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A DESCRIPTIVE MODEL OF THE DECISION MAKING PROCESS OF BUYERS OF BOOKS

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Introduction

In descriptive models of non-routine buying behavior, a consumer is traditionally regarded as an information processing system who solves a choice problem by passing through a sequential hierarchical decision making-process consisting of six phases: problem recognition, information acquisition, information evaluation, choice, purchase and post-purchase evaluation. This hierarchical model is a central part of all important non-economic models of consumer behavior, developed in the sixties and seventies (see for an overview Schiffman and Kanuk, 1991). These models also consists of several variables which indirectly influence the decision-making process. Many of these variables such as lifestyle and social class influence more the division of the available income on broad product classes than that they determine the allocation within them. Buyers of literature, for example, are well educated and buying and reading books can be characteristic for their life styles (see for instance Leemans, 1989). We will not discuss in this paper variables, which indirectly influence the decision-making process: we will discuss the modelling of the decision-making process itself. We will deal only with choice within one product class: i.e. books belonging to the category of fiction. Furthermore, we will not consider books bought as a present, as the donation process requires a different model.

In most cases a linear additive decision rule is assumed to describe adequately the evaluation of alternatives which results in the final

choice. We will describe the sequential hierarchical decision making-process and the linear additive decision rule in the next section.

In the third section we will argue that for consumers with limited information processing capacities, buying books is in most cases a choice problem which is too complex to handle in one sequential hierarchical decision-making process, employing a linear decision rule. We therefore suggest a decision making-model in which a buyer of books uses several interim evaluations and simplifying decision rules or choice heuristics. Many choice heuristics simplify the choice problem by reducing the number of alternatives on the basis of a limited amount of information. The sequential application of choice heuristics affects however not the quality of decision-making.

Alternative titles considered acceptable for further evaluation can be expected to occur in a consumer's evoked set. We will go into and explore the categorization process buyers of books go through and the concept of evoked sets.

We hold the view that a book can be regarded as a bundle of attributes and that the evaluation of alternative titles is in fact an sequential evaluation of attributes. Information on attributes of books can be evaluated in several ways. The linear additive decision rule is an example of a compensatory decision rule. Choice heuristics belong to another class of non-compensatory evaluation rules. We will deal with attributes and the information evaluation process buyers of books go through in more detail in the fourth section.

Sequential Hierarchical Models of Consumer Decision-making

From a cognitive point of view, a buyer of books is an information processing system who solves a choice problem when he purchases a title by passing through a sequential hierarchical process of decision making consisting of the following six phases:

1. problem recognition
2. information acquisition
3. information evaluation
4. choice
5. purchase
6. post-purchase evaluation

In this view the decision process starts with problem recognition or the manifestation of a need to read or just possess a book.(1)
Problem recognition occurs when an individual perceives a difference between an ideal state of affairs (i.e. possession of the book which fulfills this need best) and the actual state of affairs (no possession of this book) at any given point in time. It can be activated by arousal of motives - enduring predispositions to strive to attain specific goals. The motives for buying fiction, described in the professional literature or common in the book trade, are unfortunately expressed in rather diffuse and vague terms: children's books are bought because of their educational value and for cultural transfer; literature is meant as relaxation, mental broadening and learning and non-literary fiction is read just for the sake of pleasure. Problem recognition can also be stimulated by external stimuli such as a promotional offer of a title in the book shop or social influences such as a friend who strongly recommends a book.

Not every perceived discrepancy will result in problem recognition: there is a minimum level of perceived difference which must be exceeded before decision making is activated. This threshold is learned and will vary with circumstances. Weber and Fechner's law of the differential threshold, for example, predicts that when mean prices of most books are approximately f 25,00 a discount of f 0,50 is too small to be noticed.

If the buying and "consumption" of a book might satisfy the need, the consumer looks for information about possible alternative titles and their attributes. The initial step is an internal search within memory to determine whether or not enough is known about alternatives to permit some kind of choice. Information as regards books changes very rapidly and therefore knowledge stored in memory very fast becomes outdated, incomplete and inadequate for decision-making. In these circumstances it is likely that information is also acquired from external sources such as reviews, book columns and friends or relatives.

There are individual differences in the propensity to engage in search. Some consumers are more cautious and more willing to reduce the perceived risk of making a wrong choice by the acquisition of information than others. In addition the extent of search is governed by the balance between expected gains (i.e. the expectation of making a better choice) and the behavioral and financial costs of information gathering (Shugan, 1980). The perception of the benefits of additional

information and information seeking costs also differs between consumers and so does the propensity to engage in search.

In the third phase of the decision-making process the information on alternative titles is evaluated. In explaining multi-alternative decision-making two main assumptions are usually made: the decision is made on the basis of overall evaluations of the alternatives and the overall evaluations in turn are based on multiple attributes. Well known examples of evaluation models based on these hypotheses are the subjective expected utility model and Fishbein and Ajzen's (1975, 1980) multi-attribute attitude model. The models can be depicted algebraically as follows:

$$U_j = \sum_{i=1}^n W_i X_{ij} \quad \text{or} \quad A_j = \sum_{i=1}^n E_i B_{ij}$$

Where: U_j = subjective expected utility of alternative title j

W_i = (importance) weight of attribute i

X_i = "score" of alternative j on attribute i

A_j = attitude toward an object (i.e. a particular title)

B_i = the strength of belief i : the score of alternative title j
on attribute i

E_i = evaluation of belief i

n = the number of salient attributes

The subjective expected utility can be considered as the extent in which buying and consuming a particular title satisfies a need. The overall utility of a title depends both on the probability that the title has an attribute i and on the partial utility of attribute i , depicted as X_i . Instead of probabilities, importance weights are frequently used in utility models.

An attitude is regarded by most psychologist as a person's affective reaction to or overall evaluation of an object (see for instance Peter and Olson, 1990). In a multi-attribute attitude model this overall evaluation is based on both salient beliefs and the evaluation of these beliefs. Buyers of books acquire many beliefs about specific titles through their reading experiences and by interpreting information on books. Because of the limited capacity of active memory, only a few

beliefs can be activated and considered at once. These activated beliefs are called salient beliefs.(2)

In both models the application of a linear additive decision rule is presupposed. Furthermore it is (implicitly) assumed that a decision maker is a rational human being, who wants to make the best choice. Under these assumptions the alternative with the highest expected utility or towards which the consumer has the most positive attitude is most likely to be chosen. Following van Raaij (1988) an decision rule can be defined as the process by which an alternative is evaluated. The linear additive decision rule of the model depicted above weighs attributes according to their importance and is compensatory because "poor" attributes may be compensated by "good" ones. It is linear, because the weighted attributes are added in a linear fashion.

Fishbein and Ajzen's theory of reasoned action is an extension of their attitude model. In this model the intention to buy (I) is an function of the attitude toward the act of purchasing (A_{act}) and the subjective norm (SN) with weights w₁ and w₂:

$$I = w_1 A_{act} + w_2 SN$$

The intention to buy is the subjective probability that a consumer will purchase a particular title. It can be measured separately and is considered by both authors as the best predictor of buying behavior. The attitude towards the act of purchasing is established similarly as the attitude towards an object. The only difference is that instead of attributes benefits or risks (consequences of attributes) are evaluated. The subjective norm represents in the model the social influence of persons and is a function of the normative beliefs (NB) that they would approve or disapprove buying a particular title and the motivation to comply (MC) with their opinions. When there are m relevant persons the subjective norm can be written as follows:

$$NB = \sum_{i=1}^m NB_i MC_i$$

In most cases the attitude component is more important for predicting or explaining buying intention than the subjective norm. The influence of the subjective norm however, can be considerable when a consumer has to decide on products with more social risks or which are more difficult to evaluate, such as books.

For years both models and in particular the linear additive decision rule have been very popular. They are still widely used for theoretical study as well as for practical research applications. There are several reasons for the popularity of utility and multi-attribute attitude models and the linear additive decision rule: they provide an elegant framework within which the reasons for behavior of individuals can be studied, are intuitively appealing, sufficiently quantifiable and extremely robust. As Yntema and Torgerson (1961) have shown, the linear model provides an excellent approximation to data even when there are interactions or nonlinear relationships in the data. The most important reason for their popularity however is their excellent predictive power: the linear additive model gives estimations of the importance of attributes, for instance by means of a widely applied technique called conjoint analysis, which can hardly be improved by more complex models of consumer's choice (see for instance Carmone and Green, 1981).

The evaluation phase results in a choice. This can mean that one or more titles are preferred or that all titles considered do not meet minimum standards. In the latter case the decision must be postponed and other titles have to be considered and/or new information has to be gathered. If however the evaluation of alternative titles results in preference for a title, the consumer will probably decide to buy this particular title. Preference for a particular title, however, is not automatically followed by a purchase: the title preferred most, has only the highest subjective probability of being bought. For example unforeseen circumstances such as the non-availability of the desired book can alter the choice.

As a buyer reads the chosen book, he compares expectations with his reading experiences. This post-purchase evaluation results in a certain degree of (dis-)satisfaction, which will have consequences for future buying. Because many purchased books are not read immediately or even not at all, it is likely that post-purchase evaluation does not only take place by reading. Positive reactions from persons in the social surroundings can also contribute to satisfaction. The influence of the confirmation of having made the right choice will vary with the degree to which these persons are considered as experts in the field.

An Alternative Model Containing Phased Evaluations

It can be argued that in spite of its popularity, one sequential hierarchical model containing a linear additive decision rule does not

adequately describe the decision-making process buyers of books go through. Most shortcomings are documented in recent consumer behavior literature and apply to a wider range of products and services.

In a traditional decision-making perspective, a buying problem is recognized and search activity follows to help solve that problem. An orientation focussing solely on prepurchase search is deficient and unable to account for search activity that occurs without a recognized consumption need. Search outside a purchase context can involve a wide range of activities; in the case of books for example browsing in a book shop and reading book reviews. Limiting the study of search to prepurchase settings may only assess a subset of consumer's total search activity and underestimate the amount of knowledge consumers have at their disposal when making a purchase. This provides a possible explanation of the seeming lack of information search of impulsive buying decisions. Consumers engage in this ongoing search (Bloch *et al.*, 1986) for building a bank of product information potentially useful in the future (Hirschmann and Wallendorf, 1982) and for its intrinsic satisfactions. In a prepurchase context, the extent of search is determined, in part, by the buyer's short-term desire to make an optimal purchase (response involvement). Levels of ongoing search however, are a function of enduring involvement with the product (i.e. books). Both are also influenced by market factors such as the availability of product information and time and other situational constraints. The ongoing searcher develops product expertise which enables him to rely more heavily on less costly internal search when a purchase is being made (Bettman, 1979). Furthermore it is likely that this information is disseminated to friends and family, as product expertise is related to opinion leadership.

The existence of ongoing search was confirmed in an exploratory empirical study on information search regarding clothing and personal computers (Bloch *et al.*, 1986). It seems to apply to books too, as ongoing search activities regarding books can be easily found in for instance nearly every book shop.

The application of the linear additive decision rule within the framework of one sequential hierarchical decision-making model becomes too demanding when the number of alternatives and/or the number of attributes used to evaluate a book exceeds a critical level or, put more generally, when the choice problem becomes too complex (see for instance van Raaij, 1988). Raising the number of alternatives in this respect has more consequences for the demands imposed on the

information processing abilities of a consumer than adding attributes (Stokmans, 1988). In 1989 about 3.500 books belonging to the category of fiction for adults are published in the Netherlands, among which there are approximately 2.500 new titles and 1.000 reprints (guide for the information industry, 1991). So there are many alternatives. In addition it appears that buyers of books can use up to 29 attributes when evaluating books (Leemans and Stokmans, 1991). This number of salient attributes is much more than the number used to evaluate other products (see for instance Wierenga and van Raaij, 1987).

Context and task variables further increase the complexity of the decision-making task. The most important context variables are the structure and format of the information presented. Four information structures are distinguished (see for instance van Raaij, 1977): information regarding alternatives can be structured sequentially, pair wise, by alternative or by matrix, in which the columns represent the alternatives and the rows the attributes of the alternatives. It is very likely that information regarding books has a sequential structure: there is a continuous flow of rapidly changing information in for instance book columns in newspapers and magazines. This sequential information structure makes a simultaneous evaluation of alternatives, presupposed in the model described above, a very difficult task to accomplish, if not an impossible one.

The format of the information presented consists of several variables. The degree of comparability is most relevant here. Johnson (1988) defines comparability as the extent to which a consumer describes alternatives in similar non-price attributes. The attributes perceived by buyers of books, and with that, the degree of comparability will vary with the genre and the core benefits associated with it (Leemans and van Maris, forthcoming). In addition there is variation in perceived attributes within genres: in a study on the perception of books using Procrustes analysis, it appeared that respondents described five similar groups of titles with different attributes (Leemans, forthcoming).

An important task variable is information load. Information load is generally conceived as the amount of information to be processed per unit of time (Wright, 1975). An increase in information load can result from either an increase in the amount of information presented to the consumer (complexity) or a decrease in the time available for processing (time pressure). The amount of information on books makes a choice in many cases more difficult than easier. The conse-

quences of this "information overload" are mitigated by less time pressure at the one hand and more knowledge as a result of ongoing search at the other.

Consumers on the other hand, are subject to limitations in their ability and willingness to process information before a purchase. This ability and willingness is partly determined by the product class from which to choose and the decision process characterized as ongoing search. It makes a difference whether a consumer has to decide on a daily commodity such as groceries or a consumer durable such as a washing machine. Replacement purchases of daily commodities have a short time lag: mostly a few days or a week. Most products and brands have not changed during this short period of time. Consequently a consumer knows which alternatives are worth while considering and which one can be chosen, in most cases the same as last time. This situation resembles routinized problem solving (Howard, 1977), a situation in which a consumer has little or no motivation and ability to process information: most consumers would become mad if they had to think carefully about the many buying decisions they regularly make on products involving hardly any risks of making the wrong choice.

These risks are much higher when deciding on consumer durables. Furthermore, most people know very little of the characteristics of alternatives on the market place at the moment the present washing machine for instance has to be replaced or bought for the first time. Replacement purchases have a mean time lag of approximately five years. Most alternatives have changed considerably during this period of time. Consequently, a consumer is motivated to process information on characteristics of available alternatives. The number of decisions to be made on consumers durables does not prevent a relative detailed process of information gathering and evaluation, known as extended problem solving (Howard, 1977).

Books take an intermediate position between fast moving consumer goods and consumer durables. It resembles deciding on the type and brand of a consumer durable, as both require an active search for and use of information on alternatives. As a result of ongoing search however, buyers of books have to variable degrees knowledge of how to select a book. The purchase of a book is on the other hand not a rebuy as is the case with most daily commodities: hardly anybody will buy a book twice for himself. But books also resemble daily commodities: they are bought quite regularly, at least more often than any consumer durable. This makes it worth while to build up and maintain

by ongoing search a bank of knowledge, which can be used when a purchase is envisaged.

Ongoing searchers have an enduring involvement with the product class (i.e. books) and recreational or hedonic motives for ongoing search, apart from practical, informational motives. As ongoing searchers, buyers of books are therefore more than average willing to search for and evaluate information.

Relatively highly motivated buyers of books do not always have the opportunity to process elaborately information. Buyers of books have often many activities competing with reading and buying books. Such activities comprise not only a busy job but also many social and leisure activities.

If the choice problem is very complex and if a buyer of books has, in spite of a relatively high motivation, only limited capacities to process information, the behavioral costs of detailed and complex information processing (Shugan, 1980), necessary when using the linear additive decision rule, will exceed the expected gains of finding the best book.

Choice heuristics or simplifying decision rules(3) may facilitate the decision task and lower decision-making costs and are therefore more likely to be chosen. The linear additive decision rule is an example of an algorithm. An algorithm can be defined as an evaluation strategy or decision rule which will automatically generate the best choice (De Groot and Medendorp, 1986).

If an evaluation strategy does not lead to the best choice, but only increases the probability that the best choice will be made, it is called a choice heuristic(4) (idem). For a choice heuristic it is impossible to specify the probability that the best choice will be made.

There are of course limitations to the simplifying tendency: after all a buyer of books wants to make the best choice. Choice heuristics require less effort but are also less accurate. This means that an acceptable balance between effort and the best choice has to be found. After all making a better decision requires more information processing and therefore more effort. This balance can be reached if more than one heuristic is used sequentially (Paquette and Kida, 1988).

Many authors suggest the application of multiple decision rules in sequence. Klein and Bithier (1987) for instance argue that consumers making complex purchase decisions - meaning many choice alternatives and/or processed attributes - seldom evaluate all alternatives completely but, simplifying the decision process, most frequently

employ in the first phases of the decision process a cutoff on one or more attributes (a choice heuristic) to eliminate non acceptable alternatives. Final choices are made by using various kinds of choice principles. Furthermore, ongoing search almost implies phased evaluation strategies.

A decision maker using simplifying decision rules or choice heuristics seeks a satisfactory alternative rather than an optimal one, and hence the process is referred to as satisfying (Simon, 1979). The sequential information structure regarding books makes it almost impossible to select the best alternative. Because the information comes sequentially, the buyer of books may change the attractiveness of former alternatives when new information becomes available. In these circumstances thresholds are set, above which an alternative is satisfying. The level of the thresholds depends on the buyer's expectations of what kind of titles will be presented and may be adapted on the basis of information on apparent alternatives. The notion of satisfying choice behavior becomes more appropriate if one takes into account the ongoing nature of information search. Furthermore the buying of one title does not exclude the later purchase of another title, nor the simultaneous purchase of two or more titles. Leemans (1989) registered the purchase in book shops of more than one literary book in about 10 percent of the cases.

A descriptive model of buyers of books' decision-making process should in our opinion contain phased evaluations, allow for the application of choice heuristics and fit the concept of ongoing search. We suggest such an alternative model in Figure 1.

The decision-making process depicted in Figure 1 may but need not to start with problem recognition, as a purchase is not always anticipated. In both case the next step is to structure or restructure the problem. A consumer perceives and interprets the choice problem within a framework of existing knowledge. As a result of ongoing search, a buyer of books has considerable knowledge of books and of useful attributes to evaluate them. This knowledge determines for a large part the structuring of the choice problem. The structure of the choice problem consists of products, for example books, and relations between these products, usually a similarity or preference structure (Jungermann, *et al.*, 1983). Attributes such as genres or authors in the case of books are the organizing concepts in the similarity or preference structure. This mental structure of a choice problem is called a "problem space" (Montgomery, 1983).

The problem space determines which additional information is useful for what alternative and how this information can be used in an evaluation. The problem space determines therefore both the information acquisition stage and the evaluation stage. In Figure 1 this is represented by the arrow from problem structuring to information acquisition.

Existing knowledge - the existing problem space - is in most cases insufficient for a buyer of books to permit some kind of choice. The rapidly changing book supply and information on books make it likely that information is also acquired from external sources such as reviews and friends whose judgements can be regarded as relevant.

The model of buyers of books' decision making process contains phased evaluation of alternatives. According to the model, a buyer of books searches for some information, evaluates it, searches again for more information, evaluates this in the context of former information and so forth. In other words: he makes intermediate evaluations based on limited information. In Figure 1, this is expressed by the loop between information acquisition and evaluation. This serial process can but need not to continue until a decision (outcome in Figure 1) can be made. This depends on whether a buyer of books is engaged in prepurchase or ongoing search. A buyer of books will probably use choice heuristics, when information on books is evaluated. He may use the linear additive decision rule in making final judgements.

Figure 1: buyers of books' decision-making process

Intermediate and final evaluations are stored in memory and therefore change the problem space (see the arrow between information evaluation and problem structuring in Figure 1). An example will illustrate this: a buyer of books thinks that titles from a particular famous author can not be purchased below a price of for instance US

\$ 20,-. This rather high price is regarded unacceptable and in consequence all titles by this author are not considered further. When, however, this buyer enters the book-shop and finds out that there is a special edition which costs US \$6.90 whereas most titles by other famous authors are priced between US \$9 and US \$15, he will probably reconsider these books and as a result of the limited price differences, the attributes on which further evaluations will be based.

Book Attributes : Choice Heuristics and Evoked Set

Attributes of Books

In the introduction, we defined attributes as "any aspect of the product itself or its use that can be used to compare product alternatives. Each alternative can (but need not) be characterized by all aspects: i.e. using one aspect does not preclude using another" (Grunert, 1989).

Most economists (see for example Lancaster, 1971) regard only objective (physical) aspects of a product as attributes. An example is the nutritional value of for instance cheese. Most psychologist (see for example Anderson, 1982) argue that attributes can only be defined in perceived and subjective terms. We are of the opinion that consumers do not perceive the attributes as such, but make perceptual judgements about them. If the perception of attributes is more or less homogeneous, these attributes are considered objective to all intents and purposes. Attributes are classified as subjective when there exist substantial variation in this perception.

The perception and interpretation of an attribute depends on the knowledge a buyer has regarding the product class, i.e. fiction. This knowledge in turn depends among other things on the books and authors of these books a buyer has read in the past. These reading experiences vary considerably and so does knowledge on fiction. Consequently, one can expect differences in the perception and interpretation of attributes of fiction.

In Grunert's broad definition of attributes, a distinction is made between characteristics of a product (aspects of the product) and consequences of these characteristics (its use). This refers to the means-end chain theory (Gutman, 1982). From a means-end perspective, the meaning of an attribute is given by the consequences consumers perceives it to lead to. The end can be either an immediate consequence (a benefit or a risk) or a more abstract value. Values are the mental representations of important life goals that consumers are

trying to achieve. They determine the selection of the desired consequences, which in turn provide saliency to those attributes that can provide these consequences. The core benefits of fiction are education and entertainment for children's books, relaxation for non-literary fiction and relaxation and mental broadening for literature. They may contribute to the achievement of goals such as self-actualization and personal gratification (Rokeach, 1973). Note that the core benefits match the motives for reading fiction, mentioned in the second section. The means-end chain is therefore also known as the motivational approach.

Several classifications of attributes can be found in literature. Van Raaij (1977) distinguishes 2 types of attributes: attributes of the product (i.e. book) itself and attributes of the product as marketed. Attributes of the book itself are sometimes regarded as physical attributes or intrinsic attributes (see for instance Steenkamp and van Trijp, 1988). If intrinsic attributes are changed, the product itself is changed. Intrinsic attributes of books however, are not pure physical characteristics such as size, number of pages, typeface or cover, but rather characteristics such as actual design (as with children's books) and in particular the contents and style of writing of a book.

The attributes of the book as marketed do not have a direct link with the core benefits of a book. As counterparts of intrinsic attributes, they are also known as extrinsic attributes or added attributes: when these characteristics are altered, a book itself stays more or less the same. A clear example is the attribute price.

An important question is which attributes of books are used by buyers? Table 1 lists the attributes of fiction which were used in either the elimination or comparison phase by at least 75 percent of the respondents. These attributes were identified in a simulation of a decision-making process, consisting of one elimination and comparison phase (Leemans and Stokmans, 1991).

The attributes listed in Table 1 illustrate that respondents can not separate in many cases perceptions from evaluations. The attribute genre, for example was stated as "I like this genre" or "I don't like this genre".(5) Attributes such as "you know the author of the book" clearly reflect knowledge on particular titles. Because the attributes in Table 1 contain an evaluation or reflect knowledge, they are probably all subjective in nature. Exceptions may be the attributes genre and positive or negative reviews.

Table 1. Attributes of Books Used in the Elimination or Comparison Phase By At Least 75 Percent of Respondents (n = 50).

Attribute	Elimination phase % of respondents	Comparison phase % of respondents
You know (not) the author of the book*	100%	66%
Experience with the author*	100%	64%
Genre*	100%	72%
Theme*	100%	74%
You know what to expect from this author	96%	74%
Style of writing*	84%	62%
The book has been recommended	82%	24%
You know what the story is about	80%	44%
Positive or negative reviews*	78%	28%
It is not clear what the story is about	78%	0%

* These attributes contain a positive, a negative and sometimes a neutral evaluation.

Table 2: Evaluation Strategies.

Evaluation Strategy	Choice Heuristic?	Choice Criterion	Information	processing by:
affect referral		yes	not specified	alternative
dominance rule		no	attribute/goal	alternative
conjunctive rule		yes	attribute/threshold	alternative
disjunctive rule		yes	attribute/goal	alternative
sequential elimination		yes	attribute/threshold	attribute
lexigraphic rule		yes	attribute/goal	attribute
elimination by aspect		yes	attribute/threshold	attribute
additive difference		no	overall preference/goal	pairwise
information integration		no	overall preference/goal	alternative

All attributes in Table 1 indicate or at least suggest (the lack of) quality of a particular title. This result is consistent with the basic idea that a consumer is always searching for at least a satisfactory relation between value (quality) and money.

The descriptions in Table 1 refer to attributes and not to consequences of attributes, although no sharp boundary between both notions can be drawn. Furthermore, the classifications found in literature seem to be of limited use in the case of books. The distinction between attributes used in the elimination or in the comparison phase has more practical consequences: in the elimination phase, a few attributes and mostly one serve as thresholds and all alternatives which don't pass these thresholds are eliminated (see also fourth section). In the comparison phase on the other hand, poor attributes may be compensated by "good" ones, for instance by applying a linear additive decision rule. Attributes used in the comparison phase determine therefore less which alternative will (not) be chosen than attributes used in the elimination phase, as the latter don't allow for compensation.

Choice Heuristics.

When a consumer evaluates information on alternatives, he applies one or more decision rules or evaluation strategies. An evaluation strategy can be described by means of 3 transformations (de Groot, 1986). Firstly, the perceived attributes of an alternative are on an attractiveness scale. The attractiveness score indicates how good it is that an alternative has the attribute to a certain extent. Secondly, the attractiveness scores are integrated into an overall evaluation, if more than one attribute is evaluated. The attractiveness scores may but need not to be weighted according to their importance. Thirdly, a choice criterion is defined on the overall evaluation of an alternative or on the attractiveness score of a single attribute. A choice criterion can be a goal, a desired value such as maximum utility, or a threshold, a restriction on satisfactory values.

Both algorithms and choice heuristics are examples of evaluation strategies and can be stored as a sub-routine in long term memory and activated when a decision has to be made (Anderson, 1982).

Each transformation can be accomplished in different ways. Furthermore, each transformation is not necessary. Consequently, a lot of evaluation strategies are possible. In the literature on consumer behavior, the following evaluation strategies for non-routine decisions are documented (see for instance Van Raaij, 1988):

1. **Affect referral** is a simple evaluation strategy. Hardly any information is processed and a simple affective reaction to the holistically —perceived alternatives determines which one is selected: the alternative you like best. Attributes and especially symbols which represent the brand name are used as cues for recognizing alternatives (an author can to a certain degree be regarded as a brand). Affect referral is often used at impulse and repeat buying. Repeat buying of the same title rarely takes place; sometimes a previously bought title is purchased again as a present. Buying decisions as regards books are also seldom taken impulsively: in two studies conducted in book shops (Leemans, 1989 and Leemans and van Maris, forthcoming) it appeared that a great majority of book buyers entered the book shop knowing in advance which title or at least which author would be chosen. And even at impulse buying, the seeming lack of search on information may be explained by search prior to entering the book shop.

Although affect referral will seldom be used as an evaluation strategy and although it is an example of routinized choice behavior, it is mentioned here because many members of the book trade assume, sometimes implicitly, that almost all buyers of books take their buying decisions by applying this evaluation strategy.

2. **Dominance rule.** A consumer chooses the alternative which is better on at least one attribute and not worse on the remaining attributes. The dominance rule is a classic evaluation strategy in economic theories of consumer choice behavior (Montgomery, 1983).

3. **Conjunctive rule.** Minimum cutoffs are assumed for one or more salient attributes. If an alternative does not pass the minimum, it will be rejected. If two or more alternatives remain, another decision rule must be applied in order to reach a decision or thresholds have to be altered. Conjunctive decision rules are useful to eliminate quickly unacceptable alternatives. This is related to Simon's (1979) "satisficing" concept, in the sense that a satisfactory alternative is selected. It is possible that thresholds change as new information on apparent alternative titles becomes available. The sequential structure of information about books makes the application of more than one conjunctive rule a sensible and efficient evaluation strategy.

4. **Disjunctive rule.** This rule is based on (extremely) positive attributes. A consumer determines outstanding values for one or more attributes. An alternative which reaches the outstanding value is selected disregarding other salient attributes. Disjunctive rules can be

assumed to be at stake when titles are bought mainly because of the appearance of authors in television programs.

5. Sequential elimination. This is a conjunctive evaluation strategy in the sense that minimum cutoffs are stated for each salient attribute. Alternatives are eliminated by considering one attribute at a time. There is no rule for the order of the attributes.

6. Lexicographic rule. The attributes are ranked on the basis of their importance. Alternatives are first compared on the most important attribute. If one alternative is superior to all others, it is selected. If two or more alternatives form a tie, they are compared on a second attribute, and so on. A more realistic version of this decision rule is the lexicographic semiorder decision rule: there must be a minimal difference before an alternative is chosen.

7. A specific case is Tversky's (1972) elimination by aspect. The attributes are ranked on the basis of their importance. For each attribute a threshold is set. The alternatives which fail to pass the threshold on the most important attribute are eliminated. From the remaining alternatives, those are eliminated which do not pass the threshold on the second most important attribute, etc.

8. Information integration strategy. This is a generalization of the linear additive decision rule discussed in the second section. In the general information integration strategy all algebraic rules are permissible (Anderson, 1982): summation of all weights to one (linear averaging decision rule), multiplicative or other polynomial functions (non-linear compensatory decision rule) etc.

9. Additive difference. The differences between two alternatives are determined by the (weighted) sum of all paired comparisons of alternatives. The alternative with the lowest score is eliminated and the "winner" is compared with a third alternative. When however the number of alternatives rises, the number of paired comparisons becomes very large and the application of this decision rule demanding.

Some decision rules mentioned above assume information processing by alternative (i.e. dominance rule, conjunctive rule, disjunctive rule and information integration strategies), whereas others assume information processing by attribute (i.e. sequential elimination, lexicographic (semiorder) rule and elimination by aspect). The additive difference rule could be called paired comparison of alternatives, a mixture of both information processing styles.

The conjunctive rule, sequential elimination and elimination by aspect set thresholds on one or more attributes. All other evaluation strategies define the choice criterion as a goal. Information integration strategies and the additive difference specify this goal, usually maximum utility, for all salient attributes, while the dominance, the disjunctive and the lexicographic (semi-order) rule do this for one or more, but not necessarily all attributes. The evaluation strategies are summarized in Table 2 (Stokmans, 1991):

Consumer's Evoked Set.

Preventing situations of information overload, a buyer of books ignores most of the titles available on the market. Furthermore, most perceived titles will be eliminated quickly using a choice heuristic and only a small number of alternatives will be considered for purchase. This selective perception and rapid categorization of perceived alternatives can be seen as a very effective way of simplifying the buying decision.

Howard (1963) was the first who put forth the concept evoked set in relation to the output of this simplification process. He defined the term as: all the alternatives a buyer considers when contemplating a purchase. Narayana and Markin (1975) proposed a more expanded version of the consumer simplification process to take into account those alternatives of which a consumer is not aware of during any stage of the decision-making process. They further broke down the awareness set to include the evoked set, as well as two other subsets called "inert set" and "inept set". Positively evaluated alternatives considered acceptable for purchase would be found in the evoked set, negatively evaluated ones rejected from such consideration would be classified in the inept set and the inert set would comprise the remaining alternatives, evaluated as indifferent.

Brisoux and Laroche (1980) proposed a further extension. They theorized that owing to cognitive capacity limitations only a subset of the awareness set is evaluated by the consumer. They defined those alternatives which are not evaluated as belonging to a foggy set in which no clear concept of the alternatives is held. The processed set was split into 3 categories similar to those of Narayana and Markin: the evoked set, the reject set and the hold set. In contrast with the alternatives evaluated as indifferent in the inert set, it was assumed that the hold set included alternatives associated with both positive and negative attitudes, as well as a neutral attitude. Brisoux and Laroche reported supporting evidence in several empirical studies using daily com-

modities (23 brands of beer) and also consumer durables (15 color televisions) (Brisoux and Laroche, 1980, Church et al., 1985). Their conceptualization of the categorization process of alternatives is depicted in Figure 2:

The dotted lines in Brisoux and Laroche's model indicate the dynamic nature of the categorization process. They represent the possible recategorization of alternatives over time into other subsets. It is for example possible that a buyer of books forgets a title of which he has no clear conception. These titles will be reallocated from the foggy set into the unawareness set. The opposite can also happen: as a result of information processing a title may be reallocated from the unawareness set into the foggy set. In this case it is possible that such a title, to which more attention has been paid, shows up in the processed set.

The categorization process of choice alternatives depicted in Figure 2 can be regarded as a part of the problem structuring (see Figure 1). It is likely that in order to make the decision making task manageable, buyers of books employ one or more choice heuristics to form the processed set from the awareness set and afterwards the evoked, hold and reject sets from the processed set. This categorization process can be repeated once or more often. We however do suggest a definition of the hold set, which deviates slightly from the one described above. In our opinion the hold set comprises those alternative titles which are not evaluated positively enough to make a further evaluation in the evoked set worth while. Hold alternatives corresponds to those which are acceptable but for which a buyer of books does not feel a need, that is those that do not offer sufficient utility. The reject set will consist of alternative titles which clearly do not meet minimum standards. Only alternatives included in the evoked set will be considered for purchase. All decision rules may be applied here.

Summary and Conclusions

Traditionally the decision-making process consumers go through is described by one sequential hierarchical process consisting of six phases: problem recognition, information acquisition, information evaluation, choice, purchase and post-purchase evaluation. In most cases it is assumed that a linear additive decision rule adequately describes the process of evaluating alternatives.

There are several arguments which make a revision of one sequential hierarchical decision making process necessary, especially if one

Figure 2: The Brisoux and Laroche categorization process of alternatives.

wants to describe the decision making of buyers of books. The traditional model can not account for information search outside a purchase context. As a result of this ongoing search, buyers of books have relatively much knowledge on books and on strategies to evaluate them, when a purchase is envisaged. As ongoing searchers, they are also more willing to search for and process information. In spite of these relatively high levels of knowledge and motivation, buyers of books are as consumers in general subject to limitations in their ability and willingness to process information. They engage in many activities, competing with buying and reading books and even they are confronted with information overload.

On the other hand, buying books is in most cases a choice problem which is too complex to handle in one sequential hierarchical decision making process, employing a linear decision rule. The complexity of the choice problem is caused by a huge and rapidly changing book-supply, the sequential structure of information on books, a limited degree of comparability of alternative titles and the tendency of buyers of books to base their evaluations on many attributes.

We therefore propose a model of decision making, in which several interim evaluations are made: a buyer of books searches for information on books and evaluates it in the context of evaluations made before, searches again for some information which is evaluated until a final choice can be made (see Figure 1). When engaged in ongoing search, interim evaluations result only in a restructured choice problem. It is very likely that simplifying decision rules or choice heuristics are used as information evaluation strategies. For choice heuristics require less cognitive effort and can reduce the tension between a complex choice problem and the limited cognitive abilities of a buyer of books. In addition, the sequential application of more choice heuristics do not result in decisions of lesser quality. When a purchase is actually made, the linear additive decision rule may but need not to be used.

An important part of the problem structuring and of the simplification of the decision process consists of the composition of the evoked set. The evoked set can be defined as all the alternatives a buyer considers when contemplating a purchase (Howard, 1963). In Brisoux and Laroche's model of the categorization process of alternatives, consumers process information on only a limited part of the perceived alternatives. This processed set is further split into 3 categories: the evoked set, the reject set and the hold set. The reject set contains

eliminated alternatives, while the hold set consists of, in our opinion, titles for which a buyer of books does not feel a need, that is those that do not offer sufficient utility.

We assume that books can be conceived of as bundles of attributes. The (interim) evaluations consist of the evaluation of one or more perceived attribute, using an evaluation strategy (see Table 2). An explorative study on attributes used to evaluate books (Leemans and Stokmans, 1991) indicated that attributes of books are hardly physical. Furthermore, most attributes contain an evaluation or reflect some degree of knowledge. This can be explained by the absence of functional benefits and the difficulties to evaluate books. In these respects, books belonging to the category of fiction differ from normal daily commodities or consumer durables.

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Footnotes

1. In a survey among buyers of literary books it appeared that buyers of literary books read on average 60 percent of the purchased titles.
2. Fishbein (1975) argued that the typical number of salient beliefs about an attitude object is not likely to exceed seven to nine.
3. See the later section on choice heuristics
4. In most professional literature, the distinction between an algorithm and a choice heuristic is not so clearly defined. Bettman (1979) for example, defines a choice heuristic as a rule of thumb.
5. The way in which attributes are formulated varied much more in this study. Different formulations of attributes which the researcher regarded as the same are combined into a category such as can be found in Table 1.

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