

Fig. 12: Shows a selection of the repertoire of icons available for modifying, revising or changing a choice of search terms or to process the resulting set of retrieved books. These icons are supposed to be perceived as action buttons while navigating through the Book House at different stages of the search.

The most important issue regarding the use of icons is of course their comprehension by the user. This is not only a function of their form and content but, more importantly, the context within which they are viewed, e.g. where in the retrieval task one is. How a user interprets an icon in a given situation also depends on his/her intentions/experience at the given moment. The challenge for the designer is to provide a match between the context of the information retrieval task and the icons, and enable the user to perceive the latter in the intended fashion. The approach to constructing these icons was to use index terms as the basis for imagining and drawing an appropriate pictorial analogy. The meaning of these icons were tested during the design phase by three groups of end users: children, adults and librarians. Children and adults associated different meaning with the icons. Therefore the meaning of icons in the children's database are different from icons in the database for adults.

Display Retrieved Books

The "see books" phase of the dialogue is entered from each of the four strategies: After either the analytical specification or the browse in pictures selection has

been made, after a model book title has been specified in a find similar books dialogue, or after the user has desired to browse in book descriptions. A description of the first book of the current set is now displayed on the screen (figure 9). The number of the books in the current set is displayed in the book case at the right bottom corner of the screen. A host of options now become available independent of the search strategy selected. The user can now repetitively select icons for search actions from the repertoire of icons displayed on the top of the screen. (See figure 12 for some examples)

Beyond the Desk Top Metaphor

The use of icons in the Book House interface stands in contrast to the widely used Desk Top Metaphor which is nothing more than an arrangement on the display screen of some tools (files, documents, folders, trash baskets) mainly depicted in terms of conventional technology without any direct support of the work situations the user could be confronted with.

The icons of the Book House not only refer to objects to use to proceed the search in terms of signs indicating action alternatives during a search, such as the rubber for delete terms, the printer for printing books etc. (figure 12 for Book House Search and figure 16 and 17 for Book House Write). Icons are furthermore used as symbols providing a symbolic representation of the semantic content of the database, i.e. the substance of book contents and features (figure 7 and 11). They also display alternative search routes in the house for two user groups, children and adults (figure 5 and 6).

Direct Manipulation of the Interface

A primary postulate behind the Book House project is that efficient navigation in a data base by a novice or casual user will be greatly enhanced when the invariant data base structure is embedded in a context which is represented directly on the interface display surface. For novice users the symbolic icons preferably should be multi-purpose and permit a direct mapping onto effective cues/signs for action at the manipulative level, and at the same time onto the semantic organisation/content of the data base for use in planning and decision making. For example the work room with retrieval tools on the desk (figure 6). This makes it possible for the user to quickly develop efficient skills in communicating through the interface without the need for complex mental juggling to convert one representation to another. Then a very efficient spatial navigation can take place by moving the mouse followed by a selective clicking with the mouse button. Secondly, it is well known that icons are faster to "read" compared to text since one icon can communicate complex messages. They are easier to learn, and to recognise once learned (recognition is easier than recall). But their meaning is not always unambiguous. Therefore, the verbal meaning of each icon is written in a text line at the bottom of the screen, to support the first time user's understanding of its meaning.

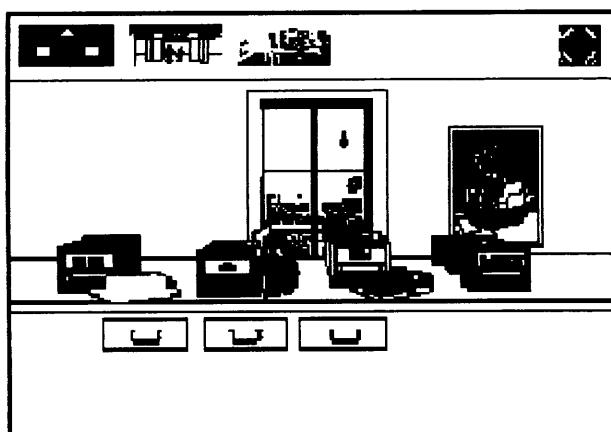


Fig. 13: Work room with card catalogues as tools for storage and editing information in the database.

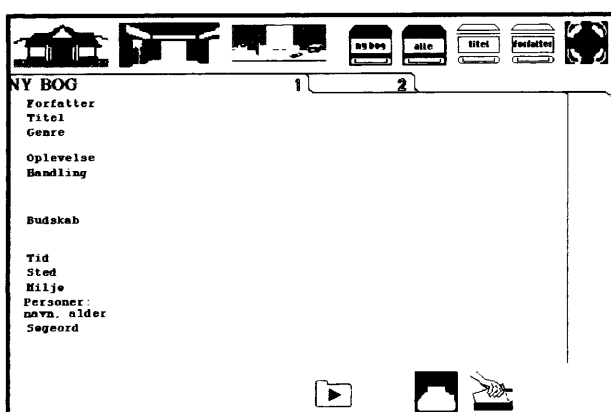


Fig. 14: A blank new card ready to be filled with a new book description and card catalogue tools.

Book House Write: Classification and Editing the Database

New books can be added to the database and existing books can be edited. A typical task of storing information about a book will involve indexing – i.e. the analysis and representation of the book to be searched for and displayed in the Book House search system. This activity includes: Check whether the book is already in the database; if not, select a card to fill in a book description; skim the book, eventual reviews and other material; formulate a new description using standard categories; save the book description in the database, which is then updated.

When adding new descriptions to the database, the blue “New book” card catalogue is chosen with blank cards with labels for empty categories ready to be filled in (figure 14). When editing existing book descriptions, the yellow “Titles” catalogue or the green “Authors” catalogue gives access to a known item. The red “All” catalogue gives access to browsing through all the books in the database for examples of book descriptions. This is a useful option relevant in unfamiliar situations by providing inspiration on how to solve a classification problem.

The basic principle is that a book description can be

made with very little effort and practically no knowledge about classification or indexing is needed. The intention has been to make users progress gradually in their learning about the storage of information in the database. As in Book House Search, help is provided by a *textline* at the bottom of the screen informing the user about what to do by showing an example of a book description typical for the category touched with the mouse. The *life belt* icon activates help by giving an example of a fully indexed book and, if desired, with detailed information about the purpose and principles that need to be applied when indexing within varied book categories. Finally, a written folder is available on indexing options.

Changing descriptions of books already stored in the database will require the user to fetch the book from the database by selecting the action icon of “author” or “title” card catalogues on the top of the screen. A yellow card filled in with book descriptions already saved in the database is then displayed, and the user can now work with this card exactly in the same way as with the white card (figure 13, 14 and 15).

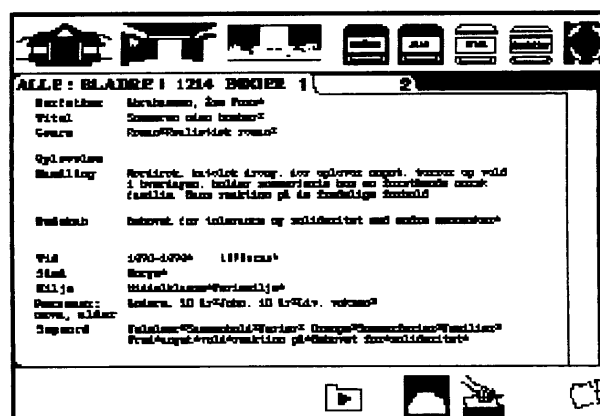


Fig. 15: A yellow card with the classification and indexing of a new book saved in the database and card catalogue tools to edit books in the database.

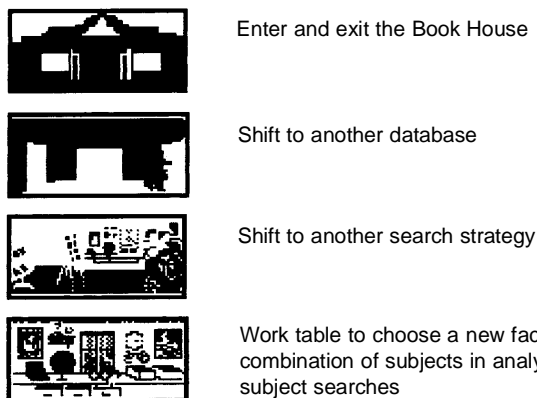


Fig. 16: shows the rooms in the house associated with navigation in the database and dedicated different search activities and hence furnished with different facilities.