Lessons from machine-readable Chinese applied to managing retrieval of graphical and textual information

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During the last 20 years the medical and cognitive science literatures have reported several experiments on North American subjects which indicate a right cerebral hemisphere (left visual field) preference in performing spatial-gestalt tasks. In the last decade studies conducted with Japanese subjects show a right cerebral hemisphere (left visual field) preference for recognition of the ancient Kanji ideograms but a left cerebral hemisphere (right visual field) preference for recognition of the phonemic Kana scripts. A study involving Chinese students enrolled at the University of California in 1979 produced the same results.

It is obvious that all cultures utilize different cerebral storage and retrieval techniques for different types of visual images. In some cultures, the organizing and accessing of such images without a linear or alphabetic sequence has been achieved by focusing on the "Appearance" (the shape or complexity) of the image. Dictionaries of Chinese and Japanese are organized by the number of strokes required for each character so characters are grouped not according to similarity of sound or meaning, but by format. Information retrieval systems designed to manipulate these scripts incorporate the same breakdown of characters but may also add a further breakdown by "general shape" as well. Thus, the format, pattern or presentation of the image is of greater importance to the retrieval and indexing procedures than the actual meaning or concept to be expressed.

Many disciplines and industries rely on graphical information more than conventional printed documents. In such industries, users of information systems will often verbalize their information need in terms of format or "type of material" needed, before specifying a subject or area of interest. For example, a petroleum geologist will begin his/her search by specifying their need for a 'well file', 'core analysis', 'report' or 'seismic'. They may specify further a particular type of report or seismic or scale (of map). Finally, they may request a specific area name or set of geographic coordinates. (Many areas of interest may defy geographic naming in any conventional sense.)

Perhaps what librarians have perceived as a reluctance on the part of engineers, cartographers, geologists and draftspersons to involve themselves in lengthy keywording

of their materials is merely friction between two styles of information processing; the well-entrenched, alphabetic literacy; and the other spatial. In fact, subjecting graphical material to retrieval by excessive bibliographic description may not only be wasteful of human and machine resources, it may be superfluous to the most often used retrieval methods. However, retrieval of these materials should be integrated with the retrieval of related documents by keyword. Implications for intelligent searching aids in map and drawing systems are discussed in relation to traditional indexing and cognitive styles.