investigations is a hindrance to another's'.⁷⁶ Nor is the catalogue any better: 'No catalogue can exhibit all possible connections of thought. Enough if it exhibit the most common, and give some clue for tracing the rarer ones. Those that claim perfection for any system show that they have no idea of the difficulties to be overcome'.⁷⁷

Melvil Dewey, addicted to the practical and the economic, was fully aware that his system was not perfect: 'The impossibility of making a satisfactory classification of all knowledge as preserved in books, has been appreciated from the first, and nothing of the kind attempted. . . . Theoretically', he says of this decimal scheme, 'the division of every subject into just nine heads is absurd'.⁷⁸

The current re-thinking of intellectual access to knowledge stores arises from several sources: research programmes based on cognitive science theories such as Dervin's, machine information system designs such as Belkin's and the merging of AI and IR as exemplified in Smith and Warner's taxonomy - all wrestling with the difficulties of serving individual needs. These are radically different vectors for librarianship and for the discipline of information science because of the move away from stores of knowledge to stores of knowledge and information *per se* - in W3 text to be sure, but stored in invisible electronic pulses and not in physical packages to be shelved.

The history of the development of intellectual access to the store of knowledge is a history of the tension between the fluid uniqueness of the individual inquirer and the essential stability and concreteness of the store of knowledge itself. One of the most important problems facing the next generation of librarians will be the relative 'fluidity' of information stored electronically. The potential for losing first editions of any publication with the ability we have in a computer store to erase, correct or change without leaving a paper trail threatens the credibility of publishers and authors when the corrections cannot be checked against the originals. There is, of course, the promise, which Belkin and others are working to bring to fruition, that the fluidity of the computer will be a more appropriate store of knowledge for the searching process of the unique and fluid inquirer.

However, as long as the store has to be accessed in graphic (print or picture) form, the problem of linking individual and store will remain; that is, as long as we must use our five senses to perceive the world. As Cutter noted, it is a difficulty in the nature of things. Information does exist 'out there' and we must deal with it from 'in here'.

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23. *Ibid.* p. 8.
 24. *Ibid.* p. 6.
 25. *Ibid.* p. 6.
 26. NEILL, S. D., BROOKES, POPPER, and objective knowledge. *Journal of Information Science*, 4(1), March 1982, 33-39.
 27. POPPER, KARL. *Objective knowledge: an evolutionary approach*. London: Oxford University Press, 1972, p. 74.
 28. POPPER, KARL. *Unended quest: an intellectual autobiography*. LaSalle, Illinois: Open Court Publishing Co., 1976, pp. 181, 182.
 29. *Ibid.* pp. 187, 195.
 30. POPPER, KARL. *Objective knowledge: an evolutionary approach*. London: Oxford University Press, 1972, p. 116.
 31. FARADANE, JASON. Fundamental fallacies and new needs in classification. In: FOSKETT, D. I. and PALMER, B. I., eds. *The Sayers memorial volume*. London: Library Association, 1961, p. 128.
 32. O'HEAR, ANTHONY. *Karl Popper*. London: Routledge & Kegan Paul, 1980, pp. 198-199.
 33. POPPER, KARL. *Objective knowledge: an evolutionary approach*. London: Oxford University Press, 1972, pp. 118-119.
 34. O'HEAR, ANTHONY. *Op. cit.* p. 199.
 35. POPPER, KARL. *Objective knowledge: an evolutionary approach*. London: Oxford University Press, 1972, p. 116.
 36. INOSE, HIROSHI and PIERCE, JOHN R. *Information technology and civilisation*. New York: W. H. Freeman & Co., 1984, pp. 129-130. (A report to the Club of Rome, Tokyo, 1982).
 37. DERVIN, BRENDA. Useful theory for librarianship: communication not information. *Drexel Library Quarterly*, 13(3), July 1977, 16-32.
 38. *Ibid.* p. 23.
 39. POPPER, KARL. *Objective knowledge: an evolutionary approach*. London: Oxford University Press, 1972, pp. 162-163.
 40. *Ibid.* p. 166.
 41. *Ibid.* pp. 145, 146.
 42. *Ibid.* p. 68, footnote.
 43. *Ibid.* p. 165.
 44. *Ibid.* pp. 166-167.
 45. *Ibid.* pp. 166-167.
 46. *Ibid.* p. 166.
 47. DE GOLLIER, ERIC. Current trends in theory and practice of classification. In: ATHERTON, PAULINE, ed. *Classification research*. Copenhagen: Lunggaard, 1965, 9-14, p. 12.
 48. BELKIN, N. J., SEEGER, T. and WERSIG, G. Distributed expert problem treatment as a model for information system analysis and design. *Journal of Information Science*, 5(5), February 1983, 153-167.
 49. RANGANATHAN, S. R. *The colon classification*. New Brunswick, NJ: Rutgers University Graduate School of Library Science, 1965, pp. 33-34.
 50. FARADANE, J., POULTON, R. K. and DATTA, S. Problems in analysis and terminology for information retrieval. *Journal of Documentation*, 21(4), 1965, 287-290.
 51. FARADANE, JASON. *Op. cit.*
 52. TAYLOR, R. S. Question-negotiation and information seeking in libraries. *College and Research Libraries*, 29(3), May 1968, 178-194, p. 179.
 53. *Ibid.* p. 181.
 54. *Ibid.* p. 192.
 55. *Ibid.*
 56. *Ibid.* p. 186.
 57. *Ibid.*
 58. *Ibid.* p. 188.
 59. KENT, ALLEN. Unsolvable problems. In: DEBONS, ANTHONY, ed. *Information science: search for identity*. Proceedings of the 1972 NATO Advanced Study Institute in Information Science, 210
60. *Ibid.* pp. 306-307.
 61. WILSON, T. D. On user studies and information needs. *Journal of Documentation*, 37(1), 1981, 3-15, p. 5.
 62. ZWEIZIG, DOUGLAS and DERVIN, BRENDA. Public library use, users, uses: advances in knowledge of the characteristics and needs of the adult clientele of American public libraries. In: VOIGT, MELVIN J. and HARRIS, MICHAEL H., eds. *Advances in librarianship*, Vol. 7. New York: Academic Press, 1977, 231-255.
 63. WILSON, T. D. *Op. cit.* p. 9.
 64. DERVIN, BRENDA. An overview of sense-making research: concepts, methods and results to date. Presented at the International Communications Association Annual Meeting, Dallas, May 1983. Seattle, Washington: School of Communications, University of Washington-
 65. WILSON, T. D. *Op. cit.* p. 11.
 66. BELKIN, N. J., ODDY, R. N. and BROOKS, H. M. ASK for information retrieval: part 1. Background and theory. *Journal of Documentation*, 38(2), 1982, 61-71, p. 63.
 67. DERVIN, BRENDA. Useful theory for librarianship: communication not information. *Drexel Library Quarterly*, 13(3), July 1977, 16-32, p. 19.
 68. BELKIN, N. J., ODDY, R. N. and BROOKS, H. M. *Op. cit.* p. 63.
 69. *Ibid.* p. 65.
 70. BELKIN, N. J., SEEGER, T. and WERSIG, G. *Op. cit.* p. 154.
 71. DERVIN, BRENDA. Useful theory for librarianship: communication not information. *Drexel Library Quarterly*, 13(3), July 1977, 16-32, p. 27.
 72. BELKIN, N. J., SEEGER, T. and WERSIG, G. *Op. cit.* p. 154.
 73. *Ibid.* p. 157.
 74. SMITH, LINDA C. and WARNER, AMY J. A taxonomy of representations in information retrieval system design. *Journal of Information Science*, 8(3), April 1984, 113-121.
 75. *Ibid.* p. 118.
 76. CUTTER, C. A. Library catalogues. In: *Public libraries in the United States of America: their history, condition, and management*. Special report, Department of Education, Washington, DC: Government Printing Office, 1876, p. 530.
 77. *Ibid.* p. 541.
 78. DEWEY, MELVILLE. A decimal classification and subject index. In: *Public libraries in the United States of America: their history, condition, and management*. Special report, Department of Education, Bureau of Education, Washington, DC: Government Printing Office, 1876, p. 625.

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