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THE EFFECT OF INFORMATION CUES IN A HYPERTEXT SYSTEM ON FICTION READING ACTIVITY OF PUBLIC LIBRARY READERS

by

Liangzhi Yu

A Doctoral Thesis
Submitted in partial fulfilment of the requirement for the award of Doctor of Philosophy of the Loughborough University

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To my daughter

My biggest sacrifice for this work is the
loss of the joy of mothering
ABSTRACT

The purpose of this research was to examine the effect of information cues, presented via a hypertext system, on the fiction reading activity of public library readers and the practical implications of the effect. A three-group post-test experimental design was applied for this purpose. The groups were formed from readers in two public libraries near the university by random assignment. The experimental treatments were three versions of a fiction searching and browsing system, differing in the complexity of information cues and the hypertext features. Data for the experiment were gathered by an observation schedule and a self-administered questionnaire and were analyzed with the Kruskal-Wallis one way analysis of variance and the Mann-Whitney test in SPSS-X.

The three groups showed significant difference in the amount of their book selection and borrowing, the extent to which they made use of the searching system and the extent to which they relied on their own experience for book selection. They also differed significantly in the types of book they borrowed. They did not differ significantly, however, in their fiction searching pattern, the conformity of their book selection to their general reading tastes, their subjective feelings of well-being and their cognitive experience during reading.

It was concluded that within the typology of information cues proposed in this research, the amount of readers' book selection and borrowing, the types of book they borrowed, their reliance on the system or their own experience for the decision making are significantly influenced by the level of information cues they have been exposed to. However, readers' searching patterns, conformity of book selection to their general taste, and emotional and cognitive experience do not relate significantly to the level of information cues they have been exposed to. It was suggested that detailed categorisation or classification of fiction should be a priority in processing fiction. The provision of adequate information cues should have more professional attention in promoting fiction reading, and the policy of fiction services should not be too high-brow.
I wish to express my deepest gratitude to Dr. Ann O'Brien, my supervisor, not only for her excellent guidance, but also for her cheerful moral support throughout my study. I would like to thank Dr. Paul Sturges, my director of research, for his advice and administrative work while I have been at Loughborough.

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I express my sincere thanks to the Chinese Government and the British Council for their generous sponsorship.

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Chapter 1

INTRODUCTION

1.1 Overview

This introductory chapter presents the background against which the research question arises and states the general purpose and objectives of this study. It also briefly previews the approach and methodology of the research and the structure of the dissertation. The overall intention of this chapter is to highlight the rationale of the study and to provide a glimpse of the whole work detailed in the following chapters.

1.2 Background of the study

One of the challenges that fiction librarians and researchers constantly face is the idiosyncratic approach of fiction readers. In nearly all aspects of fiction reading, readers have been found to differ greatly, not just from person to person but, within the same person, from time to time (Ross, 1991). Their selection of books does not always comply with established social values, nor is it usually subjected to external tasks or educational obligation. A good book, from the reader's point of view, is not necessarily one from the literary canon or an item recommended by authoritative persons. It is something that matches his/her needs under particular circumstances. When the book is being read, the reader inevitably draws his/her own experience into the construction of meaning, passes all the details of the book through the filter of his/her own preoccupations and brings forth a unique perception of the text. From the librarians' perspective, these idiosyncrasies raise great difficulties in modelling reading activity and in exerting influence on it.

It has long been recognized that traditional information cues (e.g., the title, subject headings, annotations, etc.) play important roles in helping librarians to meet this challenge. The argument that fiction readers should be provided with in depth information cues such
as subject indexes or classified catalogues can be traced back to a century ago (Guard, 1991). It was then argued that such information cues could meet readers' various interests - not only the interest in a particular author, but also interests in particular personalities, genres, times, places and various literary affinities (Baker, 1890). It was also visualized that librarians could be more helpful and influential in fiction services by providing the reader with an author's brief biography and lists of book reviews when he/she would feel a demand for it (Anonymous librarian in Carrier, 1965). The current century sees even greater value for in-depth information cues in meeting fiction readers' diverse needs. They are seen as a definite help for the reader to find the type of book he/she wants (Burgess, 1936; Haigh, 1933; Admas in Carrier, 1985), important aids for libraries to build their collection (Walker, 1958), useful tools for librarians to answer various fiction enquiries (Guard, 1991) and a primary means of bringing to the surface inarticulate interests within the readership (McClellan, 1981). They are even believed to be able to help readers to understand the book better by alerting the reader what meanings the book aims to convey. (Pejtersen, 1992).

Having recognized the value of information cues in helping fiction readers, the early library professionals echoed this recognition by the compilation of fiction catalogues and fiction processing schemes. Printed catalogues for public library readers were quickly developed around the turn of this century (Guard, 1991). Some of the catalogues have been continually published periodically up to the present day. The best known among them is Fiction Catalogue published by W.H. Wilson company. These printed catalogues and indexes usually provide subject headings in addition to author, title and publication data. Some of them even provide annotations (Guard, 1991; Hayes, 1992). However, from a subject-searching standpoint, they are reckoned to be of little help (Sapp, 1986; Hayes, 1992). Most of them are limited in scope and deficient in the levels of information cues (Sapp, 1986).

In line with the growth of printed fiction catalogues, the necessity of fiction processing schemes also came to the fore. The development of fiction processing schemes evolved from the profession's discontent with the universal classification schemes, such as Dewey Decimal Classification (DDC) and Universal Decimal Classification (UDC), which provide
few information cues for fiction. Over the century, many fiction processing schemes have come into existence to fill the gap (Haigh 1933; Burgess, 1936; Walker, 1958; Pejtersen, 1979, Pejtersen and Austin, 1983; Sapp, 1986). Earlier schemes basically followed principles and techniques of conventional enumerative classification. In dealing with unorthodox library materials like fiction, these conventional principles were often found to be inadequate and inappropriate, for they failed to reflect the typically complex nature of fiction requests (Pejtersen and Austin, 1983). Walker's (1958) scheme in the late fifties of this century adopted the concepts and devices of Ranganathan's Colon Classification, including personality, matter, energy, space and time (PMEST), the five facets. It represented a turn from a mono-dimensional processing approach to a multi-dimensional approach. Most schemes developed thereafter have followed this approach and aimed to construct information cues in a multi-dimensional way.

Recent developments in the construction and representation of information cues are a combination of multi-dimensional fiction processing techniques and modern information technology such as hypertext and hypermedia systems. A good example of such a combination is Pejtersen's (1989, 1992) Bookhouse, which was launched in the late 1980s. With dynamic hypertext links and the pictorial interface, this system is able to provide very complex information cues, such as bibliographic data, multi-dimensional subject headings, annotations of stories, similarity between books, etc. Through the organization of these information cues, the system has shown its capacity not only in fiction retrieval, but also in fiction browsing and fiction reference/advisory services (Yu and O'Brien, in press). Since the launch of Bookhouse, the domain of fiction librarianship has seen a rapid growth of similar systems both in number and in coverage (Borgman, Walter, Rosenberg and Gallagher, 1991; Carlson, 1988; Novelist, 1995).

However, except for printed catalogues, few innovations in the construction and representation of information cues have been implemented by public libraries. Although most libraries today do have general Online Public Access Catalogues (OPACs) for the whole stock of the library, these OPACs provide very limited information cues about fiction (Marriott, 1993). So, finding an appropriate book for a particular need still remains a matter of serendipity in most cases (Mann, 1982b; Hayes, 1992; Ross, 1991). As to why librarians
are not rectifying the situation with more advanced fiction representation (Guard, 1991), there is as yet no clear answer.

Allied with the fact that studies on the representation of information cues have not been able to empower the fiction service, the domain of fiction librarianship is lacking in knowledge about the effect of information cues on fiction reading activity. This is reflected in the frequent recurrence of a primary question regarding information cues in the domain literature, that is, what are the precise levels of information cues that would be helpful to readers? (Pejtersen and Austin, 1983; Sapp, 1986; Ransley, 1987; Ranta, 1991).

It is believed that an examination of the effect of information cues will not only contribute to the solution of this theoretical question and ultimately contribute to the domain knowledge, but will also shed light on related practical questions, e.g., will the impact, if there is any, of information cues warrant their implementation in fiction services?

1.3 The aim and objectives of the research

The purpose of this research then was to examine the effect of different information cues represented in a hypertext system on fiction reading activity of public library readers. More specifically, the objectives of this study were:

- To compare the effects of different representations of information cues with empirical evidence
- To examine these effects in the network of previous findings, as well as in the light of established theories.
- To model the roles of information cues in fiction reading activity.
- To link the findings to the reality of current fiction services and draw some practical implications.
1.4 Preview of the approach and methodology of the research

This study saw the problem from the perspective of the reading context. That is, it first identified the contextual factors that determine readers’ idiosyncratic reading needs and then examined the effects of information cues with reference to these factors. This approach sought to complement that of previous research, particularly Pejtersen's (1979a, 1979b, 1988, 1992a, 1992b) studies, which constructed information cues from the perspective of readers' expressed needs.

This research adopted a post-test experimental methodology. The experiment consisted of three groups of public library readers formed by random assignment. These three groups were exposed to three different versions of a searching and browsing system with different levels of information cues and hypertext features. They were then tested after they had used the system. This methodology was adopted because it enabled the researcher to manipulate the information cues for each group and observe the effect of this manipulation. In so doing, "the effect of other factors that might possibly be relevant to the research problem (i.e., affect the values of the dependent variable) are minimized through careful experimental design" (Busha and Harter, 1980, p. 35).

1.5 Definition of terms

Key terms in this research either are defined operationally or adopt established definitions from authoritative sources.

*Information cues* adopts Schramm's (1956) concept of index cues, which means stimuli that represent and predict other stimuli. The concept is termed slightly differently here in order to distinguish it from the index in its conventional sense.

*Hypertext systems* refer to computer systems which consist of nodes (or chunks) of information and machine-supported links between them. (McKnight, Dillon and Richardson, 1991, p. 2).
Fiction reading activity refers here to the whole process of leisure activity relating to the use of fictional books, including the formulation of reading needs, searching for suitable books and the perception of the fictional text. This concept is developed from a number of reading models explained in chapter 3.

Emotional experience during fiction reading activity refers, in this research, to fiction readers' identifying themselves with characters in a fictional book, an experience which gives rise to a subjective feeling of well being. The terms "emotional experience" and "subjective feeling of well being" are sometimes used interchangeably in this research.

Cognitive experience during fiction reading activity refers to the change of fiction readers' knowledge store (structure) as a result of the reading, e.g., the reader may get to know more about a particular culture or historical events. It is distinguished from the emotional experience because it relates to readers' knowledge rather than feeling. Elsewhere it has also been referred to as the educational effect of fiction reading (Kinnell, 1991; Robins, 1985).

A readers' fiction reading context operationally refers here to individual readers' traits, knowledge and experience involved in the generation of his/her reading needs. Environmental context such as physical reading facilities and condition, availability of the reading materials, etc., are not the concern of this research.

Multiple group post-test experimental design is a model of experimental research design in which a control group and experimental group(s) are formed, normally by random assignment; experimental intervention(s) is or are administered to the experimental groups, the scores of both the control group and the experimental group(s) are tested after the experimental intervention. The model of such a research design can be visually illustrated as: (Bausell, 1987, p. 92).

![Multiple group post-test experimental design diagram]

A sample is identified and randomly assigned

intervention

control

All subjects are post-tested
1.6 Delimitation and limitation of the research

1.6.1 Delimitation
The experimental intervention was administered only to adult public library fiction readers. It would be just as interesting to examine the effect of such intervention on children, but since children's reading contexts, reading needs and reading behaviour are different from their adult counterparts, this issue demands a separate study. Non public library fiction readers, e.g., occasional fiction readers who read only bought books, were not included either, because it is virtually impossible to administer any experimental treatment to them.

Only the short term effect of the hypertext searching and browsing system was investigated in this research. The long term effect was not feasible in this case because of time and financial restrictions.

1.6.2 Limitation
(1) This research employed an experimental design, it hence carried with it all the limitations of such research design. Firstly, it is rarely possible for an experimental study to apply random sampling, as was the case in this research, so the research cannot claim an absolute representativeness of its sample. Consequently, it is not able to claim a statistical generalisation of its findings, as such a generalisation should be based on random sampling. Nevertheless, it is confident in claiming a non-statistical generalisation, which, as Keppel (1989) pointed out, depends upon the domain knowledge.

Secondly, it applied artificial experimental conditions, some of which were quite different from the current practices of fiction services. For example, the categorization scheme applied in this research was different from that used by many public libraries. Therefore the practical implications drawn from the findings of this research do not claim immediate applicability.

(2) Experimental research requires rigorous control and manipulation of the experimental condition and procedure. It therefore needs considerable cooperation from the host library. When such demands go beyond their ability, compromises which will not seriously
jeopardize the internal validity of the study are sometimes inevitable. In this research, three compromises were made:

A. The experiment time had to be reduced. The experiment was intended to be carried out during September 1994 to February 1995. However, the host library, Loughborough Library, experienced an unexpected staff reorganization which required them to continually postpone the commencement of the experiment until the end of February 1995. Because of the time limitation, the experiment had to be finished in a shorter period. Although intensive and laborious field work was undertaken so that the planned sample size was maintained, this sample size might not be able to achieve the same representativeness as a sample obtained in a longer period of time.

B. The books required by this experiment were not arranged to be readily available for the experiment. So, a large proportion of books were found not on shelf when the subjects decided to borrow them. Although reservations were made with financial support from the British Council, some of the books were not collected by the readers when they arrived.

C. The host library, Loughborough Library, was to install its own OPAC one month after the experiment started. The experimental system had to be moved away for fear that it might cause confusion to the users. A similar library had to be found for the experiment to continue. Melton Mowbray Library in Leicestershire was selected for this purpose. However, although the similarity of the two libraries was checked by the researcher, no two libraries are exactly the same.

1.7 The structure of the thesis

The research is presented in the following chapters:

Chapter 2 briefly looks into previous studies, focusing on research about the construction and representation of information cues with new technologies. This review locates the current study in the broad context of fiction librarianship and draws insight from the focused studies. It also identifies the deficiencies in these studies.
Chapter 3 provides a theoretical framework for the research from the perspective of the reading context. This theoretical framework determines what information cues are to be represented by the experimental system and what effects are to be measured. It predicts the roles of information cues in the reading activity and lays the foundation for the formulation of the hypotheses.

Chapter 4 specifies the operational variables and states the hypotheses of the study. It discusses the methodological features of the research and presents the results of the pilot studies.

Chapter 5 looks in further detail at the experimental treatment - the hypertext system named "Hypertext Modern English Fiction" (HMEF).

Chapter 6 describes the procedure of the experiments. It shows how the internal validity of the research is enhanced by the control of these procedures.

Chapter 7 presents the major results of the experiment, which were analyzed with the aid of SPSS. Differences of fiction reading activity between the control group and the experimental groups in terms of the dependent variables specified in chapter 4 are here presented quantitatively.

Chapter 8 provides an explanation of the results in the network of previous findings reviewed in chapter 2 and in the light of the theoretical framework presented in chapter 3. The extent to which the information can affect fiction reading activity is finally evaluated.

Chapter 9 summarises main findings and contributions of this research. The role of information cues in fiction reading activity is remodelled based on these findings. In addition, areas for further research are also pointed out here.
THE DOMAIN OF FICTION LIBRARIANSHIP
AND A CRITICAL REVIEW OF CLOSELY RELATED RESEARCH

2.1 Overview

Before drawing related literature into focused review, this chapter first provides a general conceptual structure of fiction librarianship. Evolved from a rather adverse social and cultural environment\(^1\), the structure of the domain has remained underdeveloped and amorphous. The intention of clarifying this general structure preceding the focused review, is to set the current study in a broad context of the domain so as to indicate how it attempts to contribute to the practice of fiction services and the development of the domain knowledge.

The closely related research is then identified within this broad context and is highlighted for an intensive and critical review. The purpose of this in-depth review is to draw insights from and to identify deficiencies in existing relevant research.

2.2 The domain of fiction librarianship

Fiction librarianship refers here to the research area which aims to improve library services for fiction reading as a leisure activity.

There are basically two different views of this area (Yu and O'Brien, in press). The narrower view, represented by Atkinson (1981) in his monograph *Fiction Librarianship*, sees it as mainly composed of principles and practices of major professional activities: fiction acquisition, processing, promotion and fiction preservation. The broader view, represented by Margaret Kinnell (1991), in her outline of the domain knowledge and skills

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\(^1\) The environment has been mainly characterised by religious and social prejudice against reading for pleasure. The prejudice and its legacy which treated fiction reading as useless and even harmful cast a long shadow which made it difficult for both practical and theoretical innovations in fiction services to blossom. Carrier (1965, 1986), Sturges (1992) and Snape (1995) have all examined such environments in great detail.
required of professional staff, sees it as an area that embraces the communication between the author and the reader, in which fiction functions as the media, libraries being the major channel.

It is believed that the broader view provides a more comprehensive and realistic picture of the domain knowledge, because linking the author and the reader in the process of their communication is really what the fiction service is about. The broader view is therefore applied here to establish the broad context of the present research. Viewed from this perspective, four focuses of research have emerged from previous studies, dealing with different elements of the communication process:

(1) Fiction: the characteristics and functions of fiction from the library's point of view.
(2) Professional activities: libraries' performance in fiction provision, e.g. fiction acquisition, fiction processing and representing, fiction promotion, collection management, etc.
(3) Fiction readership: fiction readers' needs and behaviour.
(4) Fiction policy: the libraries' general attitudes towards fiction on the one hand, and to fiction readers on the other, and the perceived professional function in linking the reader to the book.

2.2.1 Exploring fiction as a type of library material

Studies about fiction from the library's point of view, unlike those in the area of literary criticism, are mainly concerned with the nature and function of fiction as a special type of library material. The objective of such research is to understand the attributes and functions of fiction, which underpin its processing and provision in libraries. Issues which have already been addressed by previous studies include:

- attributes/features of fiction
- possible dichotomy with fiction
- the value of fiction

Pejtersen's study on the "aboutness" of fiction is an example of research on the first issue. She suggested that fiction content was normally perceived from different dimensions, e.g.
subject, author's intention, setting, etc (Pejtersen, 1979). Mann's (1982a, 1982b) and Mann and Burgoyne's (1969) sociological study of books and reading formed a major contribution to the second issue. They conceptualized the continuum of fiction types with serious fiction on one side and light fiction on the other. Gerhard's study (1991) is among those about the third issue. He called for more objective evaluation of mystery and detective fiction in libraries based on a model of its value constituents. This model stated that mystery and detective fiction has multiple values: recreational or entertainment value, mental stimulation value, knowledge value, literary value. However, the recreational or entertainment value is the principle value for the evaluation of mystery and detective fiction in libraries.

2.2.2 Understanding fiction readers

Promoted by researchers such as Spiller (1980) and Pejtersen (1979a, 1979b), fiction readers' needs and behaviour rose from being a marginal topic in general reading studies to a major area in the domain of fiction librarianship in the 1980s. Among the major studies are: McClellan's (1981) and Brewis, Gericke and Kruger's (1994) theoretical construction of fiction readers' motivations; Spiller's (1980) study on the reading behaviour of general fiction readers; Pejtersen's (1979b) study on readers' construction of their searching strategies; Jennings and Sear's (1986) study on how readers actually choose their books; Spenceley's (1980) and Mann's (1980) studies on literary fiction readers; and Goodall's (1989) review of several studies on readers' browsing behaviour in public libraries.

2.2.3 Enhancing library policy

The rationale to stock fiction was one of the major concerns of early professional controversies. The essence of the controversy, which was revealed from historical studies, such as Carrier's (1965, 1985), Sturges and Barr's (1992) and Snape's (1995), was actually libraries' attitudes towards fiction and its readers, in a society disdaining both of them. So the objective of the debate was towards an acceptable and working policy on fiction. Sturges and Barr (1992) noted that in the UK the debate did gradually come to a resolution
of sorts in the early twentieth century, which was stated in a policy form without dissent (p. 25).

Today the issue of whether or not to stock fiction is less debatable, but controversy over the library's policy on the dichotomy of light fiction and literary fiction has never diminished. Arguments on this issue actually signalled the modern professional dissents between two different library policies: the library function oriented policy and the market oriented policy. While the former emphasises the library's postulated professional role, the latter places the user at the centre of library activities (Yu and O'Brien, in press).

2.2.4 Improving fiction services

Fiction services - library activities to manage fiction resources and make them available for readers' use - fall roughly into the following categories:

- fiction acquisition
- fiction processing
- fiction representation and retrieval
- fiction promotion
- fiction reference/advisory services
- collection management

Fiction Acquisition Library activities related to fiction acquisition in UK libraries has been described in great detail by Atkinson (1981). Issues raised from this practice include factors affecting fiction acquisition (Mann, 1980; Palmer, 1987, 1988, 1991; Shaw, 1991; Sweetland, 1994; Wiener, 1983), techniques of evaluating books for acquisition (Broadus, 1981; Futas, 1994; Wager, 1981), models of decision making in fiction acquisition (Baker, 1994; Oosthuizen, 1994) and automation of acquisition. For example Palmer (1988) and Shaw (1991) examined the effect of book reviews on the library's acquisition with correlation between the number of reviews a title received and the number of its holding libraries. Shaw surveyed 200 reviewed American titles against their availability in 78,011 OCLC libraries. Palmer investigated 182 novels that had been reviewed in the Canadian
Book Review Annual and their availability in the OCLC database and in the Book Review Index. In both cases, there was a very positive correlation between the number of reviews a book received and the number of holding libraries. (r=.90 in Palmer's, r=.67 p<.01 in Shaw's). Shaw's study also finds that a power curve (y=ax^b, r^2=.84) represents a better fit.

**Fiction Processing**  Fiction processing - subject analysis, indexing and classification etc.- has constantly attracted many researchers for decades. Proposed fiction processing schemes have experienced dramatic change and development from Haigh's (1933) crude fiction adaptation of DDC, through Burgess's (1936) detailed enumerative system to Walker's (1958) PMEST based facet system. Walker's facet system, which was theoretically and technically supported by Ranganathan's concepts and devices, represented a turn from the mono-dimensional processing approach to the multi-dimensional approach. This new approach has been remarkably developed since then by Pejtersen (1978, 1979a, 1980, 1994; Pejtersen and Austin, 1983, 1984), Beghtol (1989, 1990, 1991, 1994) and the American Library Association's (ALA) (1989). While Pejtersen's processing scheme was based on her own theory about fiction readers' enquiries, Beghtol's was based on an extensive analysis of literature warrant. Therefore the 1980s and 1990s in fact have seen the multi-dimensional approach maturing, though not necessarily implemented. A detailed review of such research has been done by Beghtol (1989, 1990), Hayes (1992), Ranta (1991) and Yu and O'Brien (in press).

**Fiction Representation and Searching**  Studies in this area are well exemplified by Pejtersen's project named Bookhouse, (1989) which represents fiction books with multi-dimensional information cues in a hypermedia system. This study and others in this area will be reviewed in more detail in section 2.4.1.

**Fiction Promotion**  Fiction promotion, as seen by Goodall (1991), is library activities to foster the fiction reading habit, which essentially involves personal contact and the published word, e.g. the format of publicity materials and "atmospherics" or "image" (Goodall, 1991, p. 142). Research in this area has focused on the evaluation of particular promotion schemes, such as "Well Worth Reading" (McKearney and Baverstock, 1990), and the effect of certain promotion techniques on readers' use of fiction stock (Baker,
For example, Goldhor tested the effect of book displays and book lists in the use of fiction stock with a pre-test and post-test experimental design. He found that a causal relationship exists between devices or techniques with guidance function and the circulation of books that are treated with the devices or techniques.

Fiction Advisory and Reference Services

Most research works on fiction reference services are practical, aimed to provide various kinds of reference aids. Mann (1985) and his successors's works (Huse, 1993), which provide cross references between fiction authors, are examples of such practical research. There is now also an electronic version of Mann's A Readers' Guide developed by Clayton (1993) with HyperCard. In addition to cross-references between authors, genre access points are also provided so that a reader can access a list of novelists of certain genre from the genre title. On getting a list, the reader can click on any of the authors whom he/she has known or read, he/she will then be led to a list of authors who write in a similar way to the chosen one. This system was tested in three public libraries in Leicestershire, UK and received very positive responses from the readers. Ross's (1991) reappraisal of readers' advisory services is an example of a recent study in readers' advisory services. She conducted over one hundred open-ended interviews on pleasure reading, and argued that there is a great potential for readers' advisory services in pleasure reading today, but they must take a new direction: that is, to respect idiosyncrasy in pleasure reading and help to satisfy each individual need. This new idea of readers' advisory services is echoed in MacLennan's (1996) design of a prototype expert system, named "BROWSER". The system was designed to function as an experienced librarian to recommend to the reader what he/she might like based on the reader's sprofile. But so far it has just been used to demonstrate the potential of artificial intelligence in the new brood of readers' advisory services. For the system to function at a higher level than demonstration, much more input effort (e.g., fiction classification) is required.

Collection Management

Studies on collection management deal with library collection as one unity and seek for the efficient use of this resource by means of collection arrangement (Ainley, 1982; Corn, 1995; Dixon, 1986; Harell, 1985; Jennings and Sear,
1989), stock assessment and control (Futas, 1994; Slote, 1971; Sweetland, 1994) and cooperative provision and preservation (Goodall, 1993; Samways, 1980).

2.3 A model of the current structure of the domain of fiction librarianship and the position of the present research

The domain structure, with all contingent areas discussed above, is illustrated in figure 2.1.

Though most previous studies focused on a specific area, it is not unusual for a particular piece of research to cover two or more areas. Peitersen's Bookhouse is such an example, in which she integrated studies on readers' behaviour, fiction processing and fiction representation.

Whatever the area a study actually falls into, it is expected to contribute to the domain in either or both of two ways: (a) to improve the practice of fiction services (b) to build up the body of the domain knowledge, which in turn, provides a theoretical foundation to both the practice and further research.

The professional activities, which outline the domain of a specific aspect, play a paramount role in the development of the whole domain. Such fiction services, on the one hand, raise problems and engender demand for practical research, and on the other, put forward questions and evidence for theory construction, e.g. Peitersen's (1978, 1979b) study on readers' enquiries and Goldhofer's (1972, 1981) study on the relationship between book display and the use of fiction.

In the area of professional activities, it is possible to distinguish between (a) IT based professional activities and (b) conventional professional activities. New technology was found to be prevailing in many areas of fiction services. Labdon (1991) offered a case study of a computerised acquisition system. Peitersen (1989, 1992a, 1992b) made an important contribution to fiction representation, with a hypertext-interfaced computer system. Clayton (1993) and MacLennan (1996) attempted, respectively, automated fiction reference services and fiction readers' advisory services.
Figure 2.1 The structure of the domain and the position of this research
This study stands among those which focus on construction and representation of information cues with new technology. By examining the effect of recently developed techniques of the construction and representation of information cues, it attempts to contribute to the area both practically and theoretically.

2.4 A critical review of closely related research

From the broad context of fiction librarianship depicted in figure 2.1, three areas are identified, according to Creswell's (1994) criteria, for intensive and critical review: (a) research that deals with the same independent variable(s), (b) research that applies the same dependent variable(s) and (c) research that pinpoints the problem dealt with in this research - the effect of the independent variable on the dependent variables. The kinship of these three areas to the current study is shown in figure 2.2.

2.4.1 Fiction representation with IT

Fiction representation is defined here as descriptions of the physical features and content of a fiction book with language and/or pictures or any other signs in a computer system or in a traditional media, e.g. booklist.

This definition manifests two essential elements: information cues on the one hand, and representation means on the other.

Representing fiction with IT is still new. A few years ago, even the ordinary OPAC was not used in all UK public libraries (Marriott, 1993). Research on special representation techniques for fiction was even rarer.
**Purpose:** Effect of information cues in a hypertext system on fiction reading activity

- **Independent variable:**
  - Fiction representing techniques
  - Irrelevant

- **Dependent variables:**
  - Literature in the domain of fiction librarianship
  - Attributes of fiction reading activity

**Flowchart:**
1. Irrelevant
   - Excluded for intensive and critical review
   - Literature for intensive and critical review, 1
   - No
   - Literature for intensive and critical review, 3

2. Relevant
   - Effect of fiction representation on reading activity
   - Yes
   - Literature for intensive and critical review, 2
   - No
   - Literature for intensive and critical review, 3

3. Relevant
   - Effect of fiction representation on reading activity
   - Yes
   - Literature for intensive and critical review, 2
   - No
   - Literature for intensive and critical review, 3

**Figure 2.2 Literature for further review**
With reference to the two elements in the definition of fiction representation, four types of computerised representation systems have been identified in the literature surveyed by this chapter:

- Representing bibliographical information with a traditional linear system
- Representing multi-dimensional or multiple types of information with a traditional linear system
- Representing bibliographical information with a hypertext system
- Representing multi-dimensional or multiple types of information with a hypertext system.

2.4.1.1 Representing bibliographical information with a traditional linear system

An online catalogue is an example of this method. Information represented in such systems is usually preliminary, typically comprising title, author, keyword and ISBN, occasionally with subject and fiction category (Marriott, 1993).

Recent enhancement of fiction representation with such systems follows mainly two approaches:

The first approach is to expand subject access points in existing online catalogues. For example, in the US, an OCLC sponsored project was designed and conducted cooperatively by a group of libraries to enrich fiction records by listing additional subject/category headings as set forth in ALA's Guidelines. Previously the Library of Congress catalogued fiction according to author, title, publisher, place, and date of publication, page length and call number (Quinn and Rogers, 1992).

Yee and Soto (1991) addressed the problem of searching for fiction characters in current online catalogues. Most OPACs require users to specify a term from title, subject or author
to search with. However, fiction characters are a type of heading that do not fall neatly into one of these broad groups. Yee and Soto's questionnaire survey with reference librarians indicated that fiction readers who were looking for fiction characters had difficulty in deciding which type of access point to pick. Two solutions were suggested for such problems: for smaller libraries, it is possible to create a general index which does not require the user to specify a particular type of access point. Large libraries might consider double indexing. For example, fiction characters can be indexed in both the name/author and the subject index.

The second approach is to design special catalogues for fiction materials. Fiction Finder is an example of such catalogues (McKenna, 1987). This catalogue was developed for school libraries. It classified fiction for children and young adults from different angles: subject, readability of the text, interest level of the reader (readers' age group), gender of characters, and length of the book. When using the system for fiction retrieval, readers can specify any of these criteria or their combinations. Each book record contains a very brief annotation (usually one sentence) in addition to basic bibliographic data such as author and title.

2.4.1.2 Representing multi-dimensional and multiple types of information with a traditional linear system

A piece of software named Novelist Readers' Advisory introduced by CARL Corporation in September 1994 may be taken as an example of such systems. There are four functions of this software. "Match a novel" uses a reader's favourite author or title to retrieve a list of titles with similar content. "Describe a plot" uses keywords provided by the user to go into a subject browse, or uses those keywords to find titles that may be of interest. "Explore fiction types" uses genre headings in an icon-based environment to retrieve titles of interest for the user. "Best fiction" is totally customisable and can feature awards, such as the Pulitzer and Nebula prizes, bestsellers, or local favourites. The editing feature allows for timely updates for these locally created databases. This software is now available in a windows based format with a graphical user-interface, as well as in DOS (Novelist, 1995).
2.4.1.3 Representing bibliographical information with a hypertext system

"Science Library Catalog", although consisting of more than fictional books, can be taken as an example of such type of systems, because books in this catalogue, fiction and non-fiction, are all basically for pleasure reading. It is a HyperCard catalogue for elementary school students. The essential feature of its design is that it allows users to navigate a database in a hierarchical manner by selecting subjects on the screen. Each selection reveals ten subordinate subjects, depicted as ten shelves with signs. Clicking on the topic at the bottom level will lead the user to book lists on this topic. From the booklists, the user can click on a title of interest and visit screens containing all the information cues for that item. These information cues are typically bibliographical in nature, showing the title, author, and publication data of that book. From the book record the user can also click a button to visit the library map, which actively draws the path to the current book's physical location relative to the user's position in the room (Borgman, Gallagher, Krieger, and Bower, 1990; Borgman, Walter, Rosenberg, and Gallagher, 1991).

2.4.1.4 Representing multi-dimensional information and multiple types of information with a hypertext system

A catalogue for children in Colfax, Washington, U.S.A. is a system of this type. It is a catalogue written for use in a book mobile that is not staffed by a professional librarian. This catalogue not only contains bibliographic information, but also book illustrations, plot summaries, etc. Children can also read comments by other children who have read the books (Bertland 1992).

Another important and influential work of this type is Pejtersen's (1989, 1992a, 1992b) Bookhouse. This is a hypermedia-based system designed to support novice and casual public library users (children as well as adults) in finding fiction in public libraries. All books in the system are represented with multi-dimensional information cues.

The construction of information cues in Bookhouse was mainly based on Pejtersen's theory about fiction readers' enquiry. This theory was developed from an empirical study which observed, recorded and analysed fiction readers' conversations with librarians in real
settings. According to this theory, fiction readers usually perceive the "aboutness" of fictional works and express their needs through four dimensions of information:

1. Subject matter, the subject content of a novel, what the story is about, including action and course of events, psychological development and description of social relations.

2. Frame, the setting in time and place chosen by the author as the scenario of a novel.

3. Author's intention, the theme of a novel, i.e. the author's attitude towards the subject or the set of ideas and emotions that the author wants to communicate to his readers, including emotional experience and cognition and information.

4. Accessibility, the level of communication, described in terms of those properties that can facilitate or inhibit communication, e.g. difficulty of language.

A later study in which she participated further indicated that readers' value construction of these information cues follows a certain structure. The most important to least important categories are: (1) emotional experience (2) cognition/information: criticism (3) psychological description (4) social relations (5) readability (6) action/course of events (7) time (8) setting (9) cognition/information: agitation (10) place (11) typography (Morehead, Petersen, and Rouse, 1984).

The system employed a graphical user interface. Information both in and about the database (as well as the various means of communicating with it) was represented as pictures/icons. Each information cue was allocated to a particular location in a virtual space. For example, the category "time" was represented as a clock on the wall. Access to this category can be activated by clicking on the clock with a mouse.

The whole system features four types of searching: (a) intuitive browsing for browsing along all book records within a icon-represented category (b) associative retrieval based on
analyses between known books and unread books (c) Analytical retrieval using the four
dimensions and their subdivisions as searching enquiries (d) bibliographical retrieval for a
known item. These strategies act as navigation and retrieval means in the Bookhouse. Thus
on entering the Bookhouse, the user will first enter a hall connecting to three different
rooms representing three different databases. After the user has chosen a database, he/she
can then select one of the four strategies. The selection will then lead the user to a new area
where the required set of tools for carrying out the chosen search strategy is available. The
execution of the selected searching strategy takes the user to the "see book" phase. A
description of the first book of the current set is then displayed. The user can now
repetitively activate new search actions by clicking the icons displayed on the margins of
book-display screens.

2.4.2 Fiction reading activity as dependent variables

As the broad context of this research in figure 2.1 has shown, it is possible for libraries to
impact on fiction reading activity through various professional activities, including
enhancing library policies, fiction acquisition, fiction promotion, fiction advisory and
reference services, fiction collection management, apart from fiction representation.
Previous research has indicated that the following aspects or attributes of fiction reading
activity are open to the impact of these professional activities:

- the amount of readers' borrowing (or circulation of the fiction stock)
- readers' searching patterns or approaches
- readers' general reaction towards the innovative fiction services
- finishing ratio of borrowed books and/or readers' rating of the enjoyability
  of the borrowed books

2.4.2.1 The amount of readers' borrowing (or circulation of fiction stock)

Readers' borrowing, such as total circulations, circulations of different types of books,
circulation of particular titles, can be affected by many innovative fiction services. A number
of studies (Baker, 1988; Goldhor, 1972, 1981; Jennings and Sear, 1989; Spiller, 1980;
Wood, 1984) have found that specially arranged book displays, either alone or allied with
other promotion activities, result in significant increase of fiction circulation. This relation
was noted first by Goldhor (1972) in his pre-test/post-test experimental study. The study aimed to test the hypothesis that public library circulation of books will be significantly greater when the books are collected and placed in a prime location than when they are scattered on the shelves of even an open stack collection. One hundred and ten titles in two public libraries were selected to experiment with. In the first 6 months, the titles in neither of the libraries received any treatment. Their circulation was monitored. In the second phase of the experiment, the titles in the experimental libraries were displayed in a special area "Good Books You Might Have Missed", near the circulation desk. No treatment was given to the titles in the control library. Circulation of these titles in both libraries was monitored again. The circulation of these titles in the experimental libraries in the second phase was significantly greater than in the first phase or in the control library. This result was confirmed ten years later in another study by Goldhor's (1982), and in Baker's (1988), both of which applied a similar methodology design to Goldhor's first one. Goldhor (1982) and Wood (1985) also found that distribution of book lists could result in significantly greater use of the experimental books. In summarizing these experimental results, Goldhor (1982) suggested that a causal relationship exists between devices or techniques with a guidance function and the circulation of books treated with these devices.

2.4.2.2 Readers' searching approaches or patterns

A number of studies (Jennings and Sear, 1986; Spenceley, 1980; Spiller, 1980) attempted to identify readers' searching patterns when they looked for books. These studies agreed in identifying (a) browsing and (b) specific searching with authors' names as the dominant methods of selecting books by public library readers, but the variables applied as indicators of searching patterns differed greatly from study to study. For example Spiller (1980) measured the pattern from the readers' point of view, asking how many readers usually search for books by: (1) authors only (2) authors/some browsing (3) equal authors/browsing (4) browsing/some authors (5) browsing only. Jennings and Sear (1986), on the contrary, studied it from the borrowed books' perspective, checking how many books were borrowed by being: (1) reserved (2) especially looked for this title (3) especially looked for books by this author (4) browsed and recognized by author's name (5) browsed and chosen because it looked interesting (6) looked for under this genre. Pejtersen (1979b, 1984, 1988, 1992a) proposed a typology of searching strategies for the searching patterns in a
computerized searching environment. The typology consists of four search strategies: (1) bibliographic search strategy for a specific known title (2) analogical search strategy for books similar to a particular known book (model book) (3) analytical search strategy for books that meet a number of criteria, especially content criteria (4) empirical search strategy for books that conform to certain stereotypes or image. When Bookhouse which facilitates these strategies was tested in a public library in Denmark, all these strategies were frequently used. However, it was not clear whether the result signalled the potential of fiction representation to impact on readers' searching patterns. As far as how fiction readers' searching patterns can be affected is concerned, no other evidence was found from previous literature.

2.4.2.3 Readers' general attitudes towards an innovative fiction service

Spiller (1980) employed this variable for readers' response to a fiction booklist provided by the investigated libraries in his questionnaire survey. He divided readers' attitudes into three levels: enthusiastic, in favour and not interested. Jennings and Sear (1989), in their experimental study about the effect of book display on the use of the displayed books also examined readers' attitudes as an indicator of the effect. In this experiment, a categorised area called "Novel Ideas" was set up and separated from the main A-Z shelves. Circulation of these books and reader's reactions to them (collected by questionnaire and interview) was monitored for six months. Readers' reaction to this display area was measured on a three level scale: enjoyed using it, so-so, not enjoyed. Both of Spiller's (1980) and Jennings and Sear's (1989) studies reported very positive reaction towards the service in question. It is believed that this reaction relates to the greater use of the experimental books.

2.4.2.4 Finishing ratio and rating of the enjoyability of the borrowed books

Both variables were employed in Spenceley's study (1980) to measure readers' satisfaction level with the borrowed books. With these variables, he proposed a correlation between readers' satisfaction level and their knowledge about the book before they borrowed it. The more a reader knows about a book beforehand, the more he/she tends to enjoy reading it. Jennings and Sear (1989) noted that readers' satisfaction level with the borrowed books is substantially higher if the books are displayed in a specially arranged display area. Readers' satisfaction level in their study was measured on a three level scale: enjoyed, so-so, not
enjoyed. Goodall (1991) believed, that in conjunction with circulation, readers' satisfaction level measures more accurately the effectiveness of fiction services.

2.4.3 Effect of fiction representation on fiction reading activity

Within the scope of literature reviewed by this study, no research has been devoted to this problem. The domain knowledge about the effect of information cues on fiction reading activity is almost blank, except for some marginal evidences generated from the tests of a few of the systems reviewed earlier. For example, the test of Bookhouse revealed that readers welcomed Bookhouse; they made great use of all the search strategies provided by the system; they also borrowed frequently books that had "looked boring" (Pejtersen, 1992).

The issue is regarded as unexplored in spite of the above evidence, at least for two reasons. Firstly, since the tests which gave rise to these evidences usually aimed at the evaluation of the functionality of particular systems, variables applied in these tests were usually highly specific to the technical features of the systems, rather than the general impact on fiction reading activity. For example, Bookhouse was tested to evaluate its indexing scheme and its user-interface. Variables applied for this purpose include: the degree to which the dimensions in the indexing schemes correspond to users' needs, the degree to which the searchable terms were adequately specific and exhaustive, the degree to which the search strategies were utilized, etc. Results measured by these variables indicated the function of the system, but they did not necessarily suggest its impact on the reader. Secondly, because the major concern of the evaluation was the function of individual systems, rigorous manipulation of impacts, say, through comparisons of results, was not necessarily involved. Therefore, results of readers' performance, if there were any, might be attributable to many factors, rather than to the effect of the system alone. For examples, in theory, the observed increase of fiction circulation when Bookhouse was tested, may have actually been accounted for by the change of seasons, holidays, influence of mass media system, and so on, rather than by the use of the system.
2.5 Strength and deficiencies of previous research

2.5.1 Strength

More than a decade has passed since Pejtersen and Austin (1983) bitterly noted the lack of professional concern with the techniques of fiction representation and launched her own pioneer study in this area. Within the decade, research on this issue has progressed dramatically. Related studies have built up a repertoire of representation techniques ranging from conventional OPAC systems to hypermedia systems, although few have been implemented to fiction services. Many systems are very distinct from their non-fiction counterparts, both in the construction of information cues and the representing media. A number of trends have been noted in both aspects. Firstly, fiction retrieval systems tend to represent various non-bibliographical information cues with the aid of hypertext/hypermedia technology. Secondly, they tend to enhance their browsing function and other functions, e.g., readers' advisory function with the representation of information cues. Thirdly, there is a trend to integrate into the system access points which are neither bibliographical nor subject in nature, e.g., "analogy-of-book" access point.

Of particular merit are Pejtersen's (1984, 1988, 1989, 1992a, 1992b, 1994) studies concerning the design and test of Bookhouse. According to the literature surveyed by the present study, Bookhouse is the first computerised fiction retrieval system in which all the above features are notably presented. In addition, the system also merits special note for two other features:

1. It is based on a theory about fiction readers' enquiries - a conceptual construction of readers' multi-dimensional enquiries. The application of such a theoretical base substantially distinguished Pejtersen's research from others. As she correctly criticised, a common defect of most previous research is that designers of new systems as well as adaptors of existing ones drew heavily upon their personal sets of values and perception of fiction when they constructed their system.

2. Except for the theoretical foundation, the system is also notable for its technical device, a graphical user-interface. The preliminary test of the system with public library readers...
showed that such an interface was enthusiastically welcomed by the readers, probably because (a) it is very user-friendly and suitable for novice computer users such as public library readers (b) the graphical interface enabled the system to imitate to a maximum extent the browsing environment of public libraries, which public library readers have long been used to.

Previous research has also demonstrated that although fiction reading is highly idiosyncratic, it is not totally beyond the impact of innovations in fiction services. Readers' searching behaviour, their use of fiction stock, even their perception of fiction texts, are open to the impact of fiction services. In fact, certain causal relationships between library services and fiction reading have been established. For example, Goldhor (1972, 1981) noted that library services with guidance functions may increase readers' use of the fiction stock. Findings from these studies suggest that the techniques of fiction representation developed in the last decade, which are advanced in guidance function, would certainly affect fiction reading activity in one way or another. For the purpose of examining the effect, which is the major concern of the present study, these studies have also shown how the effect can be measured.

2.5.2 Deficiencies

In the area to which the present research attempts to contribute, a number of general deficiencies are revealed from the literature review.

(1) The general view of the whole area is rather pragmatic. Very few studies are grounded in a solid theoretical framework. This is first reflected in the works about the effect of innovative fiction services. When such effects are concerned, applications of variables are seldom theoretically justified. Fiction circulation or the amount of borrowing is applied in most cases as an indicator of the effect in question. Yet the concept of circulation has been assigned such diverse meaning that it is hardly possible to compare the result of different studies. The finishing ratio of the borrowed books was employed occasionally in alliance with circulation. It was assumed in some research, e.g., Spenceley's (1980) that the variable was related to readers' satisfaction level, but Spiller (1980) argued that this assumption did not hold true. So the conceptual construct that this variable is meant to measure has
remained very ambiguous. Furthermore, it is not clear whether there are still other aspects/attributes of reading activity that might be affected by innovative fiction services. This methodological confusion is hardly surprising considering that nowhere in the reviewed literature, have the concepts of fiction reading and fiction reading activity been defined.

The pragmatic view of the area is secondly reflected in the research about fiction representation, from which the independent variable of this research was developed. Due to the lack of theoretical framework, the construction of information cues has remained either a matter of trial and error or solely experienced-based. Pejtersen's research is an exception. It was based on a conceptual perception of readers' needs and enquiries. However, this theory does not seem to be a solid one. The empirical research from which the theory was developed had gathered data from readers who approached librarians for help. According to reader studies, such readers make up a very small minority in public libraries (Spiller, 1980). Therefore the sample of the research did not seem to be adequately representative. In addition, the data collected consisted merely of readers' expressed needs. The validity of the data relied very much on the assumption that readers' expressed enquiries reflected all their needs. However, this is one of the assumptions that is least supported by general user studies. As Pejtersen (1990) herself acknowledged in another paper, due to psychological factors, there is often a gap between users' requests and their real needs. Therefore, the data thus collected did not seem to be adequately valid.

(2) There is also a general lack of interest in the building of theories (i.e., the theoretical outcome or objectives) about fiction representation. Pejtersen's research is again an exception. In a number of her studies, the development of representation systems actually led to the modelling of fiction readers' searching strategies and value constructions of information cues (Pejtersen, 1979b, 1988; Morehead, Pejtersen and Rouse, 1984). However, apart from that, the whole area is dominated by practical interest. This is illustrated by the rapid growth of fiction representation systems in the last decade.

The predominance of the practical interest is not so blameworthy in its own right as for its relation with the tradition of fiction librarianship in which professional ideology and skills
have long outweighed the system of the domain knowledge. The tone of the tradition was set in the debate of fiction questions (also called fiction problems or fiction nuisances). The major concern of this debate was the professional attitude towards fiction and fiction readers and the establishment of a new professional consciousness under the impingement of fiction provision on its education functions (Sturges and Barr, 1992; Snape, 1995). The domain's theoretical tasks - clarification of concepts, classification of phenomena, establishment of relationships - had been largely neglected under the disguise of these ideological concerns. The consequence of this neglect was that no systematic knowledge, not even opinions, evolved from the long debate. "There was really no serious debate at all. The nature of the viewpoints [of the debaters] is not so much contributions to a debate as expressions of concern, indeed, of fear" (Sturges and Barr, 1992, p. 31).

So viewed in this context, the predominance of practical interest reveals not so much a genuine concern with practical needs as the legacy of the traditional neglect of the theoretical task. In fact, theoretical construction is important not only in its own right, but also for further practical research. Firstly, it is vital to system evaluation, for the development of appropriate measurements and methods for system evaluation relies very much on the establishment of related variables and the relationship between these variables, which is beyond the scope of practical research. Secondly, it will also lay the foundation for system design. Many fundamental questions regarding system design cannot be tackled by practical research alone. For example,

which questions and problems in fiction indexing are genuine, and which have been artificially created through employing an unsuitable approach for the task? Which of the solutions suggested for the genuine problems will improve retrieval performance, and which will fail and need replacement by other methods? (Pejtersen and Austin, 1984, p. 34)

(3) Since the previous practical interest has built up a wide range of information cues and representation techniques, one of the major theoretical tasks naturally evolved from the development is to classify the information cues and reappraise them in their relation to fiction reading activity. The literature survey of this study has shown, however, the domain knowledge about the effect of information cues on fiction reading activity still remains conceptually and methodologically blank.
(4) If the effect of information cues is to be measured by attributes of fiction reading activity, another problem in previous research would become acute. None of the variables identified in previous research has gone through validity and reliability tests. Therefore it is not known whether the variables really measure what they intend to measure and to what extent they measure it realistically.

In conclusion, the review of this chapter finds it imperative to examine the actual effect of fiction representation (including two indispensable elements: the construction of information cues and the representing media) on fiction readers' activity, particularly to establish the relationship between the depth of information cues and readers' searching and reading effectiveness. For the purpose of such a study, some measurements applied by previous research can be adopted to some extent. Many of them, however, need refinement, both theoretically and statistically.
Chapter 3

CONTEXT OF FICTION READING
ACTIVITY AND THE ROLE OF INFORMATION CUES

3.1 Introduction

This chapter builds up the theoretical framework of the study from the perspective of the reading context. It first defines the concept of fiction reading activity, and then discusses the reader determinants in this activity (e.g., the reader's personality), with which the reader context of fiction reading activity is developed. It finally sets the role of information cues in this activity with reference to the reader context. This perspective is meant to complement Pejtersen's studies. As shown in the previous chapter, most of Pejtersen's works examine information cues from the point of view of readers' expressed needs. The drawback of such a standpoint is its limitation in seeing the reader's complete needs, because usually only part of the needs generated from the reading context are articulated by the reader.

3.2. Reading, fiction reading and reading activity

"Nothing is more commonplace than the reading experience and yet nothing is more unknown. Reading is such a matter of course that, at first glance, it seems there is nothing to say about it (Todorov, quoted in Howe, 1992, p. 61).

Cast in this general conceptual ambiguity, the concept of fiction reading is even more difficult to grasp. The term covers a wide range of activities from bed-time reading to serious hermeneutic study of a literary text. Since there is no accepted definition for an act with such diversity, the section below develops a concept of fiction reading from what is known about reading in general.

3.2.1 Reading

Gray (1965), in his historical research about adult reading, looked at the development of the concept of reading in general. He noted that early this century, reading was often
defined as the act of recognizing and pronouncing words. Between 1910-1925, the concept gained a much broader meaning which consisted of not only accurate recognition of words but also the fluent grasp of meaning. However, this definition was soon found to constrain people's understanding of the interactive nature and social implication of the concept. It was then further conceived as a process to react thoughtfully to what is read, reject the inaccurate, the biased and the unsound and respond favourably to the true, the beautiful and the good. From the nineteen forties, a new dimension of meaning was added to the concept, that is, reading involves also what the reader already has in his/her mind, his experience and knowledge. "Reading typically is the bringing of meaning to rather than the gaining of meaning from the printed page" (Smith, 1961, p. 23), a process of rewriting the text of the work within the text of the reader's life (Scholes, 1989, Holland, 1989). So reading is now conceived as a complex activity of four dimensions: the perception of words, a clear grasp of meaning, thoughtful reaction, and integration.

Reading may take a variety of forms. Outwardly, it consists of a repertoire of activities: skimming, scanning, looking up, studying, browsing etc. When a reading act is performed, the reader selects from this repertoire forms that suit his/her needs and the reading materials.

3.2.2 Fiction reading

The concept of reading in general developed so far - the interactive and integrative extraction of meaning - does not fully clarify the concept of fiction reading, for 'meaning' itself is perhaps one of the most ambiguous terms concerning fiction reading, especially fiction reading in public libraries. On the one hand, fiction, unlike other library materials, is laden with subjective information - emotion, attitude and value judgement, which is open to various understandings. On the other hand, public library readers differ greatly in their education, social status and motivations, etc., and bring accordingly various meanings to a particular text. A book can reveal to one reader human nature and human tragedy while to another, it may be nothing more than a tearful story. Mann (1982a) cited George Owell's Animal Farm as an example to show the diversity of meaning in a fiction book. The book is seen by some people as an excellent animal story. But to those who know about Russian modern history, it is a political fable which conveys much deeper meaning.
Thus meaning of fiction can be extracted at various levels. Most indexers (e.g., Ransley, 1987; Pejtersen and Austin, 1983, 1984), from the perspective of fiction processing, see the meaning of fiction as a double layered construct. At the more superficial level, fiction presents the fact or subject matter. At the deeper level, it presents the thematic significance or author's intention. From the ordinary fiction reader's point of view, Leenhardt et. al. (in Ankusowicz, 1991) identified three levels of "meaning extraction": (1) disposition to facts and events - a reading strictly following the plot, structure of narration and omitting deeper reasons (hidden or external to the reality presented) for the event taking place. (2) a reading of the identification-emotional type based on an analysis of the heroes' characters, their mental motivations, where identification with the character frequently takes place. (3) a reality of the analytical-synthetic type. This is an overall formulation of the situation, action, mental motives, reasons and results.

With the meaning of fiction being perceived as a multi-layered construct, fiction reading can then be defined as a process during which the reader, through skimming, scanning, browsing, studying etc, interactively and integratively extracts meaning from fictional works on any of the three levels:

- extraction of plots
- emotional identification
- analysis and synthesis of the actions, reasons and mental motives

3.2.3 Fiction reading activity

The act of reading itself - the extraction of meaning from a particular text alone - does not make up the whole process of reading activity. Fiction reading activity is a series of mental and physical activities performed by the reader which are associated with a particular fictional text.

Nell (1988) started his model of pleasure reading activity with the antecedents of the reading process, among which is correct book selection [see figure 3.1]. Book selection is regarded in Nell's model as an important part of the whole process, because the consequences of a mismatch are an inordinate expenditure of energy in order to maintain
reading. The effort of reading a poorly chosen book is likely to lead to speedy abandonment of reading in favour of another activity.

Figure 3.1  A model for ludic [pleasure] reading  (Source: Nell, V. Lost in a book. New Haven: Yale University Press, 1988, p. 8).
Nell is not the first one who sees book selection as an important part of pleasure reading activity. Hatt (1976) also stressed that reading activity is a much broader concept than the "reading act" - the actual visual perception of the text. He saw reading activity as a process of interpersonal communication which involves a text, a sender [writer], and a receiver [the reader]. Before the reading act happens, the reader and the text exist in their separate unique identities. Each has been "made" and in the course of the reading situation, each is re-making the other. Therefore in order for any reading to happen, the two separate unique identities, the book and the reader, have to be properly matched. He criticised some models of reading activity for taking the coming together of the text and the reader as 'given' and locating the commencement of the reading activity at the point where the reader starts to perceive the words on the pages.

This is hardly satisfying. If we accept that a reader's mental 'set' is a key factor in reading performance, then it would seem that the approach route to the text is crucial. If what the reader gets from the text depends on the questions he addressed to it then these questions derive initially from expectations which are roused before he encounters the text. In effect, a reading act, extended to include the 'finding' of the text can be seen as a series of questions which the reader puts to a store of message. At the beginning of the reading act, the questions may be vague and amorphous and the store is the whole world out there. As the reading act proceeds, the questions become more specific and the store narrows to a text (Hatt, 1976, p. 66).

He, therefore, proposed to locate the beginning of a [reading activity] at the point when the reader decides to read and start attending to messages (information cues) about a text or clues for relevance, putting aside other claims on his attention.

Fiction reading activity does not finish with the ending of the text either. The connection between the reader and the text quite often goes on long after the "reading act" is accomplished. The extended connection is sometimes reflected in the reader's desire for 'more [books] like this one' and the desire to talk to someone else about a book that has involved [the reader] so deeply (Chambers, 1969, p. 46). In figure 3.1, Nell (1988) modelled this post "reading-act" activity with one evaluation process and two results (exits) from the evaluation. The current reading is continually evaluated against at least two sets of
criteria, which not only determine whether the current one will be continued but also decide whether it will lead to any further reading. These two criteria are:

- Is the reader's book-induced cognitive product itself rewarding?
- Is the reward value of this cognitive product more attractive than the rewards offered by available alternatives?

The success of the current reading forms positive reinforcement for future reading, or else the evaluation will lead to the abandonment of reading in favour of other alternatives.

In summary, fiction reading activity is a series of associated mental and physical activities by a fiction reader, including: (a) activities preceding the reading act such as identifying and locating the text (b) the perception of the text (c) consequent activities such as mental review of the text, talking about it, forming new reading plans. It is this broader activity that really characterises the reading habit of a particular reader. When the reader responds to certain innovation in fiction services, he/she also opens the whole area of his/her reading activity to its impact.

3.3 The effect of fiction reading activity and its relation to information cues

3.3.1 The effect of fiction reading activity

Fiction reading activity, which is able to involve the reader deeply in all the emotional, intellectual and physical dimensions, is bound to have profound impact on the persons engaging in it.

What effect fiction reading activity may have on the reader has caused considerable concern since public libraries started fiction provision last century. Most early thoughts on this issue were voiced during the great debate on fiction questions. Opinions first conflicted on whether fiction reading activity had any positive effects at all. The answer from a considerable number of librarians was "no". Fiction reading was condemned by these librarians for wasting the time which should be instructively employed, for encouraging immorality and bringing about intellectually "disabled" persons. It was believed that "the
reader of novels only, especially if he reads many, very soon becomes an intellectual voluptuary, with feeble judgment, a vague memory and an incessant craving for some new excitement" (Porter in Carrier, 1965, p. 17). Some librarians, on the contrary, did see the value of fiction reading in the reader's intellectual growth, particularly in keeping the newly-gained literacy of the working-class. Reading fiction, as they argued, was better than reading nothing at all. If the books were appropriately selected, fiction reading could have a wholesome effect on the readers' knowledge and on their views of themselves and others (Carrier, 1965; Sturges, 1992).

This more positive professional opinion about fiction reading has become considerably consolidated by the increase of fiction readers and fiction issues as time has gone by, although the legacy of religious and social prejudice against fiction reading persists even today. Most librarians of the newer generation are willing to admit that fiction reading could extend the reader's knowledge (Carrier, 1965) and serve as a way to personal enrichment (Brewis, Gericke and Kruger, 1994). Rockwell recognized two types of knowledge in fiction: first, information about the institutional, technological and legal state of society, second, information about attitudes and values prevailing in society (Rockwell in McClellan, 1981). The significance of fiction for individual readers and for society at large is achieved through the communication of the information in the process of reading, that is, as Rockwell demonstrated, through readers' perception, comprehension and assimilation of the information. So under this more positive stance towards fiction reading, it is possible for a fiction reader to experience an educative reading process identical with Hatt's general reading pattern:

1. the reader perceives the text
2. the reader decodes the text
3. the reader accepts the message
4. the reader retains, in his store, knowledge taken from the message

Fiction reading is now also acknowledged as having profound effect on reader's attitudes and values towards the world and himself/herself. It "deepen his sympathies and help [him]".

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1 The effect of reading is emphasized with italics by this author.
understand himself and others" (Carrier, 1965, p.19); it reveals to the reader certain norms as to what is acceptable and what is not in society (Rockwell in McClellan, 1981); it positively influences the reader's life by assisting him or her to form his/her own attitudes and values (Brewis, et al., 1994); it also reinforces beliefs and aids the transition to new values (Robins, 1985). With such effect taking place, fiction reading, again, draws itself close to general reading patterns identified by Hatt (1976):

1. the reader perceives the text
2. the reader decodes the text
3. the reader accepts the message
4. the reader uses the message to confirm an attitude or opinion

and

1. the reader perceives the text
2. the reader decodes the text
3. the reader accepts the message
4. the reader uses the message to change an attitude or opinion

Moreover, librarians are beginning to see the effect of respite as a positive effect of fiction reading in its own right. Such effect is found to be necessary for a healthy development of a person's psychological process. According to Brewis et. al.(1994), theories of psychology agree that the social roles a person plays in modern society often cause substantial tension in his/her life. These theories also agree that the tension one experiences in reality can be alleviated to a great extent by the tension he/she experiences in fiction reading. Nell (1988) noted that readers’ temporary detachment from reality and rapture in the imagined world requires heightened arousal, and readers are more aroused when they are reading the pages they like most. The reward value brought by fluctuating arousal feeds back to consciousness as a generalized feeling of well-being. He also found that pleasure reading is similar to hypnosis in that it not only fills the reader with absorption but also with trance in the case of some readers.

Absorption holds one, but trance fills readers with the wonder and flavour of alternative worlds. During both these conditions, the reader transmutes active secondary-process input to effortless, passive and drifting cognitive products, a vicarious daydream which fully occupies consciousness. We
argue that this daydream is especially pleasant both because of its content and because a regnant ego holds threatening experiences at bay by continually reassuring the reader that the imagined experience is only make-believe. (Nell, 1988, p. 264)

The best part of this consciousness-transforming power of fiction reading, according to Nell, lies in its capacity to bring the reader from the imagined world back to reality safely. The reader may fall to the state of absorption, trances, hypnoses in the process, but he/she is always able to come back to reality intact, mentally and physically. The reader him/herself is always in control of the journey departing from and returning to reality. Abbey (1981) concurred with Nell in stating that the respite or escapism are important for the reader, for it ultimately refreshes men with the imagined world, for their far tougher task of coping with reality (Abbey, 1981).

In summary, librarians today largely agree that fiction reading may give rise to at least three categories of effects:

(1) Subjective feeling of well being: This includes the feeling of relaxation, respite, escape from unpleasant reality, etc. An intensive inner feeling of well-being is found to be accompanied by certain atmospheres surrounding the reading process, e.g. absorption, concentration, imperviousness to distraction or simply an expression that 'I couldn't put it down' (Nell, 1988, Chambers, 1969). These feelings are also often followed by the desire for 'more like this' and desire to talk to someone about the book (Chambers, 1969).

(2) Cognitive change: This refers to the change in a reader's knowledge store, or learning from reading. It is assumed that during the reading, the reader first extracts the relevant information, and then integrates what he/she extracted with his/her previous knowledge and fits it in a meaningful way. This knowledge will be remembered and retrieved when it is wanted (Gilbson, 1975)

(3) Reinforcement/change of attitude: This refers to the effect on the reader's view of the world, society, the environment, others and the self.

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3.3.2 The relationship between fiction reading effect and information cues

The effect of fiction reading discussed above may relate to information cues in various ways. Pejtersen (1992a, 1992b) noted that information cues may improve readers' understanding of the borrowed books by introducing to them the authors' viewpoints and opinion, facts, fantasy and so on. This is probably because the introduction increases the reader's existing knowledge about the book. It is established in reading psychology that readers' understanding of textual information significantly relates to the richness of relevant knowledge already existent in his/her mind. The greater the knowledge base of the reader, the better the comprehension of the text. According to Solso (1988), one way to account for this relationship is that knowledge can be viewed as an organized collection of information. New information can be assimilated more thoroughly when relating cognitive structures and information already exist. So, when information cues introduce new relevant knowledge to the reader, as those in Bookhouse did, an improved understanding of the book and cognitive change should be expected.

The cognitive effect of fiction reading may also relate to information cues indirectly through their effect on fiction selection. This expectation is based on Mann's (1982a, 1982b) sociological model of reading. According to this model, cognitive effects of fiction reading are determined by the types of books being read. The model contrasts two types of fictional works: serious novels and light fiction. To read a serious novel, he argued, is to accept a form of stimulus which will require the reader to undertake an intellectual form of exercise if any real benefit or understanding is to be gained. It is status-conferring. Light fiction is defined in the model as writings for entertainment and escapism only. The reading of these books is seen as largely a personal matter. It might give pleasure to the reader at the time of reading but it has little carry-over effect beyond the act of reading. Based on this model, it seems reasonable to assume that information cues might affect cognitive effects of fiction reading by encouraging serious fiction borrowing. It must be noted, however, that the validity of the model has not been empirically tested. The model itself and any predictions derived from it are highly speculative.
Theoretically, a reader's subjective feeling of well being in reading may also related to the information cues encountered before the reading. This expectation is based on a number of empirical studies and theoretical speculations. Firstly, Mann (1980), Spencely (1980), Turner (in Goodall, 1989) have noted that there exist a correlation between readers' satisfaction with reading a book and his/her knowledge about the book prior to borrowing. The more he/she knows about the book, the more he/she tend to enjoy reading the book later on. Since information cues may add to readers’ knowledge about the book to be borrowed, a more intensive subjective feeling of well being should be expected as a result of exposing the reader to more comprehensive and in-depth information cues. Secondly, Nell (1988) noted that the outcome of pleasure reading is determined to a great extent by readers' book selection. Correct match between the book and the reader gives rise to great satisfaction and encourages further reading. Mismatch yields dissatisfaction and leads to quick abandonment of reading. So if information cues can improve the match of books and readers, the improvement should be reflected in the increased subjective feeling of well being.

3.4 Reader context of fiction reading activity

Librarians' experience consistently shows that readers differ greatly in terms of what books they choose, how they read, and what effect they get from the reading. The human mechanism (attributes of readers) which determines these differences has attracted numerous researchers. Factors revealed by these studies constitute a specific context, the reader context, for fiction reading activity.

3.4.1 Factors from a psychological point of view

The reader's psychology has been treated by many researchers as one of the most important factors affecting reading behaviour. Among the early researchers are Ward (in Karetzky, 1982), Rubakin (1937), Bryan (1939, 1940), Butler (1933), etc. Among the more recent researchers are Schramm (1956), Holland (1975), Nell (1988), etc. While all these researchers agreed on the importance of the overall psychological aspects, they differ distinctly in their focus. The first group of researchers focused on the reader's personality as the decisive factor and the second group focused on the reader's current motives or needs.
The motive is more dynamic an attribute than the personality. As Butler (1933) pointed out, the psychological motive behind each type of reading is unique and distinctive. Yet it is probable that no one motive ever persists. A reader seems to slip easily from one to another.

Rubakin is perhaps one of the most influential researchers of the first type. In his theory about reading (Rubakin, 1937), a reading process is nothing more than a psychological phenomenon and it is the reader's personality or psychological type that determines this process. "When the book is being read, it is a subjective psychological phenomenon based on impressions which the reader's psychological organism receives from it as an external object. The greater the difference in personalities the greater the divergence of meaning or content attributed to the same book" (Rubakin, 1937, p. 11).

Readers can be classified into different psychological types. Each type has a different taste in books and different perceptions of the same text. For example, from one point of view, readers can be classified into two types: those who draw everything toward themselves, and those who push everything away from themselves. A reader of the former type sees himself/herself as the centre with the whole of his/her psychological activity revolving around himself/herself. In the books he/she reads, he/she seeks a confirmation of his own thoughts and feelings; he/she is unable to identify himself/herself with the hero or any other character. In a word, he/she is an individualist, who endeavours to subordinate life in the community to his/her wishes.

From another point of view, the emotional point of view, readers can be classified into three major types, pessimistic, optimistic and aggressive. A pessimistic reader sees everything around him as being beyond his possibilities, the world seems to him dark and sad. The optimistic, on the contrary, focuses on the pleasant and positive aspects of everything. He/She prefers books with a happy ending and readily looks at the last pages before starting to read a book.

Personality is called "identity theme" in Hollan's (1975) theory. He regarded identity theme as the determining factor of reading divergence, but he also went beyond that to explain
why the same person may have a very different response to different literary texts in the
same situation. According to him, literary reading involves a transformation by means of
forms acting like a defence of drives, impulses and fantasies back and forth from the most
primitive strata of psychic life to the highest - the social, intellectual or moral themes which
people find in literature. The determining role of the reader's identity theme during this
transformation process of reading, is that it determines the wholeness a reader creates in the
same way that he passes all his other experiences through the filter of his personality in a
defensive way. For example, a reader may psychologically avoid threats by refusing to
perceive them at all and repression by not acknowledging the perception. A narrator
(author) who kept the terrible happenings to the end or as a suspense, provides such a
defence mechanism. The reason that some people respond to literary characters as though
they were real people when they are not real and often not even realistic, the feeling of
being absorbed or taken out of themselves is that their process of transformation melds with
the exterior work so that they no longer perceive a difference between in here and out
there. "He must have found something in the work that does what he does to cope with
needs or dangers" (Holland, 1975, p. 115). Such transformation leads the reader to the
meaning and wholeness of the book that is characteristic and pleasing for him and therefore
to the unique pleasure of reading (Holland, 1975, p. xii)

So "readers read differently because of their different personalities and we can understand
both the large and the small interactions of a reader with what he reads by relating them to
an invariant identity theme abstracted from his ego choices" (Holland, 1975, p. 203).

Like Holland, Nell (1988) also based his theory about pleasure reading on theories of
psychology and his own empirical research. But he was more influenced by Rubakin's
bibliopsychology. He regarded Rubakin's work as the most important early study and
Rubakin himself as a hugely erudite Russian revolutionary and propagandist (Nell, 1988, p.
115). According to Nell (1988) the glamour of reading for pleasure lies in the fact that it is
free of any authoritative judgement (the reader does not have to choose books which have
socially approved value), free of response demand (the reader does not have to answer any
pre-imposed questions). Reading for pleasure also appeals to readers because of the
possibility of its bringing certain mental states to the reader: absorption, trance, change of consciousness, etc.

Exactly which mental states a reader can achieve and what kind of books he/she prefers are determined by his/her openness to fantasy which in turn is determined by the reader's personality. Therefore books may be used either voraciously and anxiously to hold consciousness at bay by some readers, those who are fearful of fantasy, or to heighten it by other readers, those who welcome fantasy. The former type of readers are called Type A and the latter, Type B. Type A readers are usually individuals whose inner life is governed by fearfulness, anxiety, guilt, or other negatively toned states. For these readers, empty period during which fantasy can develop will be especially threatening. So books, as well as other things, are used to keep them busy to prevent fantasy from developing. They would prefer highly formulaic material. Their reading acts are characterized by much more absorption than entrancement. And it is more likely that their reading is more rapidly forgotten. On the other hand, Type B readers are usually those Maslow called mature and fully actualized persons. They welcome fantasy and are quite happy to lose themselves in it. A book therefore ceases to be primarily an instrument for shifting attention from the self to the environment in order to block out self-consciousness and becomes instead a vehicle for involvement with the characters and situations in the book. Their reading is characterized by differentiated and selective use of reading material and by deeper involvement.

Bryan (1939, 1940) and Schramm (1956) are representative of researchers who emphasized the reader's psychological motives for reading. Bryan saw reading motives as the reader's more specific desires and needs, including needs for security, new vitalizing experiences, recognition and affectionate response. She pointed out that librarians must find out the reader's interests, attitudes, emotional problems and needs, in addition to his/her educational background, in order to find the right book for the right reader, at the right time.

Schramm saw motives for reading as basically of drive-reduction or drive-stimulation or their combination, which is determined by the reader's socialization. For example, a child learns, by trial and error, how to reduce certain drives and tensions (such as hunger and
loneliness). As the process of socialization goes on, he/she learns that he/she ought to have some of the drives and tensions in order to play his/her social roles. He then learns further to reduce these learned drives and tension. The implication of this model is that on the one hand, different socialization has different effects on the reader's motivation for reading, on the other hand, different reading materials require different levels of socialization. It makes it possible to differentiate between reading in which immediate drive reduction (immediate reward) is sought and reading in which temporary uneasiness, even increased tension, is tolerated because it will supposedly lead to later social rewards in prestige, status, or survival. For example, comic reading or Hollywood gossip reading, requires less in the way of socialization than does other reading, and normally can have immediate drive reduction.

The above two schools of thought, in fact, revealed two different psychological factors in fiction reading: the more invariable personality and the more dynamic motives. The reader's personality (invariant identity theme) decides his/her usual reading tastes and habits. So each reader's reading activity has its own characteristics. But motives (current psychological needs, desires or concerns) also play an important part in the formation of reading needs and the perception of fiction text. Sometimes it may affect fiction reading to such an extent that the reader may temporarily change the characteristics of his/her reading activity determined by his/her invariant personality. In Nell's term, Type A readers may temporarily become type B readers and vice versa.

3.4.2 Factors from a sociological point of view

To study reading activity from a sociological point of view is to see the reader in groups, in society. It is believed by researchers of this approach that a reader's membership in society and in groups decides the reader's reading behaviour to a great extent. Therefore factors that grant the reader various kinds of memberships constitute an important dimension of the reading context.

A reader as a human being enters a society and culture through a long process of socialization. A number of institutions play important roles in this process, the three most paramount of which are family, school and occupation (Vakkari, 1991). These institutions
affect the reader's fiction reading activity mainly through two mechanisms. Firstly, they influence the reader's attitudes to and ability in reading through "opportunity structure" - reading resources and potentials for gaining the resources. Secondly, they affect reading activity through the institutional status of reading. A family's reading atmosphere and intellectual atmosphere determine the size of reading resources available to the children. It also determines the force of books in competition for leisure time with other entertaining media. Parents' values affect children's choice of books and the way of reading. In addition, family also transmits its influence into one's education, so does education into his/her occupation.

Apart from the family background, schools and occupation, the reader may also be linked to other people (social groups) by such factors as age, sex, income, active participation in the social life of a community, etc. (Gray and Munroe in Karetzky, 1982). Waple's (1932) research revealed that the major influences on reading are: (in descending order of importance) a person's sex, education (schooling) occupation, age, environment and time spent in reading. He found that in general the expressed interests of men and women follow the traditional male-female stereotypes. Women are more interested in reading about human nature, personality, interesting people and places than men. A person's occupation is mainly determined by his/her sex and education. Its influences arise because it determines, to some extent, who one comes in contact with, where one lives, the time available for reading and the relevance of current events. Age does not in itself cause a change in reading habits, however, the characteristics that vary by ages do: education, occupation, income, and so on.

The findings and conclusions from these studies are also supported by more recent studies. For example, Mann (1982a), based on the survey of Euromonitor, identified gender, economic and social status, education and age as important factors in reading behaviour. He concluded that the current profile of the fiction reader is more likely to be women than men, middle class than working class, reasonably well-educated and a bit older rather than younger.
3.5 The roles of information cues in fiction reading activity

3.5.1 The concept of information cues

"Information cues" is an adoption of Schramm's (1956) concept of "index cues". Schramm defined index cues as stimuli that represent and predict other stimuli. For example, captions in a newspaper act as index cues to the news that follows. Similarly, the bibliographic data, keywords/subject headings, the abstracts of a scientific article are all information cues to that article. In the case of fiction reading activity, various items of information may function as index cues (information cues) to the original fictional text. Spiller (1980) found that most readers would check the following before they borrow a book: (1) cover (2) author (3) title (4) publishing data (5) blurb. Ross (1991) found that apart from the above information cues, a fiction reader may even check the first few pages to predict what is in the text and how it is presented. Very often they would try to recall whatever information they have learnt somewhere else about the author to support their decision making. Goodall (1989), in summarizing a number of surveys about fiction reading, concluded that blurbs play a paramount role in readers' decision during book selection.

3.5.2 The roles of information cues in fiction reading activity

The role of these information cues first of all manifests itself in readers' selection of books for reading. Under most circumstances, it is these information cues, not the original text that determine readers' decisions to accept or reject a particular fiction work. In the process of this decision making, information cues represents the major features of a book and provide clues for the reader to judge the relevance of the book. They also enable the reader to predict what reward the original text may bring to him/her. In so doing, they stand for the original book in its competition for readers' leisure time. The relationship of information cues with other factors in such decision making is summarized by Schramm (1956) as below:

```
| content to be read | index cues | decision | personality characteristic | active environment |
```

In this construct, the content to be read may be perceptually different for different readers. Index cues, i.e., information cues may or may not accurately represent the content. They differ widely in availability over time and among individuals. Active environments include
competition for an individual's attention, factors which make for a comfortable or uncomfortable reading situation, and values and mores attached to reading by society.

Although the role of information cues in other aspects of fiction reading activity is not sufficiently studied, evidence does exist to suggest that information cues play certain parts beyond the stage of book selection. As section 3.3.2 of this chapter has shown, information cues are expected to affect the reading act by magnifying the cognitive and emotional effect derived from the reading process. More specifically, they may enhance these effects by introducing to the reader knowledge about the book before hand and/or indirectly through their influence on the reader's book selection.

3.6 A model of fiction reading context, reading activity and the role of information cues

Research discussed in the previous sections revealed from different approaches factors that determine people's reading needs, habit and behaviour. From a psychological point of view, researchers have identified the personality and current motivating factors. From a sociological point of view, they have identified the socialisation, age, sex and a range of other factors. These two approaches are different and sometimes even contemptuous of each other (Karetzky, 1982). However, none of the factors, should be neglected from the librarian's perspective. There is no doubt that psychological factors play a far more important role in fiction reading than in other reading activities, because the fiction reading need is basically generated from the reader's inner desires, rather than from external tasks. Yet there is no such thing as purely psychological needs. A readers' psychological trait is bound to mirror his/her other attributes (e.g., age) and experiences (e.g., education). Furthermore, even readers with the same personality (e.g., type A readers in Nell's term) and the same motives (e.g., to release anxiety) might behave very differently in their fiction reading activity, because of their difference in educational background, social status, family background, etc. Therefore, librarians' modelling of a reader's reading context must take all these factors into account.
Being active in this scenario, these factors are united in the reader and thus present themselves in fiction reading activity with the presence of the reader, who again presents himself to fiction services, not only as a reader, but also as a human being.

The human being, according to Erikson (1977), is at all times organized into groupings of geographic and historical coherence: family, class, community and nation. A human being, thus, is at all times an organism, an ego and a member of a society and is involved in all three processes of organization. So the fiction reader, as an organism, an ego and a member of a society brings to fiction reading all the factors previously discussed. These factors, interacting with each other, form a complex context, under which fiction reading activities take place. Firstly the reader is an organism. His/her biological process of organization forms one aspect of the reading context. This involves factors such as sex, age, health (including physical fatigue), etc. Secondly, the reader is an ego. His/her psychological process of organization forms the second aspect of the reading context. This includes the invariant personality and current psychological needs, such as needs to reduce fear, boredom, anxiety etc. Thirdly, the reader is a member of a society and a culture. He/She obtains this membership through the process of his/her socialization including the family, schooling and occupation. This process provides the reader with a value system, knowledge and experience. All these factors affect the reader’s reading habits and form the third aspect of the reading context. As Smith (1961) remarks

"our interpretation of what we read, in fact our readiness to learn to read is largely a function of those human groups and institutions with which we have been associated...Both our thoughts and everyday perceptions have a social origin...It is obvious that the culture delimits the characters of individual behaviour (p. 29)."

These factors interweave into a reader’s reading context and determine not only his general reading tastes but also his particular reading needs. Needs lead the reader to set up certain goals. Facing the same needs, the potential reader might choose alternative activities or he might choose reading magazines instead of fiction. So to read, and to read certain books
and to read them in a particular way (carefully or casually) makes up the goal for the reader to satisfy his/her needs.

It is at this stage that information cues step into a reader's reading activity. Firstly, they represent and predict the attributes and features of the material and act as searching tools when the reader feels the need to read. Secondly, they provide specific clues for the reader to judge the relevance of the material and to predict the potential reward the reading of the book may bring. By doing so, they compete with all other alternatives for reader's attention. Thirdly, they increase readers' knowledge about the original material and equip him/her for a better understanding of that particular material.

There are various types of information cues. Some mainly affect the reader's reading decision through his/her psychological character. Typical of this kind of information is the content and structure of the story. Some information may attract a reader's attention mainly through his socialization aspect. Typical information of this kind is the social judgement of the fiction work and its author. So how a particular reader would make use of these information cues is decided both by his/her general reading context and his/her current reading needs.

The possible relationship between fiction reading context, reading activity and the roles of information cues discussed above is shown with a visual model in figure 3.2.

It is predicted from this model that fiction reader's reading activity varies with reading context and availability of information cues. For example, a reader under stress (change of the psychological factor of the reading context) may choose materials different from what he/she chooses in a normal state. Similarly, the provision of information cues, say, media response to a book may lead readers' selection of books to conform more closely to the social judgement about the book.
Librarians can do little to interfere with the upper part of the model. It is formed by readers' own experience. They can, however, affect readers' reading activity through the lower part of the model: to provide adequate information cues and to make the information cues relevant to the reader's reading context. It is underpinned by these predictions and assumptions that the overall hypothesis stated in the next chapter is formed and the experimental treatments, which will be presented in chapter five are designed.
Figure 3.2  A model of reading context, reading activity and the role of information cues
Chapter 4

GENERAL RESEARCH DESIGN

4.1 Introduction

The previous chapter has established the concept of fiction reading activity, reading context, reading effects and the roles of information cues. From the potential relationship between the above conceptual constructs, it is predicted

- that the effect of fiction representation pervades the whole process of fiction reading activity, from book searching to the perception of fiction text
- that the effect of fiction representation will be ultimately reflected in the consequences of fiction reading, i.e., readers' subjective feeling of well being, cognitive change and the change of attitude
- that in depth information cues suit the complexity of fiction readers' reading context better and is therefore more effective in affecting readers' reading activity.

The overall hypothesis of this research developed from the above predictions is that providing different readers with different levels of information cues in certain media will result in different effect on their fiction reading activity.

This chapter presents the general methodology and operational variables required by this hypothesis, specific statistically testable hypotheses in terms of given variables, instruments for collecting data on the variables, validity and reliability of the instruments, the pilot study that tested the validity and reliability. It also discusses the selection of the sampling procedure and the data analysis technique.
4.2 General methodology

The purpose of this research and the overall hypothesis stated above require a rigorous manipulation of the information cues and their media, so that the observed differences in reader's reading activity can be and can only be attributed to the information cues and the representing media. The experimental methodology is believed to be appropriate for such a task, because the distinguishing feature and advantage of experimental research "is that it involves directly manipulating one or more variables that are being studied" (Ellis, 1994 p.221). The experimental methodology was therefore adopted as the general methodology of this research.

From the wide varieties of experimental research designs, the multiple-group, post test experimental design was applied. The experiment consisted of three groups formed through random assignment. The number of groups (three in this case) was decided according to the context of fiction reading activity. The first group was exposed to the vaguest information cues with reference to readers' reading context. The second group was exposed to moderate information cues with reference to their reading context. The third group was exposed to the most comprehensive information cues with reference to their reading context. The reading activity of all these groups was tested after the reader received the experimental treatment. The pretest and post-test design would have been the ideal choice, but they were not feasible in this case, because the public library reader is not a stable subject as a classroom student or a clinical patient. It is therefore extremely difficult, if not impossible to administer more than one test on the same subject.

The following diagram applies Campell and Stanley's (1963) notation to illustrate such a general design:

\[
\begin{align*}
\text{Group A} & \quad \text{R---X1---O} \\
\text{Group B} & \quad \text{R---X2---O} \\
\text{Group C} & \quad \text{R---X3---O}
\end{align*}
\]

where R denotes a random assignment procedure, X the manipulated treatment and O the observation of the dependent variables.
The treatments (X1, X2, and X3) were three versions of a fiction searching and browsing system with different levels of information cues and hypertext features. X1 provided only bibliographical data, including title, author, publication data in a hypertext system with limited navigation facilities. X2 provided multi-dimensional keywords of the subjects/themes, writing techniques, characters, settings about the book and the summary of the story, in addition to all the information provided in X1. X3 provided the author’s brief biography (e.g., experience and writing career), basic literary knowledge (e.g., glossary and literary prize), comments from book reviews, similarity between writings of different authors, in addition to all information cues included in X2. The information was represented in a hypertext system with complex navigation facilities (The design of the systems is described in detail in Chapter 5).

Assignment of subjects to the above treatments was accomplished through a random assignment procedure (R). The first reader entering the experimental area was approached and assigned to group A, the second to group B and the third to Group C. Whoever entered the experiment area at any time was completely unpredictable. For more details about the procedure, see chapter 6, which describes the procedure of the experiment in the field.

The observation (O) of the effect of the treatments (i.e. the three versions of the searching and browsing systems explained earlier) was made on the following aspects of the reading activity based on the theoretical framework, each of which was, in turn, measured by a number of operational variables:

- searching /browsing patterns
- efforts of decision making during the searching process
- amount of book selection and borrowing
- conformity of readers' borrowing to their general reading tastes
- readers' emotional experience during the reading
- cognitive experience during the reading
4.3 Operational dependent variables

4.3.1 Operational variables of readers' searching pattern

Searching pattern refers to readers' use of different access points when they search for books. Six access points were provided in all the three treatments: categories, keywords, authors, publishers, titles, and prize winners. The following operational variables were used for this aspect of the reading activity:

- the percentage of total searches using categories
- the percentage of total searches using keywords
- the percentage of total searches using authors
- the percentage of total searches using publishers
- the percentage of total searches using titles
- the percentage of total searches using prize winners

As noted in the literature review, surveys about readers' current searching behaviour found that fiction readers' searching is predominantly accounted for by two searching methods: random browsing and search for known authors' names (Spiller, 1980; Jennings and Sear, 1986; Spenceley, 1980). Pejtersen's (1992) report on the field test of Bookhouse, however, indicated that when provided with sophisticated searching methods, fiction readers tend to make use of all the methods available. The contradiction between these findings suggests that readers' reliance on random browsing and author names is probably a compromise with inadequate fiction cues. If this is true, readers' searching patterns should be apt to change when fiction representation is improved.

4.3.2 Operational variables of readers' decision making efforts

In this research, readers' decision making effort was assumed to correlate with two factors: the extent to which the system is used (external information support) and the dependence on the reader's own knowledge about the book, for the use of the system is associated with external information support for book selection, while the dependence on readers' own knowledge is associated with limitation in the scope of book selection.
4.3.2.1 Operational variables of the use of the system

How helpful the system was in the searching process was assessed by the following operational variables:

- **readers' general reaction to the treatment:** this was defined as the readers' general attitude to the utility of the system. It was believed that a reader's attitude to the system decides to a great extent how much use he/she will make of it. The attitude was quantified on a five point scale according to their direct remarks about the system or the way they use it. Those who showed greater interest in the system were assigned the highest point. Those who remarked negatively about the system were assigned the lowest point.

- **confidence in selecting books:** this was defined as the extent to which the reader can predict whether the book is the right one for him, given the information cues about the book. It was measured on a five point scale.

- **attitude to books not on shelf:** this was indicated by the reader's decision about books which had been selected from the system but were not found on the shelf thereafter. Possible decisions were assigned different weights within a five point scale. The greatest weight was assigned to the decision to reserve all the selected books and the least weight was assigned to the "don't bother" decision. The rationale of the weighting lies in the assumption that these decisions relate to the extent to which the reader is motivated by the system to borrow the books.

- **the extent of physically checking books per se to aid the decision-making:** this was assessed by weighting the sections of the book being checked by the reader after he/she had had related information cues from the system. It was assumed that when the reader developed enough trust in the information cues provided by the system, he/she might not check the book per se in the shelf area (in this case the variable has its greatest weight). The less he/she trusted the system the more extensively he/she would check the book.

- **relative importance of information cues in readers' decision making:** this was measured by the frequency of each information cue being rated as important by readers in their book.
selection. It was expected to indicate whether the relative importance of these information cues varies with the change of the searching environment.

4.3.2.2 Readers' dependence on their own knowledge for book selection
This factor is indicated by the following operational variables:

dependence on known authors in book selection: it was assumed that greater dependence on known authors relates to narrower choices of books and consequently greater efforts of search. This research therefore assigned the least weight to those readers who searched books only by one particular author and the greatest weight to readers who selected books by various authors. This variable was expected to show whether any of the experimental treatments is more effective in widening readers' choices of authors.

awareness of the books before using the system: this was defined as how much the reader already knew about a borrowed book before he/she saw it in the system. The awareness was weighted on a five point scale. The greatest weight was assigned to no awareness about the books at all. The least weight was assigned to awareness gained from reading a book review, from which he/she presumably had learned many details about the book, including bibliographical data and contents of the book. The rationale of the weighting is that when the reader tends to borrow only books that he knows enough beforehand, the system becomes less helpful in encouraging borrowing.

4.3.3 The operational variable of the conformity of readers' borrowing to their general reading tastes
This aspect of the reading activity was assessed by a multi-item variable - similarity (difference) of current book to what the reader usually reads. The similarity was defined in terms of its author, category, and characters and writing style. It was measured by the frequency with which a reader usually borrows books similar to the current one, that is, the borrowing had the greatest conformity to the reader's general reading taste if the reader very often read books by the same author, of the same category and about the same characters.
4.3.4 Operational variables of the distribution of book borrowing

The distribution of readers' borrowing was assessed from four different angles with reference to the author's "popularity", the "popularity" of the title itself, the nature of the book review comments and the fiction categories.

4.3.4.1 Distribution of borrowing with reference to authors' popularity

Authors included in this research were classified into "very popular authors", "popular authors" and "unpopular authors" according to how many times they were asked for by all the subjects during the period of the experiment. Although the classes were operational and arbitrary, it was believed, nevertheless, that authors who are generally popular among public library fiction readers, e.g., Dick Francis, Catherine Cookson, would remain relatively popular among the subjects of this research. Authors who are generally unpopular would remain relatively unpopular in this experiment. That is, an author's popularity in question here bears with it the author's popularity in general.

The distribution of borrowing with reference to the author was therefore demonstrated with the following variables:

- the amount of borrowing of books by "very popular" authors
- the amount of borrowing of books by "popular authors"
- the amount of borrowing of books by "unpopular authors"

Distribution of borrowing with the above variables was expected to show whether preferences of the three groups for authors were identical, given different levels of information about the authors.

4.3.4.2 Distribution of borrowing with reference to the popularity of individual titles

Titles were operationally classified into "popular" (appealing) titles and "unpopular" (unappealing) titles based on how many times they were selected by readers from the control group. It was believed that readers in this group would rely very much on their intuition for book selection, i.e., on how much the title sounds interesting, because few other information cues were provided. This has been found to be the case among general public library fiction readers when information cues are not adequate (Spiller, 1980).
Distribution of borrowing with reference to this feature of books was indicated by the following operational variables:

- amount of borrowing of "popular" titles
- amount of borrowing of "unpopular" titles

These variables were expected to show whether the experimental treatments would have different effects on readers' reliance on their intuition for book selection.

4.3.4.3 Distribution of borrowing with reference to the nature of book review comments

Book review comments were included in one of the experimental treatments. The review was either positive or negative or neutral, depending on the views of the majority of reviewers. Distribution of borrowing with reference to the nature of comments was indicated by the following variables:

- amount of borrowing of positively commented books
- amount of borrowing of negatively commented books

These variables were expected to show whether positively reviewed and negatively reviewed books were identically distributed among the three groups.

4.3.4.4 Distribution of borrowing with reference to categories

The distribution of borrowing was also examined with reference to fiction categories. Viewed from this perspective, two operational variables were applied here:

- the amount of borrowing of light fiction
- the amount of borrowing of serious fiction

This conventional dichotomy used by previous research was adopted here so that the findings of this research on these two variables could be compared with that of previous research.
4.3.5 Operational variables of readers' emotional experience (subjective feelings of well-being) during the reading process

It has been shown in the previous chapter that fiction reading activity results in subjective feeling of well being, cognitive change, the change of attitude. While the change of attitude is a long term result and difficult to measure here, the following operational variables were applied to measure readers' subjective feelings of well being (emotional experience). The cognitive change will be discussed later.

finishing ratio: this variable was measured with the proportion of read page numbers out of the total length of a borrowed book. Different finishing ratios were accordingly assigned different weights on a five point scale. "Less than a few pages" was assigned the least weight and "all" was assigned the greatest.

Although there is disagreement among researchers about the conceptual construct that this variable really indicates (Spiller, 1980), most researchers believe that the variable relates to readers' satisfaction level with the book (Spenceley, 1980; Jennings, 1989). As Nell (1988) argued, in the case of reading for pleasure, dissatisfaction with the book soon leads to the abandonment of the reading process.

desire to read similar books in the future: it is assumed that if a reading process yield high level of satisfaction the reader will be encouraged to read more similar books. So this variable was measured with the amount of further reading that a borrowed book would lead to. The amount of reading was measured on a five point scale, with "as many as possible" having the highest score and "none" having the lowest score.

desire to recommend the book to others: Chambers (1969) noted that it is a natural inclination of fiction readers to recommend a book he/she has enjoyed to others. Spiller (1980) also noted that recommendation from friends is one of the commonest approaches for fiction readers to learn about new authors.
Subjects in this research were, therefore, asked to rate their desire to recommend their borrowed book to other people on a Likert scale.

*Readers' rating of the commitment of their attention to the reading process*: in Nell's (1988) model of reading for pleasure, commitment of attention is one of the most important indicators of the intensiveness of readers' emotional experience. It was measured in this research on a Likert scale.

*recall ratio*: This variable was measured with the proportion of plots out of the whole story that the reader could recall after he/she finished a borrowed book. It was expected to show to what extent the reading was a memorable reading.

In addition, three other variables were assumed to correlate with the intensity of readers' emotional experience during the reading process: *readers' rating of the enjoyability of the book, readers' rating of their emotional involvement in the story, readers' rating of the possibility to re-read the book in the future.*

### 4.3.6 Operational variables of readers' cognitive experience during the reading process

The effect of the treatments on the cognitive dimension of a reading activity was indicated here by the following operational variables:

*Readers' rating of "learning through reading"*: this variable was measured by multi-items that asked directly how much the reader had learnt from the book about culture, people, historical events, as well as the author's life, world view and writing techniques etc., according to a Likert scale.

*Readers' general evaluation of the reading process*: This is a multi-item variable measuring how much the reader thought the reading was beneficial to his/her life, work and understanding of other people, etc. It was measured with a Likert scale.
the score of a reader's comment on a borrowed book: It was assumed that a reader's comment on a read book, to a great extent, reflects his/her cognitive experience during the reading, because the coverage and depth of the comment relates directly to the depth of the reader's analysis and synthesis of what he/she has read. In this research, the score was marked by the researcher according to the coverage and depth of the comment.

4.3.7 Amounts of book selection and borrowing

Three operational variables are related to this aspect of the reading activity:

- amount of book selection
- amount of actual borrowing
- amount of borrowing made by reservation

4.4 Hypotheses:

The overall hypothesis of this research can now be dissected into the following statistically testable hypotheses in terms of the above operational variables: They are stated as null hypotheses below:

Hypothesis 1 There is no difference in readers' searching patterns between the three groups, in terms of the percentage of searches using different access points.

Hypothesis 2 There is no difference in readers' decision making efforts during their searching/browsing process between the three groups, in terms of how much they make use of the system, or how much they rely on their own knowledge for book selection.

Hypothesis 3 There is no difference in the distribution of readers' borrowing of books between the three groups, with regard to authors, titles, fiction categories or nature of comments.
<table>
<thead>
<tr>
<th>Hypothesis 4</th>
<th>There is no difference in readers' emotional experience (subjective feeling of well being) during their reading process between the three groups, with regard to their involvement in the process and their rating of the reading process.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 5</td>
<td>There is no difference in readers' cognitive response to their reading, between the three groups, in terms of readers rating of the general benefit of the reading, their rating of learning through reading, and their score on critical reading.</td>
</tr>
<tr>
<td>Hypothesis 6</td>
<td>There is no difference among the three groups in terms of the amount of their total selection, borrowing and reservation.</td>
</tr>
</tbody>
</table>

4.5 Instrument for data collection

A structured observation/interview schedule, an unstructured observation note and a self-administered questionnaire were used together as the instrument for data collection. For details of the questionnaire, the observation/interview schedule and a sample of the observation notes see appendix 1.

4.5.1 The structured observation/interview Schedule

The structured observation/interview schedule comprised three sections. The first section was to gather the basic demographic data of the reader with a short interview before the reader used the system. The data collected by this section were not to be used in the data analysis, instead, they were used to monitor the result of the random assignment procedure to ensure that no systematic differences except for the experimental treatments occurred among the groups. The second part of the observation/interview schedule was to collect data on the variables of the searching process through the observation of their searching behaviour. This section was filled in by the researcher as soon as one session was finished (a session began when the reader started to use the system and ended when he/she took out or rejected books). The third section was to record the amount of readers' selection and
borrowing and the details of the borrowed books. It was also filled in by the researcher after the session.

4.5.2 The unstructured observation note
The unstructured observation note was to record all behaviour and comments of the readers' during the searching session which could not neatly fit into the structured observation schedule, e.g., reasons for accepting or rejecting particular books. All details of the note acted together as the evidence for the rating of the readers' general reaction to the treatment, their confidence in selecting books and their reliance on their own knowledge in book selection. This part of data was recorded as soon as possible throughout the experimental session.

4.5.3 The self-administered questionnaire
The self-administered questionnaire included three groups of items all connected to the reading of one particular book selected from the system. The first group measured the variables of the searching process. The second group measured variables of readers' emotional experience. The third focused on variables of readers' cognitive change as a result of the reading. The questionnaire was issued whenever a reader borrowed books on the spot or borrowed books through reservation. When more than one book was borrowed, only one questionnaire was issued, normally with the first book.

4.6 Validity and reliability of the data collection instrument

4.6.1 Validity
Two types of validity were tested to ensure that the instrument indeed measures what the research intended to measure: face validity and concurrent validity.

Face validity: Face validity refers to "judgements about validity made on the basis of overall appearance". (Ellis, 1994, p.92). Despite the fact that very often in social sciences, face validity is nothing more than a statement that "a group of experts in the field examined the test and judged it to possess [face] validity, the evaluation of content [face] validity can
be an extremely useful strategy as long as the evaluators do indeed know what is being measured" (Bausell, 1978, p. 210).

Face validity of the instrument in this research was evaluated by a field expert panel. (For an introduction to this panel see Appendix 2). Each expert was first asked to read a general introduction to the objectives and variables of the research. They were then asked to evaluate the validity of each item of a given variable on an evaluation sheet (see Appendix 2). The face validity of the instrument was calculated with the following formula, recommended by Bausell (1987):

\[
\text{face validity coefficient} = \frac{\text{number of very relevant items} + \text{relevant items}}{\text{total number of items}}
\]

which resulted in a face validity coefficient .72. Problem items were marked for further consideration.

**Concurrent validity**: Unlike face validity, concurrent validity applies more objective criterion to check the validity of an instrument. It "compares apparent validity of a new operational measure to an established more widely used operational measure" (Ellis, 1994 p. 92).

Three criterion measurements were compared, respectively, with variables of decision making, variables of emotional experience, and variables of cognitive experience. Variables of the distribution of borrowing and the amount of selection/borrowing were not tested because they have been commonly used by previous research and presumably have established validity.

The criterion for variables of decision making was readers' evaluation of the utility and helpfulness of the system, tested with a system evaluating questionnaire (see Appendix 6). It was assumed that if the data collection instrument was valid, then the score obtained by the instrument and the score of the system evaluation should be highly correlated, i.e. those
who made greater use of the treatment, and relied less on their own knowledge should also think highly of the utility and helpfulness of the system.

The criterion used for emotional experience (subjective feeling of well being) was Mann's book rating scale with reference to the market success and literary success of fictional books (Mann, 1982a). For the purpose of testing the validity of the measurement, subjects were instructed to rate the book subjectively based on their own impression of the book and not to rate it according to the commercial and literary success of the book in reality. It was assumed that if a reader rated the book he/she had read as both literary and market successful, he/she would have been highly satisfied with it. If he/she rated it as successful in one aspect, he/she would have been less satisfied with it. And if he/she rated it as a failure in both aspects, he/she would have been least satisfied with it. So if the data collection instrument was valid, the data it collected and the score obtained by Mann's rating scale should be highly correlated.

The criterion applied for the variable of cognitive experience was the score of a specially compiled test, which was supposed to show the cognitive attribute of the reading process. Questions in this test covered knowledge about the author, plots of the story, writing style, language and characterization. It was assumed that if the data collection instrument was valid, a reader's scores obtained by the instrument and his/her scores in the test should be highly correlated.

In the pilot study to test the validity, Mann's rating scale and the examination questions were combined into one form named "quiz about your book" (see Appendix 3). Details of the pilot study are described in section 4.8 of this chapter.

Concurrent validity was expressed, in this research, with Spearman correlation coefficients between each pair of scores. Spearman correlation coefficient is a measure for the strength of the association between two ordinal variables, the type of variables applied in this research. It was assumed that if the instrument was valid, then a reader's two sets of scores - one obtained by the data collection instrument and the other by the criterion measurement - should be highly correlated, i.e. a high correlation coefficient should be obtained.
Items that possess either very low face validity or very low concurrent validity and items that possess relatively low face validity and concurrent validity were deleted. The finishing ratio variable was exceptionally maintained although it had a low concurrent validity (.42), because it has been quite commonly used by previous research.

The concurrent validity of maintained items is shown in Table 4.1.

### Table 4.1

<table>
<thead>
<tr>
<th>Variables</th>
<th>Validity</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>general reaction to the treatment</td>
<td>.83</td>
<td>N/A</td>
</tr>
<tr>
<td>attitude to unavailable books</td>
<td>**</td>
<td>N/A</td>
</tr>
<tr>
<td>conformity to general reading taste</td>
<td>**</td>
<td>N/A</td>
</tr>
<tr>
<td>dependence on readers' own experience for book selection</td>
<td>**</td>
<td>N/A</td>
</tr>
<tr>
<td>confidence in selecting books</td>
<td>.94</td>
<td>N/A</td>
</tr>
<tr>
<td>pre-awareness of the book</td>
<td>**</td>
<td>1.00</td>
</tr>
<tr>
<td>extent of checking books per se in the shelf area</td>
<td>1.00</td>
<td>N/A</td>
</tr>
<tr>
<td>finishing ratio</td>
<td>.42</td>
<td>.94</td>
</tr>
<tr>
<td>commitment of attention</td>
<td>.78</td>
<td>.82</td>
</tr>
<tr>
<td>desire to read similar books in the future</td>
<td>.78</td>
<td>.89</td>
</tr>
<tr>
<td>emotional involvement</td>
<td>.78</td>
<td>.82</td>
</tr>
<tr>
<td>desire to recommend to others</td>
<td>.78</td>
<td>.82</td>
</tr>
<tr>
<td>rating of enjoyability of the book</td>
<td>.78</td>
<td>.82</td>
</tr>
<tr>
<td>desire to re-read the book in the future</td>
<td>.82</td>
<td>.88</td>
</tr>
<tr>
<td>recall ratio</td>
<td>.78</td>
<td>.83</td>
</tr>
<tr>
<td>general evaluation of the reading process</td>
<td>.84</td>
<td>.89</td>
</tr>
<tr>
<td>scores on the comments made</td>
<td>.98</td>
<td>1.00</td>
</tr>
<tr>
<td>rating of learning through reading</td>
<td>.98</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* Face validity coefficient after deletion of problem items=.86

Variables related to book circulation, such as total amount of borrowing are commonly used in previous research and presumably have established validity.
Concurrent validity cannot be tested with the student subjects in the pilot study. They are maintained based on their face validity.

4.6.2 Reliability
Repeated tests were applied to ensure that the instrument would be used by the readers consistently. The second test was carried out ten days after the first one. Both were completed in the first pilot study (to be described in section 4.8 below). Correlation between the two scores was analyzed with the Spearman correlation coefficient. The result is shown in table 4.1.

4.7 Population, sampling and subjects
4.7.1 Population and sampling technique
Bausell distinguishes two levels of population related to experimental types of research: the one actually available to the researcher (and from which a sample is drawn) and the one to which the researcher aspires to generalise the study results (Bausell, 1986 p.22). For convenience of reference, the current research names the latter "population", and the former "subpopulation".

General public library fiction readers in the UK formed the population of this research. Fiction readers of Loughborough Library and Melton Mowbray Library, both in Leicestershire formed the subpopulation. This subpopulation was chosen from the population through the convenience sampling method. The actual sample, the subjects of the experiment was then formed from this subpopulation through an incidental sampling technique. The researcher approached the readers who happened to use the fiction area of the library during the period of experiment and at the time when the researcher was not working with other readers. The reason that such sampling methods were applied in this research was that it was not feasible to apply random sampling to form either the subpopulation or experimental subjects. On the subpopulation level, requirement of rigorous manipulation of the experimental environment and procedure, as well as the financial and time resources, determined that it was virtually impossible to carry out the experiment in a number of randomly selected libraries. On the experimental subjects level, because the public library reader is not an invariable body as the classroom student or clinic patient, applying random sampling to select the subjects and arranging for them to come to
participate the experiment would require too much cooperation from the library and readers. The efforts imposed on them might actually suppress the research totally. In addition, it was believed that readers in the experimental libraries (the subpopulation) do not differ substantially from readers of other public libraries (population) and when the size of the samples becomes large enough, it will approximately represent the subpopulation.

Bausell (1987) and Keppel (1989) assured that for an experimental research design like the present one, absolute representativeness is not a crucial problem. Fortunately for research involving relationships or differences, the issue of absolute representativeness of a sample to its population is not so crucial as it is for a study whose purpose is only to arrive at a precise description (Bausell, 1978 p. 227).

Bausell went further to show that it is reasonable to expect the same result to be found in the population as long as the study in question is completely performed and as long as the subpopulation and the sample is not very different in some ways from the population. Keppel also comments that although the results of experimental research cannot claim a statistical generalisation, which depends upon random sampling, they may safely claim a non-statistical generalisation, which depends upon knowledge of a particular area (Keppel, 1989, p. 18).

### 4.7.2 Sample size

Sample size is a very important factor in determining the validity of the statistical test of experiment results (Bausell, 1987; Kraemer and Thiemann, 1987). When the sample size is too small, the probability of a real difference not being judged statistically significant would be too large. So "on the assumption that the research hypothesis is true, it is necessary that the investigator determines the sample size needed to give this hypothesis a reasonable chance of being proven correct" (Kraemer and Thiemann, 1987 p. 9). Bausell suggests that when the available sample is too small and fixed, the wisdom of conducting the study at all should be questioned.

According to statistical research, sample size is a function of the following parameters: (1) preset statistical power, (2) significance level, (3) critical effect size and (4) analysis procedure to be applied (Bausell, 1987; Kraemer and Thiemann, 1987; Keppel, 1989).
In this research, statistical power was preset at .90 and significance level was set at .05, which means the null hypothesis will be rejected at .05 significance level with .90 possibility that such a significance will be obtained when a real difference exists. In the case of fiction reading, the resulting differences judged important by society are assumed to be as large as 1 point of 5, considering the status of fiction reading in today's society and the status of fiction services in today's library world. This means that only when an innovation of fiction service results in a 1 point out of 5 effect, may it be judged important by society. Such an assumption gave rise to a quite large critical effect size of .35, according to Kraemer and Thiemann's (1987) formula. Their Master Table shows that such a critical effect size requires approximately 40 subjects per group for a .05 two-tailed test with .90 power. Considering that a large proportion of readers might not borrow books after using the system, 100 subjects were decided for each group in order to achieve about 40 questionnaire respondents.

4.8 Pilot studies

In September 1994, the first pilot study was carried out with nine postgraduate students from Loughborough University. It aimed at testing the validity and reliability of the instruments and any construction problems of the questionnaire. It was not tested with real public readers because it was designed as a repeated test, with ten days discrepancy. It would be too difficult to trace the public library readers for the second test. In addition, for the purpose of testing the instrument, the major concern of which is the intra-consistency of each tester's replies, the difference between students and real public library readers will not result in much distortion.

The second pilot study was carried out in February 1995, during the first two days of the field work. It aimed at discovering problems of the observation schedule instrument in a real setting.
4.8.1 The first pilot study
Student subjects were invited to test the concurrent validity of the observation/interview schedule and questionnaire and the reliability of the questionnaire, with the instruments specified in section 4.6. The students who agreed to do the pilot study were first asked to read the questionnaires and make comments on it. Some modifications were made based on their comments. For example, the question "How much is this book different from what you expected it to be?" was found unclear and overlapped with the question about readers' expectations of the enjoyability of the book, so it was deleted. The sequence of some related questions was adjusted. They were then asked to use the system and evaluate the helpfulness and utility of the system with a set of questions chosen from a system evaluating questionnaire (Appendix 6). They were then asked to choose at least one book to read. The way they worked around the system was observed, recorded and scored with related variables in the observation schedule. After they finished reading the book, they were asked to fill in the revised questionnaire and answer the questions in the "quiz about your book". The finished questionnaire and answer sheet were then carefully monitored by the researcher. Name and date were put on it. Ten days later, they were asked to fill in the same questionnaire again. The reliability of the variables in the questionnaire was tested with correlations between scores measured at different times. The concurrent validity of variables in the questionnaire was assessed with correlations between scores on the questionnaire and the specially designed "quiz about your book" (see Appendix 3). The concurrent validity of variables in the observation/interview schedule was assessed with the correlation between their scores and their rating of the system they used.

4.8.2 The second pilot study
This study was carried out during the first two days of the experiment with 20 public library readers. The major objective was to discover any problems with the observation schedule. Several items were found to be irrelevant or impossible to measure in the real setting. For example, in the original observation schedule, inputting mode (clicking or typing) were distinguished. It turned out that the majority of readers asked the researcher to do the searching with them and in many cases, inputting modes were not their own choice any more. Searching time was also found irrelevant to this research, because treatment 3 provides much more information than the other two treatments. Readers were quite happy
to spend spectacularly more time on it than on the other two. So it was no longer clear
whether time is an indicator of searching efforts (as in other cases with information retrieval
systems) or an indicator of the attraction of the system. Time spent in the shelf area was
found not feasible to measure because it was mingled with time spent in checking other
books which were not from the system. These items were therefore deleted from the
observation schedule.

4.9 Procedures of data collection
A set of data was collected through the following procedures:

(1) approaching readers in the fiction area with a request to participate.
(2) observing their searching behaviour when they work with the system.
(3) recording or printing book records they are interested in.
(4) accompanying them to the shelf area and observing their browsing
    behaviour.
(5) issuing questionnaire with thanks
(6) filling in observation schedule and taking notes.

Details of these steps are described in chapter 6.

4.10 Data analysis technique

Kruskal-Wallis one way analysis of variance was applied here for the overall difference
between the three groups. The Mann-Whitney test was applied for the difference between
each pair of groups. The analysis was carried out with SPSS-X.

Kruskal-Wallis is a non-parametric statistical procedure for inferences concerning the
differences of K (more than two) independent groups. Mann-Whitney is a non-parametric
statistical procedure for inference concerning the difference between two independent
groups, based on their central tendency (typical or average value on the dependent
variable). These two procedures were chosen from the non-parametric family, because such
inference was exactly what the current study aimed to make in order to examine whether
different experimental treatments result in different effects on readers' reading activity.
These two procedures were preferred to their parametric counterparts - analysis of variance (ANOVA) and t-test respectively, because like other non-parametric tests, their models do not specify conditions about the parameters of the population from which the sample was drawn. For example, they do not require that the population from which the observation is drawn be normally distributed - a condition that this research cannot assume to hold. Moreover, these tests do not require measurement so strong as that required for their parametric counterparts. Parametric tests such as ANOVA and t-test require that observations be made at least with interval scale which can not only indicate "equivalence" and "greater than" between individual observations, but also have known ratios for any two intervals. The scales applied in this study, however, are ordinal in nature, which only indicate "equivalence" or "greater than" between individual observations. Siegel (1956) urged social scientists and behaviour scientists to use non-parametric tests instead of parametric tests, because most of the measurements made in social sciences and behavioural sciences culminate in ordinal scales. "When parametric techniques of statistical inferences are used with such data, any decisions about hypotheses are doubtful" (Siegel, 1956, p. 26).

The disadvantage of Kruskal-Wallis and Mann-Whitney tests, compared with ANOVA and t-test, is that they are not so powerful as their parametric counterparts in rejecting a null hypothesis when it is indeed false. However, the loss of power can be compensated by a relatively larger size of samples, because when sample size increases, so does the statistical power.

4.11 The model of the overall research design

All elements of this research (hypotheses, instruments, sample, procedure etc.) having been specified, the general research design can now be summarized as below:

A random assignment procedure formed three approximately identical groups. Group 1 acted as the control group. Group 2 and 3 acted as two experimental groups. Three different treatments were administered respectively to these three groups. The effects of the
treatments were observed on variables whose validity and reliability had been tested with face validity, concurrent validity and repeated tests of reliability. Data on these variables were analysed with Kruskal-Wallis one way analysis of variance (for the overall difference between the three groups) and Mann-Whitney tests (for the differences between pairs of groups). Null hypothesis was accepted or rejected at .05 level with expected .90 statistical power. This design can be depicted with the following diagram:

<table>
<thead>
<tr>
<th>assignmen procedure</th>
<th>independent variables</th>
<th>dependent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>R--------X1---------O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R--------X2---------O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R--------X3---------O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R--&gt;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>group</th>
<th>subject</th>
<th>gender</th>
<th>education</th>
<th>frequency of borrowing fiction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>F</td>
<td>H</td>
</tr>
<tr>
<td>1</td>
<td>100</td>
<td>m</td>
<td>100-m</td>
<td>h</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>m</td>
<td>100-m</td>
<td>h</td>
</tr>
<tr>
<td>3</td>
<td>100</td>
<td>m</td>
<td>100-m</td>
<td>h</td>
</tr>
</tbody>
</table>

M = Male
F = Female
H = High level education (college and above)
L = Low level education (below college)
f = borrow fiction frequently
nf = borrow fiction infrequently

X=

<table>
<thead>
<tr>
<th>versions</th>
<th>information cues</th>
<th>hypertext features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>bibliographical</td>
<td>preliminary navigation</td>
</tr>
</tbody>
</table>
| 2        | bibliographical data + keywords 
 & summary of stories | preliminary navigation |
<p>| 3        | information in 2 + comments, author information &amp; literary knowledge | full navigation |</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>Reliability</th>
<th>Face Validity</th>
<th>Concurrent Validity</th>
<th>Statistical Power</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables of searching pattern</td>
<td>&gt;=80</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Variables correlating with the use of the system factor</td>
<td></td>
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<tr>
<td>Dependence on previous experience for book selection</td>
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<tr>
<td>Conformity of borrowing to reading taste</td>
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<td></td>
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<tr>
<td>Variables of distribution of borrowing</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total amount of book selection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total amount of borrowing</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total amount of reservation</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Variables of emotional experience</td>
<td></td>
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</tr>
<tr>
<td>Variables of cognitive experience</td>
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Chapter 5

THE DESIGN OF THE EXPERIMENTAL TREATMENTS - THREE VERSIONS OF HYPERTEXT MODERN ENGLISH FICTION (HMEF)

5.1 Introduction

As specified in the previous chapter, the methodology design of this research required three versions of a fiction searching and browsing system to act as the experimental treatments, differing only in their information cues and accordingly, hypertext links.

In order to have three comparable versions, a base system was developed first. It was a hypertext fiction searching and browsing system containing about 410 book records, most of which were written by contemporary English authors and had been published in the last thirty years. Each book record consisted of bibliographical data, keywords and summary of stories. Other related information, such as author biography, book review comments, literary prizes and glossary was also provided in the system. It was possible to access these information cues from every book record or vice versa, to retrieve related book records from these information cues. The system was named Hypertext Modern English Fiction (HMEF). It was initially developed on Macintosh plus with HyperCard 2.0 and later transferred to a Macintosh LC475 with Hypercard version 2.1. The system was evaluated twice before it was used as the basis for the desired three versions.

The three versions used as the experimental treatments were all developed from this base system, by varying the information cues and hypertext links. Version 1 was a semi-hypertext system consisting of only OPAC like bibliographical data, with very limited hypertext facilities (links and nodes). The primary function of the bibliographical data was to locate the book. It provided the reader with very limited clues about the book, especially the content of the book. Version 2 was a semi-hypertext system consisting of bibliographical data, keywords and summary of stories with limited hypertext links. The major function of keywords and summaries of stories is to provide information about the
content of the book for the reader to judge its relevance to his/her needs. These information cues were therefore descriptive in nature. Version 3 adopted the complete base system (information cues and dynamic links), providing author biography, book review comments, basic literary knowledge in addition to the bibliographic data and descriptive data. These information cues aimed to comment rather than to describe. They were therefore analytical in nature. The basic features of all the three versions are shown in table 5.1.

Table 5.1

<table>
<thead>
<tr>
<th>versions</th>
<th>information cues</th>
<th>type of information cues</th>
<th>hyper links &amp; nodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>version 1</td>
<td>author, title and publication data</td>
<td>bibliographical</td>
<td>limited</td>
</tr>
<tr>
<td>version 2</td>
<td>basic bibliographical data, keywords and plot summaries</td>
<td>descriptive</td>
<td>limited</td>
</tr>
<tr>
<td>version 3</td>
<td>basic bibliographical data, keywords, plot summaries, book review comments, author biographical data, prize and glossary</td>
<td>analytical</td>
<td>complex</td>
</tr>
</tbody>
</table>

It was indispensable to specially design a system for the purpose of the present research, because within the literature searched by the author, no readily available system came up with the features required by this research. A system required by this research should at least meet the following criteria:

(1) Information cues in the system should be constructed with reference to readers' reading context.

(2) These information cues should be alterable so that variations of the system can be derived from it to form the experimental treatments.

(3) The variations thus derived should be identical in some aspects and contrasting in other aspects according to the requirement of the hypothesis.
This chapter describes the design of the system and shows how the internal validity (the extent to which the study's conclusions are likely to be correct for the sample actually employed) of the research is concerned in the development of the experimental treatment.

5.2 Design backgrounds of the base system

Literature that provided the background knowledge for the design of the base system was mainly from three areas. In the order of relevance to the purpose of this research, these three areas were: (a) application of hypertext in fiction services of public libraries, (b) application of hypertext in other libraries, e.g., children's libraries, and (c) application of hypertext in literary study areas.

In the public library sector, Pejtersen's (1984, 1989, 1992a, 1992b) Bookhouse was the most important and influential one. This application has been reviewed in detail in Chapter 2. Its most remarkable features can be summarized as:

- It applied a multi-dimensional fiction processing scheme to provide information cues to the books
- It employed a graphical user interface
- It provided conventional information retrieval strategies (e.g., analytical search strategy with keywords) as well as non-conventional search strategies (e.g., analogy strategy with a model book)

In other types of libraries, mainly school libraries where the library stock is not very large, there exist more hypertext applications for the purpose of browsing and searching of books. The Colfax catalogue (Bertland, 1992) for children (reviewed in chapter 2) is characterised by its rich information cues, including bibliographic information, illustrations, plot summaries and comments by children who have read the books.

"Science Library Catalogue" (Borgman, Gallagher, Krieger and Bower, 1990; Borgman, Walter, Rosenberg and Gallagher, 1991) features a combination of a conventional hierarchical classification system and a user friendly hypertext interface and hyper links.
These studies (both in public libraries and other types of libraries) indicated that hypertext could be successfully used as a bibliographic system. In fact, hypertext's ability to deal with large amounts of text and the ability to build links among text can enhance the retrieval function of the system with unconventional access points (e.g., analogy search), and with non-bibliographical data, (e.g., illustration, plot summaries, readers' comments). Such a system, probably due to its flexibility, availability of graphics, sound, and its use of the mouse, was found particularly appealing to people who do not have much experience with computers and who have difficulties in using command driven online catalogues. This research assumed that a large proportion of fiction readers are not experienced computer users.

Some more relevant research can also be found beyond the library world in the literature studies area. The justification to employ ideas from this area lies in the fundamental commonality between fiction reading in literary research and fiction reading in public libraries. Both are processes of extracting meaning from fiction works in certain contexts, and both involve the reader's putting together related knowledge and experience for the understanding of the works being read.

The pioneer project in this area was the education system for poetry courses called FRESS developed by Andries Van Dam at Brown University in U.S.A. The poem chosen was William Blake's The Sick Rose. The text web built by this system includes both original and critical text. Students were encouraged to move around multiple windows and were encouraged to participate in the shaping of the material (Welsch, 1992).

In the 1980s, context32 was developed as part of the Intermedia project at Brown University for use in literature survey courses. Both historical and biographical data were provided in this system, including overview, biographical timeliness, brief biographies, short essays about literary works as well as graphical illustrations, all of them were browsable by students (Welsch, 1992).

Another literature education system was developed with hyperCard in Massey University, New Zealand for studies of Katherine Mansfield's short stories The Garden Party and The
Daughters of the Late Colonels. Except for the original stories, secondary information such as Mansfield's life and times, background information about the circumstances of composition, setting and critical reception of the two short stories, a list of secondary readings, terminology etc. were also included. Nine interlinked hypercard stacks were developed to accommodate the information as the following map shows:

![Navigator Map](image)

**Figure 5.1** Navigator Map used in Massey University's Katherine Mansfield system (Source: Dowling, D. Authoring for English literature in HyperCard: Where in the world is Blake's Tyger? Hypermedia 4(3) 1992, p.184)

Moving around different parts of this system was very easy by the means of buttons, system map and integrated active text. Students could also add their own notes in the system and finally combined them to make up an essay (Dowling, 1992).

These applications mainly contributed to the technical backgrounds of HMEF. They showed how hyper links between original literary text and secondary information could be built, how readers' cognitive space could be represented with the hyper space; how the user interface could be designed to illustrate this cognitive space, etc.
5.3 Fiction processing for HMEF

The processing method, to a great extent decides the searcher's cognitive space in the fiction retrieval process, it hence decides the general structure of the retrieval system. The specification of a fiction processing method, therefore, preceded the general design of the experimental treatments in this research.

The fiction processing method applied in HMEF was basically a selective adoption of a number of fiction processing schemes, mainly Pejtersen's (Pejtersen and Austin, 1983, 1984), Beghtol's (1995) and ALA's (1989). These schemes contributed to the fiction processing for this research in various ways. Firstly, they led the current research to process fiction in a multi-dimensional approach. Secondly, they showed how the dimensions should be constructed. Thirdly, they provided HMEF with specific genre titles and subject headings. The processing method thus developed for HMEF included three dimensions: fiction genre, content and bibliographic form.

5.3.1 Dimension 1: fiction genre

The word "genre", in its literary sense, refers to the system of literary writing. "Genre is a theory, insofar as it tries to organize the numerous facts at hand according to principles derived from any interpretation of the poetic art as a whole, and beyond this, of its own place in a larger scheme of knowledge" (Guillen, 1971, p. 377). But in the sphere of fiction services, it usually refers to the operational categories of fictional works, such as "general fiction", "sea stories", etc.

Librarians have long noted that fiction categorization based on a operational genre system facilitates random fiction browsing, which accounts for the majority of book searching in public libraries, for it gathers books of the same type (Ainley, 1982; Goodall, 1989). Reader investigations also found that categorization increases ease of use of libraries (Goodall, 1989; Jennings and Sear, 1989; Sapp, 1986) and decreases readers' information overload and dependence on their own knowledge about authors (Baker, 1988). It also promotes circulation of fiction stock (Goldhor, 1972, 1981; Baker, 1988; Jennings and Sear, 1989).
So in general, fiction categorization is assumed to be more congenial with the characteristics of fiction readers' needs and behaviour (Ainley, 1982; Goodall, 1989; Spiller, 1980).

HMEF therefore applied genre as one of the dimensions in its fiction processing so as to enhance its browsing function. However, the "genre system" now existent in public libraries and genre titles from LCSH were found not rigorous or systematic enough for a computerised system. Firstly, the schemes used by various libraries differ greatly from each other (Harell, 1985), probably because there is hardly any common principle underlying these categorisation schemes. Secondly, only a minority of the published fictional works have their places in these schemes, the majority fall nowhere and have to be labelled as "general fiction".

A system from the literary area was, therefore, sought to provide a more systematic foundation for this dimension. Systems from this area were assumed to have such potential, because the ultimate purpose of literary genre is to create a systematic order by which any individual work produced does not merely become an additional unit in a sum of separate units. It becomes an integrated element of a structural whole (Guillen, 1971; Dubrow, 1982).

Scholes's fiction continuum was selected for this purpose. Scholes (1981) regarded fiction genre as a rough scale only, with the primary possibilities notated and located in relation to one another. He identified four types along this scale or continuum: history, realism, romance, and fantasy according to their view of the real world.

<table>
<thead>
<tr>
<th>History</th>
<th>Realism</th>
<th>Romance</th>
<th>Fantasy</th>
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</table>

By history, Scholes referred to those works which are closest to life - fictional records of what has really happened. He defined realism as a matter of perception. The realist presents his impressions of the world of experience. A part of his vocabulary and other technical instruments he shares with the social scientists - especially the psychologists and
sociologists. The realistic writer seeks always to give the reader a sense of the way things are.

Romance is a matter of vision. The romantic writer presents not so much his impressions of the world as his ideas about it. The ordinary world is seen at a greater distance and its shape and colour are deliberately altered by the lenses and filters of philosophy and fantasy. "What is often gives way in romance to what ought to be or might be, ought and might always imply what is by their distortion of it" (Scholes, 1981, p. 7)

Fantasy, as understood, is a fiction type that evokes wonder and contains a substantial and irreducible element of supernatural or impossible worlds, beings or objects. It stands most distant from what the world actually is, contrasting with history.

The advantage of this continuum is two-fold. On the one hand, it bears with it the systematic merit of the literary genre system. It reflects conventions of fiction production and acts as orders for fiction classification. On the other hand, it is quite practical from the library's point of view. Not only all genre titles which are now applied in public libraries can be located along this continuum, new genre titles can also be developed when necessary according to their relations with the two extremes of the continuum.

The problem with this system, from the library's perspective, is that there is no clear distinction between each type. Scholes warned that any attempt to give every shade of fiction a place would be cumbersome and misleading. However a working system in libraries, requires that every fictional work has its place(s). The following compromise had to be made: on the one hand, an arbitrary and operational subdivision was given at this stage to make the continuum a working system, on the other hand, other retrieval devices were provided later to compensate for the information loss through this arbitrary subdivision.

**History**

This category is composed of fictional records of what really happened in the past. It was divided operationally according to the focus of a fictional work. If it focused on what happened to individuals, it was defined as biographical fiction. If it focused
on a historical event, it was defined as historical fiction. So under the history side of Scholes's continuum, there were

- historical fiction
- biographical fiction

**Realism** According to Scholes, what realistic fiction presents is the author's impression of world experience. Based on the environment of experience, this category was operationally divided into five subgenres:

- psychological fiction, which focuses on the inner experience of individuals
- Bildungsromance, which focuses on development and growing up of individuals
- Family fiction, which focuses on experience of one family, sometimes crossing generations.
- Community fiction, stories that happen in a rather closed community or area.
- Social fiction, which focuses on the common concern of the whole society.

Authors of social fiction, because of their great concern with society, share vocabulary and other technical instruments with social scientists (Scholes, 1981; Vinson, 1985). For this reason, subject matter manifested itself as the major standard for further classification of social fiction. According to the subject matter identified in comprehensive reviews of twentieth century fiction (Vinson, 1985), the following categories were established:

- gender issue fiction
- war novels
- political fiction
- religious fiction
- racial fiction
- class fiction
- occupational fiction
- crime fiction
Romanticism Romanticism was used to replace Scholes's "romance" in order to differentiate it from ordinary love stories. In fictional works of this category, the ordinary world is seen at a greater distance. Life is somewhat distorted in a number of ways: Firstly, what is gives way to what ought to be. Within this approach, two topics are most often applied by authors to represent how life ought to be. One is gentle and peaceful life in rural areas, another is love that is free of social constraint. Secondly, ordinary human beings are assigned extraordinary intelligence, ability and power. Extraordinarily intelligent detectives, brave adventurers and capable western frontiersmen are the most often adopted prototypes for distorted images of human beings. The following subgenres were therefore developed for this category:

- pastoral fiction
- romance
- westerns
- adventure
- detective

Fantasy Fantasy was operationally broken down into four categories: (a) those that appear to have science and technology as their basis (science fiction) (b) those that appear to have soft science or social science as their basis (utopian literature) (c) those based on mythical worlds which are beyond the explanation of current science and technology (mythical stories) (d) those that appear to be against science, by deriving their stories from the supernatural and occult (black fantasy or horror).

The inverted four categories along the continuum and their subdivisions plus experimental fiction and strip cartoons constituted a categorization system as one dimension of the fiction processing scheme. The complete dimension is listed in Appendix 4.

5.3.2 Dimension 2: Contents
This dimension was developed with elements identified by previous research. (Pejtersen, 1978, 1979; Walker, 1958; Beghtol, 1991, 1994; ALA, 1989). The first element was the
subject matter or theme of a work. It refers to the kind of life the characters live, the problems they face, the relationships they hold and the meaning of their lives related with the society or human being as a whole. The second was the characters, the human beings or things that drive the plot to a denouement. The third was the setting, the historical or geographical or social background of the plot. The fourth was the techniques the author used. These included the philosophical guiding idea under which the author develops his story (e.g. naturalism), the mode (e.g. gothic mode), the literary form (e.g. epistolary), the atmosphere (e.g. humorous) etc.

So from previous research and literary criticism, the following aspects that make up any fiction works were identified as potential access points:

- subject and theme
- technique
- setting
- characters

5.3.3 Dimension 3: bibliographical form

Bibliographical form refers to the description of the physical features of a fictional work.

Scale is one of the most important physical features of most literary works and can be the basic feature of some, e.g., sonnets in poetry and short stories in fiction.

Typography is another important physical feature of fiction. Large typography has won great success for some publishers, for it especially meets the requirements of many elderly and weak sighted readers.

Size and weight of the book are also very important. It is perhaps one of the most important factors of materials for bed reading, fireplace reading and travel reading.

Unlike the physical features of non-fiction documents, these features often constitute a part of a reader's request, according to Pejtersen's reader study. They were, therefore, integrated into the fiction processing method of HMEF.
5.3.4 The overall structure of the fiction processing scheme for HMEF

The fiction analysis and processing method used in HMEF had, therefore, three dimensions: genre, content elements, and bibliographical form. The three dimension constituted a whole analysis and processing scheme for this research. All fictional works in this research were analysed by subject matter and theme, technique, characters, setting and bibliographical form, and eventually the continuum of the genre system. Appropriate terms from all three dimensions were assigned to fictional works as indexing terms. The overall scheme is listed in appendix 4.

5.4 The design of the base system

5.4.1 The selection of the prototyping tools

HyperCard was selected as the development software. This is quite a powerful prototyping tool of hypertext applications, available and free of charge with each Apple Macintosh computer. The card of HyperCard (one card usually fills one screen) is the basic unit for organizing and presenting the information. It consists of two layers. The foreground layer holds information unique to a particular card. The background layer holds information shared by a number of cards. Both layers are not only applicable to text format of information but also to graphics, sounds and video etc. Another advantage and power of the cards as the unit of information organization is their flexibility to hide and show information depending on the designer's need. Information can be made invisible in various ways. It can be stored in a scrolling field where it is visible only when the reader scrolls along the field; or it can be made visible or invisible with the presence or absence of the mouse in a certain area. The information can even be made invisible forever but still searchable by HyperCard.

Cards are further grouped into stacks. Navigation through cards within a stack and among the stacks is supported by implemented hyperCard navigation facilities, including buttons, active text etc.

HyperCard has an integrated programming language HyperTalk, which can be used to enhance its power of information organization according to the designer's own need.
HyperCard was chosen as the prototyping tool in this research for a number of reasons:

(1) It was readily available from the Department of Information and Library Studies, Loughborough University, where this research was based.

(2) It is flexible and powerful in organizing information as explained above. This feature was particularly appealing to the present research because:
   - The amount of information collected for each book in this research was large. Some parts have to be hidden when necessary.
   - Treatment of the control group and experiment groups had been hoped to be developed by reduction, hiding and reorganizing the information from the base system, which could be done very easily with HyperCard.

(3) It has the advantage to work with graphics, which enables it to provide user-friendly interface. This is very important for public library readers because it is assumed that many of them do not have experience with computers.

5.4.2 Structure and presentation of information cues
The base system consisted of two hyperCard stacks, a main searching and browsing stack and a help stack. Information presented in the searching and browsing stack, with reference to the reading context, included:
   - basic bibliographical data
   - keywords assigned to individual fiction works with the processing scheme
   - author biography
   - summaries of stories
   - book review comments
   - information about major literary awards and their winners
   - a glossary

---

1 For the purpose of this thesis the term "keyword" is used for terms and phrases assigned by the author
The main body of information in the searching and browsing stack was the book records with bibliographical data, keywords and summaries of stories. This information was supposed to be the most important for fiction browsing and searching and were designed to be always visible on each record. Book records were organized according to the genre system of the processing scheme. Book records within each subgenre were arranged alphabetically according to the author's name. A sample of the book records is shown in figure 5.2.

![Figure 5.2 A sample book record in HMEF](image)

Author biographies and literary prizes were organized as independent information sectors with their own access points. But there were links to attach them to relevant book records. For example, author biography could be accessed directly from the user interface with the
author access point. It could also be accessed from each individual book record. Samples of author information and literary awards are shown in figure 5.3 and figure 5.4 respectively.

Figure 5.3 A sample section of the author information which can be accessed directly by the author access point, or from each book record.

Book review comments and the glossary were attached to individual book records and were only accessible from book records. They were usually not visible unless the reader required them. Figure 5.5 shows that the hidden book review comments has been activated.
Figure 5.4 A sample section of the information about literary prizes

Figure 5.5 A sample of a book record with the book review comments visible
The user-interface to the above body of information consisted of the welcome screen and working places for six access points, including: category, title, author, publisher, keywords, prize winners. All these access points were presented either as icons or as active text that the reader could click on.

Links were available between all kinds of access points and information chunks, between bibliographical information and non-bibliographical information.

**5.4.3 Searching modes and navigation**

**5.4.3.1 Searching modes**
This system was designed to provide two main searching modes: general browsing and specific searching. The welcome screen asks the reader to choose either of the modes, as shown in figure 5.6.

![Welcome screen](image)

_Figure 5.6_ The welcome screen which asks the user to choose one of the main searching modes

Browsing was an exploratory rather than an exclusive process, in which the user scanned available alternatives for books which would satisfy his/her needs. The browsing process
took place when the reader clicked the mouse among a number of alternative routes until he/she was taken to the books he/she was interested in. The browsing of books then began with the next and previous buttons. The procedure was transparent to the reader.

Searching was a process of looking for information in the database using an exactly specified search question. Users of HMEF could search for books by inputting words of the title, author name, genre category, subject matter/theme, setting, character, publisher and prize title, either by typing directly into it or choosing terms from a recommended list. The users were also able to combine as many of these features as he/she liked to conduct a more specific search. On getting a start search command, the computer would search the whole database for books which met the reader's criteria and took the reader to the found books. This procedure was opaque to the reader.

5.4.3.2 Navigation

A system map was not provided on the screen. Navigation around the system was guided by local instructions with buttons and active texts. The navigation for a typical search started by choosing one of the above two searching modes.

The browse mode took the searcher to an option of six browsing approaches, as shown in figure 5.7. The category access point within this strategy was presented with icons, as shown in figure 5.8. Only 19 out of all the categories in the processing scheme were included in this system. Unpopular categories were attached with definitions. These definitions were designed as a pop-up field, so that when the reader's mouse moved to the icon of a defined category, an explanation of that category would appear. When the mouse moved out of that area or after the reader actually clicked on that icon, the explanation disappeared.
Figure 5.7 The starting point of the browse mode where six browsing approaches were provided.

Figure 5.8 The presentation of categories.
Clicking on any of the categories would take the reader to the book records in this category. Further navigation from each individual record was possible through the following navigation tools:

- *previous* and *next* buttons to the book record before or after the present one
- *back* button to the last viewed record
- *author information* button to the author biography
- *comments* button to show the book review comments on the book
- *glossary* button to see explanation of any literary terms the reader encountered while viewing the book record
- *help* button to the relevant section of the help stack
- *browse or search* button to start a new search
- *cards seen* button to jump to a particular book record the reader had seen

The author access point within the browse mode took the reader to an alphabetical list of author names, as shown in figure 5.9. Clicking on any of the names would lead the reader to the detailed information about this author, including a brief biography, major works, whom he/she writes like etc. Sometimes the author's photo was also attached (see figure 5.3). From here, the reader could choose to view one of the author's works or all of them. The selection of any title(s) would take the reader to relevant book records where further navigation was possible as with the category approach. The reader could also have the computer quickly show information about other similar authors, by clicking on the *who writes like* button.
Figure 5.9  The alphabetical list of author names after the author browsing approach is chosen

Prize access point led the reader to information about literary awards (figure 5.4). From there the reader could click on the prize title to view all its winners or click on an individual book title to see information about it. This took the reader to related book records where further navigation was possible as with the category approach.

Titles were fragmented into 26 groups according to the beginning letter of that title, as shown in figure 5.10. At any certain time, only one group was visible. The hidden groups could be made visible by clicking on the letter with which a title begins. Clicking on any of the titles would take the reader to that particular book record where further navigation was possible as with the category approach.
Keywords took the readers to a multi-dimensional index system, the reader could choose one of the dimensions by clicking on the left, then choose a term under this dimension by clicking on the right. This would take the reader to corresponding book records. Figure 5.11 shows that the reader was taken to the multiple dimensions after the Keyword has been chosen from the browse menu.
Figure 5.11 The screen after the keyword browsing approach is chosen

The publisher access point took the reader to a list of publishers as shown in figure 5.12. Clicking on any of them would enable the reader to view all books published by this publisher.

Figure 5.12 The screen after the publisher approach is chosen
With the search mode, a reader could type in any words directly or choose from an recommended index and then start searching. After a starting search command was issued, the computer would then show the reader the number of hits and provide him/her with three options: view books, modify search, new search. Figure 5.13 and 5.14 shows the search menu and search result screen. View books option took the reader to all relevant book records where further navigation was possible as with the browse mode.

![English Fiction Search Menu](image)

**English Fiction Search Menu**

Type searching terms into the space provided below. You can type:
- terms of: genre title, subject/theme, characters, settings and writing technique
- titles of books
- author names
- publishers
- prize title

You can combine as many kinds of terms as you wish then click on "start search" button.

You can click on "check index" button to find appropriate terms to use. On getting a list, click on the terms you choose, then click "start search" button.

Browse menu Quit restart

Figure 5.13 The search menu where the reader can input their search enquiries
5.5 The collection and input of information

5.5.1 The selection of books

A target of about four hundred books was set up beforehand based on the following considerations:

(1) Previous research experiences was consulted for the number of books necessary. It was found that for theoretical research objectives, 400 to 500 books is a commonly applied scale. For example, Jennings and Sear (1989) applied 500 books in their experiment. Pejtersen and Austin (1983, 1984) applied about 430 books in their laboratory experiment.

(2) It would have been ideal to have a larger number of book records if financial and time resources had permitted. However, the information required for each book forced the author to keep the number of books to the minimum. As the next section will show, not...
only the amount of information for each book record was large, it was also highly sporadic. The procedure for collecting and inputting information was tedious. This made the addition of any books into the system extremely time consuming.

(3) In addition, the experiment required that the majority of the books should be available from the experimental library, while at the same time, there should be enough existing information about them. This raised another serious restriction to the number of books that were qualified to be included.

A wide variety of book categories was also set up as a target beforehand to make the system as representative of the whole library fiction stock as possible, so it covered the range from serious literary works to light fiction such as romance and detectives. Effort was also made to keep the quality of the books balanced, covering both the good and the poor. Since the evaluation of the books' quality was far beyond the author's ability, the criteria for the good and the poor were according to the book review. Therefore, both the positively reviewed and negatively reviewed books, as well as the neutrally reviewed books were included.

The procedure of the book selection was: (1) an author list was compiled from a number of reference books, e.g., The World Author (Wakeman, 1985), (2) their books which were available from the library were selected, (3) the availability of required information about these books, e.g., book review, was checked and books whose required information was available were further selected, (4) these selected books were then balanced according to their quality. For the final list of the four hundred books see appendix 7).

5.5.2 The collection and inputting of information for individual books

5.5.2.1 Primary information

Primary information was the information cues presented on each book record. It included author, title, publication data, a group of multi-dimensional descriptors, and summary of the story.
These data were mainly collected from the books themselves during the process of fiction processing. In several exceptional occasions when the books could not be traced, they were collected from secondary information sources, such as The World Author.

5.5.2.2 Supplementary information
Supplementary information was the information cues which were not automatically visible on each book record, but accessible when necessary from the related book record. It included information about the author's life and writing, information about literary prizes, information from book reviews and the glossary of literary terms. These data were not derivable directly from the book itself. They were, therefore, collected from scattered secondary resources.

Comments were extracted from well known book reviews. If a book was reviewed positively by the majority of reviewers, the positive comments were extracted. If it was reviewed negatively by the majority of reviewers, the negative comments were extracted. About one third of the reviews were downloaded from electronic BookReviewDigest in OCLC Firstsearch. The rest were collected manually from various resources and then converted into electronic form.

Author information was about the author's reputation, writing style, view of the world and their life. It was collected manually from various secondary resources such as Dictionary of Literary Biography, British Novelist Since 1960 (Holio, 1983) and was input to the computer.

Information about prize winners was gathered from secondary information sources such as Literary and Library Prizes (Weber, 1980) and was input manually into the computer.

5.6 The evaluation of the base system
The base system underwent two tests during and after its development. The first one was in March 1994, when the prototype was developed. There were then 31 book records in the prototype. Twenty students participated in this test. The general purpose of this test was to
see whether this prototype could be further developed as the experimental instrument for the present research. This purpose was achieved with two specific objectives: (1) to test the usability of the information and the effectiveness of the links between the information. (2) to identify the designing problems. The test consisted of an interactive observation and a questionnaire. The observation focused on the following aspects:

- the searching modes chosen and the way they were used
- frequency of viewing the supplementary information
- time spent on each question

The questionnaire consisted of three types of questions:

- questions to find books that meet specific requirements (simulating specific search)
- choosing books that the reader would like to read (simulating nonspecific search)
- general impression of the system

The results of the first test are summarized below:

**use of searching modes**

<table>
<thead>
<tr>
<th>searching modes</th>
<th>browse only</th>
<th>search only</th>
<th>both</th>
</tr>
</thead>
<tbody>
<tr>
<td>percentage of readers</td>
<td>0%</td>
<td>60%</td>
<td>40%</td>
</tr>
</tbody>
</table>

N=20
Frequency of viewing supplementary information

<table>
<thead>
<tr>
<th>comments</th>
<th>frequency</th>
<th>number of readers</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>never</td>
<td>6</td>
<td></td>
<td>35%</td>
</tr>
<tr>
<td>seldom</td>
<td>2</td>
<td></td>
<td>12%</td>
</tr>
<tr>
<td>occasionally</td>
<td>1</td>
<td></td>
<td>6%</td>
</tr>
<tr>
<td>often</td>
<td>8</td>
<td></td>
<td>47%</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td><strong>17</strong></td>
<td></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>author information</th>
<th>frequency</th>
<th>number of readers</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>never</td>
<td>6</td>
<td></td>
<td>35%</td>
</tr>
<tr>
<td>seldom</td>
<td>4</td>
<td></td>
<td>24%</td>
</tr>
<tr>
<td>occasionally</td>
<td>2</td>
<td></td>
<td>12%</td>
</tr>
<tr>
<td>often</td>
<td>5</td>
<td></td>
<td>29%</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td><strong>17</strong></td>
<td></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

N=20

Score of answering simulating questions and time spent on each question

- correct answer: 90%
- wrong answer rate: 4.3%
- unanswered questions: 5.7%
- time for each question: 2.04'

Users' general impression of the system

<table>
<thead>
<tr>
<th>the whole system</th>
<th>navigation</th>
<th>instruction</th>
<th>typography</th>
</tr>
</thead>
<tbody>
<tr>
<td>helpful</td>
<td>a bit difficult</td>
<td>easy</td>
<td>small but readable</td>
</tr>
</tbody>
</table>

As the result of the first test, the access points under browse mode were expanded to include prize title and publisher. The search mode was simplified (it used to require the searcher to specify the searching area, e.g., title, keyword, etc.)

The second test took place in September 1994 after the base system was completed. Ten postgraduate students participated in the test. The objective of this test was to evaluate the usability of the system as the experimental treatment according to accepted criteria.
Nelson’s (1990) usability criteria of hypertext was adopted in this evaluation. According to Nelson, the usability of a hypertext can be tested with the following criteria:

- easy to learn
- efficient to use
- easy to remember
- few errors
- pleasant to use

Based on this criterion, a questionnaire was designed. It consisted of two sections. The first section asked the subjects to answer a number of simulating searching enquiries. The second section asked them to comment on the design of the system against a five point or four point scale. The result of the evaluation is show below:

**Scores on answering simulating searching enquiries:**

- correct answer: 94%
- wrong answer: 0%
- unanswered questions: 6%

**Users' general rating of features of the system**

<table>
<thead>
<tr>
<th>system features</th>
<th>scores of the evaluation</th>
<th>total score</th>
</tr>
</thead>
<tbody>
<tr>
<td>clarity of button names</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>length of summary</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>length of comments</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>readability of summary</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>readability of comments</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>relevance of comments</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>ease of the system in general</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>speed of the system response</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>helpfulness of the system in general</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

N=10
The evaluation indicated that the system could be used as the base system for the required experimental treatments. It was also predicted from this evaluation that for public library readers, some personal help might be needed, even though a screen sensitive help stack was provided.

5.7 The development of the experimental treatments

The complete base system was used directly as the treatment of one of the experimental groups, and was referred to as version 3 of the searching system later during the experiment and in the discussion. Version 1 and version 2, the experimental treatment for the control group and another experimental group respectively, were developed by reducing information and links from the base system. In version 2, all the supplementary information (author information, book review comments, literary award information, etc.) and links to and from them were deleted. In addition, the browse mode was deleted from the system to simulate the searching environment of an online public access catalogue (OPAC). Figure 5.15 and 5.16 show the searching menu and a sample of the book records in version 2.

![Search with Category](image)

Figure 5.15 The search menu in version 2 of the searching system
Author: Adams, Douglas
Title: Life; the universe; and everything
Publisher: Harmony Bks., 1982

Abstract: This novel concludes the trilogy which began with 
The Hitchhiker's Guide to the Galaxy and The Restaurant at 
the End of the Universe. The characters in this volume are  
Zaphod Beeblebrox with his two heads; the lovely Trillian;  
Arthur Dent who is still in his bathrobe; and Marvin, the  
brilliant but depressed robot. Although these characters are  
scattered about the universe in various fixes at the beginning  
of this episode, they are brought together by coincidence to  
save the universe from the people of the planet Krikkit. The  
Krikkiters are sports fanatics who have one goal in  
mind: to destroy the universe. . . . Our heroes manage  
to subvert the plan and convince the Krikkiters to  
stop their destruction." (SLJ).

Figure 5.16 A sample of book records in version 2

In version 1, the keywords and the summary of the story were also taken out. Figure 5.17  
shows the book record on which the keywords were made invisible but searchable.

Figure 5.17 A sample book record in version 1
5.8 Summary: the comparison between version 1, 2 and 3

In summary, the three versions were made identical in the following aspects:

- book titles
- processing method and keywords assigned
- screen features: efforts have been made to keep the screen as alike as possible, for example, the layout and the font.

They were different in the following aspects:

- Levels of information: full details of information, including bibliographic data, keywords, summary of stories, and other supplementary information were available from version 3. Less information was available in versions 1 and 2.
- Hypertext features: Hypertext features were implemented as fully as needed in version 3, including complex nodes and dynamic links, as well as navigation facilities. In versions 1 and 2, these were cut to the minimum level to simulate an OPAC searching environment.
Chapter 6

PROCEDURE OF THE EXPERIMENT

6.1 Introduction

This chapter describes in detail the procedure of the experiment so as to show how the internal validity of the study was concerned in the conducting of the experiment. The internal validity is defined as "the extent to which the study's conclusions are likely to be correct for the sample actually employed." (Bausell, 1986, p. 91). It is crucial to any study because it is a necessary condition of external validity, the extent to which a study's results can be generalized beyond the sample actually employed.

The chapter also presents the statistical verification of the theoretical groupings of the variables with the collected data, preceding the overall data analysis.

6.2 Contacting the experimental sites

The research design decided that the experimental library should be adjacent to Loughborough University for economic reasons. Loughborough Central Library was therefore chosen as the primary experimental site.

The initial contact with the library commenced in May 1994 through the Department, when the experimental system was still under construction. The objective of this initial contact was to seek consent from the library to allow such an experiment to be conducted in the library. An early contact was necessary because book records in the database then being constructed were planned to be drawn mainly from the experimental library to make the system more practical, authentic and thus more attractive to use.

Agreement was achieved in this initial contact. Therefore, the database drew most of its book records from the fiction stock of Loughborough library. The system was completed in August 1994 and was tested in September.
Further contact proceeded after the test of the system. The objective of this contact was to
arrange a time for the experiment to commence. Problems arose, however, at this point, for
the library was experiencing an unexpected reorganization of staff and unable to adjust to
any external disturbance. The process of this reorganization, however, turned out to be
agonizingly long. The experiment was not able to start until February 1995 after a number
of difficulties in communication.

The experiment eventually went ahead at the end of February 1995. However, one month
later, the library started installing their own OPAC. The experimental system had to be
cleared from sight well in advance of the installation in order to make a fresh start to the
computerization of their catalogue system. Although the researcher was informed that it
might be possible for the experiment to resume after a certain period, the possibility of
going a substitute experimental site was considered at this stage because the research was
running short of time. Melton Mowbray Library was considered as the best substitute
because: (a) It is similar to Loughborough Library both in size and in region, (b) Their
readers were assumed to be not substantially different. Although Loughborough has a
much bigger student population than Melton Mowbray, yet students do not make up a
significant subgroup of fiction readers.

Melton Mowbray Library was therefore contacted. This time both official channel (talks
between the department and the library) and unofficial channel (help from an acquaintance
who was working in the library) were attempted. Both channels turned out to be helpful.
The experiment soon resumed in Melton Mowbray Library at the end of April, 1995.

6.3 Experimental sites and environments

Loughborough Library is located in the centre of a small Midlands town, Loughborough. It
has a reasonable size of fiction stock, which is arranged according to the following
categorization:

- general novels
- paperback books
- large print books
crime
science fiction
historical fiction
western
romance

The catalogue of this stock had been in microfiche form before April 1995.

A space near the entrance to the fiction section and next to the microfiche catalogue was arranged specially to house the experimental system. From this location, it was possible to observe clearly readers' moving around in the fiction section and to ask for their participation in good time. It was also easy for the readers to access the system. The area was reasonably well lit. A writing space was provided for the researcher to take observation notes.

Melton Mowbray Library is another town library of Leicestershire. The town is about twenty miles away from Loughborough. The library also has a reasonable size of fiction stock, which is arranged for public access with the following categories:

General novel
crime fiction
romance
science fiction
westerns
paperback books

Although the stock arrangement here was slightly different from that in Loughborough, it was believed that this factor would not violate the coherence of the experiment, because the experimental system had its own categorisation scheme, so reader's selection of categories was mainly structured by the same experimental scheme, rather than by their own library categorisation systems.

A special experimental area was set up as well to house the experimental system. It was again at the entrance to the fiction section and next to the library's OPAC terminal. A desk
was moved in for the researcher to write observation and interview notes. The area was spacious, quiet and well lit.

6.4 Supplementary experimental instruments

In addition to the experimental system which was on a Macintosh LC475 and the data collection instruments - the observation / interview schedule and the questionnaire, the experiment also used the following supplementary instruments:

(1) An Apple Stylewriter: this was used to print out the book records that a reader had selected. The researcher kept a copy of each selected item for the purpose of recording the readers' book selection. The reader was provided with another copy on request.

(2) Publicity materials: These included a sign and a leaflet. The sign, named "Fiction Catalogue", was printed on an A4 size bright blue card. It was put on the wall just over the experimental area to catch the readers' attention. The leaflet introduced to the public the research project and request for their participation. It was printed on an A5 size cream paper and was distributed at the issue desk to readers returning books. The leaflet is shown in figure 6.1.

The publicity materials did not seem to work very well. Few readers came to use the system on their own initiative. So readers who entered the fiction section were approached and invited to use the system.

(3) subjects log: It was used to record readers' group membership as the result of random assignment, so that the equality of the three groups could be monitored.

6.5 Experimental procedures:

An experimental session usually started with approaching readers, moved on to the use of the system and then checking books on shelves. It ended with the completion of observation notes after the reader had taken out books or had rejected books in the shelf area. It took on average of 40 minutes for each session.
A research project is underway at Loughborough University to improve fiction searching in public libraries. We ask for your help in trying out the catalogue which you'll find next to the photocopier in this library. It is great fun to use.

Figure 6.1 A leaflet used to introduce the research to the readers
6.5.1 Approaching readers

Readers who were entering the fiction section and readers who were still browsing without any selected books in their hands were usually approached and invited to use the system in a courteous way. If there were more than one reader in the fiction section at the same time, the first reader next to the experimental area was approached for the first session. The next session would move to the reader further away from the experimental area, even though all the readers were new. Such an approaching way was followed to prevent the control group and the two experimental groups from becoming systematically different in readers' constitution and, therefore, in their propensity to change on the dependent variables. It also attempted to prevent the participants from becoming intrinsically inclined towards certain categories of fiction and therefore becoming less representative of the whole population. Readers' response was extraordinarily satisfactory. Most of them showed great understanding to the observer as a researcher and kindness to her as an individual. In total, 357 readers were approached. Fifty seven of them were not able or were not willing to participate for one of the following reasons: (1) their car park time was expiring or (2) they came to borrow books during the lunch break and had to rush back to their work or (3) they always chose books by particular author and were not interested in any searching facilities.

6.5.2 Random assignment of the subjects

Readers who were willing to participate in the research acted as the subjects of this experiment. On agreeing to participate, they were led to the experimental area and were assigned randomly to one of the three groups. The random assignment was in fact achieved by assigning the very first reader, i.e. the one with case number 001, to the control group, the second reader (002) to the experimental group one and the third (003) to the experimental group two and all the successive readers to the group that they happened to fall into by sequence. This method was regarded as random assignment because, for each particular group, what the reader was going to be like, was completely unpredictable. The readers' background information was obtained through the brief interview and recorded in the interview/observation schedule. Their membership was recorded in the subject's log to enable the regular monitoring of the equality of the three groups. The method turned out be
quite efficient. This is shown by the final profile of the three groups of subjects in tables 6.1 to 6.3

Table 6.1.
Distribution of subjects with reference to their gender and education

<table>
<thead>
<tr>
<th>groups</th>
<th>gender</th>
<th>education</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>female</td>
<td>male</td>
</tr>
<tr>
<td>control group</td>
<td>63</td>
<td>37</td>
</tr>
<tr>
<td>experimental group 1</td>
<td>64</td>
<td>36</td>
</tr>
<tr>
<td>experimental group 2</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>total</td>
<td>187</td>
<td>113</td>
</tr>
</tbody>
</table>

Table 6.2.
Distribution of subjects with reference to their reading motivations

<table>
<thead>
<tr>
<th>groups</th>
<th>for pleasure</th>
<th>for curiosity</th>
<th>for knowledge</th>
<th>for study or work</th>
<th>for personal problems</th>
<th>other</th>
</tr>
</thead>
<tbody>
<tr>
<td>control group</td>
<td>100</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>experimental 1</td>
<td>99</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>experimental 2</td>
<td>99</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>total</td>
<td>298</td>
<td>6</td>
<td>16</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: As the readers were allowed to choose more than one item, the total number is different from the total number of subjects
Table 6.3.
Distribution of subjects with reference to the frequency of borrowing fiction from the library

<table>
<thead>
<tr>
<th>groups</th>
<th>&gt; once a week</th>
<th>once a week</th>
<th>once a fortnight</th>
<th>once a month</th>
<th>&lt; once a month</th>
</tr>
</thead>
<tbody>
<tr>
<td>control group</td>
<td>14</td>
<td>44</td>
<td>19</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>experimental group 1</td>
<td>24</td>
<td>39</td>
<td>20</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>experimental group 2</td>
<td>24</td>
<td>43</td>
<td>18</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>total</td>
<td>62</td>
<td>126</td>
<td>57</td>
<td>23</td>
<td>32</td>
</tr>
</tbody>
</table>

6.5.3 Preview of the searching procedures
The readers were then showed the appropriate version of the system, particularly its structure and the way it worked. They were then asked whether they would like to do the searching themselves or would like to do it with the researcher. Not surprisingly, the majority chose to do it with the researcher.

6.5.4 Searching the system
The searching generally started with the reader choosing one of the searching approaches from: category, keyword, author, title, publisher, prizewinner and moved further along that approach. Experimental group 2 were asked to choose from the two searching modes - browse mode and search mode - before they chose from the six searching approaches (see figure 5.7 in Chapter 5). Nearly all the readers chose browse mode. The reader was allowed to do as many searches as they wished. On encountering any interesting books, they could have the records printed out while continuing the search. In the mean time, the researcher observed readers' searching behaviour and took simple note when possible.
6.5.5 Checking books from the shelf

After readers finished their searches, they were accompanied by the researcher to the shelf area with all the printed book records to check whether the books were available. If the books were not available at that time, the reader was allowed to make reservations free of charge. Their attitudes and behaviour in the shelf area and the way they checked the available books were observed. When they decided to borrow any of the books, they were requested to take a questionnaire. They were instructed to fill in it after they finished reading the book and to return it with the book. If more than one book was chosen, only the first one was issued with a questionnaire. Only one reader refused to take the questionnaire.

6.5.6 Taking note of the whole process

As soon as the reader rejected books or took out books, the rest of the observation/interview schedule was filled in. This included their behaviour in the shelf area, details of the books they had borrowed, etc. A field note was also taken for other information which did not neatly fit into the observation schedule, e.g., the readers’ remarks on the system itself and on the books they viewed, their gestures and expressions, the reason they gave for rejecting or taking a particular book.

The above procedure was followed strictly for each subject. The consistency of the procedures, in addition to the random assignment of subjects, was believed to be able to work out a reasonably high internal validity for the research, that is, the possibility of the study’s conclusion being correct for the sample actually employed, was supposed to be reasonably great.

6.7 Statistical verification of the theoretical groupings of variables with the collected data

The experiment lasted for nearly two months and 300 fiction readers participated in the experiment. The data were checked and the loose observation notes were categorized, quantified and added to the observation schedule.
These data measured a large number of variables. Many of these variables are very likely to correlate with each other. So to interpret the value on these variables individually, regarding the effect under examination, would be uneconomical and less meaningful. It would be more sensible to measure a smaller set of underlying variables (factors) by grouping the observed variables.

The possible underlying variables (factors) have been attempted according to the theoretical framework. In order to confirm the theoretical grouping, a factor analysis was carried out with the collected data proceeding the major analysis - Kruskal-Wallis and Mann-Whitney tests. The objective of such a preceding analysis was (a) to verify the theoretical grouping of the observed variables and (b) to explicate the underlying variables, and (c) to obtain factor scores for further analysis.

Factor analysis was chosen for this purpose. Factor analysis is a statistical analysis which recognises the underlying variables as "factors" and a formal method of specifying the extent to which each original (observed) variable (e.g., reader attitude towards books not on shelf in this research) is, in fact, a measure of these "underlying variables" (e.g., the use of system factor). It shows this extent with factor loadings. "The loading of a variable on a factor expresses the correlation between the variable and the factor" (Alt, 1990, p. 59). For example, table 5.4 shows that the single variable of readers' reliance on their previous experience for book selection correlated substantially with the use of readers' own knowledge factor (with .88888 factor loadings), therefore it can be used to measure this factor quite realistically.

Factor analysis was performed on a number of variables from the observation/interview schedule, which measured the readers' behaviour and attitudes in a similar way. Variables which were measured in a distinct way, for example, number of issues, percentage of searches using each access point, were not included in the factor analysis. The result verified the theoretical grouping of variables to two factors: the use of system factor and the use of readers' own knowledge factor in their decision making on book selection. Factor loadings of related variables are shown in table 6.4.
Table 6.4.

Factor loadings on the use of system factor and use of experience factor

<table>
<thead>
<tr>
<th>observed variables</th>
<th>factor loadings of the observed variables on the two underlying factors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>use of system factor</td>
</tr>
<tr>
<td>confidence</td>
<td>0.80989</td>
</tr>
<tr>
<td>reaction</td>
<td>0.78805</td>
</tr>
<tr>
<td>book checking</td>
<td>0.64266</td>
</tr>
<tr>
<td>attitude</td>
<td>0.58694</td>
</tr>
<tr>
<td>pre-experience</td>
<td>0.21059</td>
</tr>
</tbody>
</table>

A similar analysis was then performed on the majority of variables from the questionnaire. Variables which were measured in a distinctive way, for example, the decision making point variable, were not included in the factor analysis.

The analysis verified that two distinctive types of experience exist in fiction reading experience. But correlation between these two factors and all the variables were found to be slightly different from the theoretical grouping. For example, readers' general evaluation of their reading process was assumed to correlated mainly with their emotional experience. Factor analysis, however, indicated that it correlated more with their cognitive experience. Recall ratio was assumed to correlate with the cognitive experience factor, but the factor analysis showed that it correlated with the emotional experience factor.

The result of factor analysis showed that the following variables correlated highly with the emotional experience factor:

- readers' emotional involvement in the reading process
- readers' commitment of their attention to the reading process
- the possibility to re-read it in the future
- amount of reading of similar books in the future
- finishing ratio of the book
- recall ratio of what has been read
- readers' rating of the enjoyability of the reading process
The cognitive change factor was found to correlate with the following variables:

- readers' general evaluation of the reading process
- readers' rating of learning through reading
- critical reading - score of readers' comments

The factor loadings of all these variables are shown in table 6.5.

**Table 6.5**

*Factor loadings on the emotional experience and cognitive experience*

<table>
<thead>
<tr>
<th>observed variables</th>
<th>factor loadings of the observed variables on the two underlying factors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>emotional experience</td>
</tr>
<tr>
<td>desire to read the book again</td>
<td>.64184</td>
</tr>
<tr>
<td>desire recommend to others</td>
<td>.87293</td>
</tr>
<tr>
<td>attention commitment</td>
<td>.81232</td>
</tr>
<tr>
<td>emotion involvement</td>
<td>.74646</td>
</tr>
<tr>
<td>finishing ratio</td>
<td>.69466</td>
</tr>
<tr>
<td>recall ratio</td>
<td>.52049</td>
</tr>
<tr>
<td>rating of the enjoyability</td>
<td>.90424</td>
</tr>
<tr>
<td>desire to read similar books</td>
<td>.79557</td>
</tr>
<tr>
<td>comment</td>
<td>-.08505</td>
</tr>
<tr>
<td>learning through reading</td>
<td>.38480</td>
</tr>
<tr>
<td>general evaluation</td>
<td>.45426</td>
</tr>
</tbody>
</table>

Further analysis, Kruskal-Wallis analysis and Mann-Whitney test for group difference, was performed with factor scores instead of the original scores of these variables.
MAJOR RESULTS - DIFFERENCES BETWEEN THE THREE GROUPS
RESULTING FROM THE EXPERIMENTAL TREATMENT

7.1 Introduction

The field observation of the experiment described in the previous chapter lasted about two months. In total, 300 fiction readers participated in the experiment, acting as experimental subjects. Although most of these readers intended to borrow books from the system, only half of them managed to take out books and were further investigated with the questionnaire. Another half dropped out for a number of reasons:

- the reader failed to get any relevant books from the system
- the reader did not find the books on the shelves and did not want to reserve the books
- the reader rejected all selected books after examining them in the shelf area

Table 7.1 shows the distribution of readers for each stage of the experiments, from the initial participants to the final questionnaire respondents. The research was not able to exert any control over the distribution of readers after the initial stage (it is assumed, in fact, that the distribution of readers itself acts as an important indicator of the effect of the experimental treatment). Consequently the number of questionnaire respondents was different among the three groups.

The uneven distribution of questionnaire respondents across the three groups raised two issues with regard to the inferences to be made from the questionnaire data. The first issue was the representativeness of the respondents. All further inferences were based on the assumption that the respondents were representative of all the book borrowers. The justification of this assumption was the high respondent rates of all the three groups. The second issue was the drop in the statistical power compared with the pre-set .90 statistical
power which was based on the even distribution of experimental subjects. Further inferences were based on the assumption that the drop in the statistical power because of the uneven distribution was not substantial enough to jeopardise the validity of the inference. To further justify this assumption, the statistical power was calculated again with the actual number of respondents of each group. This resulted in a statistical power of around .85. Generally speaking, a value of .80 (which is interpreted as an 80 percent chance of obtaining statistical significance when the null hypothesis is in reality false) is considered an acceptable level of statistical power (Bausell, 1987).

Table 7.1

<table>
<thead>
<tr>
<th>Experimental stage</th>
<th>Distribution of readers among groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>participants</td>
<td>100</td>
</tr>
<tr>
<td>book selectors</td>
<td>67</td>
</tr>
<tr>
<td>book borrowers</td>
<td>36</td>
</tr>
<tr>
<td>questionnaire respondents</td>
<td>24</td>
</tr>
<tr>
<td>rates of questionnaire</td>
<td>66.7%</td>
</tr>
<tr>
<td>response (percentage of</td>
<td></td>
</tr>
<tr>
<td>respondents out of</td>
<td></td>
</tr>
<tr>
<td>borrowers)</td>
<td></td>
</tr>
</tbody>
</table>

This chapter presents the results observed from the three groups in raw data, as well as in all related statistics obtained by the Kruskal-Wallis analysis, and where appropriate, the Mann-Whitney test. Where a summary of the results on a number of variables could reinforce the findings of each individual variable, the summary is also presented. The original data and related statistics are presented with tables. The descriptive summaries, which are not subjective to statistical analysis, are presented with graphs.

Since the purpose and the design of the research did not require a correlation test, the two sections of the data, monitored by the observation/interview schedule and the questionnaire
respectively, were relatively independent of each other. They were, therefore, analyzed separately.

Sections 7.2 to 7.4 present the major results from the observation data. These data recorded details of readers' searching behaviour, e.g., the amount of book selection they made; their browsing behaviour in the shelf area after they selected books from the system; the details of the books they actually borrowed or reserved; all remarks they made during the experiment session; and their reasons for rejecting or selecting books. Most of these data were easy to tabulate and were therefore recorded with a pre-prepared observation/interview schedule. Data that did not neatly fit into the schedule, such as readers' remarks, were recorded as completely as possible and were categorized, coded and quantified before the data analysis.

Sections 7.5 to 7.9 present the results from the questionnaire data. The first part of the data dealt with readers' decision making process about a particular book. The second part dealt with readers' actual reading process of the book.

7.2 Readers' searching pattern

Readers in the three groups were all provided with six access points:

- author, with which readers could search or browse books by a known author.
- category, with which readers could search/browse books of a particular category.
- title, with which readers could search for a particular book.
- publisher, with which readers could search/browse all books published by a publisher.
- keyword, with which readers could search for books relevant to a subject heading or a combination of subject headings.
- prize-winners, with which readers could search or browse all winning titles of a particular literary prize.
Information cues under each access point were designed to be different among the three versions. Version 3 of the system (treatment for experimental group 2) had the largest amount of information cues and dynamic links between these information cues. For a detailed description of the variation of the system, see Chapter 5.

Readers' searching pattern - the use of these six access points - was measured by the percentage of the search with each access point out of the total number of searches a reader actually carried out during the experimental session. Percentage measurement was applied in this case, because it presumably reflected readers' preference for the provided access points more realistically than the absolute number of searches. For example, a reader who did all his/her three searches (100%) with the author approach was regarded to favour author approach more than a reader who did three out of five searches (60%) with author names. The Kruskal-Wallis analysis in the simultaneous comparison of the three groups and the Mann-Whitney test in the multiple comparison between pairs of the three groups were all based on the results in percentage figures.

Tables 7.2 to 7.7 show the use of all these access points by the three groups of readers. Column 1 is the percentage of searches using certain access points out of the total number of searches a reader did, columns 2 to 4 are the number of readers in each group whose searches corresponded to that in column 1. The related Kruskal-Wallis statistics, including degree of freedom (df), the Kruskal-Wallis test statistic H and the significance level p, are presented below each table¹.

¹ Degree of freedom is defined as the number of observations minus one. In the Kruskal-Wallis test, df=k-1, where k is the number of observed groups. The Kruskal-Wallis test statistic H is a measurement of disagreement between groups being compared. It is calculated based on the ranks of samples. A small H value supports the null hypothesis that the mean of the ranks in any one group is equal to the mean of the ranks in any other groups. A large value reflects great disagreement between the actual distribution of ranks over samples and the expected distribution, and thus discredits the null hypothesis. P value is the probability, when the null hypothesis is true, of obtaining a value of the test statistic (H value in Kruskal-Wallis test) which is equal to or more extreme than its observed value. Small p value means the observed disagreement between groups reflected by the H value occurs only rarely by chance phenomena.
7.2.1 The use of the category searching approach

As described in Chapter 5, versions 1 and 2 of the HMEF presented category access point with an online public access catalogue (OPAC) type interface. The readers were required to type in a category which they wanted to search. Version 3 presented categories with icons, which readers could click the mouse to initiate a search (see figure 5.8 in Chapter 5 for illustration). There was also a pop-up definition of each category in version 3. The extent that this approach was used by the three groups is shown in table 7.2.

### Table 7.2

The use of the category access point by the three groups of readers

<table>
<thead>
<tr>
<th>% of category searches out of the total number of searches a reader did</th>
<th>number of readers who did the corresponding searches</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
<td>experimental 1</td>
</tr>
<tr>
<td>0</td>
<td>43 (43%)</td>
<td>51 (51%)</td>
</tr>
<tr>
<td>17</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>20</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>25</td>
<td>1 (1%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>33</td>
<td>4 (4%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>40</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>50</td>
<td>8 (8%)</td>
<td>11 (11%)</td>
</tr>
<tr>
<td>60</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>67</td>
<td>1 (1%)</td>
<td>3 (3%)</td>
</tr>
<tr>
<td>75</td>
<td>0 (0%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>100</td>
<td>43 (43%)</td>
<td>31 (31%)</td>
</tr>
<tr>
<td>total</td>
<td>100 (100%)</td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

N=300 df=3-1=2 H=2.4853 p>.1

The category approach was used intensively by all the three groups. From the control group, experimental group 1 and experimental group 2, 43%, 31% and 22% of the readers respectively carried out all their searches by category. From the three groups, 51%, 47%, 47% of the readers respectively carried out half or more of their searches by category.

Despite the icon representation of categories and the presence of a definition for some categories in system version 3 (treatment for experimental group 2), no significant
difference was noted between the three groups in terms of the use of the category access point in their search.

7.2.2 The use of the keyword access point
With version 1 and 2, the readers were supposed to type in the keywords to start a search. The intention was to simulate the search in current OPACs. In version 3 all searchable keywords were listed and were further linked to one of the multiple dimensions: genre title, subject/theme, character, setting (in space and in time). Searches were carried out by clicking the on dimensions and the specific keywords on the screen. The extent to which this approach was used by the three groups of readers in the experiment is shown in table 7.3.

Table 7.3
The use of the keyword access points by the three groups of readers

| % of keyword searches out of the total number of searches a reader did | number of readers who did the corresponding search |
|---|---|---|
| | control | experimental 1 | experimental 2 |
| 0 | 96 (96%) | 97 (97%) | 95 (95%) |
| 25 | 0 (0%) | 1 (1%) | 0 (0%) |
| 33 | 0 (0%) | 0 (0%) | 2 (2%) |
| 40 | 0 (0%) | 1 (1%) | 0 (0%) |
| 50 | 1 (1%) | 0 (0%) | 1 (1%) |
| 100 | 3 (3%) | 1 (1%) | 2 (2%) |
| total | 100 (100%) | 100 (100%) | 100 (100%) |

N=300 df=3-1=2 H=.5269 p>.1

Few readers tried this searching approach in all three groups. Only 3%, 1% and 2% readers from the control group, experimental group 1 and experimental group 2 respectively used keywords for all their searches. Another 1%, 2% and 3% respectively from the three groups combined keyword searching with other searching approaches. The use of this approach by the three groups is not significantly different.
7.2.3 The use of the author access points

With version 1 and 2, basically a reader was required to type in an author's name to start a search. The intention of such a design was also to simulate the author search in current OPACs. With version 3 the reader began a search by clicking with the mouse on a name from an alphabetical list of authors. He/She would then be able to view a brief biography of this author and access either all of the authors' books or a particular title. The use of this searching approach by the three groups of readers is shown in table 7.4.

Table 7.4
The use of the author access points by the three groups of readers

<table>
<thead>
<tr>
<th>% of author searches out of the total number of searches a reader did</th>
<th>number of readers who did the corresponding search</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>0</td>
<td>47 (47%)</td>
</tr>
<tr>
<td>20</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>25</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>33</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>40</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>50</td>
<td>8 (8%)</td>
</tr>
<tr>
<td>60</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>67</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>75</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>80</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>100</td>
<td>39 (39%)</td>
</tr>
<tr>
<td>total</td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

N=300 df=3-1=2 H=.8869 p>.1

Author names were used frequently as an access point by all the three groups. From the control group, experimental group 1 and experimental group 2, respectively 39%, 39% and 24% readers relied solely on known author names. Respectively, 52%, 53% and 48% from the three groups did half or more than half of their searches with author names. The extent to which this searching approach was used was not significantly different between the three groups.
7.2.4 The use of the title access point

While versions 1 and 2 required the reader to type in a title to start a search, version 3 listed all the available titles with 26 cards, each of which could be brought into view by clicking on the title's starting letter (see figure 5.10 of Chapter 5). The use of this searching approach is shown in table 7.5.

**Table 7.5**

<table>
<thead>
<tr>
<th>% of category searches out of the total number of searches a reader did</th>
<th>number of readers who did the corresponding search</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>0</td>
<td>100 (100%)</td>
</tr>
<tr>
<td>25</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>33</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>50</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>100</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>total</td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

N=300 df=3-1=2  H=4.0675  P>.1

Hardly any readers came for a known title. This was the case in all the three groups. None of the readers in the control group did any searches with the title access point. Only 4% of readers in experimental group 1 and 2% of readers in experimental group 2 tried title searching approach either independently or in combination with other approaches.

7.2.5 The use of the prize access point

While version 1 and version 2 asked the reader to type in a prize name or choose one from a hint list to initiate a search for all winners of that prize, version 3, with the aid of hypertext feature, presented richer information cues under this access point in a dynamic way. It first presented information about the prize itself, followed by the winning titles and authors. Both access to individual winners and access to all winners of a particular prize were possible. The use of this searching approach by all the three groups is shown in table 7.6.
Table 7.6
The use of the prize access point in fiction readers' searching

<table>
<thead>
<tr>
<th>% of prize searches out of the total number of searches a reader did</th>
<th>number of readers who did the corresponding search</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>0</td>
<td>99 (99%)</td>
</tr>
<tr>
<td>17</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>20</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>25</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>33</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>40</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>50</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>60</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>67</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>100</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>total</td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

N=300 df=3-1=2  H=39.6724  p<.001

On the whole, this approach attracted only a minority of readers (1%, 18% and 36% from the control group, experimental group 1 and experimental group 2 respectively), and in no cases, was it used independently. But relatively more readers from the experimental groups searched for prize winners. The difference was significant at the .0001 probability level. In order to see how the overall difference was resulted, a Mann-Whitney test was carried out to further test the difference between the following pairs of groups:

- experimental group 1 versus the control group
- experimental group 2 versus the control group
- experimental group 1 versus experimental group 2
Table 7.7 shows the statistics from such multiple comparisons, including the Mann-Whitney test statistic $z^2$ and the statistical significance level. As it indicates, there exists a significant difference between each pair of the three groups.

**Table 7.7**

*Multiple comparisons between pairs of the three groups on their use of prize access point*

<table>
<thead>
<tr>
<th>group$_i$</th>
<th>group$_j$</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 1</td>
<td></td>
<td>$z=-4.0894$</td>
<td>$z=-2.9640$</td>
<td>$z=-2.9640$</td>
</tr>
<tr>
<td>p&lt;.001</td>
<td>p&lt;.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 2</td>
<td></td>
<td>$z=-6.3521$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p&lt;.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7.2.6 *The use of the publisher access point*

It was possible to search books with publishers' names by typing it in version 1 and 2, and by clicking with the mouse on a list of publishers in version 3. However, none of the 300 readers searched for books with this approach.

7.2.7 *Summary of the differences between the three groups in their searching pattern*

Regarding the searching pattern in general, author and category access points were used most frequently by all the three groups. Keyword, title and publisher were particularly appealing to few readers. So the only difference resulting from the experimental treatment was readers' interest in the prize searching approach, with the access point being used more frequently by readers from experimental group 2 than from the other two groups, and more frequently by readers from experimental group 1 than the control group. However, since the actual number of people who used this approach was small and since it was not used as an independent searching approach, it did not seem to affect the whole searching pattern.

---

$^2$Statistic $z$ is the Mann-Whitney counterpart of Kruskal-Wallis H. $|z|$ indicates the degree of disagreement between the two groups being compared.
This is shown by figure 7.1 which summarises the general pattern of readers’ searching approaches from the data in individual tables.

So the null hypothesis regarding the effect of the experimental systems on readers' searching pattern, i.e., that there is no difference among the three groups in their general searching pattern, cannot be rejected.

![The use of different searching approaches by the three groups](image)

**Figure 7.1**  The use of different searching approaches by the three groups of readers

7.3. The amount of readers' book selection and borrowing

During the process of searching, readers were encouraged to select books that met their needs. The majority of readers did make some selections. On finishing the searching
process, they were accompanied to go to check the books per se in the shelf area. If the books were not on the shelves, they were allowed to make reservations free of charge. Some books were rejected after the reader had checked the books, some were not available at the time and were not reckoned to be worth the reservation by the reader. So the amount of selection and the amount of actual borrowing were in fact different. Both of them were analyzed and were compared.

7.3.1 The amount of book selection

Book selection which resulted from the searching process is shown in table 7.8. Column 1, acting as the ranks in the Kruskal-Wallis one way analysis of variance, is the number of books a reader actually selected. Column two is the number and percentage of readers in the control group, who made the corresponding selections. The following columns are the results of the two experimental groups, arranged in the same way as that of the control group.

Table 7.8
Book selections by the three groups

<table>
<thead>
<tr>
<th>number of books the reader selected</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>33 (33%)</td>
<td>17 (17%)</td>
<td>10 (10%)</td>
</tr>
<tr>
<td>1</td>
<td>19 (19%)</td>
<td>23 (23%)</td>
<td>25 (25%)</td>
</tr>
<tr>
<td>2</td>
<td>16 (16%)</td>
<td>23 (23%)</td>
<td>24 (24%)</td>
</tr>
<tr>
<td>3</td>
<td>13 (13%)</td>
<td>15 (15%)</td>
<td>24 (24%)</td>
</tr>
<tr>
<td>4</td>
<td>11 (11%)</td>
<td>7 (7%)</td>
<td>13 (13%)</td>
</tr>
<tr>
<td>5</td>
<td>5 (5%)</td>
<td>4 (4%)</td>
<td>2 (2%)</td>
</tr>
<tr>
<td>6</td>
<td>2 (2%)</td>
<td>4 (4%)</td>
<td>2 (2%)</td>
</tr>
<tr>
<td>7</td>
<td>0 (0%)</td>
<td>3 (3%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>8</td>
<td>1 (1%)</td>
<td>4 (4%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>total</td>
<td>100 (100%)</td>
<td>100 (100%)</td>
<td>100 (100%)</td>
</tr>
<tr>
<td>total selection</td>
<td>160</td>
<td>239</td>
<td>219</td>
</tr>
</tbody>
</table>

N=300 df=2  H=6.7464  p<.05
As the table shows, 33%, 17% and 10% of readers from the control group, experimental group 1 and experimental group 2 respectively failed to get any relevant books from the system. Experimental group 1 seemed to have made the largest selection. Not only substantially more people from this group than from the control group succeeded in finding relevant books, but also many readers (15% compared with 8% in the control group and 4% in experimental group 2) selected four or more books at the same time (The library regulation is that a reader can borrow a maximum of four books at the same time). Although readers from experimental group 2 made nearly as large a selection as experimental group 1, remarkably fewer people exceeded the maximum number laid down by the library regulation. None of them selected more than six books, compared with 7% from experimental group 1 and 3% from the control group who did so.

The table also indicates that the three groups scored significantly different in their selection of books at .05 probability level. A Mann-Whitney test further showed that the overall difference was actually due to the differences between both the two experimental groups and the control group, but not the two experimental groups with each other. The statistics obtained from this multiple comparison are shown in table 7.9.

<table>
<thead>
<tr>
<th></th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 1</td>
<td>z=-2.0555</td>
<td>p&lt;.05</td>
<td>-</td>
</tr>
<tr>
<td>experimental 2</td>
<td>z=-2.4023</td>
<td>p&lt;.05</td>
<td>z=.3512 p&gt;.1</td>
</tr>
</tbody>
</table>

Table 7.9

Multiple comparison between pairs of the three groups on amount of their book selection

136
### 7.3.2 The amount of borrowing

Borrowing refers to the readers' actual taking out of books and/or making a reservation if the book was not available that day. It was assumed that books which were actually borrowed by the reader after being checked in the shelf area were those judged as really relevant by the reader; books which were rejected after being checked were those judged as not very relevant by the reader. The differences on this variable among the three groups are shown in table 7.10.

<table>
<thead>
<tr>
<th>number of items borrowed</th>
<th>number of readers who borrowed the corresponding number of books</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
<td>experimental 1</td>
</tr>
<tr>
<td>0</td>
<td>64 (64%)</td>
<td>51 (51%)</td>
</tr>
<tr>
<td>1</td>
<td>23 (23%)</td>
<td>25 (25%)</td>
</tr>
<tr>
<td>2</td>
<td>6 (6%)</td>
<td>10 (10%)</td>
</tr>
<tr>
<td>3</td>
<td>6 (6%)</td>
<td>9 (9%)</td>
</tr>
<tr>
<td>4</td>
<td>1 (1%)</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>5*</td>
<td>0 (0%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>total</td>
<td>100 (100%)</td>
<td>100 (100%)</td>
</tr>
<tr>
<td>total borrowing</td>
<td>57</td>
<td>93</td>
</tr>
</tbody>
</table>

N=300 df=2  H=18.0432  p<.001

Note: * Although the library regulation requires that readers borrow not more than four books at the same time, under exceptional circumstances, some readers do borrow more books with other family members' tickets

As indicated in the table, readers from experimental group 2 made the largest borrowing, followed by experimental group 1. Not only more people from the experimental groups actually took out books (65% and 49% respective from experimental group 2 and
experimental group 1, compared with 36% from the control group), they also tended to borrow more books.

The overall difference among the three groups was significant at the .001 probability level. Multiple comparisons with a Mann-Whitney test further indicated that the difference was significant between every pair of the three groups. The statistics from this test is shown in table 7.11.

Table 7.11

Multiple comparisons between pairs of the three groups on the amount of their borrowing

<table>
<thead>
<tr>
<th>group_i</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 1</td>
<td>z=-2.1414</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>p&lt;.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 2</td>
<td>z=-4.2936</td>
<td>z=-2.0233</td>
<td></td>
</tr>
<tr>
<td></td>
<td>p&lt;.0001</td>
<td>p&lt;.05</td>
<td></td>
</tr>
</tbody>
</table>

A comparison of readers' selection and readers' borrowing within each group and between the three groups is shown by figure 7.2. It seemed that not only the two experimental groups selected more items, they also actually borrowed a larger proportion of the selected books. The proportion reached its highest in experimental group 2.
7.3.3 The amount of reservation

If books were not on the shelf that day, readers were given the chance to reserve them free of charge. Even so, not all books were reserved. Reservation required more efforts from the reader: filling in an application form, leaving his/her address and sometimes telephone number, coming back to collect the book, etc. Therefore it was assumed that readers would reserve it only when they found the books indeed worth the reservation. The difference between the three groups in terms of the reservations they made is shown in table 7.12.
Table 7.12

Number of reservations made by the three groups of readers

<table>
<thead>
<tr>
<th>number of reservations</th>
<th>number of readers with the corresponding reservation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>0</td>
<td>86 (86%)</td>
</tr>
<tr>
<td>1</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>2</td>
<td>6 (6%)</td>
</tr>
<tr>
<td>3</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>4</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>5</td>
<td>0 (0%)</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

The experimental groups made greater number of reservations than the control group (23%, 33% readers respectively from experimental group 1 and experimental group 2 compared with 14% from the control group). Experimental group 2 also seemed to have made more multiple reservations.

A Kruskal-Wallis one way analysis of variance showed that the overall difference between the three groups was significant at the .01 probability level. A Mann-Whitney test showed that this difference was solely caused by the difference between experimental groups 2 and the control group. Neither the difference between experimental group 1 and the control group, nor the difference between the two experimental groups was significant at the pre-decided .05 probability level. The related statistics are shown in table 7.13.
### Table 7.13
Multiple comparison between pairs of the three groups on the reservation they made

<table>
<thead>
<tr>
<th>group&lt;sub&gt;i&lt;/sub&gt;</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 1</td>
<td>z=-1.6353</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>p&gt;.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 2</td>
<td>z=-3.1391</td>
<td>z=-1.5302</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>p&lt;.01</td>
<td>p&gt;.1</td>
<td></td>
</tr>
</tbody>
</table>

### 7.3.4 Summary of the results regarding readers' selection and borrowing of books

In summary, readers' fiction selection, fiction borrowing and reservation were all significantly different between the three groups. So the following group of related null hypotheses are all rejected:

A. There is no difference between the three groups in terms of the amount of book selection.

B. There is no difference between the three groups in terms of the amount of book borrowing.

C. There is no difference between the three groups in terms of the number of reservations.
Furthermore, a comparison of the three indicators, as showed in figure 7.3, indicated that books selected by experimental group 2 were not only large in number, they were also more likely to be borrowed or reserved.

Figure 7.3  A comparison of book selection, book borrowing and reservation within and across groups

7.4 The Distribution of readers' borrowing

The distribution of borrowing, reflected by the amount of borrowing of different types of books, was expected to show whether certain types of books were borrowed more
intensively by a particular group than by other groups as a result of being exposed to different experimental treatments.

The "type of books" can be constructed from different perspectives. This research examined the distribution of the borrowed books with reference to authors' popularity, the titles' own popularity, the nature of book review comments and the categories of fiction.

7.4.1 Distribution of borrowing with reference to authors' "popularity"

The authors' popularity was operationally determined by the number of total enquiries made of them during the whole experimental period. The more frequently they were cited to initiate a search, the more popular they were regarded as being. So according to the number of enquiries made by the readers, authors included in the experimental systems were classified into three groups:

- "very popular" authors - authors who were inquired by more than 15 readers. Only four authors (Catherine Cookson, Dick Francis, Stephen King and Jeffrey Archer) fell into this category.
- "popular authors" - authors who were inquired by more than five and fewer than 15 readers. Twenty authors (including Kingsley Amis, Ruth Rendell and Fay Weldon, etc.) fell into this category.
- "unpopular authors" - authors who were inquired by fewer than five readers.

Correspondingly, each book was assigned by its authorship to one of the three groups: books written by "very popular" authors, books written by "popular" authors and books written by "unpopular" authors.

7.4.1.1 The borrowing of books by "very popular" authors

Data regarding the borrowing of books written by "very popular" authors is shown in table 7.14, including the number of books borrowed by individual readers and the total amount of borrowing of each group.
Table 7.14
The borrowing of books written by very popular authors

<table>
<thead>
<tr>
<th>number of borrowed books</th>
<th>number of readers with corresponding borrowing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>0</td>
<td>91 (91%)</td>
</tr>
<tr>
<td>1</td>
<td>7 (7%)</td>
</tr>
<tr>
<td>2</td>
<td>2 (2%)</td>
</tr>
<tr>
<td>3</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>4</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>total</td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

| total borrowing          | 11 | 29 | 13 |

N=300 df=2 H=3.5605 p>.1

Considering that the number of "very popular" authors was small, the amount of borrowing accounted by their books was relatively large in all the three groups. As shown in the table, although the borrowing of this type of books by experimental group 1 was slightly bigger than the other two groups, the overall difference between the three groups, according to the Kruskal-Wallis one way analysis of variance, was not significant.

7.4.1.2 The borrowing of books written by "popular" authors

The borrowing of books written by "popular" authors is shown in table 7.15. Data are arranged in the same way as those of books by "very popular" authors.
As shown in the table, experimental group 2 borrowed apparently more books of this type than the other two groups (61 in total compared with 31 by the control group and 34 by experimental group 1).

A Kruskal-Wallis one way analysis of variance showed that the overall difference between the three groups was significant. A Mann-Whitney test indicated that this overall difference was due to the difference between experimental group 2 and the other two groups. The difference between experimental group 1 and the control group, however, was not significant. The statistics obtained from the Mann-Whitney test are presented in table 7.16.
7.4.1.3 The borrowing of books by "unpopular" authors

The borrowing of this group of books is shown in table 7.17. The overall difference between the three groups in terms of this variable was significant at the .01 probability level. A further examination with a Mann-Whitney test indicated that the difference actually lay between experimental group 2 and the control group. Neither the difference between experimental group 1 and the control group nor the difference between the two experimental groups was significant. The statistics obtained from these multiple comparisons are shown in table 7.18.

**Table 7.17**

The borrowing of books written by "unpopular" authors

<table>
<thead>
<tr>
<th>number of borrowed books</th>
<th>number of readers with corresponding borrowing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>0</td>
<td>89 (89%)</td>
</tr>
<tr>
<td>1</td>
<td>8 (8%)</td>
</tr>
<tr>
<td>2</td>
<td>3 (3%)</td>
</tr>
<tr>
<td>3</td>
<td>0 (0%)</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

N=300 df=2 H=12.2671 p<.01

**Table 7.18**

Multiple comparison between pairs of the three groups on their borrowing of books written by unpopular authors

<table>
<thead>
<tr>
<th>group_i</th>
<th>group_j</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td></td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 1</td>
<td>z=-1.8677</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p&gt;.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 2</td>
<td>z=-3.4642</td>
<td></td>
<td>z=-1.7433</td>
<td></td>
</tr>
<tr>
<td></td>
<td>p&lt;.001</td>
<td></td>
<td>p&gt;.05</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.4.1.4 Summary of the distribution of borrowing with reference to authors' "popularity"

The results presented so far regarding the distribution of borrowing with reference to author's popularity, showed that books by very popular authors were borrowed to the same extent by all the three groups. However, the borrowing of books by less popular authors were found to be significantly different between the three groups. The difference was especially marked between experimental group 2 and the other two groups. The null hypothesis that there is no difference among the three groups in terms of their borrowing with reference to authors' popularity is rejected. A summary of these results is illustrated in figure 7.4, where the right-hand part of the three bars representing the three groups is much more divergent than the left-hand part, indicating that their borrowing of books by the less popular authors is more different than their borrowing of popular authors' books.

Figure 7.4 A comparison of the distributions of borrowing of the three groups with reference to authors' "popularity"
7.4.2 Distribution of borrowing with reference to the "popularity" of titles

From this perspective, books were arbitrarily divided into "popular titles" and "unpopular titles" according to the frequencies they were selected by the readers in the control group. Books that were selected by more than five readers in the control group were defined as "popular titles". Other titles were categorised as unpopular titles. Readers in the control group were only provided with bibliographic information cues, such as the author, title and publication data. According to previous research, when information cues are not comprehensive enough to reveal the content features of the book, readers tend to resort to their intuition for book selection, i.e., they would select books that look or sound interesting (Spiller, 1980; Goodall, 1989; Jennings and Sear, 1986). It was therefore assumed that book selection in the control group would rely to a great extent on how interesting the book title sounded. The results presented here were expected to show whether the increase of information cues in version 2 and version 3 could alleviate such intuitive effect in book selection.

7.4.2.1 The borrowing of "popular titles"

Table 7.19 shows the borrowing of popular titles by the three groups. Included in this table are: the number of books of this type borrowed by individual readers, which acted as the rank in the Kruskal-Wallis analysis, the number and percentage of readers in each group, who made the corresponding borrowing; and the total borrowing of each group.

<table>
<thead>
<tr>
<th>number of borrowed books</th>
<th>number of readers with corresponding borrowing</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
<td>experimental 1</td>
</tr>
<tr>
<td>0</td>
<td>90 (90%)</td>
<td>87 (87%)</td>
</tr>
<tr>
<td>1</td>
<td>9 (9%)</td>
<td>12 (12%)</td>
</tr>
<tr>
<td>2</td>
<td>1 (1%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>3</td>
<td>1 (1%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>total</td>
<td>100 (100%)</td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

| total borrowing          | 14                                           | 17            | 15 |

N=300 df=2 H=.4418 p>.1
Only a very small minority of books were shown common interest by the readers. The borrowing of this type of book seemed to be very similar among the three groups both in terms of the total amount of borrowing and in terms of readers' distribution along the borrowing rates. Kruskal-Wallis analysis showed that the borrowing of this type of books was indeed not significantly different at the pre-decided .05 probability level.

7.4.2.2 The borrowing of "unpopular titles"

The borrowing of unpopular titles is shown in table 7.20. The data are arranged in the same way as those of popular titles.

<table>
<thead>
<tr>
<th>number of borrowed books</th>
<th>number of readers with corresponding borrowing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>0</td>
<td>68 (68%)</td>
</tr>
<tr>
<td>1</td>
<td>22 (22%)</td>
</tr>
<tr>
<td>2</td>
<td>6 (6%)</td>
</tr>
<tr>
<td>3</td>
<td>2 (2%)</td>
</tr>
<tr>
<td>4</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>5</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>total</td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

As shown in the table, the two experimental groups borrowed substantially more books of this type than the control group. The amount of borrowing reached its highest in experimental group 2. The two experimental groups were also distinguished from the control group in that more readers in these groups appeared towards the higher rate of
borrowing. Kruskal-Wallis analysis indicated that the difference was significant at the .001 probability level.

Multiple comparisons were performed between pairs of the three groups. The result showed that both of the experimental groups were different from the control group on this variable. However, they were not significantly different from each other. The statistics from these multiple comparisons are presented in table 7.21

<table>
<thead>
<tr>
<th>group&lt;sub&gt;i&lt;/sub&gt;</th>
<th>group&lt;sub&gt;j&lt;/sub&gt;</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 1</td>
<td>z=-2.2119</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p&lt;.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 2</td>
<td>z=-4.4107</td>
<td>z=-1.7433</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p&lt;.0001</td>
<td>p&gt;.05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7.21

Multiple comparisons between pairs of the three groups on their borrowing of unpopular titles

7.4.2.3 Summary of the distribution of borrowing with reference to the "popularity" of titles

Figure 7.5 summarizes the information from tables 7.19 to 7.21. It shows that while popular (appealing) titles were borrowed to the same extent by the three groups, the "unpopular" titles were borrowed more intensively by the experimental groups than the control groups. So the null hypothesis that there is no difference between the three groups in the distribution of their borrowing with reference to the popularity of titles is rejected.
Figure 7.5  A comparison of the distribution of book borrowing with reference to the "popularity" of titles between the three groups

7.4.3 Distribution of book borrowing with reference to book review comments

Media response to the books, extracted from prestigious book reviews, was provided exclusively to experiment group 2. Books in the system were either reviewed positively, negatively or neutrally, according to the opinion of the majority reviewers. The distribution of readers' borrowing with reference to this factor is presented below:

7.4.3.1 The borrowing of positively reviewed books

The borrowing of positively reviewed books by the three groups is shown in table 7.22. The first column is the number of positively reviewed books borrowed by individual
readers, acting as the ranks in the Kruskal-Wallis analysis. The following columns are the number of readers in each group, who borrowed the corresponding number of books which were positively reviewed.

**Table 7.22.**

The borrowing of positively reviewed books

<table>
<thead>
<tr>
<th>number of positively reviewed books borrowed by the reader</th>
<th>number of readers with corresponding borrowing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>0</td>
<td>73 (73%)</td>
</tr>
<tr>
<td>1</td>
<td>25 (25%)</td>
</tr>
<tr>
<td>2</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>3</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>4</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>total</th>
<th>100 (100%)</th>
<th>100 (100%)</th>
<th>100 (100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>total borrowing</td>
<td>30</td>
<td>40</td>
<td>77</td>
</tr>
</tbody>
</table>

N=300 df=2  H=18.4560  p<.001

As shown in the table, the number of non-borrowers of positively reviewed books was smallest in experimental group 2, while the number of borrowers was largest on nearly all the levels of the borrowing scale (rank). So the borrowing of experimental group 2 was apparently biased towards positively reviewed books. The Kruskal-Wallis analysis indicated that the overall difference on this variable between the three groups was significant at the .001 probability level. The Mann-Whitney test further showed that this overall difference was caused particularly by the difference between experimental group 2 and the other two groups. The difference between experimental group 1 and the control group, however, was not significant at the pre-set .05 probability level. The results of these comparisons are shown in table 7.23.
Table 7.23
Multiple comparisons between pairs of the
three groups on their borrowing of positively reviewed books

<table>
<thead>
<tr>
<th>group_i</th>
<th>group_j</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 1</td>
<td>z=-.2976</td>
<td>p&gt;.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 2</td>
<td>z=-3.7094</td>
<td>p&lt;.001</td>
<td>z=-3.1762</td>
<td>p&lt;.01</td>
</tr>
</tbody>
</table>

7.4.3.2 The borrowing of negatively reviewed books

Table 7.24 shows the extent to which this type of book was borrowed by the three groups. Data are arranged in the same way as those of the positively reviewed books.

Table 7.24
The borrowing of negatively reviewed books

<table>
<thead>
<tr>
<th>number of negative books borrowed by the reader</th>
<th>number of readers with corresponding borrowing</th>
<th>reviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>number of readers with corresponding borrowing</td>
<td>reviewed</td>
</tr>
<tr>
<td></td>
<td>control</td>
<td>experimental 1</td>
</tr>
<tr>
<td>0</td>
<td>90 (90%)</td>
<td>75 (75%)</td>
</tr>
<tr>
<td>1</td>
<td>7 (7%)</td>
<td>18 (18%)</td>
</tr>
<tr>
<td>2</td>
<td>2 (2%)</td>
<td>5 (5%)</td>
</tr>
<tr>
<td>3</td>
<td>1 (1%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>4</td>
<td>0 (0%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>total</td>
<td>100 (100%)</td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

N=300 df=2 H=18.4560 p<.001

Quite contrary to the borrowing of positively reviewed books, the number of borrowers of negatively reviewed books in experimental group 2 was smallest on nearly all levels of the
borrowing scale (rank). In this group, 90% of the readers were non-borrowers of negatively reviewed books. The overall difference among the three groups was found to be significant at .001 probability level according to a Kruskal-Wallis one way analysis of variance.

Multiple comparisons with a Mann-Whitney test indicated that the overall difference was actually formed by the difference between experimental group 1 and the control group and the difference between experimental group 2 and experimental group 1. The difference between experimental group 2 and the control group, however, was not significant. The statistics from such multiple comparisons are presented in table 7.25.

Table 7.25

Multiple comparisons between pairs of the three groups on their borrowing of negatively reviewed books

<table>
<thead>
<tr>
<th>group₁</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 1</td>
<td>z=-2.7645</td>
<td>p&lt;.01</td>
<td></td>
</tr>
<tr>
<td>experimental 2</td>
<td>z=-.0282</td>
<td></td>
<td>z=-2.8189</td>
</tr>
</tbody>
</table>

7.4.3.3 Summary of the distribution of borrowing with reference to the nature of book review comments

In summary, the extent to which both the positively reviewed books and the negatively reviewed books were borrowed was significantly different among the three groups. The null hypothesis that the distribution of borrowing with reference to the nature of book review comments is identical among the three groups is rejected. A summary of the information from table 7.22 to 7.25 is further illustrated in figure 7.6.
7.4.4 Distribution of books with reference to fiction categories

As a result of the in-depth fiction processing, books in the experimental system were classified into nineteen categories, which were located along Scholes's (1981) continuum from fantasy to history. Operational categories of fantasy and romanticism - science fiction, horror, romance, western, detective and spy fiction - fell roughly into what is conventionally called "popular fiction" or "light fiction". Operational categories of realism and history - psychological fiction, gender issue fiction, political fiction, historical fiction, etc. - were roughly identical to what is conventionally called "serious fiction". Therefore, for the convenience of comparing the result of the current research with that of previous research, books were further grouped into two general categories for data analysis: light fiction and serious fiction.
7.4.4.1 The borrowing of light fiction

The borrowing of light fiction is shown in table 7.26. The first column is the number of books of this type that a reader borrowed. The number acted as the ordinal scale (rank) in a Kruskal-Wallis analysis. The following columns are the number of readers borrowed the corresponding amount of light fiction.

Table 7.26
The borrowing of light fiction

<table>
<thead>
<tr>
<th>number of borrowed books</th>
<th>number of readers with corresponding borrowing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>0</td>
<td>77 (77%)</td>
</tr>
<tr>
<td>1</td>
<td>15 (15%)</td>
</tr>
<tr>
<td>2</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>3</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>4</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>5</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>total</td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

N=300 df=2 H=3.9779 p>.1

A Kruskal-Wallis analysis indicated that the overall difference between the three groups on this variable was not significant at the pre-set .05 probability level.

7.4.4.2 The borrowing of serious fiction

The borrowing of serious fiction is shown in table 7.27. Data are arranged in the same way as those of light fiction.
As shown in the table, the total amount of borrowing was larger in the two experimental groups. The proportion of readers who "scored" relatively high was also larger in these two groups compared with that in the control group. A Kruskal-Wallis analysis indicated that the overall difference was significant at the .01 probability level. A Mann-Whitney test further identified that the difference actually lay between both the two experimental groups and the control group, but not the two experimental groups with each other. The statistics from these multiple comparisons are shown in table 7.28.

### Table 7.27

The borrowing of serious fiction

<table>
<thead>
<tr>
<th>number of borrowed books</th>
<th>number of readers with corresponding borrowing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>0</td>
<td>84 (84%)</td>
</tr>
<tr>
<td>1</td>
<td>12 (12%)</td>
</tr>
<tr>
<td>2</td>
<td>2 (2%)</td>
</tr>
<tr>
<td>3</td>
<td>2 (2%)</td>
</tr>
<tr>
<td>total</td>
<td>100 (100%)</td>
</tr>
</tbody>
</table>

| total borrowing | 22 | 44 | 59 |

N=300 df=2  H=6.4311  p<.01

### Table 7.28

Multiple comparisons between pairs of the three groups on their borrowing of serious fiction

<table>
<thead>
<tr>
<th>group&lt;sub&gt;i&lt;/sub&gt;</th>
<th>group&lt;sub&gt;j&lt;/sub&gt;</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 1</td>
<td>z=-2.1802</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p&lt;.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 2</td>
<td>z=-2.2604</td>
<td>z=-.4918</td>
<td>p&gt;.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>p&lt;.01</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.4.4.3 Summary of readers’ borrowing with reference to fiction categories

The results from tables 7.26 to 7.28 show that while the three groups borrowed light fiction to the same extent, the two experimental groups borrowed significantly more serious fiction than the control group. The null hypothesis that there is no difference in the distribution of borrowing of books with reference to fiction categories between the three groups is therefore rejected.

The proportion of light fiction and serious fiction within each group is also worth special note. Light fiction borrowing was 60% more than serious fiction in the control group and 10% more in experimental group 1, yet it was slightly less than serious fiction in experimental group 2. These results are summarized in figure 7.7.

![Distribution of borrowing with reference to fiction categories](image)

Figure 7.7  A comparison of the distribution of borrowing of the three groups with reference to fiction categories
7.5 Decision making efforts in book selection

A number of variables in the interview/observation schedule related to readers' decision making on book selection. A factor analysis was applied to these variables and differentiated two underlying factors - the use of the searching system and the reliance on readers' own knowledge. The analysis verified the theoretical grouping of the variables in Chapter 4.

7.5.1 The use of the searching system in the decision making

The raw data on these variables are listed in tables 7.29 to 7.32. But for the purpose of the Kruskal-Wallis one way analysis of variance, the factor scores of these variables were applied instead of the original scores.

7.5.1.1 Readers' reaction to the system

Table 7.29 shows readers' general reaction to the system. Column 1 is the type of readers' reaction. It was assumed that a positive reaction relates to greater use of the system. Column 2 is the weight assigned to the reactions based on this assumption. The following columns are the distribution of readers among the types of reactions. Readers' reaction was assessed by the researcher according to remarks made about the system, which were recorded in the observation notes. Fewer than 300 cases are presented here because for a small number of readers, the remarks made were not informative enough to accurately determine their reactions.

The proportion of readers who reacted positively towards the system (showing interest or enthusiasm) was substantially larger in the two experimental groups, especially in experimental group 2. Moreover, the number of readers who felt doubtful or were even against the system was substantially smaller in the two experimental groups, especially experimental group 2.
Table 7.29

Rating of readers' general reaction to the system

<table>
<thead>
<tr>
<th>reaction</th>
<th>rating</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>against</td>
<td>1</td>
<td>5 (5.9%)</td>
<td>7 (8%)</td>
<td>2 (2.7%)</td>
</tr>
<tr>
<td>doubtful</td>
<td>2</td>
<td>15 (17.6%)</td>
<td>2 (2.3%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>indifferent</td>
<td>3</td>
<td>26 (31%)</td>
<td>24 (27%)</td>
<td>7 (9.6%)</td>
</tr>
<tr>
<td>interested</td>
<td>4</td>
<td>39 (46%)</td>
<td>48 (54%)</td>
<td>64 (63%)</td>
</tr>
<tr>
<td>enthusiastic</td>
<td>5</td>
<td>0 (0%)</td>
<td>7 (8%)</td>
<td>18 (25%)</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>85 (100%)</td>
<td>88 (100%)</td>
<td>73 (100%)</td>
</tr>
</tbody>
</table>

N=246

7.5.1.2 Readers' confidence in book selection

Table 7.30 shows readers' confidence in their decision making during book selection. Data are arranged in the same way as those of readers' reaction. Readers' scores were assigned by the researcher according to the field notes about the readers' manner of book selection. Fewer than 300 cases were presented. Field notes for the rest of the readers were not informative enough to decide their confidence level. A markedly greater proportion of readers in the two experimental groups selected their books with confidence or great confidence than those in the control group. Very few readers in the experimental groups, especially experimental group 2 selected books without or with little confidence. By contrast, in the control group, more than half of the readers selected their books with little confidence or even worse, were unable to make their decision.
Table 7.30  
Rating of readers' confidence in decision making on book selection

<table>
<thead>
<tr>
<th>confidence rank</th>
<th>rating</th>
<th>number of readers who selected or rejected books with corresponding level of confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>control</td>
</tr>
<tr>
<td>was not able to make decision</td>
<td>1</td>
<td>22 (37%)</td>
</tr>
<tr>
<td>select/reject with little confidence</td>
<td>2</td>
<td>8 (14%)</td>
</tr>
<tr>
<td>select/reject with some confidence</td>
<td>3</td>
<td>11 (19%)</td>
</tr>
<tr>
<td>select/reject with confidence</td>
<td>4</td>
<td>15 (25%)</td>
</tr>
<tr>
<td>select/reject with great confidence</td>
<td>5</td>
<td>3 (3%)</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>59 (100%)</td>
</tr>
</tbody>
</table>

N=205

7.5.1.3 The extent of checking books per se before borrowing

Table 7.31 shows the extent to which the three groups of readers had checked the book in the shelf area before they borrowed it. It was assumed that the extent of the check related to the reader's degree of trust in the information cues of the system. Inadequate information cues would lead to more careful checking of the book per se. The check was therefore rated as most extensive and assigned the lowest score if the reader not only examined the front section (e.g. cover, copyright page) and the back section (e.g. blurbs), of the book, but also checked the main body of the text. A less extensive check involved examining the front and the back of the book but not the main body of the text. The extent of checking was rated least extensive and assigned the highest score if the reader took out books without examination.
Table 7.31
The extent of checking books by the three groups in the shelf area

<table>
<thead>
<tr>
<th>extent of checking of the book</th>
<th>rank</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>cover+copyright</td>
<td>1</td>
<td>1 (3.6%)</td>
<td>2 (5%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>page+blurb+text</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cover+copyright</td>
<td>2</td>
<td>7 (25%)</td>
<td>5 (13.6%)</td>
<td>2 (4.7%)</td>
</tr>
<tr>
<td>page+blurb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cover +copyright</td>
<td>3</td>
<td>5 (18%)</td>
<td>8 (22%)</td>
<td>7 (16%)</td>
</tr>
<tr>
<td>page</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cover only</td>
<td>4</td>
<td>1 (3.6%)</td>
<td>2 (5%)</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>did not check</td>
<td>5</td>
<td>14 (50%)</td>
<td>20 (54%)</td>
<td>31 (72%)</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>28 (100%)</td>
<td>37 (100%)</td>
<td>43 (100%)</td>
</tr>
</tbody>
</table>

N=108

The most striking difference seemed to lie between experimental group 2 and the other two groups. None of the readers in experimental group 2 checked all parts of the books. Substantially more readers in this group took out books without examination. The distribution of readers along the ordinal scale (the rank) did not seem to be much different between experimental group 1 and the control group, which means the extent to which these two groups had checked the book did not differ substantially.

7.5.1.4 Attitudes toward unavailable books

Table 7.32 showed readers' attitude toward books which were not available the day of the experiment. Readers' attitudes varied from "did not bother with the book" to "reserved all
the books". It was assumed that the attitudes related to how much the information cues in
the system encouraged the reader to borrow books. These attitudes were accordingly
assigned different weights which acted as the ranks in the Kruskal-Wallis analysis.

Table 7.32
Attitudes of the three groups towards books not on shelves

<table>
<thead>
<tr>
<th>attitudes</th>
<th>rank</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>did not bother with the books</td>
<td>1</td>
<td>34 (59%)</td>
<td>32 (43.2%)</td>
<td>22 (27.5%)</td>
</tr>
<tr>
<td>did not reserve but take other books by the same author</td>
<td>2</td>
<td>2 (3.4%)</td>
<td>3 (4.1%)</td>
<td>5 (6.25%)</td>
</tr>
<tr>
<td>did not reserve but plan to come back to check the books</td>
<td>3</td>
<td>6 (10.3%)</td>
<td>4 (5.4%)</td>
<td>4 (5%)</td>
</tr>
<tr>
<td>reserve some of the books</td>
<td>4</td>
<td>6 (10.3%)</td>
<td>12 (16.2%)</td>
<td>14 (17.5%)</td>
</tr>
<tr>
<td>reserve all the books</td>
<td>5</td>
<td>10 (17%)</td>
<td>23 (31.1.5%)</td>
<td>35 (43.75%)</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>58 (100%)</td>
<td>74 (100%)</td>
<td>80 (100%)</td>
</tr>
</tbody>
</table>

N=212

The proportion of readers with sorts of compromising attitudes (e.g. did not reserve but
took out other books by the author) was similar between the groups. However, the
proportion of readers with two extreme attitudes differed greatly among the three groups.
Experimental group 2 had the smallest number of readers who did not bother with the
unavailable books and the largest number of readers who reserved all of the unavailable

163
books. Compared with the control group, experimental group 1 had a slightly smaller number of readers who did not bother with the books but a much larger number of readers who reserved all the books.

7.5.1.5 Summary on the use of the system factor

A Kruskal-Wallis analysis of variance based on the factor scores of the above variables showed that the three groups were significantly different on this factor (P<.001). Multiple comparisons with a Mann-Whitney test indicated that the differences between each pair of the three groups on this factor were all significant, as shown in table 7.33. The results lead to the rejection of the null hypothesis that there is no difference among the three groups in the extent to which they used the system in their decision making.

<table>
<thead>
<tr>
<th>group$_i$</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td>z=-2.7494, p&lt;.01</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>experimental 1</td>
<td>z=-6.9577, p&lt;.0001</td>
<td>z=-4.4032, p&lt;.0001</td>
<td>-</td>
</tr>
</tbody>
</table>

7.5.2 Readers' reliance on their own knowledge in book selection

The result of this single variable factor is shown in table 7.34. Column 1 is the degree of readers' reliance on their own previous reading experience rated by the researcher according to the loose field notes of readers' remarks about the reason they selected or rejected the book. It was assumed that the more a reader relied on his/her previous reading experience for book selection, the more his/her book selection was constrained by his/her knowledge. Therefore, greater self-reliance related to less information support in readers'
decision making. Column 2 is the weight assigned to the degree of reliance based on this assumption. The following columns are the distribution of readers along the weighting scale. Fewer than 300 observations are presented here, because for a minority of readers, the field notes were not informative enough to decide the degree of their reliance on previous reading experience. These readers were treated as missing cases.

Table 7.34
Rating of readers' reliance on previous reading experience in their decision making

<table>
<thead>
<tr>
<th>the degree of reliance on previous experience</th>
<th>number of readers with corresponding level of reliance on their previous reading experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>very much rely</td>
<td></td>
</tr>
<tr>
<td>quite rely</td>
<td>1</td>
</tr>
<tr>
<td>moderately rely</td>
<td>2</td>
</tr>
<tr>
<td>slightly rely</td>
<td>3</td>
</tr>
<tr>
<td>hardly rely</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td>total</td>
<td>80 (100%)</td>
</tr>
</tbody>
</table>

N=252 H=17.3886 P<.001

A notably larger proportion of readers in the two experimental groups appeared towards the "hardly rely" side of the scale than in the control group. By contrast, over half of the readers in the control group were found to rely on their own experience for book selection. A significant difference at the .001 probability level was noted. A Mann-Whitney test further showed that the differences between every pair of the three groups were all significant. Related statistics of the multiple comparisons are shown in table 7.35. The result led to the rejection of the null hypothesis that there is no difference among the three groups in the extent to which readers rely on their own knowledge in their decision making.
Table 7.35
Multiple comparisons between pairs of the three
groups in terms of reliance on their own knowledge in book selection

<table>
<thead>
<tr>
<th>group$i$</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental 1</td>
<td>$z=-1.9796$</td>
<td>$p&lt;.05$</td>
<td>$-$</td>
</tr>
<tr>
<td>experimental 2</td>
<td>$z=-4.2221$</td>
<td>$p&lt;.0001$</td>
<td>$z=-2.0970$</td>
</tr>
</tbody>
</table>

7.6 Readers' self report on the use of the system in their decision making

A number of questions were also asked in the questionnaire about how the readers made their decision to borrow a particular book. These questions were addressed to compare readers' own perception of their decision making on a particular book with the results obtained by the observation of readers' general book selection. Abstract concepts such as confidence in decision making were avoided in the questionnaire. Questions were addressed to the following variables:

- when (at what point during the searching and browsing process) did the reader reach his/her decision to borrow the book?
- how much had the reader known about the book before he/she encountered it in the system?
- what types of information provided in the system were important in the reader's decision making?
- how much did the reader expect the book to be enjoyable to read when he/she encountered it in the system?
7.6.1 Readers' decision making points

Figure 7.8 shows the decision making points of the three groups. The majority of readers reported that they were able to make a decision based on the information in the system. The number of readers who intended to borrow the book in question before they used the system, the number of readers who decided to borrow the book based on the information provided in the system and the number of readers who were not able to reach their decision until after they checked the book per se, did not seem to be much different among the three groups. A X² analysis confirmed this visual impression (p>1)

![Figure 7.8. Readers' decision making point](image)

7.6.2 Readers' pre-awareness of the book

Figure 7.9 shows the readers' awareness of the book before they read all the information about it in the computer system. The difference of such awareness between the three groups did not seem to be substantial, that is, none of the groups had known more about
their borrowed books before they found it in the system than the other groups. A $X^2$ analysis confirmed this impression ($P > .1$).

Figure 7.9 Readers' pre-awareness of the book

7.6.3 The relative importance of different information cues in their decision making

Readers were asked to identify the information cues they thought important in their decision. Answers from the three groups are respectively illustrated in figure 7.10 to 7.12. It seems that the relative importance of the basic bibliographical data such as author and title decreased when other information cues became available. For example, title was rated as important by 41% readers in the control group. It was regarded as important by 12% readers in experimental group 1, to whom additional information such as keywords and summaries was provided. When even more information cues became available in experimental group 2, it was thought to be important only by 10% readers.
Figure 7.10  Percentage of readers in the control group who judged the provided information cues as important

Figure 7.11  Percentage of readers in experimental group 1 who rated the provided information cues as important
Distribution of readers with reference to the types of information they found important in their decision making

Figure 6.12 Percentage of readers in experimental group 2 who reckoned the provided information cues as important

7.6.4 Readers' expectation of the enjoyability of the book

This variable assessed the readers' expectations, based on the available information cues, of the potential reward the book might bring. The variable was subject to a Kruskal-Wallis and a Mann-Whitney tests, as it was measured with a five point scale. The results on this variable are shown in table 7.36.
Table 7.36
Readers' expectation of the enjoyability of the book at the decision making point

<table>
<thead>
<tr>
<th>expectation</th>
<th>rating</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>might</td>
<td>1</td>
<td>4 (16.7%)</td>
<td>3 (7.5%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>probably</td>
<td>2</td>
<td>6 (25%)</td>
<td>4 (10%)</td>
<td>2 (4.2%)</td>
</tr>
<tr>
<td>quite possibly</td>
<td>3</td>
<td>7 (29.2%)</td>
<td>11 (27.5%)</td>
<td>17 (35.4%)</td>
</tr>
<tr>
<td>very possibly</td>
<td>4</td>
<td>5 (20.8%)</td>
<td>17 (42.5%)</td>
<td>15 (31.3%)</td>
</tr>
<tr>
<td>definitely</td>
<td>5</td>
<td>2 (8.3%)</td>
<td>5 (12.5%)</td>
<td>13 (27.1%)</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>24 (100%)</td>
<td>40 (100%)</td>
<td>48 (100%)</td>
</tr>
</tbody>
</table>

N=112 df=2  H=10.7533  p<.01

Over half of the readers in the two experimental groups foresaw that the books they selected would at least very possibly be enjoyable. By contrast, less than 30% of the readers in the control group appeared to be so sure.

A Kruskal-Wallis analysis indicated a significant difference among the three groups at the .01 probability level. A Mann-Whitney test, shown in table 7.37, indicated that the overall difference was particularly caused by the differences between both the experimental groups and the control group. The difference between the two experimental groups, however, was not significantly different on this variable.

Table 7.37
Multiple comparisons between pairs of the three groups on their expectation about the books they chose

<table>
<thead>
<tr>
<th>group₁</th>
<th>group₂</th>
<th>group₃</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td>–</td>
<td>–</td>
<td></td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>experimental 1</td>
<td>z=-2.1415</td>
<td>p&lt;.05</td>
<td></td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>experimental 2</td>
<td>z=-3.2313</td>
<td>p&lt;.01</td>
<td></td>
<td>z=-1.3083</td>
<td>p&gt;1</td>
</tr>
</tbody>
</table>
On the whole, readers' own reports about their decision making seem to provide the following evidence regarding their decision making:

A. None of the groups were more prompted by the system than the other two groups in their decision making.

B. None of the groups had known more about the chosen book before they came to use the system.

C. Readers' reliance on basic bibliographical data decreased when more information cues became available. Readers in the experimental groups did seem to make use of all available information cues.

D. The experimental groups were more sure about the potential reward of their selection.

7.7 Conformity of the borrowed books to readers' general reading tastes

It was assumed by this research that readers' reading taste was reflected by features of books they usually read, typically the author, the category, the writing style and the type of heroes and heroines. Therefore the conformity of a book to a reader's taste could be measured by the similarity of the current book to what the reader usually read in terms of these features. The degree of difference was obtained from the arithmetic mean of the scores on all these features, as shown in table 7.38. The table shows that more than half readers constrained their book selection to their general reading taste. Very few people would try something completely new. This was the case in all the three groups. The difference among these groups was not found to be significant. Therefore the null hypothesis that there is no difference among the three groups in terms of the conformity of their book selection to their reading taste can not be rejected.
Table 7.38  
The difference (similarity) of the borrowed book from what the reader usually reads

<table>
<thead>
<tr>
<th>degree of difference</th>
<th>number of readers borrowing books with the corresponding degree of difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>1</td>
<td>2 (9%)</td>
</tr>
<tr>
<td>1.25</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>1.5</td>
<td>1 (4.5%)</td>
</tr>
<tr>
<td>1.75</td>
<td>1 (4.5%)</td>
</tr>
<tr>
<td>2</td>
<td>1 (4.5%)</td>
</tr>
<tr>
<td>2.25</td>
<td>1 (4.5%)</td>
</tr>
<tr>
<td>2.5</td>
<td>3 (13.6%)</td>
</tr>
<tr>
<td>2.75</td>
<td>3 (13.6%)</td>
</tr>
<tr>
<td>3</td>
<td>1 (4.5%)</td>
</tr>
<tr>
<td>3.25</td>
<td>2 (9%)</td>
</tr>
<tr>
<td>3.5</td>
<td>1 (4.5%)</td>
</tr>
<tr>
<td>3.75</td>
<td>1 (4.5%)</td>
</tr>
<tr>
<td>4</td>
<td>2 (9%)</td>
</tr>
<tr>
<td>4.25</td>
<td>2 (9%)</td>
</tr>
<tr>
<td>4.5</td>
<td>1 (4.5%)</td>
</tr>
<tr>
<td>4.75</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>5</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>total</td>
<td>22 (100%)</td>
</tr>
</tbody>
</table>

N=112 df=2 H=4.7524 p>.1

7.8 Readers’ emotional experience in their reading process

This factor was found to be correlated with the following variables:

- readers' emotional involvement in the reading process
- readers' commitment of their attention,
- possibility that the reader would read it again in the future
- the desires to read similar books in the future
- the desire to recommend the books to others
- rating of the enjoyability of the book
- finishing ratio of the book
- recall ratio of what has been read
Readers' response to questions related to these variables are shown in table 7.39 to 7.46. But for the purpose of a Kruskal-Wallis analysis, factor scores were applied, instead of the original scores.

7.8.1 Emotional involvement in the reading process

Table 7.39 shows readers' emotional involvement in the reading process. The variable was measured with a Likert scale with "indifferent" at one end and "very much involved" at the other. The majority in all three groups answered that they were emotionally involved in it to some extent. Only a small minority seemed to have been very much involved. Another small minority remained indifferent.

<table>
<thead>
<tr>
<th>rating</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 (9%)</td>
<td>7 (19%)</td>
<td>5 (12%)</td>
</tr>
<tr>
<td>2</td>
<td>5 (22.7%)</td>
<td>12 (33%)</td>
<td>6 (14%)</td>
</tr>
<tr>
<td>3</td>
<td>6 (27%)</td>
<td>10 (28%)</td>
<td>19 (45%)</td>
</tr>
<tr>
<td>4</td>
<td>8 (36.3%)</td>
<td>7 (19%)</td>
<td>8 (19%)</td>
</tr>
<tr>
<td>5</td>
<td>1 (5%)</td>
<td>0 (0%)</td>
<td>4 (9%)</td>
</tr>
<tr>
<td>total</td>
<td>22 (100%)</td>
<td>36(100%)</td>
<td>42 (100%)</td>
</tr>
</tbody>
</table>

N=100

7.8.2 Readers' commitment of their attention to the reading process

Table 7.40 showed readers' commitment of attention to the reading process. The variable was measured in the same way as their emotional involvement. On the whole, a very small minority of readers seemed to have been completely committed to the book while they read it. Quite a large proportion of readers committed little attention to the book.
### Table 7.40
Readers' rating of their commitment of attention to the books while reading it

<table>
<thead>
<tr>
<th>rating</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5 (22.7%)</td>
<td>3 (8%)</td>
<td>9 (21%)</td>
</tr>
<tr>
<td>2</td>
<td>0 (0%)</td>
<td>11 (30%)</td>
<td>7 (16%)</td>
</tr>
<tr>
<td>3</td>
<td>8 (36.3%)</td>
<td>13 (35%)</td>
<td>13 (30%)</td>
</tr>
<tr>
<td>4</td>
<td>7 (32%)</td>
<td>8 (22%)</td>
<td>10 (23%)</td>
</tr>
<tr>
<td>5</td>
<td>2 (9%)</td>
<td>2 (5%)</td>
<td>4 (9%)</td>
</tr>
<tr>
<td>total</td>
<td>22 (100%)</td>
<td>37 (100%)</td>
<td>43 (100%)</td>
</tr>
</tbody>
</table>

N=102

### 7.8.3 Desire to re-reading the book in the future

Table 7.41 shows how much the reader would like to re-read the book in the future. The variable was measured with a Likert scale with "hardly possible" at one end and "very possible" at the other.

Very few people thought that the possibility of re-reading was large. The majority fell to the negative end of the scale. This was the case in all the three groups.

### Table 7.41
Desire to re-read the book in the future

<table>
<thead>
<tr>
<th>rating of desire to re-read the book</th>
<th>number of readers who rated their desire correspondingly</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>1</td>
<td>7 (35%)</td>
</tr>
<tr>
<td>2</td>
<td>4 (20%)</td>
</tr>
<tr>
<td>3</td>
<td>6 (30%)</td>
</tr>
<tr>
<td>4</td>
<td>3 (15%)</td>
</tr>
<tr>
<td>5</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>total</td>
<td>20 (100%)</td>
</tr>
</tbody>
</table>

N=98

175
7.8.4 Desire to read similar books in the future

Table 7.42 shows how much the reader would like to read books similar to the current one in the future. The variable was measured with a Likert scale on multiple items. The arithmetic mean was calculated as the score of this variable. The proportion of readers who did not want to read similar books and who wanted to read as many as possible similar books was relatively small. The majority of readers would read a moderate amount of similar books in the future. This seemed to be the case in all the three groups.

Table 7.42

Amount of future reading of books similar to the present one

<table>
<thead>
<tr>
<th>amount of reading</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 (5%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>1.4</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (2.7%)</td>
</tr>
<tr>
<td>1.6</td>
<td>1 (5%)</td>
<td>0 (0%)</td>
<td>2 (5.4%)</td>
</tr>
<tr>
<td>1.8</td>
<td>1 (5%)</td>
<td>2 (6.1%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>2</td>
<td>0 (0%)</td>
<td>2 (6.1%)</td>
<td>3 (8.1%)</td>
</tr>
<tr>
<td>2.2</td>
<td>2 (10%)</td>
<td>0 (0%)</td>
<td>1 (2.7%)</td>
</tr>
<tr>
<td>2.4</td>
<td>2 (10%)</td>
<td>2 (6.1%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>2.6</td>
<td>1 (5%)</td>
<td>2 (6.1%)</td>
<td>2 (5.4%)</td>
</tr>
<tr>
<td>2.8</td>
<td>1 (5%)</td>
<td>2 (6.1%)</td>
<td>3 (8.1%)</td>
</tr>
<tr>
<td>3</td>
<td>1 (5%)</td>
<td>7 (21.2%)</td>
<td>9 (24.3%)</td>
</tr>
<tr>
<td>3.2</td>
<td>4 (20%)</td>
<td>4 (12.1%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>3.4</td>
<td>2 (10%)</td>
<td>2 (6.1%)</td>
<td>4 (10.8%)</td>
</tr>
<tr>
<td>3.6</td>
<td>1 (5%)</td>
<td>2 (6.1%)</td>
<td>4 (5.4%)</td>
</tr>
<tr>
<td>3.8</td>
<td>1 (5%)</td>
<td>2 (6.1%)</td>
<td>2 (5.4%)</td>
</tr>
<tr>
<td>4</td>
<td>0 (0%)</td>
<td>3 (9.1%)</td>
<td>3 (8.1%)</td>
</tr>
<tr>
<td>4.2</td>
<td>1 (5%)</td>
<td>1 (3%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>4.4</td>
<td>1 (5%)</td>
<td>1 (3%)</td>
<td>2 (5.4%)</td>
</tr>
<tr>
<td>5</td>
<td>0 (0%)</td>
<td>1 (3%)</td>
<td>1 (2.7%)</td>
</tr>
<tr>
<td>total</td>
<td>20 (100%)</td>
<td>33 (100%)</td>
<td>37 (100%)</td>
</tr>
</tbody>
</table>

N=90
7.8.5 Desire to recommend the book to others

Table 7.43 shows readers' rating of their desire to recommend the book to others. The variables were measured with a Likert scale. As shown in the table, a moderate score accounts for the majority of readers in the control group and experimental group 1. The attitude of readers in experimental group 2, however, seemed to be more divergent. A large number of readers would not recommend the book to others, yet another large number of readers were quite or even very keen on recommending it.

Table 7.43
Readers' rating of their desire to recommend the book they have read to others

<table>
<thead>
<tr>
<th>rating</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4 (19%)</td>
<td>2 (5.4%)</td>
<td>12 (27.9%)</td>
</tr>
<tr>
<td>2</td>
<td>3 (14.3%)</td>
<td>10 (2.7%)</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>3</td>
<td>6 (28.6%)</td>
<td>13 (35.1%)</td>
<td>8 (18.6%)</td>
</tr>
<tr>
<td>4</td>
<td>6 (28.5%)</td>
<td>8 (21.6%)</td>
<td>14 (32.6%)</td>
</tr>
<tr>
<td>5</td>
<td>2 (9.5%)</td>
<td>4 (10.8%)</td>
<td>6 (14%)</td>
</tr>
<tr>
<td>total</td>
<td>21 (100%)</td>
<td>37 (100%)</td>
<td>43 (100%)</td>
</tr>
</tbody>
</table>

N=101

7.8.6. Readers' rating of the enjoyability of the book

Readers' rating of the enjoyability of the book is shown in table 7.44. The variable was also measured with a Likert scale. Around one fifth of the readers in all the three groups (23%, 24.3% and 18% respectively from the control group, experimental group 1 and experimental group 2) did not seem to have enjoyed the book. Around half of the reader (50%, 54% and 61% respectively from the control group, experimental group 1 and experimental group 2) found the book enjoyable or even very enjoyable. The attitude of other readers' seemed to be neutral.
Table 7.44
Readers' rating of the enjoyability of the borrowed books

<table>
<thead>
<tr>
<th>rating</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3 (14%)</td>
<td>4 (10.8%)</td>
<td>4 (9%)</td>
</tr>
<tr>
<td>2</td>
<td>2 (9%)</td>
<td>5 (13.5%)</td>
<td>4 (9%)</td>
</tr>
<tr>
<td>3</td>
<td>6 (27%)</td>
<td>8 (21.6%)</td>
<td>9 (21%)</td>
</tr>
<tr>
<td>4</td>
<td>7 (32%)</td>
<td>11 (29.7%)</td>
<td>15 (35%)</td>
</tr>
<tr>
<td>5</td>
<td>4 (18%)</td>
<td>9 (24.3%)</td>
<td>11 (26%)</td>
</tr>
<tr>
<td>total</td>
<td>22 (100%)</td>
<td>37 (100%)</td>
<td>43 (100%)</td>
</tr>
</tbody>
</table>

N=102

7.8.7 Finishing ratio of the book

Table 7.45 shows the finishing ratio of the book. As indicated by the table, the majority of readers did finish reading the book. Abandonment of reading at the initial stage was rare. This seemed to be the case in all three groups.

Table 7.45
Finishing ratio of the borrowed book

<table>
<thead>
<tr>
<th>finishing</th>
<th>number of readers corresponding to the finishing ratio</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; a few pages</td>
<td>1</td>
<td>2 (8%)</td>
<td>2 (5%)</td>
<td>5 (10.2%)</td>
</tr>
<tr>
<td>less than half</td>
<td>2</td>
<td>1 (4%)</td>
<td>4 (10%)</td>
<td>2 (4.2%)</td>
</tr>
<tr>
<td>half</td>
<td>3</td>
<td>4 (17%)</td>
<td>2 (5%)</td>
<td>2 (4.2%)</td>
</tr>
<tr>
<td>three quarters</td>
<td>4</td>
<td>2 (8%)</td>
<td>5 (13%)</td>
<td>2 (4.2%)</td>
</tr>
<tr>
<td>all</td>
<td>5</td>
<td>15 (63%)</td>
<td>26 (67%)</td>
<td>37 (77%)</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>24 (100%)</td>
<td>39 (100%)</td>
<td>48 (100%)</td>
</tr>
</tbody>
</table>

N=111
7.8.8 Recall ratio of what had been read

Table 7.46 shows the readers' recall ratio of the book at the stage when the questionnaire was filled in. The variable was measured with a Likert scale with "little" at one extreme and "nearly all details" at the other. The majority of readers seemed to be able to recall a reasonable amount of what they had read. This seemed to be the case in all three groups.

<table>
<thead>
<tr>
<th>recall ratio</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 (4.5%)</td>
<td>1 (2.8%)</td>
<td>1 (2.3%)</td>
</tr>
<tr>
<td>2</td>
<td>8 (36.4%)</td>
<td>13 (36.1%)</td>
<td>7 (16.3%)</td>
</tr>
<tr>
<td>3</td>
<td>10 (45.5%)</td>
<td>18 (50%)</td>
<td>29 (67.4%)</td>
</tr>
<tr>
<td>4</td>
<td>1 (4.5%)</td>
<td>2 (5.6%)</td>
<td>2 (4.7%)</td>
</tr>
<tr>
<td>5</td>
<td>2 (9%)</td>
<td>2 (5.6%)</td>
<td>4 (9.3%)</td>
</tr>
<tr>
<td>total</td>
<td>22 (100%)</td>
<td>36 (100%)</td>
<td>43 (100%)</td>
</tr>
</tbody>
</table>

N=101

7.8.9 Summary on readers' emotional experience factor

A Kruskal-Wallis one way analysis of variance based on the factor score of the above variable indicated that the difference on this factor between the three groups was not significant (df=2 H=3.2680 p>.1)

Therefore regarding readers' emotional experience in the reading process, the null hypothesis that there is no difference between the three groups in terms of the extent of readers' subjective feeling of well being during the reading process cannot be rejected.
7.9 Readers' cognitive experience in the reading process

Three variables correlate with this factor: readers' comments on the book, readers' rating on how much they had learned from the reading of the book, and readers' general evaluation of the reading process. Readers' response to questions on these variables are shown in tables 7.47 to 7.49. But for the purpose of the Kruskal-Wallis analysis, factor scores were applied.

7.9.1 Learning through reading

Readers' perception of the reading as a learning process is shown in table 7.47. The variable was measured with a Likert scale on multiple items, which covers the learning of historical, geographical, cultural and literary knowledge, as well as knowledge about the authors' life, their political and world view, etc. Although most readers read fiction for pleasure (see table 6.2 in Chapter 6), the reading process did seem to be intellectually stimulating for the majority of readers in this research. This is the case for all three groups, except that relatively more readers in experimental group 2 had higher scores than readers in the other two groups.

<table>
<thead>
<tr>
<th>rating</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6 (27.3%)</td>
<td>12 (32.4%)</td>
<td>8 (18.6%)</td>
</tr>
<tr>
<td>2</td>
<td>6 (27.3%)</td>
<td>8 (21.6%)</td>
<td>8 (18.6%)</td>
</tr>
<tr>
<td>3</td>
<td>7 (31.8%)</td>
<td>13 (35.1%)</td>
<td>15 (34.9%)</td>
</tr>
<tr>
<td>4</td>
<td>2 (9%)</td>
<td>2 (5.4%)</td>
<td>11 (25.6%)</td>
</tr>
<tr>
<td>5</td>
<td>1 (4.5%)</td>
<td>2 (5.4%)</td>
<td>1 (2.3%)</td>
</tr>
<tr>
<td>total</td>
<td>22 (100%)</td>
<td>37 (100%)</td>
<td>43 (100%)</td>
</tr>
</tbody>
</table>

N=102
7.9.2 Critical reading

Table 7.48 shows to what extent the reading had involved critical insight. The variable was marked with a five point scale by the researcher based on what the reader had put in the comments column of the questionnaire. The majority in all three groups (63.6%, 56.8% and 60.5% respectively from the control group, experimental group 1 and experimental group 2 respectively) did not want (or were perhaps unable) to make any comment. Nevertheless, around 18%, 37% and 19% of readers from the control group, experimental group 1 and experimental group 2 respectively made comments with reasonably critical insights (i.e., scored 3 or over).

Table 7.48

Scores of comments made by the readers

<table>
<thead>
<tr>
<th>score of comments*</th>
<th>number of readers whose comments had the corresponding scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>1</td>
<td>14 (63.6%)</td>
</tr>
<tr>
<td>2</td>
<td>4 (18.2%)</td>
</tr>
<tr>
<td>3</td>
<td>3 (13.5%)</td>
</tr>
<tr>
<td>4</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>5</td>
<td>1 (4.5%)</td>
</tr>
<tr>
<td>total</td>
<td>22 (100%)</td>
</tr>
</tbody>
</table>

N=102

NB: * For the standard of scoring see Appendix 1

7.9.3 Readers' general evaluation of the reading process

Table 7.49 shows how much the reading process was regarded as beneficial by the reader. The variable was measured with a Likert scale on multiple items. The arithmetic mean was calculated as the score of this variable. As shown in the table, quite a large proportion of readers in all three groups thought quite positively about the reading process. Only a very small minority of reader regarded it negatively.
Table 7.49
Readers' general evaluation of the reading process

<table>
<thead>
<tr>
<th>rating</th>
<th>control</th>
<th>experimental 1</th>
<th>experimental 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3 (14.3%)</td>
<td>1 (2.9%)</td>
<td>1 (2.5%)</td>
</tr>
<tr>
<td>2</td>
<td>2 (9.5%)</td>
<td>12 (35.3%)</td>
<td>11 (27.5%)</td>
</tr>
<tr>
<td>3</td>
<td>9 (42.9%)</td>
<td>9 (26.5%)</td>
<td>13 (32.5%)</td>
</tr>
<tr>
<td>4</td>
<td>5 (23.8%)</td>
<td>5 (14.7%)</td>
<td>9 (22.5%)</td>
</tr>
<tr>
<td>5</td>
<td>2 (9.5%)</td>
<td>7 (20.6%)</td>
<td>6 (15%)</td>
</tr>
<tr>
<td>total</td>
<td>21 (100%)</td>
<td>34 (100%)</td>
<td>40 (100%)</td>
</tr>
</tbody>
</table>

N=95

7.9.4 Summary of readers' cognitive experience factor

A Kruskal-Wallis one way analysis of variance based on the factor scores of these variables showed that the difference on this factor between the three groups was not significant (df=2 H=2.1673 p>.1).

Therefore, regarding the cognitive experience of readers' reading of the book they had chosen from the systems, the null hypothesis that there is no difference in the extent of cognitive change the reader experienced from reading the book cannot be rejected.
Chapter 8

DISCUSSION: THE EFFECT OF INFORMATION CUES ON FICTION READING ACTIVITY

8.1 Introduction

A Kruskal-Wallis analysis of the experimental data has shown that after being exposed to different experimental treatments, the three groups differed significantly in the efforts of their decision making, the amount of their book selection, book borrowing and reservation, and the distribution of their borrowing. They were not significantly different, however, in their searching pattern, the conformity of their borrowing to their reading taste, their subjective feelings of well-being and cognitive experience during the reading. Since the three groups in the experiment were manipulated so as to be mutually independent, and to be equal in every aspect except the experimental treatment they received, the observed differences were assumed to reflect the effects of the experimental treatment.

This chapter examines these results in the light of the theoretical framework and in the network of findings of previous research and lays the foundation for the final conclusion.

8.2 The effect of information cues on readers' searching pattern

8.2.1 the effect of information cues on the use of individual access points

Readers' use of individual access points was measured with the percentage of searches using each access point out of the total searches a reader did. A percentage rather than the absolute number of searches was applied because the percentage was assumed to reflect more realistically readers' preference for a particular access point than the absolute number of searches. The six access points provided in all the three versions
were author, title, keywords, category, publisher and prize. As Chapter 5 showed, each of these approaches brought to the three groups a different depth of information cues.

The author access point in version 3 of HMEF revealed to the reader not only detailed information cues about the books written by a particular author, but also a large amount of information about the author him/herself, including his/her family background, writing career, world or political view and other authors who write in a similar style to the chosen author. Access to these information cues was straightforward, achieved simply by clicking on the author's name from an alphabetical list on the screen. Version 1 and version 2 required that the reader input an author's name to start a search. Version 1 would then reveal to the reader all related book records with basic bibliographical data. Version 2 would then reveal to the reader all related book records with basic bibliographical data, as well as descriptive information.

About 53%, 55% and 58%\(^1\) of readers from the control group, experimental group 1 and experimental group 2 respectively did all or some of their searches with the author access point. The difference between the three groups in the extent to which they used the author access point was not significant (P>.05, df=2). The result suggests that the different representation of information cues did not have any effect on readers' use of the author searching approach. The possible reasons for the lack of significant effect on the use of this searching approach will be discussed in Section 8.2.3, together with the reasons relating to the use of other searching approaches.

The Category access point in version 3 presented to the reader not only detailed information cues about the books of a particular category, but also some information about the category itself, e.g., definition of the category. Use of this access point was also straightforward, achieved simply by clicking on the icon of a category on the

\(^1\) Descriptive figures are often cited in the discussion, in addition to Kruskal-Wallis and Mann-Whitney statistics, for the convenience of comparing findings of the present research to those of previous research. Most previous studies presented their findings in descriptive terms.
screen. Version 1 and version 2 usually required that the reader input a category to start a search.

About 57%, 49% and 61% of readers from the control group, experimental group 1 and experimental group 2 respectively did all or some of their searches with the category access points. The difference between the three groups in the extent to which the category access point was used was not significant (p>.05, df=2). The result suggests that readers' preference for the category approach was not affected by the representation of information cues.

The Keyword access point in version 3 revealed more information cues than versions 1 and 2 by dynamically linking each keyword to one of the multiple dimensions of fiction content - subject/theme, characters, setting and writing style. While version 1 and 2 usually required the reader to input the keyword, version 3 presented all the keywords on the screen. Searches with this access point were initiated by clicking on appropriate keywords on the screen.

The above difference did not result in any difference to the extent to which this access point was used by the three groups (p>.05, df=2). Few readers in all the groups used keywords to search for books. Respectively 96%, 97% and 95% of readers from the control group, experimental group 1 and experimental group 2 did not use this approach at all. The result suggests that the use of the keyword searching approach was not affected by the representation of information cues.

The Publisher access point in version 3 presented on the screen an alphabetical list of publisher names, on which the reader could click to search for all books published by a particular publisher. Versions 1 and 2 usually required that the reader input a publisher's name to start a search. However, none of the readers from the three groups used the publisher as an access point. So readers' use of the publisher searching approach was not affected by the different representation of information cues.
All titles in version 3 of the system were grouped alphabetically and could be made visible on the screen. The author's name of each title was also presented. Detailed information of these titles could be accessed by clicking on the chosen title. In contrast, versions 1 and 2 usually required that readers input the title to be searched. The difference between the three groups in the extent to which they used title access point, however, was not significant. Respectively, 100%, 96% and 98% readers from the control group, experimental group 1 and experimental group 2 did not use the title access point at all. The result suggests that the difference between the three versions of HMEF in the presentation of this access point and related information cues did not have any effect on readers' use of it.

Information cues which were accessible from the prize winner access point were also quite different between the three versions of HMEF. With this access point, version 3 presented all the bibliographical, descriptive and analytical information about the winning titles of each prize, as well as general information about the prize itself. It also marked prize winning titles on the book records. Version 2 (treatment for experimental group 1) did not provide information about the prizes per se but indicated winning titles on individual book records. In version 1, it was possible for the reader to search for winners of a particular prize, but there was no information on individual book records to link the book to the prize.

As a result of being exposed to the above different information cues, the three groups showed significant differences in their use of the prize winner access points (p<.001, df=2). The two experimental groups, especially experimental group 2 made significantly more use of this approach than the control group (36% from experimental group 2 and 18% from experimental group 1, compared with 1% from the control group). The information cues available in versions 2 and 3 may have encouraged readers' use of this approach in either or both of two ways. Firstly, the information helped the reader to form an image of the prize itself, its winning titles and authors. For example, the information about the assessor, the evaluating procedures and the amount of the award served as an indicator of the status of a prize and the prestige of
the winning titles. Readers' trust in this approach was presumably greater when they had enough information to create an image about the prize and its winners than when they lacked such information. Secondly, the information about winning titles on the book records of version 2 and version 3 created a visual link among individual winning titles so that a reader who came across and became interested in, say, Doris Lessing's *The Good Terrorist* may want to go to the W. H. Smith Literary Award to check other winners.

8.2.2 The common searching pattern of the three groups

As discussed in the previous sections, after being exposed to three different versions of HMEF, with distinct levels of information cues, the three groups differed only in their use of the prize winner access point (p<.001, df=2), with the experimental groups having made significantly greater use of this access point. However, this difference was not substantial enough to differentiate distinct searching patterns within the three groups, because the prize winner access point was only a minor and secondary searching approach. Firstly, unlike other access points which were able to access all books in the system, the prize winner access point could only access a very small minority of books. Secondly, although relatively more readers from the experimental groups used this access point, the number of its users was generally small, compared with users of the author or category access points. Thirdly, on no occasion was the prize winner access point used independently, it was only used as joint access point.

So on the whole, the searching patterns of the three groups were overwhelmingly alike. The substantial similarity of the three groups, i.e., the existence of a common searching pattern, is clearly indicated in figure 7.1 by the striking similarity of the three lines representing the three groups. The most popular searching approach to the least popular searching approach were: (1) author (2) category (3) prize (4) keyword (5) title (6) publisher

**Author**

On average, 34% of all the readers used the author as the only access point and another 21% of all the readers used it as a joint access point. The readers'
apparent preference for author names as the major access point was not unexpected. The author's name has been constantly identified as one of the most important approaches for fiction readers (Spiller, 1980; Goodall, 1989; Speak, 1990; Jennings, 1986). Spiller (1980), for example, reported that 11.2% of his respondents searched for books only with author names. Another 22% of his respondents searched for books mainly with author names. About 35.9% of the respondents equally applied author approach and random browsing. In Jennings and Sear's (1986) survey, 46% of books were taken out because of the author's name. Goodall (1989), in summarizing findings of a number of studies on readers' book selection, concluded that despite the large amount of browsing, author's name are still important to readers.

Both Spiller's (1980) study and the present study identified two groups of author-access-point users: those who use author access point as the only searching approach and those who use author access point in conjunction with other searching approaches. The reason that more readers in this research used the author approach only and fewer readers used it jointly with other access points than in Spiller's research is probably that some of the readers in this research were generally flexible with searching approaches but happened to have chosen the author approach in this case.

**Category** This research found that the category is almost as important as the author approach in fiction searching. Category was used as the only access point by 35% of all the readers and was used as a joint access point by 24% of all the readers. The study also identified two groups of category access point users: those who used category as the only access point and those who used category in complementary with other searching approaches.

Readers' preference for category approach is not surprising either. Spiller (1980) found 69% fiction readers often search for novels of a particular kind. Jennings and Sear (1986) noted that 20% of the books issued in their library were chosen by this approach. The importance of fiction category as a searching approach has also undergone a number of experimental tests (Jennings and Sear, 1989; Goldhor, 1972,
All of these experiments found that when fiction stock is arranged according to fiction categories, the arrangement facilitates fiction browsing (searching) and increases fiction circulation.

**Keyword** As fiction in public libraries does not usually receive in-depth indexing, the use of keyword in fiction searching remains rather unknown. Pejtersen's (1992) research on Bookhouse provided what is almost the only evidence regarding fiction readers' use of keyword. "Keywords" in Bookhouse were subject headings assigned by the indexer based on Pejtersen's multi-dimensional processing scheme. Super-ordinate headings were presented as icons or pictures in the user interface. A search that involves matching these headings to users' needs was defined by Pejtersen as an analytical search strategy. A field test of Bookhouse showed that this search strategy, i.e., search with keywords was frequently used by readers with whom Bookhouse was tested.

Keywords in this research, however, were little used by readers from all three groups. On average, over 96% of all the readers did not use keywords to search for books at all. The result seems to suggest that keywords presented in text format are not particularly appealing to fiction readers. Since analytical search strategy nearly always involves matching document attributes to readers' needs with topical terms (keywords or subject headings), readers' disinterest in keyword searching also signalled their disinterest in the analytical search strategy.

It is not clear whether the elaborate graphical presentation of analytical search strategy in Bookhouse was accountable for the frequent use of this strategy and thus accountable for the disagreement between the results of this research and Pejtersen's research. But the readers' disinterest in keyword search in general and analytical search strategy in particular observed in this research is not totally unexpected, if the following factors are taking into consideration.
(1) Fiction readers have developed some very practical searching methods in the long absence of analytical retrieval tools, of which author approach and category approach are two typical ones. Such habitual searching methods would still work as the major searching approach even though other more complicated and specific searching facilities became available.

(2) Fiction readers' reading needs are less limited by specific external tasks as in the case of non-fiction searching. These needs therefore possess great uniqueness (McClellan, 1981) and are often open to change with circumstances (Ross, 1991). For this reason, fiction readers may often find it difficult to formulate their needs with specific terms, but they can identify the desired books when they come across them or their information cues (if the cues are adequate). So rigid and specific analytical expression might not be congenial to fiction readers' needs.

(3) Analytical searching is quite cognitively demanding, as Pejtersen (1984) commented: "The demands on short-term and long-term memory are higher within the analytical strategy than within other strategies, and there is a greater need or depth of knowledge about book contents and subject fields...the analytical strategy seems to put the heaviest demands on the searcher's mental resources" (p. 170). In the case of reading for pleasure, these mental demands may not be regarded as either appropriate or rewarding.

Publisher The publisher's name was not used by any of the readers from the three groups. This seems to suggest that although many publishers have distinctive characteristics for the type of books they publish, they are hardly ever used as an access point. The result confirmed Spiller's (1980) survey in which he found that for the majority of readers, the publisher was rarely an important influence.

Title The title access point was only used by six out of 300 readers, four of whom were looking for specific books. The result suggests that the title as an access point
would not be of much help to fiction readers unless the reader is looking for a particular book.

In comparison with other searching approaches, author and category stand eminently as the major approaches. About 69% of all the readers only used either author access point or category access point for all their searches. As discussed earlier, 34% of all the readers used no other searching approaches than author access point and 35% of all the readers used no other searching approaches than category access point. Even though the "author-only" readers may have included readers who were generally flexible with searching approaches but who happened to have chosen author access point in this case, and the "category-only" readers may have included readers who were also generally flexible but who happened to have chosen category access point in this case, there must exist at the same time a large number of readers who did not use the author approach in favour of the category approach and a large number of readers who did not use the category approach in favour of the author approach. The number of these two types of readers were found to be almost equal in this research. This finding supports Spiller's (1980) survey, in which he found that there existed a group of readers who always searched books with author names and another group of readers who always searched books by browsing. The size of the two groups was nearly equal.

Readers who combined different approaches were relatively small in number compared with "author-only" and "category-only" readers. Since the amount of searching with other approaches was small, when a combination search did occur, it was very likely to be a combination of author approach and category approach.

8.2.3 The conceptual "sameness" underlying the common searching pattern of the three groups

The result regarding fiction readers' searching behaviour in the present research seems to suggest that the fiction reader has a quite distinct searching pattern, i.e., to use author or category as the major approaches, to use title, keyword and publication data as the minor approaches. When the searching environment varied from a OPAC type
retrieval system to a hypertext searching and browsing system, the searching pattern remained almost the same.

Furthermore, the pattern identified under these two searching environments was found to be in high agreement with that identified by previous research in the environment where hardly any searching facilities are provided and where readers have to resort solely to shelf browsing. So in conjunction with findings of previous studies, it is reasonable to assume that unless certain searching approaches are especially emphasized or obscured by the system designer (as the analytical searching strategy was emphasized in Bookhouse), fiction readers' basic searching pattern would remain consistent in all the following searching environments, at least for a certain period after the change of the environments:

- in the absence of novel retrieval facilities
- when provided with basic bibliographical data with an OPAC type system
- when provided with bibliographical and descriptive information with an OPAC type retrieval system
- when provided with bibliographic, descriptive and analytical information with a non-graphical hypertext system

This may suggest that fiction readers' searching pattern is more habit-bound than context-bound. The change of retrieval environment has little instant effect on the readers' general searching patterns.

The results that category and author accounted for most searches and that a large number of readers only used the category approach while a similar number of readers only used the author approach, seems to suggest that: (a) most readers are either habitual category searchers or habitual author searchers, (b) as the two major access points, category and author do not always complement each other in a particular search, in fact, they are quite often exclusive, i.e., some readers are "author-bound"
readers, while some are "author-free". Author-bound readers usually search and read books of authors whom they know or whose books they have read before. "Author-free" readers, on the other hand, do not usually care about the authorship of the book as long as it is of certain type. They are very likely to do all their searches with category access point.

In summary, the overwhelming preference for the author and the category approaches to keyword, title and publication approaches, forms a distinct searching pattern of fiction readers and a remarkable similarity among the three groups. However, the true conceptual "sameness" of the three groups underpinning this phenomenally common pattern in their searching behaviour can be stated as below:

Firstly, fiction searching is more a habit-bound activity than a context-bound activity. It remains relatively stable under different environments. Therefore, information cues, when simultaneously improved for every searching approach - number of cues increased, navigation between cues enhanced - will not have significant effects in the short term on readers' searching pattern.

Secondly, while readers' searching behaviour is generally habit-bound, some readers are bound to the author approach in their searching (author-bound readers); some are bound to category approach in their searching (author-free readers). Empirical evidence tends to suggest that the proportions of these two types of readers are almost identical.

8.3 The effect of information cues on readers' decision making

According to Nell's (1988) and Hatt's (1976) models of reading activity, the instant of fiction readers' decision making is when fiction wins or loses the competition for readers' attention with other alternatives, and when a particular work wins or loses the competition with other fictional works. As Schramm (1956) noted, in most communication processes, it is information cues that stand in for the original reading
materials in this competition. Therefore the outcome of the decision making relies very much on the presentation and organization of information cues.

Studies on the roles of different information cues in non-fiction readers’ decision making during their searching process have mainly focused on the extent to which different information cues are indicative of relevance. For example, Saracevic (in Morehead, et.al., 1984) reported that titles result in a 2/3 to 3/4 recognition of relevance while abstracts yield a 4/5 to 5/6 recognition.

Studies on the roles of various information cues in fiction readers’ decision making are still at the preliminary stage. Spiller (1980) found that the major resources of information involved in fiction readers’ decision making include:

- cover
- blurb
- title
- text

But exactly how these information cues function in readers' decision making and the mechanisms for their function still remain unknown. Morehead, et.al.’s (1984) study dealt particularly with value construction of information cues derived from Peijtersen’s fiction processing scheme. The most important to the least important information cues are as follows: (1) emotional experience, (2) cognition/information:criticism, (3) psychological description, (4) social relations, (5) readability, (6) action/course of events, (7) time, (8) setting, (9) cognition/information: agitation, (10) place, (11) typography (Morehead, et. al., 1984, p. 594). Although they went much deeper in examining the value of information cues derived from her own fiction processing scheme in readers' decision making, other information cues were not covered.

Due to the lack of knowledge about the function of information cues in fiction searching on the one hand, and the lack of advanced searching facilities on the other
hand, the reality of readers' decision making in fiction searching is currently beset by many problems. Pejtersen (1984) summarized the difficulties below:

- difficulty in need formulation
- difficulty in recall of documents for consideration
- lack of need probing
- lack of information about documents
- difficulty in characterizing contents of documents (p. 170)

The present research studied the role of information cues in fiction readers' decision making by observing the effect of these information cues on readers' use of the searching system and their reliance on their own knowledge in the searching process. The observed evidence was further supported by readers' own report about their decision making.

8.3.1 Effects of information cues on the decision making process of the three groups

Readers' decision making in this research was assessed by two factors in the interview/observation schedule: the use of the system factor and readers' reliance on their own knowledge factor. The previous chapter showed that the experimental treatment resulted in significant differences on both factors between the three groups (p<.05, df=2). Readers' self-reported information about their decision making also showed certain significant differences between the three groups.

The data showed that when provided with increased information cues, which was dynamically linked with an enhanced hypertext system, fiction readers tended to make more use of the system and rely less on their own knowledge. They were therefore less constrained by their personal reading experience. The improvement of readers' decision making was reflected in the following aspects:
(1) Reader's reactions to the system became more positive with the increase of information cues and the enhancement of hypertext links. Readers' reactions were classified into five levels from "against the system" to "enthusiastic about the system". It was assumed that generally, the more positive a reader's reaction is, the more he/she tends to make use of the system. Substantially more readers in experimental group 2 showed interest or even enthusiasm towards the system than in the other two groups. Similarly, more readers in experimental group 1 showed interest or even enthusiasm to the system than in the control group. The percentage of such readers for experimental group 2, experimental group 1 and the control group were 88%, 62% and 46% respectively.

(2) The readers became more confident in selecting or rejecting books when they were exposed to the enhanced hypertext system with more information cues. Readers' confidence level was also broken down into five levels, from "unable to make decision" to "made decision with great confidence". The percentage of readers in the experimental groups being confident in book selection was much higher than in the control group. It reached its highest level in experimental group 2. The percentages of such readers for experimental group 2, experimental group 1 and the control group were respectively 91%, 68% and 28%.

(3) The readers tended to take out books with less examination of the books per se in the shelf area if they had been exposed to more information cues. Substantially more readers in experimental group 2 took out books with little or no further checking.

Two factors may have caused the reader to make a further check. Firstly it may have been caused by the psychological need for physical examination of the book even though information cues were adequate. Secondly, it may have been caused by inadequacy of information cues provided during the searching stage. Under such circumstances, the readers may check any part of the book for more information, depending on what information cues were missing. But the book cover alone is almost certainly not enough for such purpose. The fact that only 21% of readers in
experimental group 2 checked more information resources beyond the cover, compared with 47% in the control group, 41% in experimental group 1, suggests that the majority of readers in experimental group 2 had gained enough information cues from the searching system.

(4) The readers' attitudes towards books that were not on shelves were also quite different between the three groups. Readers' attitudes were classified into five types: (a) reserve all unavailable books; (b) reserve some of the unavailable books; (c) plan to come back for the books; (d) take out other books by the author; (e) did not bother. It was believed that readers' interest in the selected books would decrease along this order. As Chapter 7 showed, the number of readers whose interest in the selected book sustained even though the books were not available was smallest in the control group, and largest in experimental group 2 (17%, 36.5% and 43% respectively in the control group, experimental group 1 and experimental group 2). However, the number of readers who suspended their reading activity at this stage was largest in the control group and smallest in experimental group 2. The percentages of such readers from the control group to experimental group 2 were 59%, 57% and 27% respectively. In conjunction with the preceding finding, this seems to suggest that version 3 of the searching and browsing system not only had more positive response and resulted in greater confidence in book selection, but also engendered greater expectation of reward which thus sustained the interest in the selected books.

(5) The observed readers' reliance on their own knowledge was also different between the three groups, with the control group being the most dependent on their previous reading experience or knowledge, experimental group 2 being the least dependent on their own knowledge. It was assumed that greater reliance on readers' own knowledge related to a narrower scope of choices in book selection. The result therefore seems to suggest that the decision making of readers in experimental group 2 was well supported by information cues and was relieved from the constraints of their own experience.
More evidence was noted from readers' self-report about their decision making. Basically readers' self-report of their decision making on a particular book supported the above observation results. Readers reported that when more information cues such as keywords and summaries of stories was provided, their use of the author and title of the book, especially the title, for decision making decreased dramatically. When comments from book reviews and author information became available, readers' reliance on other information such as summaries of stories also decreased. This seems to suggest that readers' selection of books in the latter circumstance, was grounded in a variety of information. Readers' self-reports about their decision making also showed a significant difference in their expectations of reward from the borrowed books. Readers in the two experimental groups had significantly higher expectation of their selected books than readers in the control group.

Readers' self-reports about the decision making point and their pre-awareness of the borrowed books, however, did not provide as much support. The majority of readers in all three groups made their decision to borrow the book when they were using the system. Only a small minority of readers came with a decision to borrow specific books. Another minority of readers made their decision to borrow the books after they checked the books per se. The reason that none of the groups were more or less prompted by the system in their decision making was probably that the borrowed books were actually those that had really intrigued the readers when they were encountered in the system. The grounds for the decision might have been generally different for the three groups (readers' own knowledge or any of the information cues), but their decision making points were the same as far as the borrowed books were concerned. Similarly, none of the groups had known more about the chosen books than the other two groups before they used the system. The reasons for the lack of significant difference on this variable among the three groups will be discussed later.

Since all other conditions for the three groups were approximately equal, it is reasonable to assume that the information cues accounted for all the differences observed above.
8.3.2 Possible mechanisms for the observed effects on readers' decision making

As established in the theoretical framework, people's needs for fiction arise from a very complex set of contextual factors. Physical factors, psychological factors, socialization factors and previous reading experience factors all play their parts in this context. With each factor, there exists relatively static elements (e.g., gender in physical factors, personality in psychological factors) and dynamic elements (e.g., fatigue in physical factors and anxiety in psychological factors). These static elements and dynamic elements, interweaving with each other, determine readers' needs and their book selection. Readers' book selection varies between the polarity of good/bad, active/passive, new/familiar, facing problems/escapism. But exactly where between these polarities the reader's book selection falls under certain circumstances depends on the reader's mood, work and what happening in his/her life (Ross, 1991). Therefore when information cues match the book to the reader, they actually build up references from the book to the elements of their reading context.

Information cues such as the author, title and publication data of a book are usually referred to as bibliographical information. Such information cues are likely to provide the reader with very limited clues about the subject matter, theme and values of the book. So when only bibliographical information is provided, as is the case in version 1 of HMEF, the system can barely establish really helpful references from the book to the reader's reading context. Readers' decision making is therefore least supported in this case. Information such as keywords, produced by the fiction processing scheme and summaries of the stories aim to depict as realistically as possible what the book is all about. They are therefore descriptive in nature. Such descriptions are supposed to reveal to the reader the nature of the subject matter (serious or entertaining), the geographical and time background of the story, the type of heroes and heroines, and the writing style. By presenting such information cues in addition to the bibliographical information, as version 2 of HMEF did, the system may provide references for the book to a number of elements of the reading context. Readers' decision making in this case is therefore better supported. Some information cues about a fiction book, such as information about the author, information from book reviews, information about
literary prize, etc. in version 3 of HMEF, aim to comment rather than to describe. They are therefore analytical in nature. Such information may extend the references for the book to even more elements of the reading context. For example, when a reader feels the need to read authors who have the same family or geographical background or political views as his/her own, only author biography may provide the appropriate references.

So it is the reference which information cues build up from the book to readers' reading context that possibly acts as the internal mechanism for the effect of information cues in readers' decision making. Composite information cues which consist of bibliographical information, descriptive information and analytical information, as the information cues in version 3 of HMEF, seem to be able to establish a more comprehensive system of references from the books to the readers' reading context than bibliographical information or purely descriptive information alone.

These references are particularly important when the reader finds it difficult to formulate his/her needs or when he/she cannot tell what he/she really needs before he/she actually sees the references. Such a situation is not unusual in public libraries. Ross (1991) noted that a typical searching criterion expressed by public library readers is "a particular atmosphere, or something complete new, which I will recognize when I see it" (p. 511). This elusiveness of fiction readers' needs has at least two origins. Firstly, the more dynamic factors of the reader's reading context often gives rise to circumstantial needs. Such needs change a great deal from time to time, from circumstances to circumstances. Books that suit these needs may delicately differ from what the reader usually reads. The reader may therefore find it difficult to describe them with any kind of customary formulations. Secondly, fiction readers' needs usually meet little external constraints because "[the fiction readers] are searching through fiction simply to satisfy a self-determined need, rather than performing an externally-defined task" (Morehead et.al., 1984, p. 589). Such self-determined needs are very likely to be lacking in readily defined expressions.
When readers are indeed in such a situation, it is natural that they should start a search with a broader enquiry than their exact needs and take in a large amount of information during the search to refine their criteria for rejecting and selecting books.

Browsers use all available information as they try to match their own requirements with what a particular book has to give. They use knowledge in their head about authors, titles, and genres, memories of what reviewers, friends, or family members have said; clues provided by the book cover and the blurb on the back; and information from sampling the book. The smaller the store of information in the reader's head, the more weight will be given to clues contained in the book itself (Ross, 1991, p. 512).

This characteristics of fiction searching behaviour possibly act as an external mechanism for the effect of information cues on readers' decision making.

In summary, with its results being viewed in the light of the theory of reading context, the current research is able to make the following propositions:

(1) Fiction readers' decision making in book selection needs a great deal of information cues for support. The more information cues a system provided, the more comprehensive the references it can build up from the book to the readers' reading context, hence to his/her reading needs.

(2) Although bibliographical information cues, descriptive information cues and analytical information cues all play important roles in book searching, it is descriptive and analytical information cues which are decisive in readers' decision making. The descriptive information provides the reader with clues to form an image of the book and match the image to their internal needs. The analytical information provides the reader with social judgements about the book and the author. It serves as a reassurance to the reader's decision making based on his/her own value system. The reader is most confident when their selection meets his/her inner needs and at the same time meet the external social consent.
This finding seems to fit well with what has been discovered about fiction readers' searching pattern. The findings of these two sections, in conjunction, suggest that readers' exact needs determined by the uniqueness of their reading context are often obscure when they set up the goal of reading. They therefore usually take the broad habitual searching approach to look for books, but they require a large amount of information to refine the search and support their decision making.

8.4 Effect of information cues on the amount of book selection, book borrowing and book reservation

The preceding chapter showed that the three groups were significantly different in all the three indicators concerned here - the amount of selection, amount of borrowing and the amount of reservation.

Experimental group 1 who were exposed to bibliographic information and descriptive information, and experimental group 2, who were exposed to all bibliographical information, descriptive information and analytical information, both made greater amounts of selection than the control group who were exposed to an OPAC type version of the searching system (p<.05). Experimental group 1 and experimental group 2 selected 49.4% and 36.9%, respectively, more books than the control group. The difference between the two experimental groups, in terms of the amount of book selection, was not significantly different.

Since the three groups were manipulated to be equal in every aspect except the experimental treatment they received, this difference is attributed to the effect of the experimental treatment. The addition of descriptive information cues to the system used by experimental group 1 markedly increased readers' book selection, but the addition of analytical information cues to the system used by experimental group 2 did not result in a further increase of selection. The result suggests that, firstly, inadequate information cues restrain book selection while sufficient information cues encourage
book selection; secondly, the increase of information cues does not result in an infinite increase in book selection. After a certain point, the amount of book selection tends to remain constant.

The reason for such a relationship between information cues and book selection is two-fold. Firstly, library regulations regarding the maximum number of books a reader can check out imposes an external restriction on the potential amount of book selection of each library visit. Secondly, the increase of information cues, after it has reached a certain level, may not affect the amount of book selection any more, although it might affect it in other ways, for example, by improving the quality of book selection.

The result on book borrowing and reservation seems to indicate that this is indeed the case. Experimental group 2, although it did not have significantly more book selection than its peer experimental group, it had a significantly larger amount of book borrowing (105% more than the control group and 26% more than experimental group 1). This means that substantially more books selected by this group passed readers' further examination in the shelf area, which in turn suggests that readers' decision during the searching stage was better supported by the searching and browsing systems. Experimental group 1 also made significantly greater borrowing than the control group (63% more than the control group). This is not surprising, because the small amount of selection made by the control group inevitably lead to a small amount of book borrowing.

The three groups also differed significantly in terms of the number of reservations they made (p<.01). Experimental group 2 made the largest number of reservations (76.3% more than the control group). The multiple comparisons between the pairs of the three groups indicated that only one pair of the groups - experimental group 2 versus the control group - showed a significant difference. The differences between the other two pairs were not significant. Reservation requires a great deal of effort from the reader, including the exposure of some of his/her personal details to the experimenter (e.g. address and telephone number). Therefore, it was not easy for the system to have
significant effect on such an effort-demanding task. The fact that only version 3 of the system increased readers' reservation once more supports the previous proposition that the addition of analytical information cues to the searching and browsing system improved the quality of fiction selection.

The relationship between information cues and book selection, book borrowing and book reservation established in this section seems to fit well into the findings discussed in previous sections regarding readers' searching pattern and decision making, and make the previous findings even more conceivable. It has been noted that fiction readers' needs are often complicated, obscure and difficult to formulate at the early stage of their reading activity. Therefore readers often start with a broad habitual searching approach but require a large amount of information during the searching process to refine their searching strategy, to sift their initial searching results for the final decision. When information cues are not adequate, fiction readers tend to refrain from their selection in some circumstances. This inevitably constrains their borrowing, i.e. results in low circulation. The increase in information cues encourages fiction selection. Furthermore, it seems that after a certain point, the increased information tends to be more of an enhancement of selection quality than a stimulation of the amount of selection.

The result has also developed findings regarding the relationship between information cues and fiction circulation reported in previous research. In the domain of fiction librarianship, there exists two propositions concerning the relationship between information cues and fiction circulation, hence two paths leading to the increase of fiction circulation. The first one, represented by Goldhor's (1972, 1981), believes that

Whatever serves to guide adult public library readers to a reasonably small collection of ostensibly interesting and worthwhile books will result in a significant increase in the circulation of those books; whatever inhibits such guidance will result in a significant decline in the circulation of the books in question; and whatever has no connection with or influence on the guidance of readers will have no appreciable effect on the circulation of the relevant books (p. 266)
Viewed in the frame of the relationship between information cues and the circulation of fiction, this proposition suggests that if librarians limit the range of fictional materials to be represented by information cues, the related information cues (e.g., fiction cover, book list) will then lead to a higher circulation rate of the focused fiction stock. Most conventional techniques of fiction services which aim to increase fiction circulation, e.g., fiction promotion, book display, book list, etc., are underpinned by this proposition.

The second proposition is implied in Pejtersen's studies (1987, 1992b). These studies processed fiction with a four dimensional classification scheme and represented fiction with a hypermedia system named Bookhouse. The field test of Bookhouse in a public library showed that "the book stock was used more efficiently and in accordance with the librarians acquisition criteria" (Pejtersen, 1987, p. 589). The result showed that the circulation of fiction might be increased by in-depth fiction processing and appropriate representation techniques.

It is the second proposition that the current research has supported and confirmed with experimental evidence. It is believed that this proposition underpins a more promising path leading to the increase of fiction circulation, because it does not limit readers' scope of choice, but seeks to enlarge it.

8.5 The effect of information cues on the distribution of borrowing

The distribution of borrowing is analyzed in this research with regard to authors' "popularity", "popularity" of individual titles per se, fiction categories and the nature of book review comments, respectively.
8.5.1 Distribution of book borrowing with regard to authors' "popularity"

As specified in the previous chapter, authors are classified into very frequently enquired after authors ("very popular author"), frequently enquired after authors ("popular authors") and infrequently enquired after authors ("unpopular authors") according to how many times they were enquired after by readers in all the three groups. It was assumed that if the three versions of the searching system did not have different effects on the distribution of book borrowing with regard to authors' "popularity", then the books of each type of authors should have been borrowed to approximately the same extent across the groups. The results presented in the previous chapter, however, showed that this null hypothesis was rejected.

More specifically, the statistics indicated that the three groups borrowed books by "very popular" authors to the same extent, but experimental group 2 borrowed significantly more books written by the "popular authors" than the other two groups. The group also borrowed more books by the "unpopular authors" than the control group, though not significantly more than experimental group 1.

Since the groups were monitored to be equal in all other aspects, this result is attributable to the availability of various information cues, which can be explained in more details below:

(1) When category was chosen as the initial searching approach, which was the case for a large group of readers, the reader were naturally open to a wider choice of authors than those who chose the author approach. Although this was the case for all the three groups, it was possible for readers in experimental group 2 to refine their choice according to the author information accessible from each book record by clicking on the author information icon. They might have been actually encouraged by such information to borrow less popular authors. This information cue was not available in the other two groups. As the findings of the previous section has already shown, when necessary information cues are not available, readers tend to constrain
their selections to safer items. In this case, books by well-known authors are obviously safer.

(2) When the author searching approach was chosen, which accounted for another major part of searching, readers were initially restricted by what they had chosen. Although this was the case for all three groups, yet for readers in experimental group 2, it was possible to break this restriction by checking other authors who write in a similar way as the chosen author. If authors who were referred to were not popular or well known, there was still a good chance of their books being borrowed if the accompanying author biography was encouraging and reassuring.

(3) Results discussed previously showed that the prize winner approach was used significantly more by readers in experimental group 2. This approach provides another chance for the readers to be exposed to a wider variety of authors.

(4) Previous findings have suggested that readers in experimental group 2 were less dependent on their own knowledge in book selection, compared with the other two groups. This might have made the readers in this group more open to unpopular authors, since it is more likely for popular authors to be known by fiction readers than it is for unpopular authors.

So more comprehensive and in-depth information cues like those in version 3 of the experimental system are more likely to expand readers’ selection of authors to the less popular ones. Inadequate information cues like those in version 1 of the experimental system, on the other hand, are more likely to restrict readers’ selection to the known author. This is probably because when information cues is not sufficient for a conscious book selection, many readers would rely on authors’ popularity to reduce the risk of ending up with a disappointing book.
In the context that unpopular authors are more likely to be literary authors, as suggested by the statistics from the Public Lending Right (PLR)\(^2\) (Sumsion, 1991), this finding might also have practical implications for those librarians who try to encourage the reading of literary authors.

8.5.2 Distribution of book borrowing with regard to the "popularity" of titles per se

As specified in the previous chapter, titles were classified into "popular titles" and "unpopular titles" according to how many times they had been chosen by the readers in the control group. The purpose was to see whether the effect of intuition in book selection could be reduced by an increase in information cues. Previous research has noted that borrowing by intuition (the reader borrows the book because it sounds or looks interesting) accounts for a large proportion of fiction circulation, especially among the random browsers (Jennings and Sear, 1986). Random browsers usually do not have author names or specific titles to guide their search. They pick up books by serendipity while they look around the shelf. It was assumed that this was the same situation facing many readers in the control group, who had no information cues other than bibliographical data to refine their selection. So intuition presumably played a very important role in this group. It was further assumed that if readers relied to the same extent on their intuition to judge the potential reward of the books, then their borrowing of these two types of books among the three groups should have been equal.

This, however, was not the case in the present research. The results presented in the previous chapter showed that although the three groups were almost equally attracted to the "popular titles", their interest in the "unpopular titles" differed significantly. A further comparison between pairs indicated that both the experimental groups

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\(^2\) PLR statistics indicates that the unpopular authors are more likely to be literary authors. Sumsion reported "Literary names are sparsely represented. There are none in the top 100; in the next 84 we find Kingsley Amis, Anita Brookner, Graham Green, Penelope Lively and Fay Weldon, accounting together for some 2% of the 'star' books borrowed" (Sumsion, 1991)
borrowed significantly more unpopular books than the control group, but the
difference between the two experimental groups was not significant.

This difference is attributed to the different information cues available to the three
groups. As has been noted, information cues provided to the control group were not
sufficient to build adequate references from the book to readers' reading context.
Therefore the readers, except for relying on their own knowledge about the literary
world, had to resort to how interesting the title sounded. As to the “not so interesting”
titles, their selection was more cautious and conservative than the two experimental
groups. A couple of examples from the observation of the experiment may illustrate
readers' attitudes towards less appealing titles. A female reader, who searched for
money? or emotion?". After a second thought, she rejected the book. Another book
that had several frowns and rejections from the readers in the control groups was John
Fowles A Maggot. "What a title", they said.

Book selection in experimental group 1 was supported by both bibliographical
information and descriptive information, which revealed to the reader what the book
was really about. With these information cues, the reader was able to make a
reasonable prediction of the potential reward a book might bring even though the title
did not sound interesting enough. Book selection in experimental group 2 was also
supported by analytical information, in addition to bibliographical information and
descriptive information. But the addition of analytical information did not result in
more book selection to experimental group 2 compared with experimental group 1.
The lack of difference between these two groups seems to suggest that descriptive
information plays the major role in alleviating the effect of readers' intuition in fiction
selection.

This finding is in accordance with Peijtersen's research in which she found that when
more information was provided for the fiction stock, many unpopular titles started to
circulate frequently. The information refreshed the dull look of many books which used to be neglected simply because "they looked boring" (Pejtersen, 1992a, p. 365; 1992b, p. 589).

8.5.3 Distribution of book borrowing with regard to fiction categories

For the purpose of checking the distribution of book borrowing, two general categories were distinguished:

- Light fiction: Fiction on the fantasy and romanticism side of Scholes's (1981) continuum, which formed the underlying structure of the fiction categorization scheme in this research, was grouped under this category. It roughly corresponds to Mann's (1980, 1982a) light fiction and Spiller's (1980) recreational fiction.

- Serious fiction: Fiction on the realism and history side of Scholes's continuum was grouped under this category.

The grouping followed the practice of previous research so that the result could be examined in the network of previous findings.

As shown in Chapter 7, light fiction attracted approximately the same extent of borrowing from all three groups, but serious fiction had significantly greater borrowing from the experimental groups than from the control group. A number of factors relating to information cues might have been responsible for such a difference.

Firstly, the icon representation and the pop-up definition of categories (see Figure 5.8 in Chapter 5) may have attracted readers to try the less popular categories and more varieties of categories. For example, people who were interested in family fiction may have wanted to try gender issue fiction. The icon display may also have revealed some categories, e.g., psychological fiction, which would otherwise have been obscured by the all-embracing category "general fiction".
Secondly, in the two experimental groups, the category of a book was labelled on the book record, along with all other keywords. Like the icon display, the distinction of book's category might have revealed the existence of some unpopular categories and led to more borrowing of these categories. Readers in the control group might not been aware of these categories, for public libraries do not usually classify fiction stock in detail. When a category is not known, the chance of its books being borrowed is much less, unless the author is known.

Thirdly, the previous sections showed that significantly more people in the experimental groups chose prize winner as a searching approach. Since most of the prizes in the system were literary prizes, this approach dramatically increased the possibility of serious fiction being borrowed.

Fourthly, in the two experimental groups, it was possible for readers' attempted interest in less popular categories to be fostered or assured by other supplementary information, such as a summary of the story and comments from book reviews.

So the result seems to suggest that there exists a relationship between information cues and borrowing distribution with reference to fiction categories. The more information cues available, the bigger the chance of serious fiction being borrowed.

8.5.4 Book distribution with regard to book review comments

For the purpose of checking whether people's borrowing of book varies with the nature of review comments, books were classified into the following categories:

- positively reviewed books
- negatively reviewed books
- neutrally reviewed books

In this study, only the first two types of books were included for statistical analysis.

In version 3 - the treatment of experimental group 2 - the comments were provided and were easily accessible from each book's bibliographical data. In version 1 and
version 2, this information was not available. It was assumed that if these information cues affected readers' choice, then the chance of negatively commented books being borrowed in experimental group 2, compared with that in the other two groups, should be the smallest. In addition, the chance of positively reviewed books being borrowed by this group, compared with that in the other two groups, should be the largest. A Kruskal-Wallis analysis showed that this was indeed the case.

Experimental group 1, according to findings in the preceding sections, borrowed a wide variety of books - popular authors' and unpopular authors', light fiction and serious fiction. The group also made nearly the largest book selection. In the absence of book review comments, the chances of both negatively commented books and positively commented books being borrowed by this group were presumably large. This was also found to be true.

As the preceding sections showed, the control group was the most conservative group in book selection. They tended to select what they thought was safe. When they were not sure, they tended to refrain from selection. For this reason, the chance that they would select negatively commented books was expected to be relatively smaller than experimental group 1. This was again found to be true.

An example would, again, help to illustrate the role of book review comments in readers' book selection, although it is not meant to make the discussion qualitative. Stephen King's *Talisman* was observed to be selected seven times by experimental group 1, but it was only accepted by one reader in experimental group 2. Some readers from the later group actually commented: "The comments put me off", or "I don't think I still want it". The comments on this book read as

*The real trouble comes with the mechanical series of adventures King and Straub have invented for Jack to battle through on his way to the talisman. The hoodoos encountered in a rancid roadhouse in New York, a corrupt orphanage in Ohio...are maggoty and colourful, but also wearisomely repetitive. The horrors there on the page are visually*
ingenious, but they never echo in the mind...the co-written sentences are so gaudy and muscular they seem phony, like the deltoids of a bodybuilder.

The reasons why readers are open to the influence of other people's opinion about a particular book are complex. But from a sociological point of view, two factors might have accounted for the phenomenon.

(1) The fiction reader, as an individual, also bears the feature, value and belief of the society and culture, in which he/she holds membership. "Just as culture, through the communication system, shapes us as a species, so too, it shapes us as individuals" (Shera, 1976, p. 46). The cultural and value inheritance from a society may influence the individual readers at least in two ways when they were exposed to book reviews of the media system. Firstly, it grants readers a common sense of the good and the bad which they share with other members of the society. For this reason, they are apt to be sensitive to the opinion of reviewers as peer individuals. Secondly, it cultivates a considerable compliance among readers to social value judgements, "requiring a solution of the dissonance between preference and conscience" (Nell, 1988, p. 44). For this reason, readers are apt to be sensitive to media reviews as the transmitter and/or reinforcer of the social value. Therefore,

although ludic [pleasure] readers see themselves as reading what they like, the book-selection process is not a free interaction between the skilled reader and the universe of reading matter. Readers are consumers of popular culture and are therefore subject to the factors that determine consumption patterns within this broader context (Nell, 1988, p. 26)

(2) Book reviews have gone through society's media system and bring forth some of media's effects, e.g., persuasion and propaganda.

The suggestion that can be drawn from the above results and discussion is that the presence and nature of book reviews have significant effects on the borrowing distribution of the reviewed books. When exposed to media (social) judgement about
books, readers tend to borrow books with positive reviews and avoid books with negative reviews.

This finding does not seem to support Jennings and Sear's (1986) finding that book reviews and other public views have little effect on readers' book selection. Jennings and Sear developed this statement through interviewing readers. The disagreement between the finding of this research and that of Jennings and Sear's is probably due to the different research methods applied by the two studies. In the interview survey, the question about the effect of book reviews might have been understood in various ways by different readers. For example, it might have been understood as whether or not the reader often read book reviews. It might also have been understood as whether or not the reader often read reviewed books. Such interpretation of the interview question was quite likely to result in the conclusion that book reviews has little effect on readers' book selection, for not many readers have the habit of actively pursuing book reviews. Another possible reason for Jennings and Sear's conclusion is that the reader, whose ideology and value is formed by the culture and society to which he/she belongs, might not be consciously aware of the influence of social values on his/her pleasure reading.

8.6 The effect of information cues on the conformity of readers' borrowing to their reading tastes

The conformity of readers' borrowing to their reading tastes was assessed by a single variable with multiple items, measuring the degree that a particular book they borrowed varied from what they usually read. The experimental result showed that very few readers borrowed something completely different from what they usually read. Around half of all the readers borrowed books that were similar to what they often borrow.

Kruskal-Wallis statistics further showed that the three groups were not significantly different on this variable. The result suggests that the conformity of readers' book
selection to their general reading tastes was not affected by the variation of searching
environments designed in this research, which in turn, suggests that the conformity of
readers' borrowing to their reading taste is quite independent of information cues
available, at least within the typology of information cues created by this research. In
conjunction with the findings regarding the distribution of borrowing with reference to
the title, author and category of the books, the results further suggest that although
readers may be encouraged by the information cues to enlarge their selection scope,
and select books they would otherwise have given up for safety, this enlargement of
book selection is not likely to transcend the reader's reading taste.

This finding also sheds further light on earlier findings about the relationship between
information cues and the amount of book selection/borrowing. It is noted earlier that
when information cues are not adequate, readers tend to be more cautious in book
selection, which results in a small amount of book selection and book borrowing. This
is probably because inadequate information cues, as the information cues for the
control group in this research, provide limited clues for readers to match the book to
their general reading taste. So the disparity of the book from the reader's general
reading taste is not known. The conscious selection required by the reading taste has to
rely very much on what the reader's own knowledge about the author, which raises
considerable restriction to his/her selection scope. When information cues are
adequate, as the information cues for the experimental groups, especially experimental
group 2, the disparity of the book from the reader's general reading taste is known.
The conscious selection from the reading taste perspective has little restriction. So
book selection under such circumstances is likely to be larger in quantity.

Readers' consistent conformity to their reading tastes may also explain the lack of
difference in readers' pre-awareness about their borrowed books, a result that was
reported earlier (section 8.3.1) but remained unexplained till now. The reason that
none of the groups were encouraged more than the other groups to borrow books
unknown to them seems to lie in the fact that the books selected, or at least the books
borrowed by the three groups, all remained in the territory of readers' general reading
taste. The reading taste, while imposing a limitation to "newness" of the borrowed books, at the same time imposed a limitation to the "unknownness" of the borrowed books.

This finding practically suggests that a fiction searching and browsing system, as well as other fiction services can only benefit readers' book selection within the territory of their reading taste. It also empirically supports the conviction held by Mann (1982), Ross (1991) and others in fiction reference services. They believe that fiction reference service must respect readers' own taste. The librarian who tries to press on the reader "good" books judged by certain cultural norms rather than by readers' taste is like a travel agent who forces his patrons to take a particular route to a scene, the result is that sooner or later, they will lose their patrons. (Ross, 1991). "It really is difficult trying to judge for others in fiction and it is made all the more difficult when people try to press their own judgement (prejudice?) on others" (Mann, 1982, p.15).

8.7 The effect of information cues on readers' emotional experience in the reading process

The emotional states a reader experiences during a pleasure reading process, such as fiction reading, is quite peculiar compared with other experiences in his/her life. It enables the reader to taste life without being involved, to participates the events therein without interfering them. It transforms the reader into an emotionally and intellectually different person (Scholes, 1989).

According to Nell (1988), the readers' vehement inner emotional undertaking is usually disguised with absorbed exterior quietness. The conscious attention demanded by comprehension of a fictional passage is usually intensive during a reading process and can give rise to real pleasure. As conscious attention initiates reading absorption, this leads to two further effects: firstly, "attention is removed from the self and thus holding unpleasant consciousness at bay" (p. 262), and secondly, absorption may sometimes deepen to become enthrancement. "The more stirring the book, the quieter the reader,
pleasure reading breeds a concentration so effortless that the absorbed reader of fiction, who is so often reviled as an escapist and denounced as the victim of a vice as pernicious as tippling in the morning should instead be the envy of every student and every teacher" (p. 1).

A measurement of such experience, named emotional experience in this research, is apparently very difficult if not impossible. The current research studied such experience phenomenally with a number of variables whose correlations with this emotional factor were verified by a factor analysis, shown in Chapter 6. The variables are:

- readers' commitment of their attention
- readers' emotional involvement in the reading process
- readers' desire to recommend the book to others
- readers' desire to read similar books in the future
- possibility of re-reading the book in the future
- finishing ratio of the book
- recall ratio of what has been read
- readers' rating of the enjoyability of the book

As Chapter 7 indicated, this factor on the whole, was not assessed as being significantly different among the three groups.

The majority of readers finished reading the whole book (63%, 67% and 77% respectively from the control group, experimental group 1 and experimental group 2). About 88%, 85% and 85.5% respectively from the three groups finished half or more of the book.

Readers' rating of their emotional involvement and commitment of their attention to the book during the reading process roughly followed a normal distribution in all three groups. The majority were moderately committed to the reading process. A small minority were absorbed in the reading process. Another minority approached the
reading process quite cursorily. This seems to suggest that although most public library readers fall into the category that Nell called "ludic readers" (those who read at least one book a week for pleasure, according to his operational definition), and therefore have the potential to reach the emotional state that characterizes ludic reading - absorption and even trance, yet only a very small proportion of them have actually experienced such a state. According to Nell, absorption is the true source of the subjective feeling of well being. Viewed from this perspective, what the result of this research really suggests is that there is a great potentiality for public library readers to be better satisfied.

This suggestion is further supported by other indicators of readers' subjective feeling of well being. For example, the majority of readers rated the book moderately enjoyable to read. Only a small proportion (18%, 24% and 26% respectively from the control group, experimental group 1 and experimental group 2) thought that they would very possibly re-read the book or read many books similar to this one in the future. Similarly, very few people would highly recommend the book to others.

No significant difference was observed among the three groups on any of the aspects discussed above. This means the additional information cues to the two experimental groups, especially experimental group 2 did not have any effect on readers' emotional state during the reading process.

A significant difference, i.e., an effect of information cues on fiction readers' emotional experience, was expected based on two theoretical propositions: (a) Nell's (1988) proposition regarding the relationship between book selection and readers' emotional state, (b) Mann's (1980) and others' (Spenceley, 1980; Turner in Goodall, 1989) proposition regarding the relationship between readers' prior knowledge about a book and readers' satisfaction level with the reading of the book.

Book selection or book match is one of the antecedents for ludic reading in Nell's (1988) model. Allied with reading ability and positive expectation for ludic reading, it
decides how far a reader can go in his/her venture of ludic reading. Mismatch of books to readers gives rise to inordinate expenditure of energy in order to maintain reading. The effort required for reading a poorly chosen book is likely to lead to speedy abandonment of reading in favour of another activity (Nell, 1988). Book selection, in this research, was part of the matter that the experimental treatment sought to affect, while other antecedents were monitored to be equal between the three groups. According to Nell's model, the expected differences between the three groups in their book match, if there were any, should be reflected in their subjective feeling of well being.

The fact that none of the three groups went further than the others in achieving the emotional state of ludic reading, suggests that either book match is not related with readers' emotional experience (subjective feeling of well being) during the reading (hence Nell's model does not hold true) or the increase of information cues within the typology proposed by this research does not affect the match of book to the reader.

The current research did not provide enough evidence for the acceptance of the first possibility. It is also intuitively doubtful. The second possibility is therefore very likely to be true, i.e., the information cues within the typology proposed by this research does not affect the match between the book and the reader.

This suggestion is not in any way contradictory to the findings discovered in the previous sections. The previous sections have established that the additional information cues were able to enlarge the scope of confident conscious selection, in which they would otherwise not be likely to take risks. However, the information cues did not affect the conformity of readers' borrowing to their reading taste. That is, the information cues enlarged the area of match, but did not increase the exactness of match from the point of view of reading tastes.

To further test the mediating effect of the conformity of borrowing to reading taste on readers' emotional experience, a Spearman correlation test was carried out to see
whether it is true that the more the book is different from the reader's reading taste, the less he/she is satisfied with the book. The analysis showed that the two variables are indeed correlated (r=.49 p<.0001).

Therefore the reason for the lack of effect on the variables in this section seems to lie in the mediating role of the reading taste in book selection. Since information cues created in this research did not have any effect on the match of the book and the reader's reading taste, the experimental treatment was therefore unable to affect readers' emotional experience - the subjective feeling of well being - during the reading.

Apart from Nell's model, the current research has also drawn insight from other theories about readers' emotional state during the reading process. The most notable one is the correlation between readers' prior knowledge about a book (prior to their searching and reading of the book) and their satisfaction level with the reading process (Spenceley, 1980; Mann, 1980; Turner in Goodall, 1989). These researchers noted that the more the reader knows about the book beforehand, the more he/she tends to enjoy the reading. Pejtersen (1992b) also believed that when readers learn more about the borrowed books during the searching stage, the quality of their reading would improve.

Based on this proposition, the current research had predicted that the increase of information cues would increase readers' satisfaction level, even though it did not affect the match of the book to the reader, since the information cues were bound to first increase readers' knowledge about the selected books. The evidence from this research, however, showed that this was not the case.

This result therefore raised the need for re-examining or clarifying the proposed relationship between readers' knowledge about the book and their satisfaction level with the book. It was assumed by previous researchers that readers' "knowledge" about a book was reflected by the way they searched for the book. The more specific
clues used in their search, the better they were assumed to know the book. Such assumption might have blurred the concept of "knowledge" and "the search mode" in their correlation with readers' satisfaction level. So it was not clear whether the searching modes alone determined the reading satisfaction level, or the knowledge alone, or the knowledge, mediated by book selection, determined the variance of the satisfaction level.

The result of this research seems to suggest that the knowledge about a book alone is not related with readers' satisfaction level in a short term. A reader may well enjoy reading a book without understanding its theme, author's life and view, social backgrounds, etc.

Earlier discussion has shown that the conformity of readers' book selection to their general reading taste correlates significantly with their reading satisfaction - subjective feeling of well being. It is therefore rational to suggest that the pre-reading knowledge about a book will affect the book reading only when it helps the readers to match the books to their own taste and needs.

Since reading taste is uniquely decided by readers' own reading context, the finding of this section seem to support the theory about the uniqueness of fiction readers' reading context and their response to imaginative literature. The theory is advocated by many researchers such as McClellan (1980), Nell (1988), Holland (1975) etc. and empirically supported by research such as Ross's qualitative study on the idiosyncrasy of fiction reading. The current research further supported it by providing the following quantitative evidences:

(1) Although readers were found to be affected significantly by media response to the book, provided as review comments in the information cues, the groups that selected significantly more positively reviewed books did not appear to be more satisfied with the books. This suggests that the social factor in a readers' reading context decides that the reader would like to choose something that his/her peers has confirmed as valuable.
But the emotional effect, gives way to the uniqueness of reading context determined by a readers' personal and psychological factors, as well as by the conformity of the new books to his/her reading tastes.

(2) Making the readers equally aware of the theme, the author's intention, the author's view of world and life and other characteristics of the book with the information cues, prior to the reading process, does not make the reader a different one for that particular book, nor does it draw him/her closer to the book. The uniqueness of the reader's reading context decides that their response to the borrowed book is quite independent of what they are taught about the books. As Ross (1991) concluded from her interviews of fiction readers, "the reader's own preoccupations seem to work as a filter, so that readers pay particular attention to parts of the book - sometimes minor characters and subordinate themes - that address their needs...Reading is an active process of constructing meaning, which is why readers find themselves in the books they read" (p. 509).

For practical librarians, the result of this section seems to reinforce McClellan's (1981) warning that "the prediction of responses by a number of unknown potential readers is virtually impossible...We cannot, therefore, with any certainty, assess the kinds of values which actually emerge from the reading of a particular text" (p. 78).

8.8 The effect of information cues on readers' cognitive experience in the reading process

As established in the theoretical framework, readers' cognitive change resulted from fiction reading refers to the change of reader's knowledge store, or learning from reading.

Three variables were found to be correlated with this factor. "Readers' general evaluation of the reading process" is a multiple item variable, reflecting how reader
think about the reading process in general: a mere time filler or a beneficial activity. "Rating of learning through reading" is also a multiple-item variable measuring how much a reader has learned about the author, the writing, the people and culture in the book, through searching, borrowing and reading the books. "Rating of critical reading" is a single item variable, measured by the depth of comment a reader made on the book. The Kruskal-Wallis statistics indicated that the difference between the three groups in their cognitive experience was not significant.

Examined in the frame of the constructed theory, the result shed light at least on the following aspects of the cognitive effect of fiction reading:

(1) Putting the results observed from all three groups together, this research seems to support the argument that fiction reading is not only internally pleasurable, socially status-conferring, but also cognitively stimulating (Mann, 1969). It brings the reader to a new state which is not only emotionally different but also intellectually different (Scholes, 1989).

The evidence for the intellectual change resulting from fiction reading is first of all seen from the large number of readers who reported a certain amount of knowledge-gaining through the reading. Although few readers ranked their reading of that particular book as high in knowledge gaining (5%, 5% and 2% respectively from the control group, experimental group 1 and experimental group 2), most of them reported that they had learned something through the reading (83%, 68% and 73% respectively from the above three groups), nevertheless.

The evidence is secondly seen from the result on readers' critical reading. An encouraging number of readers were able and willing to make critical comments on the book (36%, 43% and 40% respectively from the three groups) and a few of them even reached the depth of exploring the abstract theme of the book.
Thirdly, the majority of readers thought that the reading process was a beneficial activity in one way or another, e.g., it helped them to understand people better or it helped them to cope with their personal problems. Some of the readers (10%, 20% and 15% respectively from the control group, experimental group 1 and experimental group 2) thought it was very beneficial.

(2) The result of this section also suggests that intellectual stimulation is not an exclusive function for serious fiction only. Light fiction reading also gives rise to such an effect. This is reflected by the contrast of the relatively smaller number of readers who borrowed serious fiction with the much larger number of people who reported that they had learned something from the reading. For example, in the control group 14 out of 36 borrowers (40%) borrowed serious fiction, however, 16 out of 22 respondents (73%) reported a certain amount of learning through reading.

This finding supports the argument held by light fiction defenders that the value of light fiction not only lies in its function of entertaining but also in its function of conveying meaning (Yu and O'Brien, in press). It also supports the "reader-centred" view of the fiction reading effect, exemplified by Nell's (1988) and Holland's (1975) theories. According to Holland, the determining factor in the meaning formation of fiction reading is the reader's identity theme (i.e., personality). The determining role of this identity theme during the transformation process of reading is that it determines the wholeness of meaning the reader created just as he passes all his other experiences through the filter of his personality in a defensive way.

(3) The lack of significant difference between the three groups suggests that composite and in-depth information cues represented by a hypertext system do not have any effect on readers' cognitive achievement either indirectly through book selection or directly by providing knowledge about the book and the author.

Firstly, readers' cognitive experience does not seem to relate to the distribution of book borrowing resulting from book selection. In this research, although the three groups
differed significantly in the distribution of their borrowing with reference to authors' popularity, fiction category and nature of review comments, the difference did not have any repercussion on their cognitive experience. Serious fiction or light fiction, popular authors or unpopular authors were just as stimulating in readers' cognitive (intellectual) experience from the readers' point of view.

Secondly, readers' cognitive experience does not seem to relate to the match of books to readers' general reading taste. A Spearman correlation test was carried out to test whether the lack of difference between the three groups in their cognitive experience was due to the mediating effect of readers' reading tastes. The result of this test, however, indicated that unlike readers' emotional experience previously discussed, their cognitive experience is not correlated with book selection with regard to their reading taste (r=.06, p>.1).

Thirdly, information cues do not affect reader's cognitive experience by “teaching” them desirable knowledge about the book before reading. It was predicted initially that even though the information cues had no effect on readers' cognitive change indirectly through their book selection, they would affect readers' cognitive change directly through the imposition of the "ready-made" knowledge on to the reader. It was believed that the descriptive and analytical information cues, especially analytical information cues that the searching system provided to the reader, would expand the reader's knowledge base. The knowledge would be retrieved during the reading process and mingled with his/her own understanding of the text and eventually fit into his/her general structure of knowledge store. After all, fiction reading is not different from other reading in that it also involves reflection, judgement, analysis, synthesis, selection and critical evaluation. The greater the related knowledge base a reader has, the better the comprehension of the text is supposed to be.

The prediction did not turn out to be the case in this research. The result seems to suggest that the reader did not integrate the two sets of knowledge - the one imposed on them by the searching system and the one they gained from the actual reading.
process - into one unity. That is, the input of the two sets of knowledge did not cause substantial re-construction of readers' knowledge store. Therefore when their cognitive change as a result of the whole reading activity was enquired about, only the information they perceived and processed during the later stage was retrieved for evaluation.

Fiction reading can be seen as rather passive in this sense: the reader did not feel imperative to retrieve all related information for the understanding of the book. The major reason for this passiveness seems to lie in the nature of the reading task. Firstly, fiction reading is not rewarded by social consent according to its cognitive outcome. It is rewarding on its own right. "The black squiggles on the white page are still as the grave, colourless as the moonlit desert, but they give the skilled reader a pleasure as acute as the touch of a loved body, as rousing colourful and transfiguring as anything out there in the real world" (Nell, 1988, p. 1). Secondly, pleasure reading is basically a personal matter. It is without external response demand and subject to no evaluation. It is therefore carefree. The nature of the task decides that the effortful, complex cognitive re-construction of related knowledge is neither necessary nor appropriate in the case of fiction reading.

Practically, this finding is perhaps disheartening to librarians who believe that the increase of information cues or other fiction services can improve readers' reading process intellectually. It seems that intellectual (cognitive) stimulation of fiction reading is a very complex matter and is not likely to be affected by a short term educative initiative, such as educative fiction promotion.
CONCLUSIONS

9.1 Overview

This chapter briefly summarises the major findings from the experimental investigation and concludes the research with reference to its objectives, which are re-stated below:

- To examine the potential relationship between information cues presented with appropriate media and a number of aspects of the fiction reading activity of public library readers.
- To elucidate the practical implications of the relationship for fiction services in public libraries.

9.2 Summary of major findings

In accordance with the reader's reading context, the present research constructed an experimental treatment - three versions of a fiction representation system - respectively with (a) bibliographical information, (b) bibliographical information plus descriptive information and (c) bibliographical information, descriptive information plus analytical information. It was predicted that the representation of these information cues has significant effects on fiction reading activity.

The experimental investigation showed that the three groups, after being exposed to different information cues, differed significantly in their decision making, the amount of book selection and book borrowing and the distribution of borrowing. They did not differ significantly, however, in the conformity of their borrowing to their reading taste, their subjective feelings of wellbeing and cognitive experience during the reading process.

(1) The effect on readers' decision making: field observation noted that when provided with more complex information cues, readers showed more positive reaction towards the experimental treatment and greater confidence in selecting or rejecting books. Bearing
these information cues in mind, they tended to be less scrupulous in checking the book per se in the shelf area and more determined to obtain unavailable books through reservation. These features indicated that the more information cues represented by the system, the greater the use of the system by the reader. As readers' trust in the system grew, their dependence on their own knowledge for book selection decreased significantly. The questionnaire response about readers' decision making strongly agreed with what was found through field observations. According to the questionnaire data, when descriptive information cues were provided together with bibliographical data, readers' appreciation of bibliographical information cues decreased dramatically. When analytical information was added to the representation, readers' appreciation of both bibliographic information and some of the descriptive information decreased. With more complex information cues, readers were also found to be more certain about the potential reward the selected book might bring.

Chapter 8 proposed two mechanisms which might have underpinned the above effects of information cues on readers' decision making. Firstly, when matching the book to the reader, information cues may actually establish references from the book to the readers' reading context. Composite and in-depth information cues are able to establish more comprehensive references. Representation of these information cues is therefore more congenial to the great complexity of fiction reading context. These references may have served as an internal mechanism for the effects of information cues on readers' decision making. Secondly, fiction searching often requires a great amount of information to refine the searching criteria and to sift books for selection (Peitersen and Austin, 1983, 1984; Ross, 1991). This characteristic of fiction readers' searching behaviour may have acted as an external mechanism for the effect of information cues on readers' decision making.

(2) The effect on readers' book selection, borrowing and reservation: the results of the experimental investigation showed that experimental group 1, who were provided with both bibliographical information and descriptive information, made significantly greater amounts of book selection and borrowing, though not more reservations than the control group, who were provided with purely bibliographical information. Experimental group 2 who were provided with all the categories of information cues, made significantly more
book selections and reservations than the control group and greater amount of borrowing than both the control group and experimental group 1. The comparison within and between groups in terms of these three variables showed that more information cues also resulted in smaller disparity between their book selection, book borrowing and reservations. Chapter 8 proposed that the possible reason for the result is that for the purpose of pleasure reading, fiction readers tend to refrain from selection when information cues are not adequate. In the light of other results of the experiment, it was further suggested that reading taste may have functioned as a mediating factor in book selection and accounted for readers' caution in book selection when there was a shortage of information cues. That is, when information cues are not adequate, the disparity of each book from the readers' reading taste is not known, conscious selection from the perspective of reading taste is seriously restricted by this "unknownness". On the contrary, when information cues are sufficiently provided, the disparity of each book from the readers' reading taste is known. Conscious book selection according to the reader's reading taste has few constraints.

That representation of information cues may affect the amount of book selection as well as the distribution of book borrowing was first noted by a series of studies of Bookhouse. It was noted that when Bookhouse was tested in a Danish public library, it not only brought about greater use of fiction stock in general but also more frequent circulation of books which used to look boring. However, since the main purpose of these studies was to test the technical functionality of Bookhouse, the likelihood of the variation of information cues to yield change in book selection and book borrowing was not conclusive. The development made by this research is to have empirically and statistically verified the existence of a relationship between information cues and book selection/borrowing.

(3) The effect on the distribution of readers' borrowing: the experimental results showed that when represented with complex information cues, books whose titles did not look appealing, books written by less popular authors and books of serious fiction (conventionally regarded as less popular compared to light fiction) all had a better chance of being borrowed than when they were represented with fewer information cues. As Chapter 8 suggested, this result probably related to readers' decision making. A prominent characteristic of fiction readers' decision making is that when provided with inadequate
information cues, the reader tends to restrict his/her selection to safer items (i.e., books with the least possibility of being disappointing). Books that sound interesting, books written by popular authors, books of popular categories were probably regarded as relatively safer in this case.

(4) The effect on readers' general searching pattern: the experimental investigation demonstrated that the variation of information cues in the experimental treatments had little effect on the readers' searching patterns. The common searching pattern for all the three groups was characterised by readers' apparent preference for author and category searching approaches to other searching approaches, namely, keywords, title, publisher. This result, in conjunction with findings of many previous studies (Spiller, 1980; Jennings and Sear, 1986; Goodall, 1989) suggests that fiction searching patterns are more a habit-bound behaviour than a context-bound behaviour. Habitually, some reader's searching patterns are dominated by author names, while some other readers' searching patterns are dominated by fiction categories.

The finding, especially the finding regarding the place of keywords in fiction readers' searching patterns, is in sharp contrast with Pejtersen's finding based on the field test of Bookhouse. Pejtersen noted that analytical search strategy which involved using topic terms (keywords) was keenly used by fiction readers. As Chapter 8 suggested, the disagreement is probably due to the emphasis of Bookhouse on its analytical search strategy with an elaborate graphical user-interface. The treatment of this research used a text-based interface for the searching approach using keywords. It was not known whether the frequent use of analytical strategy with Bookhouse was caused by mere curiosity about the elaborate user-interface or by a genuine need for such a strategy, because the quality of book selection with such a strategy was not evaluated. Similarly, it is not absolutely clear whether the little use of keywords observed from this research suggests the readers' genuine lack of interest in such searching approaches or their temporary passiveness in adopting new searching methods, because if readers' passiveness in adopting new searching method did act as a significant intervening factor, the experimental period might have been too short to provoke detectable change in readers' searching patterns. However, as Chapter 8 suggested, considering that the analytical search strategy is cognitively demanding and that
fiction readers' needs are not always easy to define clearly in specific terms, readers' lack of interest in keyword searching is not completely unexpected.

(5) The effect of information cues on the conformity of readers' borrowing with their reading taste: the experiment noted that the different representation of information cues had little effect on the conformity of readers' borrowing with their reading tastes. In conjunction with other results observed in this research, this result indicated that more adequate information cues may enlarge the scope of readers' book selection, which they might otherwise give up for safety reasons, but the enlargement as an effect of information cues is not likely to transcend the restriction of reader's reading tastes. Another indication of the result is that information cues like those in this research are not adequate to affect the match between the book and the reader's reading tastes. It is not known whether any other information cues could improve the match.

(6) The effect on readers' emotional experience (subjective feeling of well-being) during the reading process: the extent of the subjective feeling of well-being obtained from reading the borrowed book was not affected by the representation of information cues in the searching system. Chapter 8 suggested that the lack of difference on this variable was probably due to the lack of difference between the three groups in the conformity of their borrowing with their reading tastes. A Spearman analysis indicated that the two variables are significantly correlated. The closer the book selection conforms to a reader's reading taste, the higher is reader's satisfaction level.

The finding did not support the theory proposed by Mann and others (see section 3.3.2 of Chapter 3) which relates readers' enjoyment of reading a book to their before-hand knowledge about the book. In stating this relationship, these researchers had assumed that readers using specific clues to search for books were more knowledgable about the books than readers using random browsing. Chapter 8 suggested that this assumption might have blurred the concepts of "pre-knowledge" and the concept of "searching mode" in their relationship with the reader's satisfaction level.
(7) The effect on readers' cognitive experience: the variation of information cues did not affect the cognitive experience in the three groups. The variable was not found to correlate with other variables identified in this research, either. It is not clear whether the fiction reader's cognitive experience is beyond the influence of fiction representation.

9.3 The remodelling of fiction reading context, fiction reading activity and the roles of information cues

It was predicted from the theoretical model proposed in Chapter 3 based on existing theories and research findings that the effect of information cues pervades all aspects of fiction reading activity, including: fiction searching, fiction selection and fiction reading.

The effect of information cues on fiction searching is remarkable, as shown in this research. Although information cues were not found to affect readers' searching pattern - probably because searching patterns are highly habit-bound - they have a significant effect on reader's decision making, first by increasing their trust in, and their use of, the fiction representation system and then by relieving them of the constraints of their own knowledge.

This research found that variation of information cues from the purely bibliographical data, to embrace all three categories, had the most appreciable effect on fiction selection. Although information cues do not affect the conformity of readers' borrowing with their reading taste, they do have significant effect on the amount of readers' book selection and the distribution of their borrowing. Composite and in-depth information cues result in greater amount of selection, borrowing and reservation than mere bibliographical information. Furthermore, they improve significantly the chance for unpopular authors' books, unappealing titles and unpopular fiction categories to be borrowed.

It was predicted from the theoretical model in Chapter 3 that the effect of information cues on the actual reading process of a book, if there were any, should be reflected in the reader's subjective feeling of well-being and cognitive change. The experimental results showed that neither of these variables directly related with the availability of information cues. Readers' subjective feeling of well being might relate to information cues indirectly.
through the mediating effect of the conformity of borrowing with their reading taste, but readers' cognitive experience, however, does not seem to relate to any other variables identified by this research.

Since the typology of information cues in this research was constructed in accordance with the fiction reading context, the above findings may also have implication for the relationship between reading context and desirable information cues for fiction readers. A complex reading context requires a higher level of information cues so that adequate references can be built up from the book to the reading context, hence to the reading needs. Furthermore, the construction of information cues may also need to consider the relative importance of different contextual factors. For example, in a society where individuality is highly valued, psychological contextual factors might play a far more important role than socialisation contextual factors in the formation of readers' needs. Such cultural values might raise greater demands for descriptive information cues than for analytical information cues.

With the evidence and findings obtained from this research, the theoretical model established in chapter 3 based on existing theory and findings can be further developed into the one shown in figure 9.1.

8.4 Practical implications of the research

The findings of this research have implications for various areas of fiction services, particularly fiction processing/retrieval, reading promotion and policy of fiction services.

(1) Implications for fiction processing and retrieval: the research noted that readers' searching patterns remain consistent in different searching environments, at least within a certain period after any changes of the environment. The searching pattern is characterised by an apparent preference for the author searching approach or the category searching approach rather than other searching approaches. The implication of this finding for fiction processing is that to enhance content access to fiction, the development of a detailed classification or categorisation system has priority over the development of an indexing system.
Figure 8.1 A modified model of reading context and the roles of information cues.
This research also demonstrated that representation of merely bibliographic information has little beneficial effect on fiction reading activity, in contrast with the representation of composite and in-depth information cues. The practical indication of this finding is that the general OPAC which provides bibliographical information is unlikely to be helpful for fiction readers.

(2) **Practical implications for reading promotion:** current efforts which aim at the promotion of fiction reading habits are, by and large, underpinned by Goldhor's proposition that when a smaller range of fiction stock is highlighted by guidance devices, this part of the stock will be more frequently used by fiction readers. For example, distribution of booklists, use of bookmarks, specific fiction promotion schemes, highlighted shelving of certain categories, all relate to focusing readers' attention to a narrower range of fiction stock. The potential of in-depth and comprehensive information cues to encourage book selection and book borrowing, and its potential to improve the chance for less popular books to be borrowed suggests that librarians may promote fiction reading with sufficient information cues without having to narrow down readers' choice. This approach perhaps deserves more attention from librarians, in contrast to the other one underpinned by Goldhor's proposition, because constraining the range of selection is, after all, a constraint in itself.

Furthermore, complex information cues, coupled with appropriate representation media can greatly assist readers' decision making. A system with such information cues might be particularly helpful in circumstances when the book itself is not readily available for checking but can be reserved for borrowing, e.g., in the case of interlibrary loan and book borrowing in a mobile library.

(3) **Implication for the policy of fiction services:** the current research also revealed a number of areas of fiction reading activity where librarians' ambitious and/or enthusiastic intervention might not turn out to be cost effective. These areas need to be appreciated by the policy makers of fiction services.
A. Fiction readers' reading tastes do not seem to be easily affected by fiction searching facilities. Intentions that try to upgrade readers' reading tastes, a sense of professional mission still held by some librarians, is perhaps too ambitious, if not harmful.

B. Information cues, as detailed as those in the present research, are not adequate for the purpose of increasing readers' subjective feeling of well being. The reason seems to lie in the fact that they did not improve the match between the book and the reader's reading tastes. Matching the book and the reader, as Nell (1988) noted is a very complex process. Fiction services that do not take this process into consideration, are likely to be ineffective in enhancing readers' satisfaction levels with the selected books.

C. Readers' cognitive change does not seem to be affected by the provision of information cues with educative functions, e.g., information about the author's view of world and life or his/her political views, information about the abstract theme of the book. The variable does not seem to relate with other variables identified by this research, e.g., the match of the book to reading tastes. The practical indication of this finding is that the educative approach in fiction services, as advocated by some librarians, is perhaps not realistic.

9.5 Further research

As a result of this research, a number of related issues came to the fore for further investigation:

(1) This research found that keyword searching is not particularly appealing to fiction readers. This finding is quite contradictory not only to the use of keywords in fiction searching observed by Pejtersen (1992a), but also to the use of keywords in non-fiction searching. Although the result is not totally unexpected, however, the possibility that it was caused by readers' temporary passiveness in adopting new searching methods rather than by a genuine lack of interest in such a searching approach cannot be absolutely excluded. A thorough evaluation of readers' use of keyword searching in comparison with their use of other searching approaches is needed for a firm conclusion.
(2) This research indicated that readers' subjective feeling of well-being during the reading process related significantly to the conformity of their borrowing with their general reading tastes, but information cues constructed in this research had little effect on the latter variable. Whether other information cues might affect this variable is not yet known and is worth special exploration.

(3) This study identified two groups of readers who contrast with each other in their searching habits: those who by habit predominantly use the author searching approach and those who predominantly use the category searching approach. Do these two groups also differ significantly in other respects of fiction reading activity? Will information cues have different effects on these two groups? The answer to the first question might lead to the establishment of a reader typology and the answer to the second question may lead to a better understanding of the effect of information cues on fiction reading activity. An exploratory study is needed for the first question and an experimental study which employs factorial experimental models and which applies more powerful data analysis methods (e.g., ANOVA or MANOVA) is needed for the second question.
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APPENDIX I

DATA COLLECTION INSTRUMENTS

1. THE QUESTIONNAIRE
2. THE OBSERVATION/INTERVIEW SCHEDULE
3. A SAMPLE OF THE LOOSE FIELD NOTES
Please answer this questionnaire AFTER you finish reading the book and return it to the librarian with the book.

Please circle ONE of the number opposite the reply that is most appropriate to you, or tick in ONE OR MORE boxes as applied.

1. How well did you know this book before you saw it in the computer system?

   You had read a book review of it 1
   You had heard of it from other people or seen it from an advertisement 2
   You didn't know this book but you had read other books by this author 3
   You were not aware of the existence of this book but you knew of its author or publisher 4
   You didn't know anything about it 5

2. When did you make your decision to borrow this book?

   when you browsed through the computer system 3
   when you browsed on the shelf after using the system 2
   before you saw it in the computer system 1

3. Which parts of the information provided by the computer attracted you to borrow this book?

   (tick as many as applied)
   title
   author's name
   publisher
   keywords
   summary of the story
   comments
   information about the author
4. What had you thought about the possibility of this book being enjoyable to read when you saw it in the computer?

- definitely: 5
- very possible: 4
- quite possible: 3
- probably: 2
- might: 1

5. How often have you read books by this author before?

- very often: 1
- often: 2
- occasionally: 3
- seldom: 4
- never: 5

6. How often have you read fiction of this category before?

- very often: 1
- often: 2
- occasionally: 3
- seldom: 4
- never: 5

7. How often have you read books about this sort of hero/heroine before?

- very often: 1
- often: 2
- occasionally: 3
- seldom: 4
- never: 5

8. How often have you read books set in this location before?

- very often: 1
- often: 2
- occasionally: 3
- seldom: 4
- never: 5
9. How often have you read books written in the same style before?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>very often</td>
<td>1</td>
</tr>
<tr>
<td>often</td>
<td>2</td>
</tr>
<tr>
<td>occasionally</td>
<td>3</td>
</tr>
<tr>
<td>seldom</td>
<td>4</td>
</tr>
<tr>
<td>never</td>
<td>5</td>
</tr>
</tbody>
</table>

10. How much of the book have you read?

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>6</td>
</tr>
<tr>
<td>Three quarters</td>
<td>5</td>
</tr>
<tr>
<td>Half</td>
<td>4</td>
</tr>
<tr>
<td>Less than half</td>
<td>3</td>
</tr>
<tr>
<td>Only a few pages</td>
<td>2</td>
</tr>
<tr>
<td>Zero</td>
<td>1</td>
</tr>
</tbody>
</table>

If you have read none or only a few pages of this book, then you do not need to do the rest of the questionnaire. Thank you very much for your co-operation.

11. In the future, how many books of the following types would you like to read?

Please circle the number under one of the five categories which applies AMAP-as many as possible, M-many, S-some, F-few, N-none

<table>
<thead>
<tr>
<th>Type</th>
<th>AMAP</th>
<th>M</th>
<th>S</th>
<th>F</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. books by this author</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>B. books of this category</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>C. books about the same type of hero/heroine</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>D. books set in the same location</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>E. books in the same writing style</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
12. To what extent do the following descriptions appropriately describe your reading of this book

<table>
<thead>
<tr>
<th>Description</th>
<th>False</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. It makes you relaxed</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>B. It makes you thoughtful</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>C. It helps you with your personal problems</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>D. It improves your knowledge</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>E. It helps you understand people better</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>F. It wastes your time</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

13. How much have you enjoyed this book?

<table>
<thead>
<tr>
<th>Enjoyment</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very much</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Didn't enjoy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. When reading the book how would you rate your emotional involvement with it on the following scale?

<table>
<thead>
<tr>
<th>Involvement</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotionally involved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completely indifferent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. When reading the book how would you rate your commitment of attention to it on the following scale?

<table>
<thead>
<tr>
<th>Attention</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>So involved with the story that you could not put it down</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easily able to leave the book and do other things</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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16. How strongly would you recommend this book to others?

<table>
<thead>
<tr>
<th>Strongly Recommend</th>
<th>Not Recommend</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 4 3 2 1</td>
<td></td>
</tr>
</tbody>
</table>

17. Might you like to read this book again in the future?

<table>
<thead>
<tr>
<th>Definitely Yes</th>
<th>Definitely No</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 4 3 2 1</td>
<td></td>
</tr>
</tbody>
</table>

18. At the moment when you fill in this questionnaire, how much of the story could you still recall?

<table>
<thead>
<tr>
<th>Almost All Details of Its Plots</th>
<th>Little</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 4 3 2 1</td>
<td></td>
</tr>
</tbody>
</table>

19. How much of the following aspects have you learned through borrowing and reading this book?

<table>
<thead>
<tr>
<th>A. Culture and People's Life in the Book's Setting</th>
<th>Little</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 4 3 2 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. History Events/Facts</th>
<th>Little</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 4 3 2 1</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>C. Something About the Author's Life</th>
<th>Little</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 4 3 2 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D. The Author's View of Life</th>
<th>Little</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 4 3 2 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E. The Author's Writing Style and Other Literary Knowledge</th>
<th>Little</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 4 3 2 1</td>
<td></td>
</tr>
</tbody>
</table>
20. Would you like to make any comments on this book?*

This is the end of the questionnaire. Thank you very much for your help.

* Readers’ responses to this question were marked on the following scale. The scale is not shown on the questionnaire distributed to the subjects.
1=No comments
2=General impression about the book
   (e.g., this is an excellent book)
3=Brief comments on the concret aspects of the book
   (e.g., the author use rough language)
4=Detailed comments on the concret aspects
5=Comments on the theme of the book
THE OBSERVATION SCHEDULE

Date: ________________

Background Information of the subject:

1. The subject's group number: 1 2 3 4 5 6

2. Gender: Female 1
               Male 2

3. Education:
   College and above 1
   College and below 2

4. General motivation for reading fiction:
   For pleasure only
   For curiosity
   For knowledge
   For study or work
   Help with personal problem
   Other

5. Frequency of using the library
   more than once a week 1
   once a week 2
   once every two weeks 3
   once a month 4
   less than once a month 5
Recording of searching behaviour:

6. Searching paths

<table>
<thead>
<tr>
<th>searching paths</th>
<th>frequency</th>
<th>details</th>
</tr>
</thead>
<tbody>
<tr>
<td>category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>keywords</td>
<td></td>
<td></td>
</tr>
<tr>
<td>authors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>titles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>publishers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>prize-winner</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. number of items printed or copied: 1

subject's comments:

8. Readers' general reaction to the system

- enthusiastic: 5
- interested: 4
- indifferent: 3
- doubtful: 2
- against: 1

---

1 Enthusiastic is assigned to readers who made enthusiastic comments on the system. Interest is assigned to readers who made serious use of the system, with intention to borrow books from it. Indifference is assigned to readers who use the system with obvious testing attitude, without intention to really borrow books from it. Doubtful is assigned to readers who asked for more information except that provided by the system to aid their selection. Against is assigned to readers who clearly state that they prefer shelf browsing.
9. Readers’ confidence in book selection

- selected (rejected) books with great confidence: 5
- selected (rejected) books with confidently: 4
- selected (rejected) books with some confidence: 3
- selected (rejected) books with little confidence: 2
- not able to make decision: 1

10. Readers’ reliance on their own reading experience for book selection

- only browsed records of books by favourite authors: 1
- only browsed records of books by liked authors: 2
- only browsed records of books by authors know to them: 3
- excluded books by certain author(s): 4
- did not have any restrictions: 5

**Recording of shelf browsing behaviour**

11. What part of the books did he have further examination?

- cover: □
- blurb: □
- text: □
- publication data: □

12. Attitudes towards books not on shelf

- reserved them all: 5
- reserved some of them: 4
- took other books by the same author: 3
- planned to check them next time: 2
- did not bother: 1

13. Number of books borrowed: □

---

2 Great confidence is assigned to readers who select or reject books with clearly stated reasons. Confidence is assigned to readers who make their selection without hesitation but who cannot give definite reasons. Some confidence is assigned to readers who make their selection with slight hesitation. Little confidence is assigned to readers who are not certain about their selection before they check the book per se. Cannot make decision is assigned to readers who cannot make selection and quickly abandon the search.
Subject's comments

Details of the borrowed books

14. Titles of these books:

<table>
<thead>
<tr>
<th>(for coding only)</th>
<th>type of issues</th>
<th>number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>popular titles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unpopular</td>
<td></td>
</tr>
</tbody>
</table>

15. Issues of books by different authors

<table>
<thead>
<tr>
<th>(for coding only)</th>
<th>type of issues</th>
<th>number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>books by very popular authors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>books by popular authors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>book by unpopular authors</td>
<td></td>
</tr>
</tbody>
</table>

16. Issues of books with positive literary comment and those with negative comments

<table>
<thead>
<tr>
<th>positive</th>
<th>negative</th>
</tr>
</thead>
</table>
17. Issue of different categories

- science fiction
- horror
- romance
- westerns
- detectives & spy
- gender issue fiction
- family fiction
- bildungsromance
- psychological fiction
- mental problem
- community fiction
- crime
- war novels
- political fiction
- occupational fiction
- biographical fiction
- historical fiction
- class fiction

(For coding only)

18. Number of actual requests for interlibrary-loan and reservations
A SAMPLE OF THE LOOSE FIELD NOTES

Case number: 189
Group membership: experimental group 2

A middle-aged female reader. Was checking the "General novels" shelves when approached. No books in her hands.

Happily agreed to use the system. "Yes, my love, I would do whatever to help."

Shown version 3 of HMEF. Looked keenly at the screen (not the mouse) and commented: "Oh, lovely".

Chose to do the searching with the observer and was shown the six access points. "I read all sorts of things to pass the time. I don't care much about authors. Let's check categories". When thinking of categories to search, said: "I don't like crime fiction. I don't read science fiction. Let's check detective fiction."

Quickly skipped all records of Jeffrey Archer's books. I've read all his books." and then pause to read the record of Beryl Bainbridge's Watson's Apology. "No, not this one. I don't like things happened too far ago (the story was set in 1844, which is mentioned in the summary). No, not this one (Charles Wyndham's No love for Miss Stent, the character of which is listed in the keywords), I don't like stories of nurses". At Robert Barnard's A Fatal Attachment, moved closer to the screen and read. "Sounds interesting." Checked book review comments. Lift her hand and pointed to the lines with one finger. "Yes I'd like to read this one." Flipped quickly Dick Francis's books, giving no comments. At Frederick Forsyth's No Comebacks: collected short stories: "No, no short stories", but then at his The Fourth Protocol "I haven't read this one". Checked the comments. "Sounds good. Let's print this one as well." Then quickly skipped records of Ruth Rendell's books. "I think I've read all Ruth Rendell's book." Pause to read Bernice Rubens's Mr. Wakefield's Crusade, smiled, "No." "Right, let me check these two books."

Both of the books were on shelves. Looked at the cover and then read the blurbs. Took both.
APPENDIX 2

INSTRUMENTS FOR EVALUATING THE FACE VALIDITY OF THE MEASUREMENTS

1. COVER LETTER
2. EVALUATORS
3. EVALUATING SHEET
Dear evaluator

I am a research student at the Department of Information and Library Studies, Loughborough University. I am presently doing a project under the supervision of Dr. Ann O'Brien, which aims at testing the potential effect of a hypertext searching and browsing system on fiction reading activity of public library readers. An experimental fiction catalogue, with 410 records, including bibliographical data, summaries, reviews and author information has been developed with HyperCard. The field work will be conducted in Loughborough Library from September to February. Observation and a self-administered questionnaire will be applied as the major techniques to collect data.

As I am going to test the measurement validity of the dependent variables with leading experts' evaluation, I would feel very grateful and if you could be one of the evaluators. If you would like to help, could you please read the enclosed brief description of the experiment, the questionnaire and the observation/interview schedule, and then rate the relevance of each item of the questionnaire and observation/interview schedule on the evaluation sheet?

I would be very pleased and grateful if you wish to see and use the experimental catalogue and also have a talk with me. If this is not convenient, could you please post the evaluation sheet to me as soon as possible?

Thank you very much.

Yours sincerely,

Liangzhi Yu
The Face validity Evaluators

**Margaret Evans** Professor, Head of the Department of Information and Library Studies, Loughborough University. Major works on fiction librarianship includes:

**Peter H Mann** Former director of Library and Information Statistic Unit. Major works in the area includes:

**John Sumsion** Director of Library and Information Statistic Unit, former Registrar of Public Lending Right. Major works in the area includes:
Evaluating sheet

Please tick in the appropriate relevance box for each item of the questionnaire and the observation schedule. Quest refers to items of the questionnaire and Observ refers to items of the observation schedule. For example, tick "very relevant" next to Quest 1 if item 1 of the questionnaire indeed measures the corresponding variables. Please read part 3 of the "Brief Description" - the independent variables and dependent variables again if necessary.

<table>
<thead>
<tr>
<th>variables</th>
<th>items that measure the</th>
<th>relevance</th>
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<tbody>
<tr>
<td></td>
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<td>very relevant</td>
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<tr>
<td>searching pattern</td>
<td>observ. 6</td>
<td></td>
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<tr>
<td>the use of the system for book selection</td>
<td>observ 8</td>
<td></td>
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<tr>
<td></td>
<td>observ 9</td>
<td></td>
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<td></td>
<td>observ 11</td>
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<td>observ 12</td>
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<tr>
<td></td>
<td>quest 2</td>
<td></td>
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<td></td>
<td>quest 3</td>
<td></td>
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<tr>
<td></td>
<td>quest 4</td>
<td></td>
</tr>
<tr>
<td>readers' reliance on their own experience for book selection</td>
<td>observ 11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>quest 1</td>
<td></td>
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<tr>
<td>distribution of readers' borrowing</td>
<td>observ 14</td>
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<td></td>
<td>observ 15</td>
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<td>observ 16</td>
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<td></td>
<td>observ 17</td>
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<td>the amount of selection and borrowing</td>
<td>observ 7</td>
<td></td>
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<td></td>
<td>observ 13</td>
<td></td>
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<tr>
<td></td>
<td>observ 18</td>
<td></td>
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<tr>
<td>variables</td>
<td>items that measure the variable</td>
<td>relevance</td>
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<td></td>
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<td>very</td>
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<tr>
<td>conformity of the book selection</td>
<td>quest 5</td>
<td></td>
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<tr>
<td>to readers' reading tastes</td>
<td>quest 6</td>
<td></td>
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<td></td>
<td>quest 7</td>
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<td>quest 8</td>
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<td>quest 9</td>
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<td>readers' emotional experience</td>
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<tr>
<td>during the reading (subjective</td>
<td>quest 11A</td>
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<tr>
<td>feeling of well being)</td>
<td>quest 11B</td>
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<tr>
<td></td>
<td>quest 11C</td>
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<tr>
<td></td>
<td>quest 11D</td>
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<td></td>
<td>quest 11E</td>
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<td></td>
<td>quest 18</td>
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<td>readers' cognitive experience</td>
<td>quest 12A</td>
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<tr>
<td></td>
<td>quest 12B</td>
<td></td>
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<tr>
<td></td>
<td>quest 12C</td>
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<td></td>
<td>quest 12D</td>
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<td></td>
<td>quest 12E</td>
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<td></td>
<td>quest 12F</td>
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<td></td>
<td>quest 19A</td>
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<tr>
<td></td>
<td>quest 19B</td>
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<td></td>
<td>quest 19C</td>
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<td></td>
<td>quest 19D</td>
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<td></td>
<td>quest 19E</td>
<td></td>
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<tr>
<td></td>
<td>quest 20</td>
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</tbody>
</table>
APPENDIX 3
CRITERION INSTRUMENT FOR THE CONCURRENT VALIDITY OF THE MEASUREMENTS IN THE QUESTIONNAIRE
Quiz About Your Book

1. Who is the author of this book?
2. Where did the story happen?
3. When did the story happen?
4. Did you learn any new expression or phrases from the book?
5. What is the main characteristics of the author's writing style?
6. Did you like the author's language skill? Why?
7. What characters of the hero/heroine impressed you most?
8. Which plot of the story impressed you most?
9. Could you roughly summarize the theme of the book?
10. What do you think is the most successful aspect of the book?
11. In which of the following box would you put the book? (please circle the appropriate letter)

<table>
<thead>
<tr>
<th>commercial success</th>
<th>artistic success</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>commercial &amp;</td>
<td>commercial but not</td>
</tr>
<tr>
<td>artistic success</td>
<td>artistic success</td>
</tr>
<tr>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>commercial failure</td>
<td>commercial and</td>
</tr>
<tr>
<td>but artistic success</td>
<td>artistic success</td>
</tr>
</tbody>
</table>
APPENDIX 4

THE FICTION PROCESSING SCHEME FOR HMEF
Dimension 1: Genre

Fantasy

Science fiction
  Space and outside world
  Genetic engineering
  Automation
  Nuclear
  Multi-dimension
  Ecology
  History

Utopia Literature

Horror
  Ghost Story
  Vampire story
  Supernatural forces(witches, apparition, mind-reading, etc.)
  Others

Mythical world fantasy

Fairy tale

Romanticism

Pastoral fiction

Romance
  pornography
  gothic romance
  Historical romance
  upper class romance
  middle class romance
  Lower class romance

Westerns

Detective Story
  Police detective
  private detective
  amateur detective
Espionage fiction
Financial intrigue
political intrigue

Adventure
picaresque
Adventure in deserted area
Adventure in America
Adventure in Africa
Adventure in Far East
Adventure in Middle East
Adventure in South America
Adventure in other area

Realism
social fiction
crime fiction
gender issue fiction
class fiction
colonial fiction
racial fiction
occupational fiction
war novels
political novels
religion novels
arising social problem fiction, e.g. homosexual

community fiction
Family Life (including family chronicle)
psychological fiction
bildungsroman

History
biographical fiction
historical fiction

Strip Cartoons

Experimental fiction
### Samples of Dimension 2: Content

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<thead>
<tr>
<th>theme/subject</th>
<th>atheism</th>
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<tbody>
<tr>
<td>abandonment</td>
<td>atomic threat</td>
</tr>
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<td>abnormality</td>
<td>authoritarianism</td>
</tr>
<tr>
<td>abolition of slavery</td>
<td>autonomy</td>
</tr>
<tr>
<td>aborigine identity</td>
<td>education</td>
</tr>
<tr>
<td>aboriginal culture</td>
<td>faith</td>
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<tr>
<td>abortion</td>
<td>feminist</td>
</tr>
<tr>
<td>absolute monarchy</td>
<td>generation gap</td>
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<tr>
<td>abstinence</td>
<td>government</td>
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<tr>
<td>abused children</td>
<td>hedonism</td>
</tr>
<tr>
<td>acculturation</td>
<td>homosexuality</td>
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<td>action</td>
<td>justice</td>
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<td>addiction</td>
<td>law and order</td>
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<td>AIDS</td>
<td>love</td>
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<tr>
<td>alchemy</td>
<td>manners of class</td>
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<tr>
<td>alcoholism</td>
<td>military life</td>
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<tr>
<td>alienation</td>
<td>moralilty</td>
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<td>nostalgia</td>
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<tr>
<td>altruism</td>
<td>philosophy of life</td>
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<tr>
<td>ambition</td>
<td>political corruption</td>
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<tr>
<td>ambivalence</td>
<td>provincialism</td>
</tr>
<tr>
<td>anti-christ</td>
<td>revolution</td>
</tr>
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<td>anti-fascism</td>
<td>rural life</td>
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<td>anti-Nazism</td>
<td>sex</td>
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<td>anti-slavery</td>
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<td>anti-totalitarianism</td>
<td>transport</td>
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<td>anti-utopia</td>
<td>travel</td>
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<td>war</td>
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<td>anxiety</td>
<td>western value</td>
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<td>apartheid</td>
<td>wild life</td>
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<td>apoliticism</td>
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<td>apprenticeship</td>
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<td>aristocracy</td>
<td></td>
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<td>arms</td>
<td></td>
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<td>army life</td>
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<td>arranged marriage</td>
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<td>art</td>
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<tr>
<td>assassination</td>
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<tr>
<td>assimilation</td>
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</table>

### content:characters

- abandoned woman
- actors
- actress
- adolescents
- alien beings
- angry young men
- archaeologists
- aristocrat
content: writing technique

adaptation
aestheticism
ambiguity
anti-modernism
anti-novel
anti-realism
avant-guard
chronicle
classical
collage
comedy
dialect
diary
elegance
episodic
evocative
existentialism
expressionism
Freudian
impressionism
mysticism
naturalism
nominalism
pathos

content: setting (time)

prehistoric period
ancient period
500-1100 (dark age)
1100-1399 (medieval period)
1400-1500
1500-1600
1600-1700
1800-1900
1900-1920
1920-1940
1940-1950
1950-1960
1960-1970
1970-1980
1980-1990
1990-2000

current: setting (geography)

Africa
alien worlds
antarctic
Australia
Balkan Peninsula
Belgium
Canada
caves
content: setting (historical background)
APPENDIX 5

THE INSTRUMENT FOR THE FIRST EVALUATION OF HMEF
### Part 1. Observation

1. **Strategies of searching used:**
   - Browse 1
   - Search 2

2. **Has evaluator changed to the alternative strategy?**
   - yes 1
   - no 2

3. **Does the evaluator return to previously chosen strategy?**
   - yes 1
   - no 2

4. **How many minutes has the evaluator spent on each of the searching strategy?**

5. **viewing of supplementary information:**

<table>
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<tr>
<th></th>
<th>comments</th>
<th>author</th>
<th>glossary</th>
<th>citation</th>
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<td>no</td>
<td>yes</td>
<td>no</td>
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### Table: Comments, Author, Glossary, Citation

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6. **Time spent on each book record:**

<p>| | | | | | | | | |</p>
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</tr>
</tbody>
</table>
7. Duration of the whole session
   Start time:
   Finish time:

8. number of invalid actions occurred?

\[\text{\textsuperscript{1}}\text{ Actions which lead the user to an non-destination node and which does not incur further actions.}\]
Part 2. Pre-test Questionnaire

1. Are you a
   female 1
   male 2

2. Are you a
   native English speaker 1
   foreigner 2

3. Have you used an Apple Macintosh before?
   often 1
   occasionally 2
   never 3

4. Have you used HyperCard before?
   often 1
   occasionally 2
   never 3

5. Do you read English fiction?
   very often 1
   often 2
   occasionally 3
   seldom 4
   never 5

6. Do you have a favourite British author? Please give the name if you have.
   yes 1
   no 2

7. Do you read book reviews?
   very often 1
   often 2
   occasionally 3
   seldom 4
   never 5

8. What do you think about book reviews if you have ever read one?
   relevant and object 1
   biased 2
   not relevant 3

9. Do you have any preference for fictional types. Please specify if you have.
   yes 1
   no 2
10. If you seldom or never read fictional works, what do you think is the major reason?

<table>
<thead>
<tr>
<th>Reason</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>You don't like them</td>
<td>1</td>
</tr>
<tr>
<td>You don't have time.</td>
<td>2</td>
</tr>
<tr>
<td>You have difficulty in finding them</td>
<td>3</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
</tr>
</tbody>
</table>
Part 3. Evaluation questions

1. Please find two books about the contradictions in Middle-East
   (1)
   (2)

2. Please list two books written by Peter Dickinson.
   (1)
   (2)

3. Please find a book set in Oxford

4. Please find out the author of the book entitled The Furies

5. Please find one book written in a style of symbolism?

6. If you have time, which book(s) in this prototype would you like to read?
   (please tick in the appropriate boxes)

   001
   002
   003
   004
   005
   006
   007
   008
   009
   010
   011
   012
   013
   014
7. Which of the following factors determine your decision to question 6 (which books would you like to read if you have time?)

<table>
<thead>
<tr>
<th></th>
<th>comment</th>
<th>abstract</th>
<th>picture</th>
<th>author inf.</th>
<th>your own knowledge about the book or the author</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>002</td>
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<td>009</td>
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<td></td>
</tr>
</tbody>
</table>
What do you think about this prototype in general?

- It is very helpful  1
- It is helpful      2
- OK                3
- It is not helpful 4

280
8. Have you found the instructions difficult to understand?
   Very difficult 1
   difficult 2
   quite easy 3
   very easy 4

9. Have you found it difficult to find your way around this prototype?
   very difficult 1
   difficult 2
   quite easy 3
   very easy 4

10. Do you think the typography is too small to read?
    Yes 1
    It's small, but readable 2
    It's quite OK 3
APPENDIX 6

THE INSTRUMENT FOR THE SECOND EVALUATION OF HMEF
1. Please list three fictional works by British authors you have ever read:
   (1) 
   (2) 
   (3) 

2. Please try to find out whether the books above are included in this system
   yes no
   (1)  ( ) ( )
   (2)  ( ) ( )
   (3)  ( ) ( )

3. Please give the name of one of the British authors whom you have ever heard about, then answer question 4-5
   _____________________________

4. Please find out how many of his/her books are included in this system, if the name doesn't appear in this system, put 0 in the bracket (  )

5. Are there any other writers in this system who write in a similar way to this author?
   If the author you gave in question 3 is not included in this system, please choose no.
   yes 1
   no  2

6. Please find out how many books in this system are about "wife abuse"
   [    ]

Please find the book entitled "Offshore" and then answer question 7-9

7. What is this book about as far as you can perceive from the information provided:
   _____________________________
8. Where is the story set as far as you can see from the information provided:


9. Might you like to read it if you have time:
   Yes 1
   No 2
   Don't Know 3

Please search and browse the following titles, including comments on them, information about their author, then answer questions 10-18

Heliconia Summer by Aldiss Brian
A Woman of My Age by Bawden, Nina
The Lost Father by Warner, Marina

10. Have you found the instructions on the screen about how to use the system difficult to understand
   very difficult 1
difficult 2
ok 3
easy 4
very easy 5

11. How clearly do you think the names of buttons are referring to the information behind it?
   very clear 1
clear 2
ok 3
not clear 4
misleading 5
12. What do you think of the amount of information provided in the summary of the story

- much too much 1
- too much 2
- alright 3
- a bit too little 4
- much too little 5

13. What do you think about the length of the comments:

- much too long 1
- a bit too long 2
- just alright 3
- a bit too short 4
- much too short 5

14. How relevant have you found the comments

- very relevant 1
- relevant 2
- ok 3
- not relevant 4
- misleading 5

15. Is the language of the summary easy to understand

- very easy 1
- easy 2
- OK 3
- difficult 4
- very difficult 5
16. Is the language of the comments easy to understand

<table>
<thead>
<tr>
<th>Difficulty</th>
<th>Rating</th>
</tr>
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<tbody>
<tr>
<td>very difficult</td>
<td>1</td>
</tr>
<tr>
<td>difficult</td>
<td>2</td>
</tr>
<tr>
<td>OK</td>
<td>3</td>
</tr>
<tr>
<td>easy</td>
<td>4</td>
</tr>
<tr>
<td>very easy</td>
<td>5</td>
</tr>
</tbody>
</table>

17. Does the information provided about these books cover all the aspects you would like to know before you decided to borrow it?

<table>
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<tr>
<th>Response</th>
<th>Rating</th>
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<tbody>
<tr>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
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</tbody>
</table>

18. If the answer is no, what else would you like to know?

19. How easy is the system to use in general

<table>
<thead>
<tr>
<th>Difficulty</th>
<th>Rating</th>
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</thead>
<tbody>
<tr>
<td>very difficult</td>
<td>1</td>
</tr>
<tr>
<td>difficult</td>
<td>2</td>
</tr>
<tr>
<td>OK</td>
<td>3</td>
</tr>
<tr>
<td>easy</td>
<td>4</td>
</tr>
<tr>
<td>very easy</td>
<td>5</td>
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20. How quickly have you found the system response to your searching enquiry

<table>
<thead>
<tr>
<th>Response</th>
<th>Rating</th>
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<tbody>
<tr>
<td>very fast</td>
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<tr>
<td>fast</td>
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<tr>
<td>acceptable</td>
<td>3</td>
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<tr>
<td>slow</td>
<td>4</td>
</tr>
<tr>
<td>very slow</td>
<td>5</td>
</tr>
</tbody>
</table>
21. Have you find it difficult to find your way around the system?

very difficult 1
difficult 2
OK 3
easy 4
very easy 5

22. How helpful have you found the system?

very helpful 1
helpful 2
OK 3
not helpful 4
APPENDIX 7

TITLES INCLUDED IN THE EXPERIMENTAL SYSTEM
Aburish, Said K. One Day I Will Tell You
Ackroyd, Peter Chatterton
Ackroyd, Peter Hawksmoor.
Ackroyd, Peter English music
Ackroyd, Peter First light.
Adams, Douglas Mostly harmless.
Adams, Douglas Life; the universe; and everything
Aiken, Joan The haunting of Lamb House.
Aiken, Joan A fit of shivers : tales for late at night.
Aldiss, Brian Enemies of the System.
Aldiss, Brian Helliconia Summer
Aldiss, Brian The Malacia Tapestry
Aldiss, Brian Non-stop
Aldiss, Brian Helliconia winter
Allerton, Jay Moonshears
Amado, Jorge Showdown
Amis, Kingsley The folks that live on the hill : a novel.
Amis, Kingsley The bottle factory outing
Amis, Kingsley Money: a suicide note
Amis, Kingsley London fields.
Amis, Kingsley We are all guilty.
Amis, Martin Einstein's monsters.
Amis, Martin Time's Arrow
Amis, Kingsley The old devils : a novel.
Amis, Kingsley Difficulties with girls : a novel.
Andrews, Lucilla The Phoenix syndrome
Andrews, Lucilla Hospital Girls
Andrews, Lucilla Edinburgh Excursion
Angadi, Patricia Playing for Real
Arbor, Jane The Price of Paradise
Arbor, Jane Late Rapture
Arbor, Jane Losr Yesterday
Arbor, Jane By Yet Another Door
Archer, Jeffrey Honor among thieves : a novel.
Archer, Jeffrey A matter of honor.
Archer, Jeffrey As the crow flies
Armstrong, Lindsay The Director's Wife
Armstrong, Lindsay One More Night
Armstrong, Lindsay Leave Love Alone
Armstrong, Lindsay A Dangerous Lover
Bainbridge, Beryl The bottle factory outing
Bainbridge, Beryl The dressmaker
Bainbridge, Beryl An awfully big adventure
Bainbridge, Beryl Young Adolf
Bainbridge, Beryl Watson's apology
Baird, Jacqueline Guilty Passion
Baird, Jacqueline Passionate betrayal
Ballard, J.G. War Fever
Ballard, J.G. Empire of the Sun
Ballard, J.G. Running Wild
Ballard, J.G. The Drought
Ballard, J.G. The Drowned World
Banerji, Sara Shining Agnes
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<th>Author</th>
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<tr>
<td>Banville, John</td>
<td>The Book of Evidence</td>
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<td>Banville, John</td>
<td>Kepler, a novel</td>
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<tr>
<td>Barker, Pat</td>
<td>Blow your house down.</td>
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<tr>
<td>Barker, Margaret</td>
<td>Hand in Hand</td>
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<td>Barker, A.L.</td>
<td>John Brown's Body</td>
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<td>Union Street.</td>
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<td>Barker, Pat</td>
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<td>All for Love</td>
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<td>Barker, A.L.</td>
<td>Element of Doubt, ghost stories</td>
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<tr>
<td>Barker, A.L.</td>
<td>The Woman who Talked to Herself</td>
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<tr>
<td>Barnard, Robert</td>
<td>The skeleton in the grass.</td>
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<td>Barnard, Robert</td>
<td>A city of strangers.</td>
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<tr>
<td>Barnard, Robert</td>
<td>A scandal in Belgravia.</td>
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<td>Barnes, Julian</td>
<td>Staring at the sun.</td>
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<td>Barnes, Julian</td>
<td>The porcupine</td>
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<td>Barnes, Julian</td>
<td>Talking it over : a novel.</td>
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<td>Flaubert's parrot.</td>
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<td>Barstow, Stan</td>
<td>Joby</td>
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<td>Barstow, Stan</td>
<td>A Brother's Tale</td>
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<td>Barstow, Stan</td>
<td>Give Us This Day</td>
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<td>Barstow, Stan</td>
<td>Next of Kin</td>
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<td>Family Money</td>
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<tr>
<td>Bawden, Nina</td>
<td>A little Love, A little learning</td>
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<tr>
<td>Bawden, Nina</td>
<td>Circles of Deceit</td>
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<tr>
<td>Bawden, Nina</td>
<td>The Ice-house</td>
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<tr>
<td>Bawden, Nina</td>
<td>A woman of my age</td>
</tr>
<tr>
<td>Benson, Peter</td>
<td>Riptide</td>
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<tr>
<td>Berger, John</td>
<td>Lilac and flag</td>
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<td>Black, Edwina</td>
<td>Dark Parlour</td>
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<td>Blair, Janey</td>
<td>Onus of Love</td>
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<td>Boll, Heinrich</td>
<td>A soldier's legacy.</td>
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<td>Mars.</td>
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<td>An ice-cream war</td>
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<td>Boyd, William</td>
<td>Stars and bars.</td>
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<td>Boyd, William</td>
<td>The new confessions.</td>
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<td>Boylan, Clare</td>
<td>Holy Picture</td>
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<td>Bradbury, Malcolm</td>
<td>Rates of Exchange</td>
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<td>Doctor Criminale</td>
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<td>The theory of war</td>
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<td>Bragg, Melvyn</td>
<td>The Second Inheritance</td>
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<td>Bragg, Melvyn</td>
<td>A Time to Dance</td>
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<td>Josh Lawton</td>
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<tr>
<td>Brett, Simon</td>
<td>Mrs, presumed dead.</td>
</tr>
<tr>
<td>Brett, Simon</td>
<td>A nice class of corpse.</td>
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<td>Brookner, Anita</td>
<td>Lewis Percy</td>
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<tr>
<td>Brookner, Anita</td>
<td>Misalliance</td>
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<tr>
<td>Brookner, Anita</td>
<td>Brief Lives</td>
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</table>
Brookner, Anita  Province
Brookner, Anita  A Closed Eye
Brookner, Anita  Fraud
Burgess, Anthony  The end of the world news
Burgess, Anthony  Any old iron
Burgess, Anthony  Little Wilson and Big God
Burgess, Anthony  Pianoplayer
Burnett, June  When the Singing Stops
Byatt, A.S.  Angels & Insects
Byatt, A.S.  Possession
Carr, Philippa  The Drop of the Dice
Carter, Angela  Nights at the circus.
Carter, Angela  wise children
Cartland, Barbara  A Game of Love
Cartland, Barbara  Temptation for a Teacher
Cartland, Barbara  No Escape from Love
Cartland, Barbara  Seek the Stars
Cartland, Barbara  Heaven in Hong Kong
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