

Character-marked Furniture: Perceptions, Critical Issues, and Barriers to Acceptance Among Manufacturers and Retailers

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CHARACTER-MARKED FURNITURE: PERCEPTIONS, CRITICAL ISSUES, AND BARRIERS TO ACCEPTANCE AMONG MANUFACTURERS AND RETAILERS

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(ABSTRACT)

An important issue in the furniture industry is more widespread use of character-marks. The purpose of this research was to gain an in-depth understanding of the critical issues associated with acceptance of character-marked hardwood furniture. This information was beneficial for developing strategies to increase character-mark use by large furniture manufacturers. Although much has been said about the benefits of including more character in hardwood furniture, few large manufacturers have implemented such changes in their products.

Personal interviews were conducted with product development personnel to develop case studies for large furniture manufacturers. The case studies centered on the companies' experiences with character-marked furniture. A follow-up mail survey was conducted to validate the case studies. It was found that decisions concerning character-mark use occur throughout the product development process, and involve the design, marketing, and production functions within the company. Companies that were able to fit character-marks within acceptable product concepts, considering such factors as style, finish, and hardware, appeared to have the most success with character-marked furniture in the marketplace.

Conjoint analysis was employed to provide quantitative measures of retailers' perceptions of character-marked furniture products. This information was useful for determining the potential for push-type promotion. The dependent measure stimuli were full product profiles (actual wood samples and pictures), presented to respondents during on-site interviews. Retailers preferred furniture with no knots when evaluations were based on *buying consideration* and *relative price*. However, there was a linear

relationship between preference and knot size, suggesting that opportunities for use of small knots may exist. It was found that character-marks were quite important to the product evaluations, suggesting that character-marks are a salient product feature.

In addition to generating preference measures for tangible furniture product attributes, an investigation of the intangible product attributes associated with character-marks was conducted. Rustic, casual, and antique looks were most associated with character-marked furniture. Promotion of character-marked furniture based on environmental and natural material themes did not appear to hold much potential in the minds of manufacturers and retailers. It appears that promotion of character-marked furniture aimed at retailers will have to be based on what character-marks add to the *look* of wood household furniture.

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PREFACE

This dissertation was designed to include self-contained chapters to facilitate subsequent publication in academic journals. Thus, each chapter consists of unique abstract, introduction, literature review, methods, results and conclusion sections. While every effort was made to keep the amount of redundant material to a minimum, a small amount of information is similar between some chapters. The author apologizes for any difficulty this may present to readers.

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CHAPTER 1 INTRODUCTION

PROBLEM STATEMENT AND JUSTIFICATION

A topic that has received considerable attention recently is the role marketing can play in promoting environmentally conscious product design and consumption (e.g., Lozada and Mintu-Wimsatt 1995, Mackoy et al. 1995). It is argued that marketing is well suited to encourage more responsible and efficient use of natural resources, whether directed at consumers or industrial segments. Much of the discussion concerning marketing and the environment has been based on a notion that markets for environmentally friendly products exist, when such products are promoted in an appropriate manner. Wood-based industries are often particularly sensitive to issues such as efficient resource utilization due to reliance on a raw material base for which there are many competing uses (e.g., forest recreation and wildlife habitat). To help forest products industries address environmental issues, studies have been directed at identifying consumer segments for wood products that are receptive to environmental marketing themes (e.g., Ozanne and Smith 1996, Ozanne and Vlosky 1996).

A specific issue that involves environmental considerations in some wood-based industries is the use of character-marked wood. Character-marks refer to naturally occurring features of wood, such as knots, that are generally graded against or removed at the rough mill. In particular, use of character-marks in hardwood furniture products has received attention as a potential means of extending the forest resource and lowering raw material costs for manufacturers (Buehlmann, et al. 1998, Buckley 1996, Wilhelm 1994, Araman 1979). This appears to be a timely issue, as a recent survey indicated that nearly 50 percent of the 25 largest residential furniture manufacturers in the United States and Canada were either *extremely* or *very* worried about wood supply issues. In addition, 30 percent indicated that they were more concerned about wood supply issues now than in 1997 (Adams 1998). Thus, furniture manufacturers can face pressure from both the supply and demand sides of their business to make more efficient use of hardwood resources.

Articles appearing in trade journals have discussed the role of manufacturers in utilizing and promoting character-marked furniture. Wilhelm (1994, p. 237), for example, states:

"As an industry, we need to tell the story about the natural characteristics of hardwoods and that no two pieces of wood are identical. Uniformity is man-made; variations are natural . . . By getting our customers to accept more of the natural characteristics of wood, we will be able to reduce the impact of lumber price increases on our product costs as well as conserve our forest resources."

This statement places responsibility directly on manufacturers to create demand for character-marked hardwood products throughout the distribution channel. Wilhelm (1994) suggests that manufacturers (and retailers) need to develop strategies for promoting character-marked hardwood products to consumers, offering product uniqueness and environmental-friendliness as potentially effective messages.

Other authors have claimed that responsibility for reducing hardwood demand lies largely in the hands of designers and wood material specifiers. Buckley (1996) claims that although much of the effort to improve forest management has been aimed at growers, consumers of harvested trees also have responsibility for resource management. Although large strides toward extending the forest resource have been made via technological advances, wider use of character-marks and greater use of lower grades provide additional opportunities for efficient utilization of trees. According to Buckley (1996, p. 29), we are in "the age of natural material", which should enhance the market opportunities for character-marked furniture. The following quote from Buckley (1996, p. 29) implies that manufacturers and retailers have failed to recognize opportunities for greater use of character-marks:

"I sometimes have an uncomfortable feeling that the trend of wood is towards the supermarket straight carrot syndrome in which supposedly 'the housewife' won't buy bent carrots."

Despite the calls for increased use of character-marked woods in furniture products, most hardwood furniture is still produced from primarily defect-free hardwood

parts. The purpose of this research was to determine the perceptions, critical issues, and barriers to acceptance of character-marked furniture from the perspectives of manufacturers and retailers. A better understanding of these issues is necessary in order for consumers to ultimately have the opportunity to purchase character-marked products on a more wide-scale basis.

Character-marked furniture represents a new type of material input into an existing manufacturing system, as well as a new kind of product. Thus, both the manufacturing and marketing functions in a furniture company will likely have a stake in any effort to increase character-mark usage. The manufacturing stake in character-mark use is exemplified by Buehlmann, Wiedenbeck, and Kline (1998), who found that a 14 percentage point increase in part yield was possible by allowing all character-marks two inches and smaller in diameter on both faces in parts cut from 2A Common lumber. This research was concerned primarily with the marketing aspects of developing character-marked furniture products, as illustrated by the following study objectives.

OBJECTIVES

1. Develop a conceptual model of the product development process of large case goods manufacturers and determine activities important to character-mark usage
2. Identify critical marketing and product development issues associated with use of character-marks, and determine whether differences exist among firms with differing character-mark usage strategies
3. Determine retailers' perceptions of character-marked furniture based on their evaluation of different combinations of several tangible furniture attributes
4. Determine manufacturers' and retailers' perceptions of the intangible product attributes associated with character-marked furniture

An additional objective, presented in the original working plan, has been omitted due to changes in the proposed data collection strategy. While it was originally planned to segment the retail market for character-marked furniture, based on data collection at the High Point, North Carolina Furniture Market, difficulties were encountered in

securing booth space at the Market. The original "Objective 4" was therefore not considered in this research.

A NOTE ON METHODOLOGY

Much of the research presented in this manuscript is qualitative in nature, based on case studies of companies from a relatively small geographic area. It was felt that such a strategy would provide more insights than a traditional mail survey, given the nature of the current situation regarding character-marked furniture. Much of the discussion concerning character-mark use has been somewhat cursory, concluding simply that consumers do not want character-marked furniture, or that tradition does not allow for use of character-marks in hardwood furniture. It was felt that such a situation warranted more in-depth understanding than what could be provided via questionnaires with pre-determined questions. Seeking direct feedback from persons specifically targeted for interviews facilitated understanding and probing that would have not been possible using a mail survey. The large concentration of prominent household furniture manufacturers in Virginia and North Carolina facilitated an efficient interview-based study and provided a population of theoretical importance. Additionally, given the relatively poor response rates associated with recent mail surveys of the furniture industry, it was felt that an alternative data collection strategy was appropriate.

Use of quantitative measures was not entirely abandoned, however, as a follow-up mail survey was conducted once the interviews were complete. In addition, quantitative measures of retailers' perceptions of character-marked products were developed from a conjoint analysis. The conjoint analysis was conducted via on-site interviews with retail buyers and managers. Actual solid oak samples of panels from an entertainment center and corners of a dining room table were used as the dependent measure stimuli. While such a data collection strategy did not facilitate a large sample size, it did allow for evaluation of the character-marked products to be conducted in a very realistic setting, thereby maximizing the internal validity of the results.

TOPICAL ORGANIZATION

This dissertation is organized into several chapters, each representing a different portion of the research. Chapter 2 presents a conceptual model of the product development process for large case goods manufacturers, with special attention paid to specific activities occurring in the process and how such activities affect character-mark usage in new furniture products. Such information is important when determining the most basic information concerning character-marked products, namely how such products would come to exist. This chapter addresses Objective 1.

Chapter 3 presents information concerning several important issues regarding use of character-marks in hardwood furniture. Six propositions are developed and investigated in relation to their importance to character-mark use. Of particular interest in this Chapter are comparisons between users and nonusers of character-marks, based on a categorization scheme of character-mark use strategy. This Chapter addresses Objective 2.

Chapter 4 is a study of perceptions of character-marked furniture among a sample of furniture retailers. A conjoint analysis was performed based on oak furniture samples containing different-sized knots varied across differing finishes, styles, and aspects. This Chapter addresses Objective 3. Both Chapters 3 and 4 address Objective 4.

Finally, Chapter 5 presents a summary of the findings of the preceding chapters, including recommendations and an outlook for increased use of character-marks in hardwood furniture.

An important consideration in this research was the role of product design and development in determining character-mark use (or non-use) in new furniture products. The model depicted in Figure 1.1 served as the basic framework for approaching much of the research presented in this manuscript. Bloch (1996) suggests that product form is influenced by several design constraints. In particular, the final three constraints, as indicated in italics in Figure 1.1, were topics of interest in this research. Bloch (1996) also claims that product beliefs and categorization are important to response to product design. These issues were addressed with use of the conjoint analysis.

The Chapters of this dissertation were designed to correspond to parts of the model in Figure 1.1. Chapters 2 and 3 address constraints on product form, and are thus

focused primarily on furniture manufacturers. Chapter 4 addresses response to product form, and is therefore concerned with furniture retailers. In all Chapters, "product form" involved character-marked furniture.

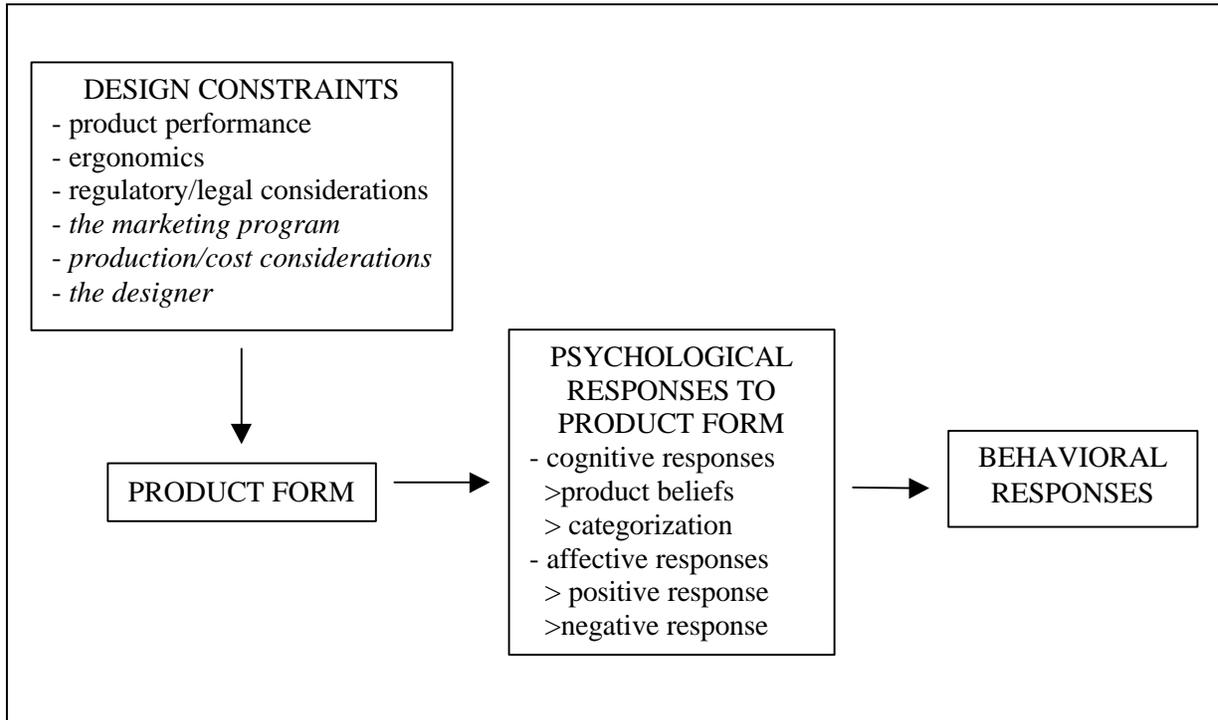


Figure 1.1. A conceptual framework for studying design constraints on product form and psychological responses to product form (Bloch 1995)

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CHAPTER 2

BARRIERS TO ACCEPTANCE OF CHARACTER-MARKED HOUSEHOLD FURNITURE AMONG LARGE MANUFACTURERS: A PRODUCT DEVELOPMENT PERSPECTIVE

ABSTRACT

The objective of this research was to develop a conceptual model of the product design and development process among a sample of large furniture manufacturers in Virginia and North Carolina. Of particular interest were stages in the design and development process involving use of character-marks in new furniture groups. Data gathered from in-depth interviews and a mail survey were used to develop a 14-Stage model of the product development process. The model indicates that the product development process involves interaction among several functional areas in a furniture company. Decisions concerning use of character-marks can occur throughout the product development process and includes both production and marketing considerations. Certain Stages in the model emerged as critical to character-mark use in new hardwood furniture products. Attempts to promote increased use of character-marks in hardwood furniture must be based on a better understanding of how product concepts originate and pass through the product development process. Such information can lead to a better understanding of the barriers to acceptance among furniture manufacturers, and ultimately better utilization of the hardwood resource.

INTRODUCTION

Product design has become a topic of increasing importance to product development managers and marketing researchers in recent years. The design of a product can be critical to its success in the marketplace (Bloch 1995, Nussbaum 1990). According to a definition of product design by Urban and Hauser (1980, p. 155), design is a reflection of the product itself:

" . . . the designation of the key benefits the product is to provide, the psychological positioning of these benefits versus competitive products, and the fulfillment of the product promises by physical features"

Design adds value to a product by enhancing appearance, ease of use, comfort, and safety (Walsh 1983). Good design can also be used to help define corporate identity and help firms differentiate themselves in highly competitive markets (Kotler and Rath 1984). It would be expected that design would play an especially important role in the product development process of the fashion-conscious furniture industry. Calantone, Vickery, and Droge (1995), for example, found that furniture executives rated *design quality/innovation* highly in terms of important product development considerations.

In many product development and marketing textbooks that present models of the product development process, design is often not explicitly expressed as a distinct step or stage (e.g., Gruenwald 1992, Souder 1987, Crawford 1983). Moreover, Bloch (1995) notes that the topic of product design is rarely addressed in marketing journals, even though design is central to marketing practice. Kotler and Rath (1984) expressed concern for a general lack of good design among many product categories in the United States and the need for better use of design as a strategic tool. However, Dickson et al. (1995) found evidence that this might be changing. Among a sample of Chief Executive Officers from small, high-growth firms in the United States, it was found that 72 percent had increased investments in design over the past three years. Furthermore, 71 percent of these respondents believed that design issues would be of increasing importance to their firm's competitiveness in the coming decade, and nearly half believed it was important for all the managers within their firms to be knowledgeable about design. Other authors have noted that the issue of product design has gained interest in recent years in the United States (Bloch 1995).

It is important to remember, however, that the design of a product does not exist in a vacuum. Consideration of product design is part of a broader product development process that encompasses all activities involved in converting new product ideas into tangible products suitable for market introduction (e.g., Black and Baker 1989, Oakley 1984, Oakley and Pawar 1983, Topalian 1980). This can be especially relevant to fashion-conscious products like furniture (Bennington 1985). Design is a critical product attribute that must be considered throughout the product development process as it relates to such attributes as wood species, style, finish, intended price-point, and the

manufacturing capabilities of the company. Furniture is a complicated product with many possible feature combinations and design considerations, serving both functional and visual functions (Tierney 1995, Bennington 1985).

An example of an issue that can affect design management during the product development process is the use of character-marked woods in hardwood furniture. According to the National Hardwood Lumber Association (1994), character-marks are any of the following characteristics incident to tree growth: knots, burls, swirls, bird pecks, holes or grooves not exceeding 1/2" in diameter and not extending through the piece, color streaks, spots, and light stain. The wood household furniture industry is the third largest consumer of domestically produced hardwood lumber (Dempsey and Luppold 1992). Studies have indicated that substantial lumber yield improvements are possible at the rough-mill when character-marks are not removed from hardwood furniture parts (Buehlmann, Wiedenbeck and Kline 1998; Araman 1979). Currently, however, the inclusion of character-marks in hardwood furniture is uncommon. Use of character-marks in hardwood products has recently experienced increased interest due to uncertainty concerning hardwood lumber quality and cost, and a desire to extend the hardwood resource (Buckley 1996, Wilhelm 1994). Lamb (1994) claims that today's hardwood resource is higher in price, smaller in size, and lower in intrinsic quality than 20 years ago. Furthermore, lower lumber grades and smaller sizes are already being used in many rough mills, suggesting that increased use of natural wood characteristics is one of few remaining options to deal with the changing resource base.

Inclusion of character-marks in hardwood furniture parts increases the usable area of boards, thus offering opportunities for yield improvement at the rough mill. It has been estimated that each one percent increase in rough mill yield reduces hardwood timber demand by 0.2 percent when a sawmill recovery rate of 50-60 percent is assumed (Buehlmann, Wiedenbeck and Kline 1998). However, removal of character-marks from furniture parts reduces achievable yield to below 75 percent when using 1 Common or lower grade lumber (Wiedenbeck and Thomas 1995, Wilhelm 1994). Thus, inclusion of character-marks could translate into substantial materials costs savings for manufacturers and help extend the hardwood resource.

Greater use of character-marked wood by furniture manufacturers represents a new kind of material input into an existing design management process, and thus should be viewed in the broad context of the product development process. Many firms demonstrate a propensity to resist change, especially in firms that have been built around manufacturing processes, which are usually rational and standardized. Design changes are not always seen by company personnel as rational and such design changes may therefore meet some resistance from within the firm (Oakley 1984, Kotler and Rath 1984). In addition to manufacturing considerations, such as defining acceptable character-marks and implementing standards at the rough mill (Huber, Ruddell and McMillin 1990; Huber, McMillin and McKinney 1985), furniture manufacturers also face decisions concerning the marketing and selling potential for character-marked products. It is useful, therefore, to understand how a character-marked furniture product might come into existence at a large furniture manufacturing company.

This research was designed to better understand the product development process among large case goods manufacturers. The first phase was to develop an initial model based on semi-structured, on-site interviews with persons familiar with the process in their respective companies. The second phase involved a validation check conducted through a mail survey. Of particular interest were stages in the process involving activities related to the decision to use character-marks in a new furniture group. Do such decisions evolve primarily from product design considerations or other considerations, such as manufacturing? This study investigated the *specific* activities occurring at each major stage in the product development process to gain a better understanding of the decisions involved in usage or removal of character-marks in hardwood furniture products.

PREVIOUS WORK

The Product Development Process

There are numerous examples of models of the product development process in marketing textbooks (e.g., Souder 1987, Crawford 1983), as shown in Appendix A. Most of these models are presented in a step- or stage-wise manner and are prescriptive in nature. Such models are often generalizations of the process that can vary substantially

between companies and industries. Moore (1984), for example, in a descriptive study found that case studies of four companies in different industries revealed four somewhat different versions of the product development process. Rochford and Rudelius (1992) found in their descriptive study that most of the medical products manufacturers they surveyed did not use all 12 stages of a proposed model developed from the product development literature. However, at least three-fourths of their respondents performed six of the stages, as indicated in Table 2.1.

Design is not explicitly mentioned as a stage in either of the previous studies. This could be due to the nature of the industries investigated, or indicate that design activities are diverse in terms of personnel and stages of the process. Most product development textbooks place design activities in a stage entitled *product development*, or other similarly titled stages, suggesting they are somewhat minor to the overall process. It is reasonable to assume, however, that design will play a large role in the product development process among furniture manufacturers (Tierney 1995, Bennington 1985).

Table 2.1. Prevalent stages in the Rochford and Rudelius (1992) model of the product development process in the medical supply industry.

Stage of the Model	Percent of companies reporting
Idea generation	99%
Preliminary technical analysis	85%
Preliminary financial analysis	75%
Product development	97%
In-house product testing	95%
Customer product testing	80%

Some product development models do mention design as a distinct step or stage in the product development process. Black and Baker (1989), for example, offer a parsimonious 5-stage model including *opportunity identification, design, prototype development, prototype evaluation, and introduction to market*. Urban, Hauser, and Dholakia (1987) also present a model that includes design as a distinct stage, as shown in Appendix A. The Urban, Hauser, and Dholakia (1987) model lists research activities associated with steps in the model in addition to business activities, and is thus somewhat

prescriptive in nature. Research activities involved in the design stage include perceptual mapping and concept forecasting.

Tierney (1995) discusses activities associated with the design phase of the product development process for furniture companies (Figure 2.1). These activities encompass many of the stages of the preceding models of the product development process, illustrating the importance of design-related activities to furniture product development. According to Tierney (1995), design involves everything from development of preliminary sketches by designers to final design approval for production.

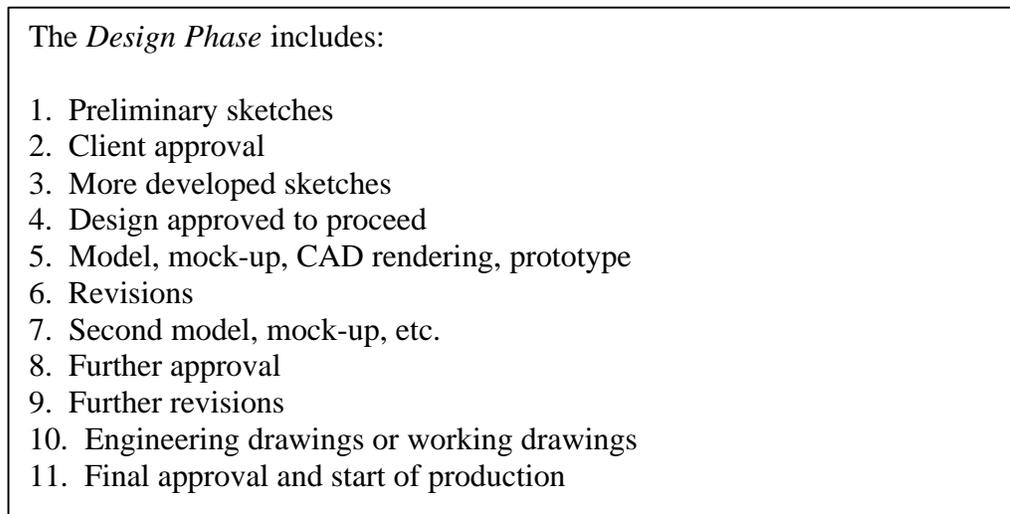


Figure 2.1. Steps of the *Product Design Phase* during product development in the furniture industry (Tierney 1995).

Oakley (1984) and Oakley and Pawar (1983) report models that mention design as a specific stage in the product development process. A unique trait of these models is that they suggest cycles of product development with frequent interactions, feedback and iterations occurring among the stages. Most models of the product development process suggest a step-wise or linear process. Figure 2.2 shows the Oakley and Pawar (1983) model. Moore (1984) also posits a model of the product development process with extensive interactions between stages, as shown in Figure 2.3. A model by Topalian (1980), although essentially sequential in nature, does have a feedback loop from the

final stage to the initial stage, suggesting a cyclical nature to product development. The

model presented by Urban, Hauser, and Dholakia (1987) (see Appendix A) also contains some potential iterations.

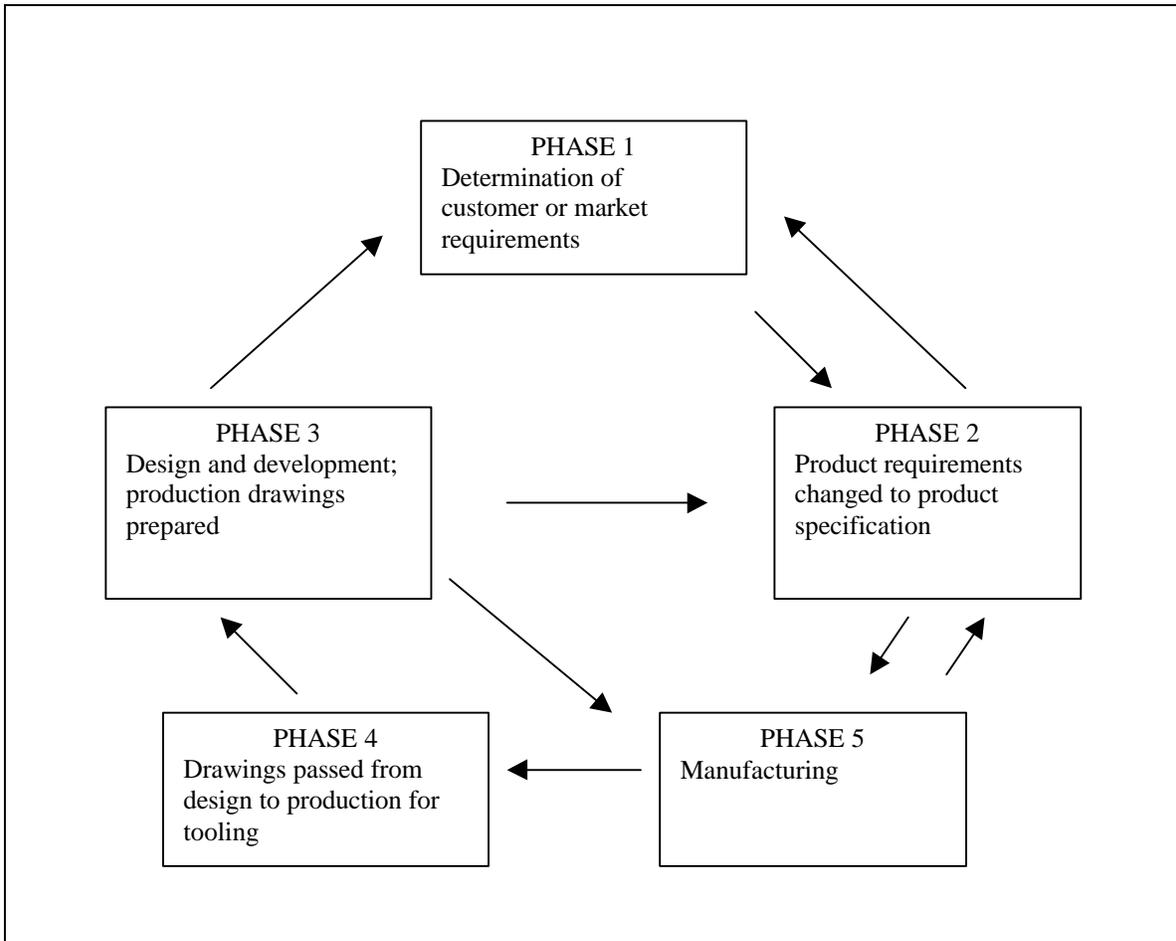


Figure 2.2. The Oakley and Pawar (1983) model of the product development process.

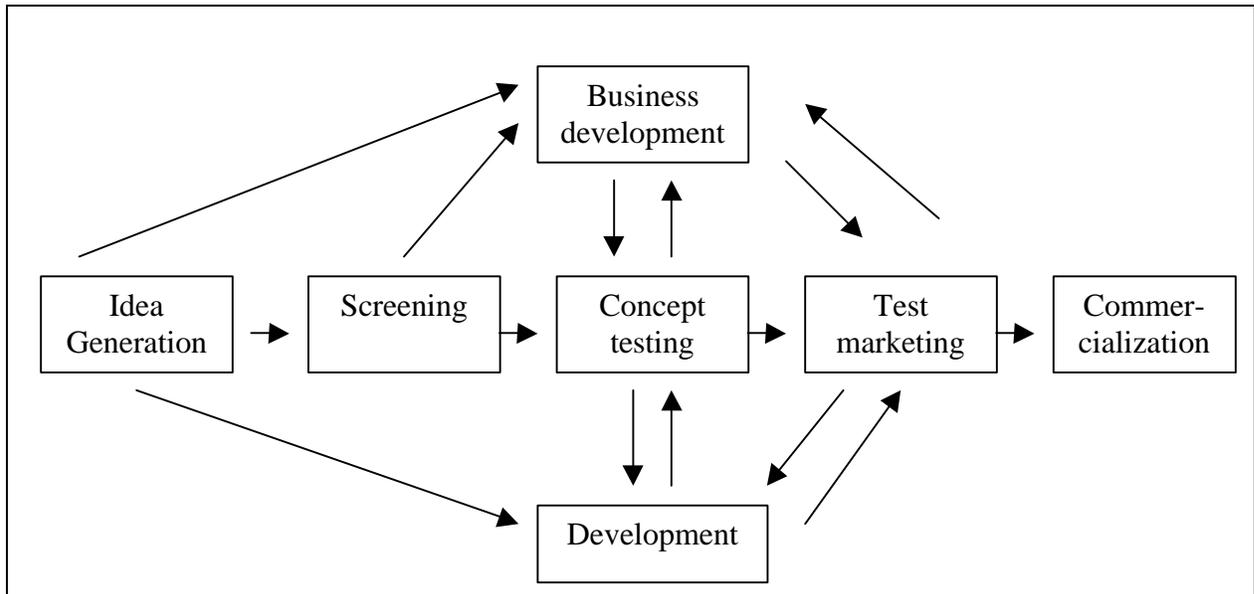


Figure 2.3. A model of the product development process proposed by Moore (1984).

It is expected that a close examination of the product development process in the furniture industry will reveal interactions between stages and iterations in the process, as evidenced by involvement of several different functional areas. Studies have shown that integration of all parts of the business is a trait of successful companies (Clipson et al. 1984, Heskett 1980). Most product development projects require participation from multiple functional areas. This creates a complex environment in which to develop new product concepts like character-marked furniture. Converting abstract product ideas into tangible products that can be produced and distributed at an acceptable cost involves the application of many different skills (Olson, Walker, and Ruckert 1995). Page (1993) found that the R&D, engineering, marketing, and manufacturing functions devoted 55.8 percent, 34.1 percent, 28.4 percent, and 13.6 percent of their time, respectively, to supporting new product activities. Dickson et al. (1995) found that the Chief Executive Officer, Marketing, R&D, Engineering, and Design functions had 22 percent, 14 percent, 10 percent, 18 percent, and 3 percent, respectively, of the major responsibility for design decisions in small, high-growth firms. Rochford and Rudelius (1992), however, found

that information was seldom contributed to a stage in the process by a functional area other than the area that had primary responsibility for that stage. The exception was the idea generation stage, where R&D, marketing, and customers were heavily involved.

It is also expected that design considerations will be important to use of character-marks in furniture, since design plays a critical rule in product development for fashion products like furniture. Bennington (1985) offers one of the only published models of the product development process in the furniture industry. Bennington (1985) recognizes the role of design in the process. Most designer activities occur early in the process, mainly in steps 1-3. The nine-step Bennington (1985) model is presented in Figure 2.4.

Step 1.	Marketing/Design Meetings by the Product Planning Committee
Step 2.	Sketches Prepared
Step 3.	Mechanical Drawings of Approved Sketches Prepared
Step 4.	Mock-ups Built
Step 5.	Product Planning Committee Review
Step 6.	Premarket Review
Step 7.	Samples Displayed at Market
Step 8.	Orders Evaluated After Market
Step 9.	Full Production if Sufficient Orders are Placed

Figure 2.4. Steps in the Bennington (1985) model of the product development process in the furniture industry.

It can be seen from the preceding discussion and Appendix A that most models of the product development process are similar in terms of the major steps or stages included. However, these models tend to be generalizations that can vary substantially from industry to industry, except for industry-specific models like those from Rochford and Rudelius (1992) and Bennington (1985). The structure of most of the models includes a starting point such as idea generation or initial market research, followed by product design or development activities. Following such activities are prototype production and market feedback, concluding with introduction of the product into the

marketplace. These models also tend to be linear or step-wise in nature, overlooking potential feedback loops or iterations that can occur in the product development process. Moore (1984) claims that generalized, linear models tend to overlook interactions between stages and assume one stage ends before the next begins. The product development process can vary in terms of stages involved, length of time for each stage, stage sequencing, and the total time span involved among different industries (Moore 1984).

Little recent empirical research has been published specifically concerning the product development process in the furniture industry. The purpose of this study was to investigate specific activities occurring within the major stages of product development among furniture manufacturers, and to determine stages in the process important to the decision to use character-marks in new furniture products. The Bennington (1985) model will serve as the framework for a brief review of what is known about the broad stages of the product development process for furniture manufacturers (see Figure 2.4). Since the Bennington (1985) model is one of few references to the product development process in the furniture industry, information was drawn from other sources to supplement the discussion.

Product Development in the Furniture Industry

Step 1. Product Planning Committee Meetings

Most furniture companies reach decisions concerning new product development via a committee. The product development committee often includes the company president, as well as senior representation from manufacturing, design, finance, marketing, and sales (Tierney 1995). Sometimes retailers or customers are also invited to product planning committee meetings to provide their input (Bennington 1985). Committees are consistent with a horizontal management philosophy, incorporating feedback from several different functional units within the firm. New product development done by committee offers a company a number of advantages, such as well-integrated design and ensured compatibility with each functional area such as marketing and production (Oakley 1984).

There are numerous sources of new ideas for furniture manufacturers. Such sources include feedback from customers, salespeople, designers, suppliers, and retailers. Internal technological and manufacturing capabilities, competitors' products, the need to increase or retain market share, and attraction of media attention are additional sources of new product ideas (Tierney 1995, Black and Baker 1987, Bennington 1985). The triggering factors which initiate the search for new designs has important implications for character-marked furniture, as it is a still somewhat innovative product idea. Companies that tend to rely on certain types of triggering factors, such as competitor's products, may be more reluctant to consider inclusion of character-marks in their designs. Bloch (1995) points out that many of today's designs tend to exhibit considerable conformity since nearly all companies within a given industry are receiving very similar market research data. Other authors have noted that most new furniture products are simply variations on products already in existence, whether belonging to the company or a competitor (Tierney 1995).

Oakley and Pawar (1983) report a case of a company with a history of successful product design. The company usually initiated the new product development process in one of two ways. The marketing department identified opportunities in the market place, while the engineering department identified problems with the manufacture of existing products. This finding suggests the importance of involving multiple functional areas in the product development process, such as often occurs when product development activities are carried out by committee. Herman Miller, a major furniture manufacturer, had a senior management team that was responsible for reviewing and approving the best new ideas for product development. There was evidence, however, that if the designer and key senior managers liked the idea, it would be carried out, reducing the actual power of the committee process (Clipson et al. 1984). Thus, even though a company has a product development committee in place, it is likely that some members will have more influence than others.

Cooper and Kleinschmidt (1990) report that products with strong definition prior to development were over three times as likely to succeed in the marketplace than products with poor definition prior to development - 85.4 percent of well-defined products succeeded compared to 26.2 percent of poorly defined products. Elements of

good product definition included a clear definition of the target market, clear understanding of customer needs, wants, and preferences, a well-defined product concept, and clear product specifications.

Step 2. Designers Prepare Sketches

Once new product ideas have been established, designers are called upon to render initial sketches or drawings of the new ideas. Often these drawings will be the designer's interpretation of the new ideas that are passed on from the product development committee. Designers can therefore be key participants in the early stages of product development, because they often bring ideas that enhance the manufacturer's initial new product ideas. Most furniture designers bring both their design education and industry knowledge to bear on a new design project (Tierney 1995). Designers have expertise concerning such attributes as the form and function of the product as well as the price-point of the product. Good designers generally have a good understanding of market trends, and are also able to take the manufacturing capabilities of the client into account when creating new designs (Bailetti and Guild 1991, Bruce 1985).

Furniture manufacturers have a choice of using staff designs or free-lance designers, or a combination. Many large companies utilize both in-house and free-lance designers (Tierney 1995, Bennington 1985). Oakley (1984) claims that the use of free-lance designers or contract designers can avoid the creative blocks often encountered by in-house designers, and that free-lance designers are better at identifying design problems or weaknesses within a firm. This finding was supported by other research investigating the product development process in furniture companies (Clipson et al. 1984). However, Oakley (1984) goes on to say that in industries where fashion changes rapidly (such as the furniture industry), firms should have a strong internal design department in order to maintain basic product knowledge.

Moody (1980) found that companies that had won design awards in high technology industries tended to favor employing free-lance industrial designers. The primary reason given for this policy was "flair". Companies admired flair in their designers and felt such flair was found more commonly in free-lance designers that had worked with a number of companies rather than in-house designers that became limited

in their creativity due to the influence of company culture. Flair was defined to include such attributes as the ability to couple aesthetic sensibility with engineering sensibility, the ability to couple styling skills with knowledge of materials and production economies, and the ability to generate enthusiasm among the rest of the design and development team.

Step 3. Designers Prepare Mechanical Drawings

An extension of the preparation of sketches by designers is the preparation of mechanical drawings. Mechanical drawings are generally made from the best ideas emerging from the initial sketches, as determined by the product development committee. According to Tierney (1995), the *design* component of the furniture development process encompasses several activities, including a) preliminary sketch-work by the designer, b) client approval of some of the sketches for further development, c) creation of more detailed sketches by designers, and d) approval of the detailed sketches by the client, leading up to the manufacturing stage of the product development process.

Companies can vary in the extent of information that is given to designers to elaborate in the form of sketches and mechanical drawings. If products are initially over-specified, the creativity of design staff or consultants can be hampered (Oakley 1984). In such cases, the designer embarks on a "pair-of-hands" assignment where formulation of a solution to a tightly defined problem is the designer's only real role. A fully-fledged design process, however, includes conceptualization of company needs, interpretation of how these needs can be met through product design, and implementation of the formulated solution (Topalian 1980).

Step 4. Mock-up or Prototype Construction

From the mechanical drawings, mock-ups or prototypes are built and presented to the product development committee. Mock-ups are furniture samples, containing fronts, tops, sides, but no working parts in the case of dressers or chests (Bennington 1985). Prototype development involves taking the design specifications from the mechanical drawings and producing the product, given the manufacturing capabilities of the firm. However, an important consideration when dealing with prototypes is that these are often

produced using "one-off" techniques rather than in situations resembling full-scale production (Oakley 1984). Sample makers often have their own machine shop away from the actual production line that is used to make mock-ups (Bennington 1985). The production feasibility must therefore not be overlooked when evaluating prototypes.

Step 5. Product Planning Committee Review

Mock-up evaluation generally entails a review by the product development committee. The committee determines from the mock-ups which pieces are most salable, and determines an initial price (Bennington 1985). This review usually involves the marketing/selling function more than the manufacturing function, as many of the manufacturing issues are worked out during mock-up production. This step represents the last major internal new product review before displaying the product in the marketplace. However, the nature of the furniture industry is such that some exclusive, dealer-only viewings occur before the product reaches the consumer marketplace.

An initial pricing strategy is also often developed at this point. Since companies generally specialize in production of furniture at specific price-points (i.e., low, medium, or high), a new furniture group will be designed and produced at a targeted price-point. Retailers' acceptance of the product at the selected price-point will be determined at later stages of the process (Sinclair 1992, Skinner and Rogers 1968). As the process proceeds, prices for pieces in a new group can be altered based on dealer response or production costs. Since furniture products tend to be grouped into price-points, product differentiation becomes very important within any given price-point category (Sinclair 1992, Bennington 1985). This is an example of how product design is related to other product attributes, such as price, in the furniture industry.

Step 6. Pre-market Reviews

Many large furniture manufacturers participate in a function known as Pre-market, a time when major retailers are invited to come to the manufacturer's showroom and view the projected offerings. Mock-ups, as opposed to actual working furniture pieces, are generally shown at Pre-market. Retailers provide feedback concerning the

new products at this time and are free to place orders if they feel the design and price are right (Bennington 1985). It has been found that retailers place about 6 percent of their yearly orders during Pre-market (Michael and Smith 1996). More important than order placement for many companies, however, is the feedback provided by prospective retail customers, which can lead to design alterations before the product is presented at Market about a month later.

Step 7. Display of New Product at Market

Showings at a furniture Market are next, a time when completed samples are displayed, orders are taken from retailers, and retailers' overall perceptions of the displays are evaluated (Bennington 1985). Markets are a type of trade show where manufacturers exhibit new products in showroom or gallery settings to retail buyers. Manufacturers generally maintain permanent showrooms at the Market sites. There are several major furniture Markets held throughout the United States, most occurring biannually. Major Markets are held in Atlanta, Dallas, Chicago, San Francisco, and High Point, North Carolina. The Market at High Point is the world's largest (Sinclair 1992). Smaller regional Markets are held in Tupelo, Jamestown, Seattle, Minneapolis, and Los Angeles. Major international markets are held annually at Cologne, Germany; Milan, Italy; and Tokyo, Japan (Michael and Smith 1994, Sinclair 1992).

Market is also a good time for manufacturers to determine how much interest their new products generate among retail buyers, even if orders are not actually placed. It has been found that about 51 percent of retailers' yearly orders are placed during and within six weeks after market (Michael and Smith 1996). Other authors have claimed that manufacturers obtain up to 40 percent of their orders during Market periods (Skinner and Rogers 1968). In addition, retailers often have several non-buying objectives when visiting markets, such as seeing new product introductions and actual product features (Michael and Smith 1996).

Despite a trend of increased brand name promotion by furniture manufacturers, furniture Markets remain the primary marketing tool for household furniture manufacturers (Sinclair 1992). The furniture markets are especially important when distribution strategies for household furniture are considered. The overwhelming

majority of household furniture is promoted and sold directly to retailers, with wholesalers being only a minor distribution channel (Sinclair 1992). Reliance on such push strategies assumes personal-selling efforts by retailers will affect consumers' brand purchasing decision (Michael and Smith 1995). It also means product innovations like character-marked furniture must pass through retail markets before becoming available to consumers.

There are both advantages and disadvantages to furniture manufacturers' reliance on Markets. Advantages include the opportunity to display entire product lines in room-like settings, the opportunity to meet major customers directly, and the opportunity to test-market new products by evaluating retailer reactions (Sinclair 1992). Disadvantages include the strong, direct competition occurring at Markets, the pirating of designs, and pressure to generate new product for display at each Market (Sinclair 1992, Skinner and Rogers 1968).

Two important points emerge from the importance of furniture Markets to the marketing mix for household furniture. First, new product introductions are quite important to household furniture manufacturers, due to the direct competition faced at furniture Markets and the need to stand out from competitors. Second, business relationships between manufacturers and retailers of household furniture are very important, with the customer only secondarily represented through the retailers. It has been reported, however, that consumer demand is the most important factor influencing retailers' furniture purchasing decision, followed by furniture Markets and sales calls made by manufacturers' sales forces (Michael and Smith 1995). The use of character-marks must therefore be accepted at both the manufacturer- and retail-level before widespread market acceptance can be achieved.

Step 8. Evaluation of Orders After Market

The fact that a new furniture product is deemed worthy of Market introduction does not necessarily mean that it will ultimately make full production. Pieces or entire groups which generate little interest during or immediately after Market may not be manufactured due to a lack of profit potential (Bennington 1985).

Step 9. Full Production

For new product samples that generate adequate interest at Market, full production is scheduled (Bennington 1985). Case goods companies can vary, however, in their production and warehousing strategies. Some companies may choose to produce a certain number of cuttings of a new group and then sell from warehouse inventory, whereas other companies might produce cuttings only to fill orders with little or no warehousing. While production schedules are simplified using the former strategy, larger inventory costs are incurred (Bennington 1985).

Purpose of the Present Research

The objective of this study was to identify the *specific* activities involved in the major stages of the product development process for large case goods manufacturers. The “major” stages were determined by the preceding literature review as well as primary data collection. Of particular interest was a determination of how character-marked furniture passes through this process, from new idea to final product. This requires a deeper understanding of the specific activities occurring within each major stage of the product development process than what is currently available in the literature, such as with the Bennington (1985) model. The data collected for the present research can be used both to supplement the Bennington (1985) model and verify that the model is still valid nearly 15 years after its publication.

Although most models of the product development process are similar in the stages or steps included (regardless of the industry investigated), most do not provide enough detail to understand how an innovative product like character-marked furniture would be developed or how different functional areas relate at different stages in the process. Furthermore, such details are likely to be industry specific, suggesting the need for more in-depth investigations of the product development process. For example, the model of product development in the medical supply industry by Rochford and Rudelius (1992) makes no mention of design, although design is expected to be a critical part of product development in the furniture industry.

The model presented in this research is intended to be descriptive in nature, generalizable primarily to large case goods manufacturers. This research will lead to a greater body of knowledge concerning potential difficulties large case goods manufacturers face when developing character-marked products, as well as ways to encourage increased use of character-marks in hardwood furniture.

METHODS

Qualitative Research

The data involved in this study were primarily qualitative in nature. Sixteen companies were contacted for on-site, semi-structured interviews with a case study of the product development process emerging for each company. Yin (1981) claims that the distinguishing characteristic of case study research is that contemporary phenomenon can be investigated in real-life context. The limited sample size allowed for in-depth information to be obtained from a well-defined population of interest. Kvale (1996) claims that generalizability is possible with qualitative interview studies if populations of interest are clearly understood. In a sense, with qualitative methods such as case studies, the issue of generalizability often rests more with the reader than with the researcher, with the reader determining whether the qualitative study has investigated a phenomenon that can be applied to his/her situation. With judgment samples, which are common to qualitative interview research, it is really the sample itself that is of interest, not some broader population (Hernon 1994). Kvale (1996) also noted that there is a trend away from broad generalizations in favor of more local understanding in the social sciences.

Data Collection

The population of interest for this research was large case goods manufacturers in North Carolina and Virginia. Large companies were chosen because such companies offer the greatest opportunities for large-scale character-mark usage. The study region was chosen because it is the center of the case goods industry. According to *Furniture Design and Manufacturing* (1997), for example, nearly one-sixth of the 300 largest North American furniture and cabinet companies (in terms of sales) have their headquarters in the two state region of North Carolina and Virginia. However, when only case goods

manufacturers are considered, this percentage is substantially higher, rising to approximately 30 percent. Most of the large case goods companies in this region are located in southwest Virginia and central North Carolina.

The sample frame was generated from the *Furniture Design and Manufacturing* (1997) list of the 300 largest North American furniture manufacturers. Companies appearing in this list that produced either dining room or bedroom furniture and that were located in North Carolina or Virginia served as the sample frame. Since this list contains the 300 largest North American furniture companies based on sales, it was considered to be a valid list of large companies. The smallest company in the list, for example, had sales of \$12 million in 1996. The initial sample frame contained 31 companies. In the process of setting up interviews, it was determined that four companies did not belong in the sample frame, resulting in a final sample frame of 27 companies. Of the 11 companies in the sample frame that were not interviewed, most were contacted, but no connection with the person of interest was made. Companies were chosen at random within the sample frame to receive calls to set up interviews.

The model was developed from data gathered during on-site, semi-structured, tape-recorded interviews with 14 large case goods companies in North Carolina and Virginia. Additional interviews were conducted via telephone and during an unrecorded showroom tour, resulting in a total sample of 16 companies. It is common for qualitative research to include 15 ± 10 interviews (Kvale 1996). The average interview lasted 38 minutes (standard deviation = 12), and some interviews included multiple respondents. Persons targeted for interviews included vice-presidents or managers in marketing, sales, or product development, as Table 2.2 indicates. Despite the somewhat broad range in position "types", nearly all respondents were members of their company's product development committee, respectively. Appendix B shows a schedule of the interview questions.

Respondents were asked to rate the extent to which their company participated in the Stage-specific product development activities revealed in the interviews, using 7-point rating scales. Respondents were also asked to indicate which Stages in the model included decisions regarding use of character-marks, and which Stage was typically most important in the final decision to use character-marks in a new furniture group.

Appendix C shows the questionnaire developed for the mail survey.

Both interviewed (n=16) and non-interviewed (n=11) companies were involved in the mail survey. The interviewee at each company was targeted for the mail questionnaire. For non-interviewed companies, the original contact person was targeted. Thus, marketing/sales/product development personnel were the respondents. Eleven usable mail survey responses were received from the 16 interviewed companies. Two unusable responses were received (in one case the original contact had left the company and in another case the company had gone out of business since the time of the interview), resulting in an adjusted response rate of 79 percent. Four usable responses were received from the 11 companies not interviewed, resulting in a response rate of 36 percent.

Data Analysis

A quantitative check for nonresponse bias was possible since questionnaire responses were obtained from both interviewed and non-interviewed companies. Three demographic measures, including number of employees, operating price-point, and number of designers were used to compare interview respondents to interview nonrespondents using independent two-sample t-tests (one-sample Kolmogorov-Smirnov tests with Stephen's modification indicated that all of the demographic data followed a normal distribution for both respondents and nonrespondents). None of the tests were significant ($P=0.22$ for number of employees, $P=0.65$ for price-point, and $P=0.10$ for number of designers), suggesting that nonresponse bias was not a problem in the study. An additional check for nonresponse bias was conducted based on the stage in the product development process companies reported to be the most critical to the use of character-marks. Due to the ordinal (i.e., non-metric) nature of this data, the Mann-Whitney U test was performed to compare interview respondents to interview

nonrespondents. A *P*-value of 0.95 was obtained, suggesting no statistical difference. Nonresponse problems were further reduced by the specific nature of the population definition and the relatively high response rate. Nonresponse bias was therefore not considered to be a problem in this study.

A base model of the product development process was developed after reading and becoming familiar with the transcripts (verbatim) of the recorded on-site interviews. To accomplish this, a data form was developed to keep track of companies reporting participation in specific Stages and Stage activities. At this point, only the major or most salient Stages and activities were recorded. Once the base model was developed, each individual company case study was carefully "fitted" to the base model, with "hits" to existing Stages and Stage activities being recorded. If a company case study revealed a Stage or activity that did not appear in the base model, that Stage or activity was added to the base model. Then subsequent companies mentioning the added Stage or activity were recorded as "hits". This process continued until all 16 companies were added to the final model.

The base question for development of the model asked the respondent to describe the steps involved in moving a new product from an idea to a tangible product. Additional information regarding the process was gained from related questions asked later in the interview involving such issues as designers, sources of new product ideas, and the internal structure of the company, concentrating on the product development committee. The companies' policies regarding character-marks and physical distressing were also discussed in the context of the product development process, as well as in a marketing context.

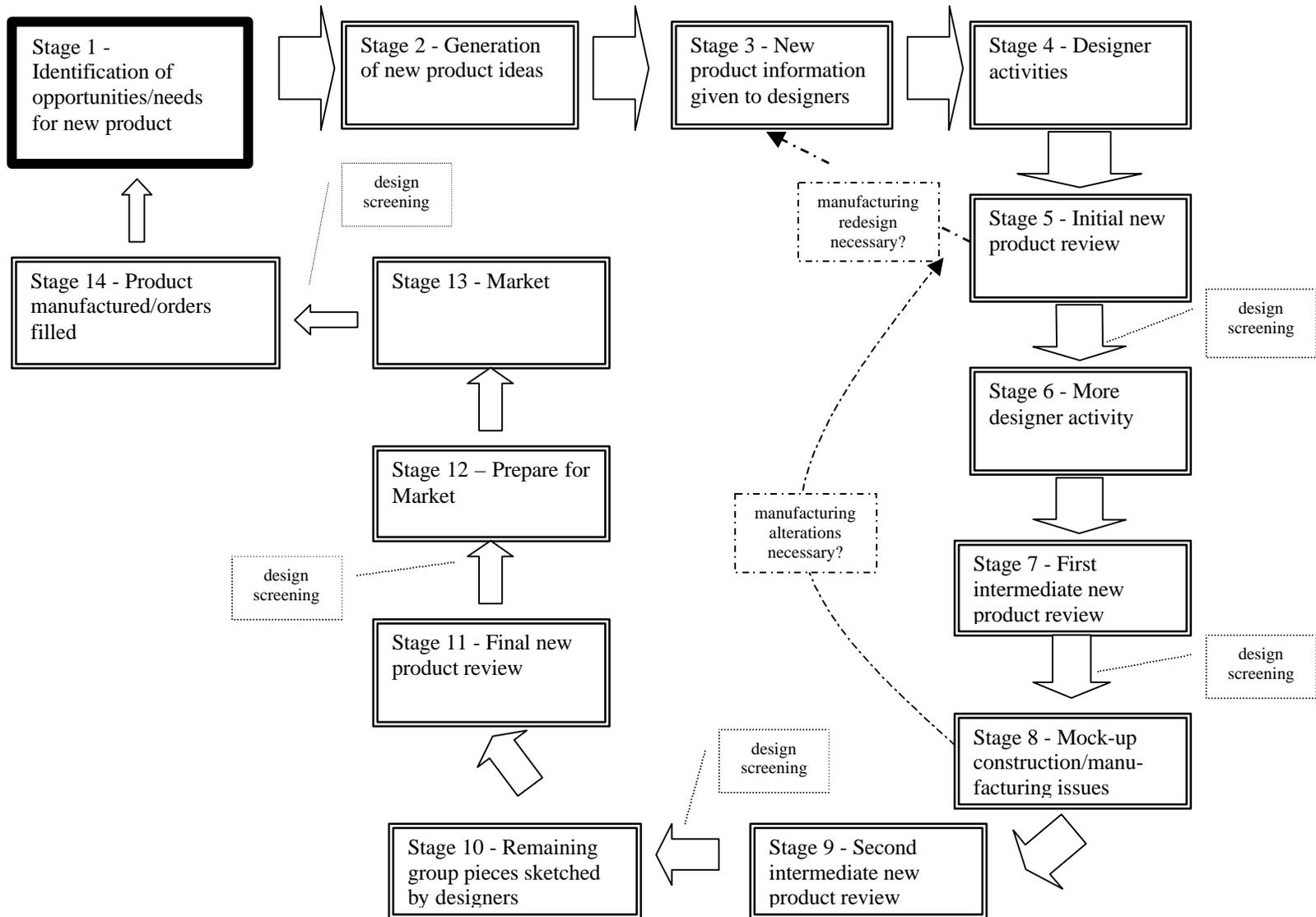
Results from the mail survey were compared to results from the interviews to determine the validity of the model. When a Stage activity with a high proportion of "hits" from the interviews corresponded to a Stage activity with a high scale average based on the questionnaires, evidence of validity was concluded. Data from the questionnaires were also used to verify which Stages were important in the decision to use character-marks.

RESULTS

A Descriptive Model of the Product Development Process

Figure 2.5 shows a conceptual model of the product development process based on the findings of this study. The boxes indicate major Stages in the process, while the dashed lines indicate backward loops in the process that can lead to iterations. For example, the loop from Stage 5 to Stage 3 indicates that manufacturing problems may be detected once designers have created sketches, resulting in updated information being presented to designers for development of new sketches. The arrows connecting the Stages occasionally become smaller (as indicated by the boxes with broken lines) to indicate that the number of design ideas declines as the process moves into the later stages. The implication is that only a select few of the original new product ideas ever become tangible products, as most are screened out at certain Stages in the process. The model is presented as a cycle to indicate that most needs for new products arise from existing products becoming obsolete.

Figure 2.5 – A conceptual model of the product development process for large case goods manufacturers.



Details of the Product Development Process

The following discussion provides details of the product development process presented in Figure 2.5. The fractions indicate how many companies reported "hits" for a particular Stage or Stage activity in the model. Not all fraction denominators equal 16 since some respondents only discussed the initial stages of the process. Following each summary table of Stage activities are qualitative discussions of a) details about the activities occurring in that Stage, and b) details about decisions regarding character-mark usage at that Stage.

Stage 1. Identification of opportunities/needs for new product

This Stage is generally the starting point of the product development process for furniture companies. Fourteen of sixteen companies reported looking at their existing product lines or looking to the marketplace in some strategic way prior to specifically searching for new product ideas. Table 2.4 reveals specific initiators that companies reported can start the product development process. This Stage is not explicitly mentioned as a step in the Bennington (1985) model of the product development process in the furniture industry. It appears that Bennington (1985) combines the first three Stages of the present model into a single step.

Table 2.4. Summary of activities occurring at Stage 1.

Stage 1	14/16
Stage 1 Activities:	
learning of popular style categories in the marketplace	8/14
determining voids in style categories in existing product line	5/14
seeking out competitive activity within targeted style categories	5/14
formation of basic product <i>concept</i> or <i>theme</i>	4/14
knowing company's <i>niche</i> in the marketplace	3/14
consumer research	2/14

Details about activities occurring at Stage 1

Learning of popular looks and styles in the marketplace was the most frequently reported source of opportunities/need for new products. One company reported trying to mirror the image of what was selling nationally as the impetus for new product development. Another company reported that a new product development project started

with identifying a style category that had been "very successful for a few companies." A major theme for identifying opportunities for new products suggested by many companies was differentiating new products in popular style categories. One company reported wanting to "avoid overlap" with competitor's products within popular style categories.

Several companies reported specific details of how Stage 1 was viewed. For example, some companies reported that at least one group was always offered in all major style categories to eliminate voids in the product line. If such voids existed, that could be the impetus for development of a new group, so the company "could stay strong in all style categories." Similarly, another company reported that the product development process started with plans to make the product line stronger for six to twelve month planning periods by "plugging in" new groups to "carry the company forward." One company reported that the bedroom component of the company's product mix was where most new product projects originated, even though bedroom was a relatively small percentage of total sales.

One source of opportunities for new products that appeared relatively unimportant to furniture manufacturers was consumer research. Only one company out of 16 reported that it was starting to do "a great deal" of consumer research. Another company indicated that consumer research was limited to learning of consumer demographics from warranty cards.

Most companies reported that new product development was basically a six-month process, beginning with identification of opportunities and needs for new products. This corresponds to the biannual furniture Market held at High Point, North Carolina. One company indicated, however, that once a product concept was formed, the remainder of the process could occasionally take up to two years until Market introduction.

Details about character-mark usage at Stage 1

No companies reported consideration of character-mark usage during this Stage of the process.

Stage 2. Generation of new product ideas

Given the general product direction or style category emerging from Stage 1, fourteen of sixteen companies reported a period of looking for new product ideas. This often involves travel by product development personnel, but several other sources were reported, as indicated in Table 2.5. This Stage is not explicitly mentioned as a step in the Bennington (1985) model, but rather constitutes part of the initial step.

Table 2.5. Summary of activities occurring at Stage 2.

Stage 2		14/16
Stage 2 Activities:		
travel by committee members		9/14
searching stores (i.e., retail, antique) for popular looks	6/9	
on-site retailer feedback	5/9	
retailer feedback otherwise generated		6/14
seeking input/advice from designers		6/14
designers go on trips with committee	4/6	
designers' existing market/product knowledge	3/6	
feedback from sales representatives		5/14
reading various forms of printed media (i.e., shelter magazines, trade publications, etc.)		4/14
solicitation from potential endorsees		3/14
initial cost research		2/14
specific dealer requests		1/14
manufacturing capabilities		1/14

Details about activities occurring at Stage 2

All furniture companies in the sample utilized committees for product development. The committee's duties in the product development process were extensive and diverse, including such activities as new product idea generation, design screening, product feature determination, and looking at regional maps or landmarks to generate names for new products to name a few. Appendix D lists the positions of committee members among the sample companies. While the manufacturing function was only occasionally represented in these committees, most companies reported early involvement of manufacturing representatives (i.e., by Stages 4 and 5).

Most of the interviewed companies relied primarily on travel for generation of new product ideas. Such trips for new ideas generally involved product development or

marketing personnel, and sometimes designers. While several companies indicated that it was advantageous to have designers go on the trips, most companies did not report such designer involvement. One company indicated that most travel was done by the vice president of marketing, limiting the need for the in-house designer to travel. Popular destinations included retail furniture stores and antique stores. One company, which made youth bedroom furniture, mentioned baby stores as an occasional destination. Due to the nature of furniture as a fashion product, the trips for new ideas are often region-specific, with separate new ideas emerging for each region visited.

Perhaps the most interesting comment made by an interviewee concerning generation of new product ideas was that "nothing is revolutionary in furniture." Most new products are variations on a theme or a differentiated product within a popular style category. Most companies indicated that they try to determine what consumers want indirectly, such as looking at shelter magazines. One company hung magazine pictures in their product development room to develop the "flavor" of the pending new group. Another company indicated that "there's no consumer feedback at all" regarding new product ideas, reinforcing the notion that most new product ideas are only indirectly derived from consumers.

Apart from considering consumers when looking for new product ideas, as one company stated, ideas can come "from anywhere." An example offered by one company was a restaurant door seen by a company's marketing representative. Several companies indicated that entire groups could be designed with single furniture parts (e.g., a table leg) serving as the initial idea or theme. This is the point at which the furniture designer primarily becomes involved in the process.

Details about decisions regarding character-mark usage at Stage 2

No companies reported consideration of character-mark usage during this Stage of the process.

Stage 3. New product information (or basic product idea) given to designers

Once new product ideas have been generated within a targeted style category, fifteen of sixteen companies reported passing information on to designers. The extent of the information given varies by company, as indicated in Table 2.6. This Stage essentially corresponds to the first step in the Bennington (1985) model, when combined with Stages 1 and 2.

Table 2.6. Summary of activities occurring at Stage 3.

Stage 3	15/16
Stage 3 Activities:	
desired style category given to designers	8/15
desired finish given to designers	5/15
desired geographic region given to designers	5/15
desired wood species given to designers	4/15
desired price-point given to designers	3/15
desired types of pieces (e.g., sleigh bed) given to designers	3/15

Details about activities occurring at Stage 3

The information that is passed to designers is the raw input into the product development process. It is the information which designers use to transform abstract product ideas into unique, marketable products. As one company indicated, information like design components, wood species, and finish are the elements that differentiate competing products in popular style categories. Another company revealed the key elements of the typical product concept, stating, "in today's market, we think of the theme. . .first. . . probably second lumber species. . .third finish, and the style kind of ties into all of that." Another consideration the committee often makes before the basic product information is given to designers is "how many corners we are going to have to cut" to achieve the desired look at an acceptable price-point. This determination is based largely on the manufacturing capabilities of the facility. The designers are then expected to work within the given cost parameters.

Designers utilized by furniture companies were either employees of the company (i.e., "in-house" designers) or contract (i.e., "free-lance") designers. Some companies reported using a combination of in-house and free-lance designers. While most companies utilized multiple designers, two companies reported using a lone in-house

designer. When asked the advantages of using in-house designers, companies typically reported *availability* and/or *design turn-around speed*. *Exposure to the marketplace*, *commission costing*, and *incentive* were commonly cited advantages of using contract designers.

A few companies reported using a single in-house designer. For companies using one in-house designer, the designer was a prominent member of the product development committee, and generally well respected by the other members of the committee for their product knowledge. In such instances, information was not necessarily passed on to the designer, but rather the designer was actually involved in developing the initial product information.

Details about character-mark usage at Stage 3 (reported by 3/16 companies)

A few companies indicated that character-marks begin to be considered at this Stage, mainly in the form of information passed on to designers. However, this information is often a secondary consideration at this point. For example, several companies indicated that the use of character-marks and physical distressing is primarily a finish issue, and desired finish is sometimes part of the product information passed on to designers. Other companies indicated that use of character-marks is a wood species issue, which can also be part of the initial new product information passed on to designers.

One company indicated that designers are informed of the "flavor" of a new group (i.e. the intended use of character-marks). This can be especially true when developing endorsed groups, where a specific look or feel is critical to the product concept. Endorsed products originate when an outside party brings a new product idea to the manufacture and allows for usage of the party's name in promotion. However, at many companies, the designers had little to do with decisions concerning character-marks. As one company indicated, character-marks are simply "not paid attention to" at the design stage.

Stage 4. Designer activities

Designers are primarily involved in developing initial product designs based on the information provided to them in Stage 3, as reported by fifteen out of sixteen companies. Some designers are given broad flexibility when given a new design project, while others are given more rigorous guidelines. While most designers are involved primarily in sketching at this point, some are also given responsibility concerning product characteristics and manufacturing considerations, as indicated in Table 2.7. Also, it is at this Stage that designers draw on their own market information and product knowledge to design relevant new products. This Stage corresponds closely to the second step in the Bennington model.

Table 2.7. Summary of activities occurring at Stage 4.

Stage 4		15/16
Stage 4 Activities:		
sketches/drawings of proposed designs prepared by designers		12/15
designer idea generation (designers' parallel to Stage 2)		9/15
general exposure to the marketplace/competitors products	8/9	
ideas generated from travel	6/9	
ideas generated from printed media	3/9	
preferences for product characteristics suggested by designers		7/15
finish preference	5/7	
hardware preference	4/7	
species preference	3/7	
design <i>feel</i> or <i>look</i>	3/7	
initial cost estimates	2/7	
manufacturing capabilities considered by designers		4/15

Details about activities occurring at Stage 4

Most companies reported similar attributes when describing a good designer. For example, some companies indicated that designers are paid for their "eye", "feel" "creativity", and "originality." Designers are critical to the product development process, generating designs from abstract new product ideas. Some companies indicated that it was also important for designers to have a good understanding of the company's manufacturing facilities. In this way, designers are "responsible for making sure that the product can be made."

There was evidence at some companies that designers were expected to be less creative and more technically oriented, following rigid guidelines set forth by the product development committee. According to one in-house designer, "we don't make decisions, we direct and give advice." Another company indicated that designers are expected to "find solutions to problems." The companies surveyed reported varying degrees of designer responsibility concerning product characteristic determination. Some designers were given assignments where fairly strict guidelines or product constraints were associated with the design projects. Other designers were given considerable freedom when design projects were passed on to them. No clear trends emerged between type of designer (in-house, contract) and type of design project (low constraints, high constraints).

When a company utilizes contract designers for a project, work from multiple designers is sometimes sought. The company then retains the designer that generates the most salable design. Often, three to four free-lance designers will be used in this fashion. One company indicated that each free-lance design generates about ten drawings for each new product design. Another company indicated that the in-house designer typically develops approximately six pieces of hardware and 12 finished panels for the committee to consider for each new design project. When a company has an in-house design staff, they often will use computerized design tools like CAD systems.

Details about character-mark usage at Stage 4 (reported by 9/16 companies)

In addition to developing sketches from product information provided by the design committee, designers at some companies are involved in suggesting product characteristics like wood species and finish. Since character-marks are often a function of wood species and finish, suggestions regarding these characteristics often have implications for use of character-marks. Many companies reported that designers had suggested the use of character-marks in new furniture groups in the past. It is important to keep in mind, however, that while designers make suggestions concerning product characteristics, they do not hold much decision-making authority (except in the case of lone in-house designers sitting on the product development committee). An important difference between companies was the extent of the influence designers had over the

decision to use character-marks. In some companies, designer's suggestions to use character-marks were generally "accepted real well," while at other companies the suggestions were "usually overridden" by the product development committee. No clear relationship emerged between type of designer (in-house versus contract) and influence concerning character-marks. It seems a more important consideration is the success a company has had with character-marked furniture. Companies with success using character-marks seemed more likely to listen to designers' suggestions to use character-marks in new groups.

It is important to note that in some companies, designers "don't really get involved" with use of character-marks. In such cases, the decision to use character-marks comes later in the process, such as in Stage 5, when decisions concerning wood species or finish is made by the product development committee. For example, one company indicated that the designer's initial sketches are "silhouettes" of proposed pieces and the basis for further evaluation as the process proceeds.

Most companies indicated that a dealer's suggestions concerning use of character-marks would have greater impact than the same suggestion by a designer. This would be somewhat expected based on the importance of dealer feedback concerning new product ideas and the push nature of the furniture industry. However, one company indicated that designers have a better handle on market trends due to their "global view" of the marketplace as opposed to retailers, who are oriented more toward what is happening in their own stores. Thus this company would listen to a designer's suggestion to use character-marks more than the same suggestion by a retailer.

Stage 5. Initial new product review

Once designers have developed initial product designs (and perhaps suggested some product characteristics), an initial new product review or screening is conducted, as reported by fifteen of sixteen companies and shown in Table 2.8. The committee members usually carry out this review, with designers or key retailers and salespeople sometimes invited to the committee meetings. Representatives from manufacturing are often involved, to help determine the manufacturing feasibility of the initial new product designs. A few companies also reported involving dealers in an initial new product review, using visual cues like drawings or wood samples as the basis for feedback. This Stage is not explicitly mentioned as a step in the Bennington (1985) model, but Bennington (1985) does discuss several of the Stage activities.

Table 2.8. Summary of activities occurring at Stage 5.

Stage 5		15/16
Stage 5 Activities:		
committee review		14/15
screening of designers' initial sketches		11/14
key dealers involved	1/11	
designers involved	2/11	
determination of product characteristics		8/14
species determination	7/8	
finish determination	7/8	
hardware determination	2/8	
piece-type determination	1/8	
manufacturing representatives review (i.e. plant managers, vice president of production)		8/15
shapes, lengths, etc.	3/8	
cost efficiency	3/8	
lumber inputs, feature size	1/8	
dealers review		2/15
sketches	2/2	
pictures	1/2	
wood samples	1/2	
hardware samples	1/2	

Details about activities occurring at Stage 5

It is at this Stage that new products truly begin to come into focus, as the product development committee picks the most promising design sketches and begins to assign

final product characteristics, such as wood species, finish, and hardware. At this Stage, drawings begin to turn from "silhouettes" to tangible products. Many factors need to be taken into account at this Stage. For example, one company indicated that species determination was a function of availability, cost, manufacturing ease, and finishing potential, as well as intended look - thus this decision involves multiple persons, including both marketing and manufacturing representatives. As another company stated, product development in furniture essentially is about hitting desired price-points with acceptable designs.

It is at this Stage that manufacturing representatives become important in the product development process. While marketing and product development personnel review designer's work primarily from a look and selling perspective, manufacturing representatives review the sketches on the basis of manufacturing feasibility and cost. As one company stated, "we'll go a different direction" if the vice-president of production determined a design could not be manufactured. Another company stated, "we are not going to do a suite the manufacturers do not want to do." Although redesign may be necessary if manufacturing representatives determine proposed groups cannot be produced, the intended look must be maintained, otherwise the proposed design is thrown out altogether. Companies are essentially looking for a nice "marriage" between intended look and manufacturing ease. As one company stated, it is better to determine manufacturing problems at this Stage than later in the process when mock-ups are produced. One company stated that the designers actually meet directly with plant managers regarding proposed designs at this Stage. This is an example of an interaction or iteration between Stages in the product development process. Bad designs, from a manufacturing perspective, might be routed back to Stage 3 with information provided to designers regarding necessary design alterations.

The design screening often results in a substantial reduction in the initial design pool. Recall that some designers are asked to develop 10 sketches for each new product idea. For example, one company indicated that the initial design pool was "whittled down" to about 20 percent of original at this Stage. Another company indicated that the design pool might be screened from five sketches of a bed down to one or two. In addition to reducing the initial design pool, some companies look to alter promising

designs in terms of product characteristics (e.g., species, finish) and develop them to be sold as essentially the same design in different geographic regions, or to different retail accounts in the same geographic region.

Only two companies reported involving dealers at this Stage. Consequently, this Stage is predominately an internal affair. For the companies involving dealers, designer's renderings were presented to "various companies" or "advanced conversation" was generated from field research of 10-12 key dealers nationwide.

Details about character-mark usage at Stage 5 (reported by 6/16 companies)

As the Stage most critical to selection of product characteristics like finish and wood species, Stage 5 is perhaps the most critical to the decision to use character-marks in a new group. Wood material issues include lumber grade and species, while finish issues include how well character-marks "marry " with the finish in terms of look and to what extent the finish can hide "less select pieces." As one company stated, character-marks are a finish/species-related issue determined "in the early stages of development after the sketches are completed."

One company provided details of a recent product development project, where several different wood species and grades were considered. The product development committee considered solid oak, knotty oak veneer, solid ash, and ash veneer for a new occasional table, and eventually decided knotty oak veneer was the best choice for the particular table group, based on both look and cost considerations. Another company indicated that manufacturing considerations were as important as marketing considerations in determining species and finish. These two functions will often discuss collectively what is to be considered an "acceptable level of defects" in the wood material used. This consideration involves material cost, intended look of the group, ease of manufacture, and how well the material selected will take the intended finish.

In companies where designers have influence over the product characteristics, this is the Stage where the product development committee makes final determinations concerning such suggestions. For example, some companies indicated that the committee could overrule designers' suggestions of wood species at this Stage.

Stage 6. More designer activity

Once the initial product review and screening is completed, designers are often called upon again to develop technical, mechanical, and in-depth design drawings which will serve as the basis for mock-up construction and/or secondary product reviews later in the process. Six of fourteen companies reported this stage, as indicated in Table 2.9. However, other issues, such as design scale, are also occasionally an important issue here, especially when designers are making mechanical drawings of unfamiliar product types. This Stage corresponds closely with the third step in the Bennington (1985) model.

Table 2.9. Summary of activities occurring at Stage 6.

Stage 6		6/14
Stage 6 Activities:		
technical specifications developed (mechanical drawings)		5/6
detail work developed (detailed design drawings)		4/6
scale determinations made		1/6

Details about activities occurring at Stage 6

While this Stage is generally straightforward in terms of what is expected from designers at most companies, one company indicated that designers' color renderings will show physical distress marks when suitable for the group. This gives both the committee members and dealers, if they are asked to provide feedback, more of a feel of how the actual product will look. Another company described designers' work at this Stage as "real nice color sketches." One other note is that scale is an important issue at this Stage, as designers often create full-size mechanical drawings for use in mock-up construction. This can be an especially important issue when a designer is asked to make drawings of an unfamiliar product type, such as a case goods designer being asked to draw an occasional table.

Details about character-mark usage at Stage 6

No companies reported consideration of character-mark usage during this Stage of the process.

Stage 7. First intermediate new product review

Sub-stage 7a. Internal review of mechanical/design drawings by committee

This seldom reported Sub-stage (one out of fourteen companies) includes an intermediate new product review by the *product development committee*, based on the more detailed design and mechanical drawings rendered by designers in Stage 6. When combined with the next Sub-stage, a first intermediate new product review is represented, as shown in Table 2.10. Stage 7 is not mentioned in the Bennington (1985) model.

Sub-stage 7b. Product review (color sketches) by key customers

This seldom reported Sub-stage (two out of fourteen companies) represents an intermediate new product review involving *customers* (namely dealers) rather than the internal committee. One of the companies appearing here is the lone company reporting activity in the previous stage. Both companies reporting activity in this stage utilize detailed color drawings rendered by designers.

Table 2.10. Summary of activities occurring at Stage 7.

Stage 7	3/14
Sub-stage 7a - Internal review of mechanical/design drawings by committee	1/14
Sub-stage 7b - Product review (color sketches) by key customers	2/14

Details about activities occurring at Stage 7 (including Sub-stages 7a and 7b)

Stage 7 was only reported by a small number of companies. For companies engaging in this Stage, proposed designs are again screened, both internally and externally, and often a few designs will emerge from the already reduced design pool as the most promising. One company indicated that about half of 6-8 ideas usually emerge from this Stage as good prospects for further development. The same company indicated that feedback from retail salespeople is sought at this point because such persons have a good perspective of the "big picture" of what's selling at the time.

Details about character-mark usage at Stage 7 (reported by 2/14 companies)

As mentioned in Stage 6, the color sketches rendered by designers might contain distress-marks. While this is a minor consideration internally at this Stage (the committee members already know about the proposed distressing), it can be more important when reviewed by dealers, as occasionally occurs at this Stage. Dealers might be able to tell from the sketches whether the physical distressing marries well with the overall look of the piece, as indicated by the drawings.

Stage 8. Mock-up construction/manufacturing issues

Thirteen out of fourteen companies reported this important manufacturing-related stage. Although mock-up production is the key activity at this stage, manufacturing feasibility is also determined here when the mock-ups are made. Such information is often unavailable until actual production of mock-ups is carried out. As mock-ups are made, alterations might be made to the initial designs, as indicated in Table 2.11. This Stage corresponds closely to the fourth step in the Bennington (1985) model.

Table 2.11. Summary of activities occurring at Stage 8.

Stage 8		13/14
Stage 8 Activities:		
mock-ups built		13/13
manufacturing feasibility determined for the new group		6/13
manufacturing alterations made to the new designs		5/13
shapes, lengths, etc.	4/5	
lumber inputs, feature size, etc.	1/5	
cost efficiency	1/5	

Details about activities occurring at Stage 8

Mock-up construction is the first major production activity occurring in the product development process. Mock-ups are critical as a source of product evaluation for both the furniture company and the dealer. However, they also represent the first opportunity for consideration of ease of manufacture. As one company indicated, some manufacturing problems are not revealed until actual mock-ups are built. Another company indicated that after manufacture, mock-ups might lose a lot of original look due

to manufacturing alterations. Thus an interaction might occur between Stages 8 and 5, as iterations in the process might be necessary if design alterations emerge as necessary during mock-up construction. However, these alterations will involve the committee more than the designers because minor adjustments to the existing designs are usually what are involved, not major redesign.

Common to most companies was the desire to achieve a "nice marriage" between proper look and production efficiency. Thus, there is often direct interaction between product development or marketing personnel and production personnel during this Stage. For example, merchandising managers at some companies reported going over design details with factory engineers just prior to mock-up construction.

Details about character-mark usage at Stage 8 (reported by 1/14 companies)

One company indicated that the manufacturing function had considerable influence over the decision to use character-marks, as this function was substantially affected by such a decision. Manufacturing issues associated with character-marks include mark orientation in the piece, defecting, and repair such as filling knots. Thus, manufacturing has considerable influence over determination of what is "an acceptable level of defects" in a new furniture group. This determination is often made at this Stage.

Stage 9. Second intermediate new product review

Sub-stage 9a. *Internal* new product review (centered around mock-ups or wood samples)

An *internal* product review involving the mock-ups was reported by eight out of fourteen companies. When combined with the next Sub-stage (9b), which involves customer or external evaluation of mock-ups, a *second intermediate new product review* is formed. Various product features are evaluated at this Sub-stage, as indicated in Table 2.12. Perhaps the best way to view this Stage, as one interviewee stated, is as the "kicking the tires" Stage. This Stage offers the committee their first opportunity to view a new product idea as a tangible, physical product. It corresponds closely with the fifth step in the Bennington (1985) model.

Table 2.12. Summary of activities occurring at Sub-Stage 9a.

Stage 9		9/14
Sub-stage 9a		8/14
Sub-stage 9a Activities:		
design/product characteristics reviewed by the committee		8/8
finish review	5/8	
use of finishing companies	2/5	
hardware review	3/8	
wood species review	2/8	
design/product alterations made		4/8
price established for the new group		3/8

Details about activities occurring at Sub-stage 9a

Although the designers' work is primarily completed by this Sub-stage in the process, one company reported that designers are called on to analyze the mock-ups to determine how well the intended look and style survived the screening and manufacturing process. Another company indicated that this is the point in the process where the selling function in the company is called upon to determine potential regions where the product could best be sold. If the sales function reacted negatively, then the product could be altered or discontinued altogether. Another company indicated that this is the Sub-stage where quality control personnel become involved in the process, with their efforts generally centering on finish application. Considering the screening process that is continually occurring in the product development process, one company indicated that mock-ups are made of about half of the designs screened at Stage 5.

Details about character-mark usage at Sub-stage 9a (reported by 4/14 companies)

For character-marked groups, this Sub-stage affords a company it's first real opportunity to view the actual furniture product and how the character-marks fit with the other product characteristics, such as the finish and hardware. Many companies have a room, such as the "mock-up room" or the "product development lab", where product development personnel view mock-ups. In some respects, this is the do-or-die point for character-marks. As one company indicated, no amount of planning can indicate how well character-marks will look on a new product until there is actually a new product to look at, as opposed to designers' renditions. For example, one company indicated that a

character-marked group was priced lower than average in the product line because "it didn't look as expensive" as other groups. This consideration could not be made until there was an actual mock-up to consider. This Sub-stage can also be a time when interactions between finish and character-marks are taken into account, since some finishes will show more character-marks than will others. Again, this is a consideration that usually cannot be fully taken into account prior to mock-up construction.

Sub-stage 9b. Dealers/sales representative or consumer critique of mock-ups

This Sub-stage, serving as the *external* component of the second intermediate new product review, was seldom-reported (three out of fourteen companies). Most companies wait until Pre-market (Stage 11) for customers to evaluate mock-ups. Several product features can be evaluated here, however, as indicated in Table 2.13.

Table 2.13. Summary of activities occurring at Sub-Stage 9b.

Sub-stage 9b		3/14
Sub-stage 9b Activities:		
critique by dealers/sales representatives		3/3
product concept	3/3	
product style	3/3	
finish	3/3	
wood species	2/3	
price	1/3	
salability of the product	1/3	
rejected designs considered for different product category	1/3	
critique by consumers		1/3

Details about activities occurring at Sub-stage 9b

The extent of dealer feedback, among participating companies, varies extensively from company to company. For example, one company indicated that it might bring in up to 14 dealers for critique of the mock-ups. Other companies reported that it might show mock-ups to 50-75 dealers and 20-25 dealers, respectively, at their Market showrooms. The critique can involve use of data gathering instruments such as questionnaires to record dealer's opinions about the mock-ups. One company reported involving final consumers in focus group-type research at this Sub-stage as well.

In general, Sub-stage 9b appears to be quite variable compared to other Stages in the process, and often more project specific than other Stages. What is represented at this Sub-stage is another design/product screening process, and one company indicated that from eight mock-ups, two or three would proceed to final Market introduction for a typical project. For smaller companies, this Sub-stage might replace the Pre-market Stage that most large companies utilize for wide scale dealer feedback.

Details about character-mark usage at Stage 9b (reported by 1/14 companies)

One company indicated that this Sub-stage is important to the "learning curve" that is often involved with character-marked furniture, in terms of how much character-marking to include. This is sometimes hard for a company to evaluate without feedback from customers. Both the size and frequency of character-marks are important considerations when determining the optimal amount of character-marking to include. This Sub-stage offers the first of several opportunities to experience the character-mark "learning curve." It is generally true for most companies that the extent of character-marking declines as the process proceeds and negative comments are received from both dealers and final consumers.

Stage 10. Remaining group pieces sketched by designers

Once the mock-ups have been evaluated, the rest of the new group is developed around the best mock-ups. In an effort to prepare for Pre-market and/or continue addressing design and manufacturing considerations for the new product, the remaining pieces in the group must be drawn (both design and mechanical drawings are needed) by the designer(s). Four out of fourteen companies reported this stage, as indicated in Table 2.14. This process intuitively involves internal evaluation of these designs, but only two companies out of four reported this activity. This Stage is not mentioned as a step in the Bennington (1985) model.

Table 2.14. Summary of activities occurring at Stage 10.

Stage 10	4/14
Stage 10 Activities:	
committee review of sketches of remainder of new group	2/4

Details about activities occurring at Stage 10

Although intuitively this Stage exists for all furniture companies, only a few companies reported it during the interviews. This probably means that this Stage was not as salient in the minds of the interviewees as some of the other major Stages. Once a mock-up has been chosen for further development, much of the work concerning wood species, finish, hardware, style, etc. will simply carry over to the remaining pieces in the group. However, this Stage is important in that there must be consistency between the pieces in a group, and some pieces may still need to be modified to some extent to fit the manufacturing capabilities of the company.

Details about character-mark usage at Stage 10

No companies reported consideration of character-mark usage during this Stage of the process.

Stage 11. Final new product review (Pre-market)

This important stage, which essentially consists of Pre-market for most companies, is an opportunity for dealers to view the entire new group, although often this will involve evaluating a combination of actual mock-ups and designer renderings of the remaining group pieces. In addition to evaluating and providing feedback for the new groups, Pre-market can also serve as a time to work out distribution arrangements with larger customers (if large dealers like what they see from a company at Pre-market). Sometimes, "off-shoots" or minor variations to a design are developed for dealers wanting a group that has already been exclusively purchased by another dealer. Such "off-shoots" can also arise from product alterations suggested by dealers. A few companies might get different kinds of reviews at this Stage (instead of, or in addition to, Pre-market), such as focus groups or displaying products at a smaller furniture Market. This Stage corresponds closely with the sixth step of the Bennington (1985) model. Table 2.15 summarizes this Stage.

Table 2.15. Summary of activities occurring at Stage 11.

Stage 11		9/14
Stage 11 Activities:		
dealer review at Pre-market (1 month before Market)		8/9
"off-shoots" arranged for specific customers	2/8	
distribution arrangements worked out for larger buyers	1/8	
"other" customer review		1/9
focus groups	1/1	
travel	1/1	
smaller Market (e.g., Minneapolis)	1/1	

Details about activities occurring at Stage 11

Pre-market can be an important event for furniture manufacturers, as one company indicated that its top 50 dealers walk through its Market showroom during Pre-market. Another company indicated that several orders are placed at Pre-market, before Market even occurs. At Pre-market, dealers are shown many or all pieces in the new group, but this will often include a combination of mock-ups and designer renditions. One company indicated that dealers are generally shown 6-8 dresser-bed-mirror combinations at Pre-market. To the extent that Stage 11 serves as a time to gain feedback

concerning planned new product introductions, some companies show their new groups at smaller, regional Markets instead of, or in addition to, Pre-market. This is often a group-by-group decision.

Several companies indicated that substantial design changes could occur as a result of feedback generated at Pre-market. However, turn-around time is fairly short, as Pre-market occurs about one month prior to Market. Once Market comes, changes are fairly uncommon. If new products are not accepted well at Market, they are generally discontinued. As one company indicated, "mostly Pre-market is where our corrections come, after Market it is very rare."

Details about character-mark usage at Stage 11 (reported by 1/14 companies)

This Stage provides an opportunity for companies to experience the "learning curve" associated with use of character-marks. For many companies, this is the first time dealers have had a chance to look at the new products intended for introduction at the upcoming furniture Market. If character-marked groups are negatively received at Pre-market, then the marks may be removed, or the group discontinued altogether. One company indicated that most of the character-marked groups they have tried to introduce had difficulty making it past this Stage.

Stage 12. Prepare for Market

When preparing for Market (as reported by ten out of fourteen companies), companies act on feedback provided by dealers at Stage 11 (usually Pre-market). This usually involves design or product feature alterations initially, but such alterations usually have manufacturing implications as well. Another important activity at this stage is training company salespeople concerning the product features and information about the new group, as shown in Table 2.16. This Stage is not explicitly mentioned as a step in the Bennington (1985) model.

Table 2.16. Summary of activities occurring at Stage 12.

Stage 12	10/14
Stage 12 Activities:	
final design alterations made (based on suggestions by dealers at Pre-market)	7/10
training of salespeople regarding selling features of the new group	7/10
samples made of remaining pieces in the new group	3/10
final manufacturing alterations made	2/10
showroom photography conducted	1/10
establishment of price for the new group	1/10

Details about activities occurring at Stage 12

Based on the relatively short amount of time between Pre-market and Market, perhaps a better way to view the product alterations that may take place at this Stage is "tweaking", as some companies reported. Pre-market can also be a time of frustration for furniture companies, as alterations suggested at Pre-market may be a step backward to an original idea that was rejected in an earlier review, whether internal or external. A few companies also indicated that it is important to determine manufacturing feasibility again once alterations are made to new products based on look or style considerations as a result of Pre-market. As one company indicated, this is the Stage when the engineering department makes a bill of materials for sample production for Market. Unlike the mock-ups at Pre-market, samples at Market are generally fully functional, and several or all pieces in the new group will be presented at Market.

Details about character-mark usage at Stage 12 (reported by 7/14 companies)

An important consideration concerning character-marks at this Stage is training of salespeople. This can be especially important with endorsed groups when the character-marks are part of the overall product concept. Special training is generally needed with any character-marked group, however, so that salespeople know the group is supposed to be character-marked and are able to pass the information on to dealers. As one company indicated, "you've got to tell the retail salesperson what it is" so that final consumers can be informed of the character-marked product.

With character-marked groups, it is sometimes necessary to incorporate knowledge gained from the "learning curve" and reduce the amount of character-marking on a new group. Thus, a character-marked group introduced at Market might have fewer markings than it did at Pre-market. This is not the end of the "learning curve"; however, as further reductions in character-marks may be necessary once final consumers are exposed to the group.

Stage 13. Market

Market is the highlight of the product development process for furniture companies, and was reported by sixteen of sixteen companies. Market is a time for furniture companies to display their finalized new products to dealers, who will hopefully express interest and place orders for floor samples. Market is also an important time to educate retail buyers about the features of the company's new products, as shown in Table 2.17. Very little design modifications are made based on Market feedback. Instead, unpopular groups simply never make production. This Stage corresponds closely with the seventh step of the Bennington (1985) model.

Table 2.17. Summary of activities occurring at Stage 13.

Stage 13	16/16
Stage 13 Activities:	
reaction from dealers analyzed (e.g., interest, number of orders)	14/16
retail buyers educated regarding product features	7/16

Details about activities occurring at Stage 13

One company indicated that 30-45 percent of new introductions never generate enough interest at Market to actually make full production. However, if retail buyers like the floor samples at Market, they will place orders for samples for their retail floors. Companies may place orders for a large number of a new group, or only a few (sometimes even one). This is often a function of the size of the retail establishment. Smaller companies may only place one group on their floor, and additional groups are then ordered from the manufacturer as consumers purchase the group.

Small to medium-sized manufacturers typically reported introducing 1-4 new groups at each Market, while larger companies typically introduce 4-5 new groups per Market in each major product division (i.e., bedroom/dining room, entertainment, home office). As indicated by the percentage of companies reporting this Stage, Market was important to all companies in the sample. For example, one company, with an exclusive distribution network, still participated in Market, but this was largely the extent of their promotional activity.

Details about character-mark usage at Stage 13 (reported by 10/16 companies)

Once the company's salespeople have been trained concerning new character-marked groups, the focus then shifts to training retail buyers at Market. Numerous companies reported the importance of educating retail buyers about the intentional use of character-marks and what is added to the look of the product by the character-marks. Again, educational efforts can be especially important to endorsed products, as characteristics of the endorsee are often expressed in the product.

Some companies indicated that retailers are often more willing to purchase character-marked groups than final consumers. Reasons given for this include greater product knowledge on the part of retailers and difficulty in getting educational efforts to the end of the distribution channel. Companies may be able to personally promote character-marked groups to dealers, but it is then up to the dealers to educate final consumers. Some companies reported that the biggest problem with final consumers was rejection of character-marked furniture due to specific marks, or the fact that the group delivered to the consumer's home is marked differently than the floor sample in the store.

Again, the extent of character-marking in new groups might be reduced as feedback is received from retail buyers at Market, assuming enough initial interest was generated to begin production of the character-marked group. The buyers might personally like the look of more extensive character-marking, but are reluctant to buy such groups for their customer base. One company indicated that character-marks were the single limiting characteristic of a popular group, and once the marks were completely removed, sales for the group took off.

Stage 14. Product manufactured/orders filled

Every company participating in Market hopes their new products generate enough interest to fill orders and make production. This usually involves selling floor samples first, and then orders are filled (i.e., "cuttings" or large batches of the group are produced and shipped) if enough interest is generated by the floor samples in retail stores.

Important activities during this Stage can include discussing manufacturing issues like realized lumber yield once orders are being filled, or dealing with complaints and product returns from dealers and consumers. This Stage is summarized in Table 2.18. This Stage is essentially split into two separate steps, *Evaluation of Orders After Market* and *Full Production*, in the Bennington (1985) model.

Table 2.18. Summary of activities occurring at Stage 14.

Stage 14		10/14
Stage 14 Activities:		
feedback/complaints received from dealers and consumers		10/10
manufacturing/yield issues discussed by committee		2/10
production issues discussed with plant personnel		1/10
manufacturing feasibility	1/1	
manufacturing speed	1/1	
potential design changes	1/1	
sales forecast	1/1	
production forecast	1/1	

Details about activities occurring in Stage 14

Once a company begins producing and shipping new product, it is time to begin thinking about product life cycles. Recall that the product development process began with identification of opportunities and needs for new product. One important consideration at this initial Stage was filling voids in the product line. In this sense, the product development process in the furniture industry is quite cyclical in nature, with successful new introductions becoming voids in the line over time. The average product life cycles for a successful group was generally reported to be between 2-3 years. A very successful group might have sustained selling strength for 4-6 years. Exceptional groups might be around in various forms (e.g., updated finishes) for 15-20 years. One company noted that "bread and butter" or basic product designs usually have longer life cycles than trendy or very fashionable groups.

The final Stage of the product development process can also be a time for review of the selling and production of the new group. For example, one company reported that once orders were received for a new group, there was still a final consideration of the production feasibility of the group before full-scale production began. Another company indicated that when a specific dealer request was met (a request that initiated a new product project), the company was able to sell leftovers (pieces the original dealer did not want) to other dealers in the same region. Still other companies reported that discussion concerning costs of production and part yield from lumber and veneer inputs were discussed as orders were filled.

Details about decisions regarding character-mark usage at Stage 14 (reported by 8/14 companies)

The final opportunity for the "learning curve" is experienced in this final Stage of the product development process. Some companies reported that dealers have a good handle on "over-distressing" and will not accept over-distressed or flawed (e.g., knots falling out) character-marked groups. This might mean returning groups before they are even unpacked at the retail location. Some companies also reported dealing with a small amount of complaints from consumers regarding character-marked and physically distressed new products. Thus, even after product has been shipped, the extent of

character-marking in a group might be less a year later from the time orders were initially filled.

A few companies reported that discussions concerning part yield, based on grade of wood material used and the extent of character-marks used, also occurred among the product development committee and manufacturing personnel at this Stage. One company reported an instance when yield was lower than expected because plant personnel were defecting too many parts when the product development committee intended more character for the group. Another company reported an instance when dark lumber was being used in a group that was to receive a very light-colored stain. There are also manufacturing issues related to full-scale production of character-marked furniture, including mark orientation, mark repair, quality control and inspection, and establishment and implementation of standards at the rough mill.

A Quantitative Measure of Stage Activities

After the interviews were completed, a mail survey was used to assess the validity of the descriptive qualitative model of the product development process, as well as character-mark usage by Stage. Stage activities with at least three "hits" were generally included in the questionnaire. If a Stage had numerous activities reported, however, activities with three or four hits were sometimes omitted to reduce the overall length of the questionnaire. It was believed that three "hits" indicated a frequently occurring activity based on the open-ended nature of the interview questions. For each Stage activity, respondents were asked to indicate the extent to which their company participated in the activity *at that Stage* using a 7-point rating scale anchored by "never" and "always." In order to reduce the length of the questionnaire, a subset of the overall model was investigated. Major Stages from 1-9 of the overall model were included on the questionnaire. These Stages were selected because they include most of the internal activities associated with product development. Stages were defined as "major" if at least half of the interviewed companies reported a "hit" for the Stage. Following this method, seven Stages were included on the questionnaire. Stages 6 and 7 were omitted due to a less than 50 percent hit rate. It was assumed that evidence of validity for the included Stages would indicate overall validity for the entire model.

Table 2.19 shows the mean scores and standard deviations for major activities occurring in Stages 1-7, based on the questionnaire results. When an activity with a high "hit" ratio from the interviews also had a high mean on the questionnaire, there was evidence of model validity. The extent of the association between the interview and questionnaire measures was estimated with Spearman's rank correlation coefficient (ρ), based on the non-normal nature of much of the data (as determined by 1-sample Kolmogorov-Smirnov tests for normality, with Stephen's modification).

In addition to validating the model, information concerning character-mark usage was gathered from the mail survey. For each Stage, respondents were asked to indicate whether decisions concerning character-mark usage were made (Table 2.20). Respondents were then asked which Stage was the most important to the decision to use character-marks (Table 2.21). Finally, respondents were asked whether the *marketing/product development* function or the *production/manufacturing function* had more influence over several product development activities associated with use character-marks in new furniture products (Table 2.22). The nonparametric Kruskal-Wallis test was used to determine if differences existed among the issues since some of the data were non-normal in nature and there were unequal variances between the variables.

Table 2.19. Mean scores from the mail survey questionnaire and number of hits from the interview survey for the Stage activities.

Stage Activities	mean score¹ (standard deviation)	interview hits²
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Stage 1 - Identify opportunity/need for new product

learning of popular style categories in the marketplace	6.3 (1.2)	8
determining voids in existing product line	6.8 (0.4)	5
looking at competitors' products within targeted style categories	5.8 (1.1)	5
formation of basic product concept or theme	6.0 (1.1)	4

Stage 2 - Generation of new product ideas

travel by product development or marketing personnel	6.3 (0.9)	9
feedback from retailers/dealers	5.9 (1.1)	6
seeking input from designers	5.9 (1.2)	6
feedback from sales representatives	4.7 (1.6)	5
reading various forms of printed media	5.3 (1.8)	4

Stage 3- New product information given to designers

desired style category given to designers	6.5 (0.7)	8
desired finish given to designers	4.9 (1.2)	5
desired geographic market region given to designers	3.4 (2.1)	5
desired wood species given to designers	5.6 (1.1)	4
desired price-point given to designers	5.2 (1.4)	3

Stage 4 - Designer activities

sketches/drawings of proposed designs prepared by designers	6.6 (0.7)	12
product characteristics suggested by designers	6.1 (0.9)	7
manufacturing capabilities of the company considered by designers	5.8 (1.1)	4

Stage 5 - Initial new product review

product development committee reviews designers' sketches	6.5 (0.8)	11
determination of product characteristics by product development committee	5.9 (1.4)	8
manufacturing representatives review designers' sketches for production feasibility	4.7 (2.1)	8

Stage 6 - Mock-up construction/manufacturing issues

mock-ups are built	6.7 (0.7)	13
manufacturing feasibility determined during mock-up construction	6.4 (0.9)	6
manufacturing alterations made to the new designs to increase the ease of manufacture	6.5 (0.6)	5

Stage 7 - Intermediate new product review

product characteristics visibly reviewed by product development/marketing personnel	6.9 (0.4)	8
product alterations made to enhance the desired look of the group	6.7 (0.5)	4
price established for the new group	5.2 (1.7)	3

association between interview and questionnaire data ³ : $r_s = 0.48$ $P = 0.01$ (two-tailed)		
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¹ based on the following scale appearing on the mail survey questionnaire: 1 = "never included at this Stage" to 7 = "always included at this Stage"

² number of companies reporting the activity during the interviews

³ based on Spearman's rank correlation procedure

Table 2.20. A comparison of Stages involving decisions to use character-marks, based on the interview and questionnaire findings.

Stage	Companies indicating decisions regarding use of character-marks occur at this Stage, based on the interviews¹	Companies indicating decisions regarding use of character-marks occur at this Stage, based on the questionnaires²
Stage 1 - Identify opportunity/need for new product	0%	13%
Stage 2 - Generation of new product ideas	0%	47%
Stage 3 - New product information given to designers	19%	73%
Stage 4 - Designer activities	56%	87%
Stage 5 - Initial new product review	38%	87%
Stage 6 - More designer activity	0%	-- ³
Stage 7 - First intermediate new product review	14%	--
Stage 8 - Mock-up construction and manufacturing issues	7%	93%
Stage 9 - Second intermediate new product review	36%	100%
Stage 10 - Remaining group pieces sketched by designers	0%	--
Stage 11 - Final new product review	7%	--
Stage 12 - Prepare for market	50%	--
Stage 13 - Market	62%	--
Stage 14 - Product manufactured/orders filled	57%	--

¹ proportion of respondents discussing character-mark usage at this Stage during interviews

² proportion answering "yes" to dichotomous question asking whether character-mark usage was considered at the Stage

³ not investigated in the mail survey

Table 2.21. Stages most critical to the decision to use character-marks, as reported on the questionnaires.

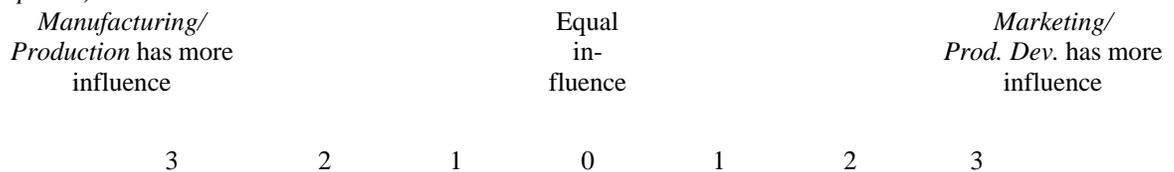
Stage	Proportion of companies indicating the Stage is the most critical to use of character-marks in new groups¹
Stage 1 - Identify opportunity/need for new product	0%
Stage 2 - Generation of new product ideas	0%
Stage 3 - New product information given to designers	13%
Stage 4 - Designer activities	20%
Stage 5 - Initial new product review	27%
Stage 8 - Mock-up construction and manufacturing issues	33%
Stage 9 - Intermediate new product review	7%

¹ on the mail survey questionnaire, respondents were asked to indicate the Stage most critical to decisions concerning character-mark usage

Table 2.22. Medians, mean ranks, and results of the Kruskal-Wallis test for extent of influence by the *marketing/product development* and *production/manufacturing* functions over product development activities involving use of character-marks.

Product Development Activities	Median¹	Mean Rank															
1. finish used	3.0	49.9															
2. wood species used	2.0	42.6															
3. decision to include character-marks	2.0	40.0															
4. size of the character-marks used	2.0	36.5															
5. lumber/veneer grade used	-1.0	21.1															
Kruskal-Wallis statistic: $H = 15.6 (P = 0.00)$																	
Post Hoc Comparisons ²																	
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center;">1</td> <td style="width: 15%; text-align: center;">2</td> <td style="width: 15%; text-align: center;">3</td> <td style="width: 15%; text-align: center;">4</td> <td style="width: 15%; text-align: center;">5</td> </tr> <tr> <td></td> <td colspan="2" style="text-align: center;">—————</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td colspan="2" style="text-align: center;">—————</td> </tr> </table>			1	2	3	4	5		—————							—————	
1	2	3	4	5													
	—————																
			—————														
There are 3 groups: (1, 2, 3), (2, 3, 4), and (5)																	

¹based on the following scale (The figures to the left of "0" were coded as negative numbers when calculating medians. Therefore, a higher median indicates more influence by *marketing/product development*):



² based on Mann-Whitney U tests ($\alpha=0.05$).

CONCLUSION

Model Validation

Many of the stages identified by Bennington (1985) were verified by the present research. Whereas the Bennington model consists of nine stages, the present research identified fourteen stages among a sample of large case goods manufacturers in North Carolina and Virginia. A contribution of the present research was a detailed account of the specific activities involved in each major Stage of the process, which allowed for a deeper understanding of the development of character-marked products. In addition, interaction between some of the Stages in the model were indicated, similar to findings

by Oakley (1984), Oakley and Pawar (1983), Moore (1984) and Topalian (1980). These interactions sometimes cause iterations in the product development process, and suggest that the process is not as linear as indicated by most marketing and product development textbooks. Also, the results indicate that a model of the product development process for the furniture industry should include design activities due to the importance of such activities in furniture product development. Three Stages in the model developed in this study directly involved designers.

Results of the questionnaire survey indicated that the model developed from the interviews exhibited reasonable validity. Most of the scale means for Stage activities from the questionnaire were high, suggesting that the activities were frequently carried out. The association between the number of hits for activities in the interviews and the scale ratings from the questionnaires was $r_s=0.48$, ($P=0.01$, two-tailed). This result suggests that the model developed in this study provided a valid framework for discussion of character-mark usage in the product development process.

Character-marks and the Product Development Process

When considered in light of the product development process for large case goods manufacturers, it appears that decisions regarding use of character-marks permeate nearly the entire process. Ten out of the fourteen Stages identified as being part of the product development process were involved to some extent when character-marks were considered for use in new furniture products. However, some Stages were more important to character-mark use than others, and a few emerged as critical to the final decision concerning use of character-marks.

Consideration of character-marks appears to begin around Stages 3 and 4 of the model presented here, making use of character-marks an important design consideration. However, since Stage 3 involves the passing of basic new product information to designers, it is likely that character-marks are in fact considered to some degree in the earliest stages of product development. Perhaps the present research failed to detect this due to a lack of salience of such considerations in the minds of product development personnel. There was wide variation among the sample companies concerning the extent of information provided to designers at Stage 3. It appears some designers were given

"pair-of-hands" assignments (i.e., rigid product guidelines) as suggested by Topalian (1980), while other designers had wide discretion in developing new product designs. Thus the extent of involvement of designers in the use of character-marks is somewhat company specific. However, it can be said that a designer's suggestion to use character-marks would at least be considered at most companies, as would occur in Stages 4 and 5. Stages 4-5, 9, and 12-14 appeared to be particularly important to character-mark usage decisions based on the interview data.

Based on the questionnaire data, it appears that decisions concerning character-mark usage increase monotonically as the model process proceeds, with large jumps at Stages 2 and 3. By the time designers become involved (at Stage 4), 87 percent of the sample companies indicated that decisions concerning character-mark usage are generally involved at that Stage, increasing to 100 percent by Stage 9. Thirty-three percent of the questionnaire study sample indicated Stage 8 to be the most critical to character-mark usage decisions, while 27 percent and 20 percent indicated that Stages 5 and 4 were the most critical, respectively.

When considering the results of the interviews and questionnaires collectively, two sets of Stages emerge as being particularly important to character-mark use decisions, including Stages 4-5, which includes *designer activities* and an *initial new product review*, and Stages 8-9, which includes *mock-up construction* and an *intermediate new product review*. The most substantial inconsistency between the interview and questionnaire data appears to involve *mock-up construction/manufacturing issues* (Stage 8). While relatively unimportant based on the interviews, 33 percent of the companies responding to the questionnaire indicated that Stage 8 was the most critical in the decision to use character-marks, and 93 percent indicated that decisions concerning character-mark usage were generally made there. While this result could be a function of the different methodologies used, it could also indicate that both manufacturing and marketing issues are important in the decision to use character-marks. It is clear from both the interviews and questionnaires that Stages involving mock-ups, whether based on production or visual inspection by the product development committee, are major hurdles for character-marks in the product development process. This point was verified by the interviews, which indicated that consideration of character-marks rises substantially at

Stage 9, the *Second Intermediate New Product Review*, which is often centered on evaluation of mock-ups.

Based on the interview data alone, it also appears that consideration of character-marks is important in the later Stages of product development, namely Stages 12-14. Most consideration at this point involves evaluating initial customer acceptance of new character-marked groups and determining whether the level of character-marking included (i.e., size and number of marks) needs adjusted based on customer feedback. Training of salespeople concerning promotion of character-marked furniture is also an important consideration in these later Stages of product development.

Functional Area Involvement with Character-marks

The results of the questionnaire study suggested that the marketing/product development function generally exerted more influence over use of character-marks than the production/manufacturing function. Of the five product development activities investigated related to character-mark usage, only *lumber/veneer grade used* did not emerge as being significantly influenced more by the marketing/product development function. Thus, arguments involving potential yield improvement alone will likely not be enough to encourage increased use of character-marks by large case-goods manufacturers.

Summary and Recommendations

It appears that decisions concerning use of character-marks peak around Stages 4 and 5. This is the point at which character-marks enter the product development process as a potential product characteristic, usually as a function of wood species or finish. Multiple functional areas are involved in these Stages, including marketing, product development, designers, senior management, and sometimes manufacturing personnel, as indicated by the activities occurring in these Stages. Thus character-marks must be acceptable to multiple persons within the company, as is usually represented by the product development committee. Companies indicated that marketing/product development personnel generally have more influence over product characteristics associated with character-marks than manufacturing personnel, suggesting that the

intended look of a new group is a more important consideration than materials cost when using character-marks.

A potentially useful strategy for change agents promoting increased use of character-marks at Stages 4 and 5 would be to encourage increased exposure of character-marked products among the sources of new product ideas for furniture companies, such as shelter magazines and designers. This could be an especially useful strategy based on the industry's reliance on secondary sources of new product ideas rather than direct consumer feedback. Kron (1983), for example, points out that standards of taste and style in furniture are determined to a substantial degree by editors of shelter magazines. These editors serve as promoters of certain designs by deciding whose visions of taste they confirm by inclusion in their publications. Retail buyers and consumers then take cues from such magazines in their subsequent purchases. However, the present research indicated that printed media was also an important cue for manufacturers. Once character-marked furniture reaches a "critical mass" in the marketplace, it is likely many companies will introduce such products due to the importance of competitors' products as a source of new product ideas. However, enough successful character-marked groups will need to exist before sources of new product ideas like furniture retailers will have enough confidence to suggest such groups for development, and subsequently purchase such groups.

Results from the questionnaire study indicate that decisions concerning use of character-marks increases as the product development process proceeds. Related to the preceding recommendation is the idea of moving character-mark consideration into the earliest Stages of the process. For example, when endorsed products are developed, it is generally understood at the outset that the new product will feature certain characteristics that enhance the image attempting to be portrayed. Perhaps this is part of the reason why endorsed groups tend to successfully contain character-marks. The decision to use character-marks is made near the outset of the project, and not as an after-thought determined when wood selection or finish is determined. Moving character-mark decisions to earlier Stages will be easier if there are more references to such products available to manufacturers, and if designers are comfortable suggesting character-mark use to manufacturers.

Activities related to character-mark usage reach another peak around Stages 8-9, when companies manufacture and view, for the first time, actual mock-ups of important pieces in proposed new groups, rather than drawings. It is important as manufacturers "kick the tires" of the proposed new group that they attain cohesion between the character-marks and other attributes of the piece, such as style, finish, and hardware. A common activity reported at Stage 9 was the alteration of product characteristics based on the look of the mock-up. While it is unlikely that committee personnel would decide to include character-marks at this point, it is far more likely that they decide to remove them.

Some companies reported instances where character-marks were the single limiting factor to otherwise highly successful groups. Other companies indicated that character-marks could be "pulled" by other superior product characteristics. In such cases, customers may like the entire product concept more than the individual character-marks, but the company is able to save money by using a lower grade material. Some companies also expressed instances of frustration over deciding against a somewhat innovative product idea, like character-marks, only to find that another company had successfully done a similar thing with their product. Thus, manufacturers might be encouraged by change agents to express some proactiveness and let character-marked groups pass through the mock-up Stages even if there are some reservations among the product development committee personnel about the fit with what the company has traditionally produced.

Finally, activities related to use of character-marks become important again near the end of the product development process, from Stages 12 through 14. Most of these activities involve determining the appropriate level of character-marking, in terms of both size and extent, as well as training salespeople to sell the character-marked groups. The interviews indicated that companies were sometimes quick to reduce character-marks or remove them entirely when complaints were received from dealers or consumers. While no company can afford to consistently attempt to sell products that receive high degrees of complaints from customers, perhaps a little more patience on the part of manufacturers would allow full appreciation of the learning curve. Such patience would allow companies to achieve the proper level of character-marking without giving up entirely on

the idea to quickly. Exploratory discussions with dealers indicated that a lack of patience on the part of manufacturers sometimes resulted in high product turnover in retail stores before customers had an adequate chance to respond to new products.

Another issue related to character-marks in the later Stages of product development is a better understanding of dealer requirements concerning such marks. It might be possible for furniture manufacturers to segment their markets based on character-mark acceptance. For example, one company indicated that they recently had trouble with a physically distressed group sold to some large department stores. The department stores wanted the distress-marks removed, because they did not feel their customer base wanted such marks on their furniture. Interviews with several retailers also indicated that some companies (generally operating at lower price-points) were somewhat comfortable with small filled-in knots, while others (generally operating at higher price-points) did not deem filled-in knots acceptable to their customer base. For these companies, knot size was not as important as knot quality.

Character-marked furniture is still a somewhat novel product concept that only a few companies have had success at selling. More numerous are the companies that have had negative experiences with character-marks or have determined to avoid character-marks in their products altogether. There will continue to be growing pains with character-marked furniture before it becomes more widespread. In the end, furniture companies are going to produce what they feel will sell, and currently most do not think favorably of character-marked hardwood furniture. Especially in the case of smaller companies, which might only make one or two new introductions per Market, it is not feasible to rely on patience alone and wait for character-marked furniture to become more acceptable. Several companies also reported that the major hang-up with final consumers was often specific marks on a piece, which made it look different from the floor sample in the retail store. This is an especially frustrating problem to overcome, and can perhaps best be addressed by educational efforts by both manufacturers and retailers aimed at consumers in the form of hang-tags, advertisements, and training of the retail sales force.

It should be kept in mind that the preceding discussion of the fit of character-marked furniture in the typical product development process was based on a combination of companies that had been successful at selling character-marked groups, companies that

had been unsuccessful at selling such groups, companies that only include small intermittent character-marks, companies that have actually promoted groups containing relatively large character-marks, and companies that essentially do not use character-marks at all. While coverage of such variable companies insures multiple perspectives, the companies in the sample might have had somewhat different perceptions of what actually constituted a character-mark in terms of size and severity of the mark. For some companies, a pin knot in oak was a substantial character-mark. For others, knots as large as quarters were described as common in character-marked oak groups. Based on personal observation of products sold by all of the companies in the sample, it can be said that use of character-marks was somewhat overstated by interviewees in some cases. Over half of the companies responding to the mail survey indicated that their company either made common use of small character-marks on most of their hardwood groups or had made specific attempts to promote select hardwood character-marks groups. Also, many companies seemed to equate physical distressing with character-marks when placing these issues in the product development process. Thus, much of what has been said about character-marks in this research applies to physical distressing as well.

Most research on yield improvements associated with use of character-marks has based results on character-mark sizes larger than what is often currently used. Overall, it appears arguments other than yield improvement will be needed to promote substantial increased use of character-marks in hardwood products produced by large case goods companies. An effective strategy for attempts to promote increased use of character-marks in hardwood furniture parts might be to stress the cost savings associated with use of character-marked woods as well as promoting use of manufacturing technologies like computerized scanning systems that make standardization of character-marks possible at the rough mill. However, based on the product development process, marketing personnel within the furniture company must also have a compelling reason to include character-marks in new furniture groups, related to such product attributes as design, finish, and the intended look or feel of the group.

Study Limitations

This study is based largely on data generated from interviews, and is therefore primarily qualitative in nature. When dealing with qualitative data, there is always concern for objectivity on the part of the researcher. Use of frequent quotes and keeping track of "hits" were specifically used in this research in an effort to maintain a "chain of evidence" (Yin 1981), linking the raw data to final conclusions. This helps the reader to understand more clearly the basis for the conclusions of this research. The quantitative measures from the mail survey were also intended to provide a different perspective of the same phenomenon.

The study is characterized by in-depth information generated from a relatively small judgment sample. It is believed that this methodology allowed for a deeper understanding of the product development process than would have been possible with a questionnaire survey, especially given the objectives of the research, which was to understand the details of the product development process. However, the results suggest that this methodology resulted in more salient aspects of the product development process getting more recognition than less salient aspects. For example, Stage 6, which involved designers making detailed mechanical sketches, is a Stage most if not all companies carry out. However, only 6/14 companies mentioned this Stage during the interviews. It was the intent of the follow-up questionnaire survey to validate the interview findings and provide a quantitative measure of the Stage activities.

The companies interviewed are representative of large case goods manufacturers, as indicated by their presence in the *Furniture Design and Manufacturing* (1997) list. All the companies in the sample were located in North Carolina and Virginia, suggesting that generalizability outside this region could be inappropriate. However, a lack of variability in the major Stages of the process for large case goods manufacturers, as suggested by the general consistency between the present research and Bennington's (1985) industry-wide model, makes generalizing outside the sample region possible with some caution. For example, the sample's proximity to the High Point Furniture Market showrooms suggests these showrooms might be more important (in addition to specific Pre-market and Market functions) for generating new product feedback than by companies located farther from the Market facilities. A more important generalizability issue is likely to be firm size -

small companies are likely to have a more stream-lined process than what is presented in this research.

It should also be kept in mind that the respondents in this research were primarily marketing and product development personnel. Perhaps some different results would have been obtained, especially in relation to functional area involvement in character-mark usage, had manufacturing representatives been the target of the research.

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CHAPTER 3
CRITICAL ISSUES TO CHARACTER-MARK USAGE
AMONG A SAMPLE OF LARGE CASE GOODS MANUFACTURERS

ABSTRACT

This study identified critical issues to acceptance of character-marked furniture among a sample of large case goods manufacturers in North Carolina and Virginia. Inclusion of character-marks, or naturally occurring features of wood considered defects under the standard hardwood lumber grading system, is a potentially effective strategy for extending the hardwood resource and lowering overall lumber costs for furniture manufacturers. Although studies have indicated that substantial yield improvements are possible at the rough mill when character-marks are not removed from furniture parts, and current computer-assisted manufacturing systems make manufacture of character-marked furniture easier than ever before, use of character-marks in hardwood furniture remains limited. The results of this study indicated that use of character-marks by furniture manufacturers involved designers as well as production and marketing representatives. The proactiveness of a company's product design strategy, fit with overall product concepts, and acceptance by furniture retailers are all critical issues associated with use of character-marks in hardwood furniture. This information is useful for promotional efforts aimed toward increasing usage of character-marks in furniture products, as well as to furniture manufacturers considering increased use of character-marks in their product line.

INTRODUCTION

An issue that has attracted renewed interest in the furniture industry is the increased use of wood materials with character-marks. The main reason for this interest is a realized need to extend the hardwood resource in light of uncertainty concerning hardwood lumber quality and cost (Buckley 1996, Wilhelm 1994). Lamb (1994) claims that today's hardwood resource is higher in price, smaller in size, and lower in intrinsic quality than 20 years ago. Previous research has shown that increasing the inclusion of character-marks in wood furniture parts offers substantial furniture part yield improvements from hardwood lumber. Using actual cutting bills from furniture

manufacturers, Buehlmann, Wiedenbeck, and Kline (1998) found that a 14 percentage point increase in part yield was possible by allowing all character-marks two inches and smaller in diameter on both faces in parts cut from 2A Common lumber. Similarly, a six percentage point increase in part yield was realized by allowing all character-marks 2 inches and smaller in diameter on both faces of parts cut from lumber graded as 1 Common. Under a more realistic production scenario, allowing 1 inch and smaller character-marks on only one part face when using 2 Common lumber resulted in a four percentage point increase in part yield. Thus, inclusion of character-marks could translate into substantial materials costs savings for manufacturers and help extend the hardwood resource. It has been estimated that each one percent increase in rough mill yield reduces hardwood timber demand by 0.2 percent when a sawmill recovery rate of 50-60 percent is assumed (Buehlmann et al. 1998).

Araman (1979) found that yield of random length cuttings with minor defects on the exposed face and sound defects on the non-exposed face was around 78 percent from 1 Common and 2A Common yellow-poplar lumber for a rip-first rough mill operation. This is consistent with Wiedenbeck and Thomas (1995) who claim that the exclusion of character-marks in dimension parts reduces achievable yield below 75 percent for lumber grades 1 Common and lower. Wilhelm (1994) also claims that lumber recovery for cabinet construction could be increased to 70 percent or more if more character were left in cabinet parts.

Knowledge of the yield improvements offered by the increased use of character-marks alone, however, is not enough to ensure such practice. Manufacturers must be willing to produce such products, and retailers must be willing to purchase them. Ultimately, at the end of the distribution chain, consumers must be willing to purchase such products in sufficient quantities and at a high enough price to justify production. Despite knowledge of the yield improvements associated with inclusion of character-marks, and modern computer-assisted processing technology which makes manufacture of character-marked furniture easier than ever before, few companies have made a focused effort to produce and market such furniture. As with many fashion-oriented industries, it seems furniture manufacturers have developed a risk aversion orientation that prohibits them from creating innovative new products (Hatch 1980). This study

addressed issues related to constraints on increased use of character-marks by furniture manufacturers, and how the decision by manufacturers to produce character-marked furniture would be managed in terms of new product development and marketing.

PREVIOUS WORK AND PROPOSITIONS

Figure 3.1 shows a conceptual framework proposed by Bloch (1995) which shows several constraints that can affect product form. Three of these constraints - the designer, the marketing program, and production/costs – are investigated in the present study, incorporated into a framework considering six Propositions related to a.) product development, and b.) marketing/selling.

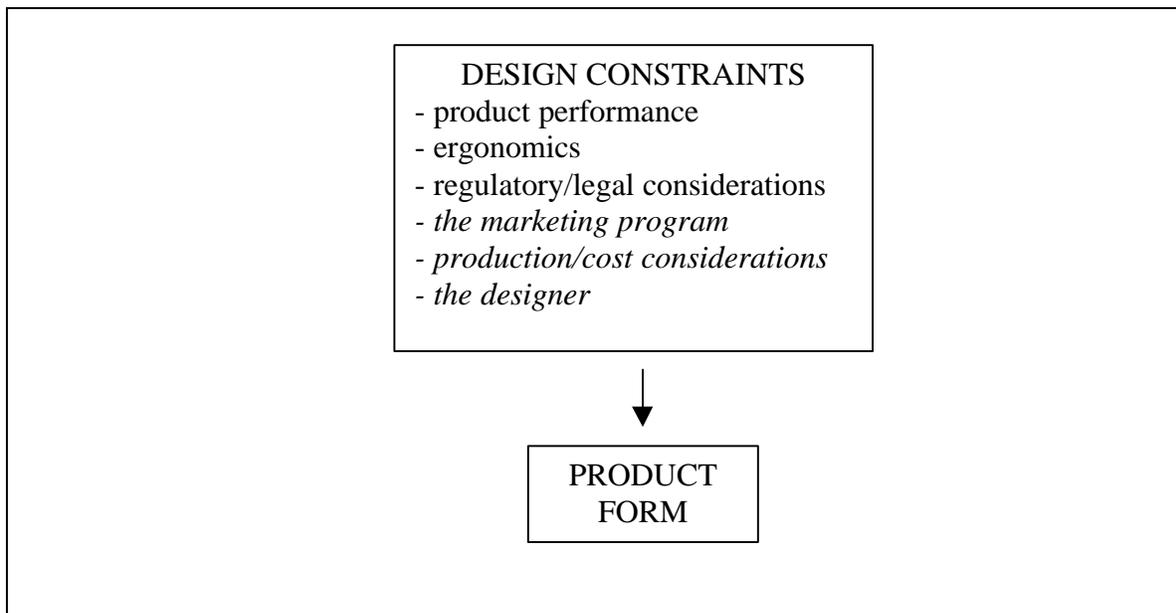


Figure 3.1. Design constraints on product form (Bloch 1995).

Product Development

Designers

Designers can be important players in the early stages of product development. Designers often have ideas which can enhance a manufacturer's general requirements,

such as the function of the product, the price-point of the product, existing market conditions, end-user requirements, guidelines on style, manufacturing considerations, and the time frame for the design process (Bailetti and Guild 1991, Tierney 1995, Bruce 1985). As Bennington (1985, p. 71) has stated, "good furniture designers do not stay at home." Rather, they are constantly on the lookout for new ideas and to determine what is selling. For this reason, designers should be included in the earliest stages of product planning, since they are likely to have the most up-to-date knowledge concerning trends in fashion and style (Oakley 1984, Kotler and Rath 1984). With most design projects, there are a number of trade-offs to be made between design constraints, considerations of which are not the sole concern of the designer (Bloch 1995). Often, there is an underlying business objective that is expected to be achieved through product design (Topalian 1980). There are several examples of companies that have used design as the foundation of a corporate identity program (Heskett 1980). For this reason, it is important that the designer has access to and support from the executive level (Tierney 1995, Oakley 1984, 1985, Clipson et al. 1984, Walsh 1983, Hatch 1980, Moody 1980), which is often accomplished in the furniture industry by including designers in product development committee meetings.

Designers can also be important in light of limited natural resources and the need to design more efficient products. It has been argued that designers generally raise and discuss issues such as trends in diminishing natural resources more readily than managers because managers are often concerned with more immediate problems (Oakley 1984). Designers are also increasingly sensitive to selecting designs which facilitate precise manufacturing, as consideration of manufacturing capabilities serves as a limit on what forms are available to a designer on a given product (Bloch 1995). Designers may therefore be more sensitive to use of character-marks for environmental purposes than manufacturers, but the question remains whether designers have enough influence and flexibility in a typical design project to suggest use of character-marks.

Another consideration is the role of the designer in moving design tastes forward. This calls into question whether consumer acceptance is the most important goal of design. Some designers feel it is not necessarily their duty to please the mass of consumers, but to offer significant design changes that may initially be resisted but

eventually be embraced (Bloch 1995). There are several examples of manufacturers that have introduced novel designs that met with initial resistance, but ultimately set the stage for widespread design changes in their industries (Martin 1995). This could be the case with character-marked furniture, with some designers believing that the idea might initially be resisted, but eventually becoming normal in residential furniture. Manufacturers, however, may not be willing to wait for consumer tastes to change.

Proposition 1 - Designers will have an important role in the decision to use character-marks.

The Product Development Committee

Research has indicated that "horizontal" organizations tend to respond to change more readily than more vertically integrated firms, due in part to the new ideas and contributions that are possible from a broader spectrum of employees and across all functional divisions (Clipson et al. 1984). Horizontal integration also enables firms to remain somewhat independent of product technology and allows them to be more responsive to design innovations. Committees are consistent with a horizontal management philosophy, incorporating multiple inputs from a variety of personnel representing several different functional units within the firm. The new product planning and development done by committee offers a number of advantages, such as well-integrated design and ensured relevance and acceptability of design results for each functional area such as marketing and production (Oakley 1984).

Most large furniture manufacturers have a specific organization whose duty it is to plan new product introductions. This organization is often referred to as the product planning committee or design committee (Bennington 1985). This committee often includes the president or the corporate executive officer, as well as senior representation from manufacturing, design, finance, marketing, and sales (Tierney 1995). Sometimes retailers or customers are invited to product planning committee meetings to provide their input. The bulk of the work of the product planning committee is done in the months preceding introduction of the new product at Market, a trade show-like event important to new product introduction in the furniture industry (Bennington 1985). Below is a brief discussion of the manufacturing and marketing functions, which are often represented in

a furniture company's product planning committee. Potential issues each function would have with character-marks are also briefly discussed.

Manufacturing

Wide scale adoption of ideas involving new materials, such as character-marked parts in furniture, often requires new manufacturing processes and assembly techniques (Oakley 1984). An important consideration associated with character-marked furniture will be the fit with the existing manufacturing process. Dickson et al. (1995), for example, found that CEOs of small, high growth companies tended to not rate themselves highly on their ability to manage the testing of the manufacturability of new products during the design process. It may be difficult to determine what kinds of character-marks to include, and certain kinds of severe character-marks (such as wane or unsound knots) might necessitate special placement in non-visible parts of the furniture piece. Oakley and Pawar (1983) point out that it is important not to overlook manufacturing capabilities when designing products based on market demand or user specifications.

Kline et al. (1998) report a case where incorporation of certain types of pre-specified character-marks were allowed in furniture parts manufactured by a large case goods producer. At the automated chop saw, yield efficiency was near optimum (compared to a computer simulation), suggesting employees were having little difficulty in making correct decisions regarding what defects to mark for scanner sensing and what defects to let pass through the automated chop-saw system. Another study, however, found that rough mill employees were correct in counting, locating, and identifying defects on surfaced lumber only 68 percent of the time under conditions where the subjects knew they were being evaluated (Huber, McMillin, and McKinney 1985).

It has also been found that no consistently applied formal rules exist among secondary hardwood lumber processors as to what constitutes an allowable defect or character-mark. While this will depend in large part on the kind and quality of product being produced by the individual firm, a study found that only three companies out of 46 surveyed had a written system of acceptable defects - most companies relied on subjective verbal descriptions (Huber, Ruddell, and McMillin 1990).

Marketing

The marketing function within a company often exerts a great deal of influence over product design. Droge, Vickery, and Markland (1994), for example, found that the competitive strategy variables they found to be associated mainly with the product design and development function are often "claimed" by the marketing function. Furthermore, these authors found several important interaction effects between a competency in product design and a competency in marketing when attempting to explain the variance in several performance measures, including market share, market share growth, return on sales, and return on sales growth.

Walsh (1983) found that plastics firms with a reputation for good design placed high value on marketing and market research. Similarly, Moody (1980) found that high technology firms with a reputation for good design allowed the marketing function within the firm to exert a strong influence over the output of the design function. Oakley (1984) cites examples where companies assumed there would be markets for technically superior products, but later found the technology incorporated into their products often were not what customers really wanted. Thus, many new product designs failed. Alexander (1985) reports the results of a several case studies where marketers and product designers worked closely throughout the product development process to create popular new products by moving beyond existing product concepts.

Often the marketing personnel within the furniture company can help determine new products for which the market is receptive (Tierney 1995, Bennington 1985). Thus a determination of the selling strength of character-marked furniture will likely be a key consideration to the decision to use character-marks in a new furniture group.

Proposition 2 - Multiple function areas, as represented on the product development committee, will have influence over the decision to use character-marks.

Design Strategy

There is a distinction in the literature between proactive and reactive firms in terms of product design strategy (Hart, Service, and Baker 1989, Urban and Hauser 1980). Firms employing a reactive product strategy deal with initiating pressures as they

occur while firms employing a proactive strategy explicitly allocate resources to preempt undesirable events (Urban and Hauser 1980). The determination of such strategy within a firm has implications for the kind of design emphasis that the firm will have.

Companies within fashion industries such as furniture will often follow a reactive strategy by imitating successful offerings by competitors (Urban and Hauser 1980). It is often difficult to assess the aesthetic elements of new designs (Oakley 1984), so reacting to successful designs offered by competitors, who have already done most of the tough design evaluations, alleviates some of the difficulty in evaluating successful designs for reactive companies.

Successful new designs are often copied to the point where they become established or modal (Bloch 1995). It is a general rule in the U.S. that an unprotected design is free to copy (Donlin 1994). This can be especially true in the furniture industry, for reasons such as the time and cost associated with gaining and enforcing a patent or copyright for an innovative furniture design, the trendiness of popular furniture styles, and the well-attended furniture markets (Donlin 1994, Sinclair 1992, Bennington 1985). A case study of a major furniture manufacturer revealed situations where some of the company's innovative designs were being copied by major competitors (Clipson et al. 1984). The stacking side chair, for example, was the original design of Charles Eames, a designer who worked extensively with the company. The chair has now become one of the most widespread types of inexpensive contract chair (Heskett 1980).

There is clearly room for a proactive strategy in the furniture industry, however. The direct competition imposed by furniture market puts pressure on manufacturers to have something new to offer and attract attention among the wide array of competitive offerings (Sinclair 1992). Calantone, Vickery, and Droge (1995) investigated the role of original (or "new-to-the-world") product development activities in the household furniture industry, finding that executives rated this activity quite low in terms of its importance to product development strategy. These executives also indicated, on average, that their respective firms performed poorly on such activities, relative to their major competitors. However, significant positive correlation was found between performance in this activity and several overall firm performance indicators, such as return on investment (ROI), growth in ROI, market share, growth in market share, and

return on sales. In regard to character-marked furniture, it might be expected that once enough initial companies introduced the product (i.e. companies following a proactive strategy), and if it generated sufficient interest among retailers, several other companies would adopt the idea (i.e. companies following a reactive strategy).

Hart, Service, and Baker (1989) found that proactive textile and engineering manufacturers believed they could manipulate the market and influence demand for their products through design, while reactive companies tended to hold the view that they provided a traditional product which could not be changed. Reactive firms tended to view the market as a constraining factor, while proactive firms consciously looked for new product ideas, even when it meant that customers' traditional views of design would have to be changed in the long term.

Proposition 3 - Companies with more proactive design strategies will be more likely to use character-marks.

Marketing/Selling

Product Design and the Product Concept

The design of a product is an important determinant of its success in the marketplace (Bloch 1995, Nussbaum 1990). Design can add value to a product by enhancing such factors as reliability, appearance, ease of use and maintenance, comfort, safety, and technical specification (Walsh 1983). Good product design can also help enhance corporate identity and help firms "stand out from the crowd" in highly competitive markets, like the domestic case goods market (Kotler and Rath 1984).

It would be expected that product design would play a critical role in the fashion-conscious furniture industry. Calantone, Vickery, and Droge (1995), for example, found that furniture executives rated the design quality/innovation activity as the second most important product development activity undertaken by their firms from a list of eight such activities. As Urban and Hauser (1980, p. 155) define product design, the design of a product is a reflection of the product itself:

". . . the designation of the key benefits the product is to provide, the psychological positioning of these benefits versus competitive products, and the fulfillment of the product promises by physical features"

The design of any product, especially furniture products, includes consideration of two important aspects - the functional aspect and the visual aspect (Tierney 1995, Bloch 1995, Bennington 1985, Oakley 1984). Traditionally, residential furniture manufacturers have been more concerned with the visual aspect (Tierney 1995), seeking to promote the "emotive" elements of their products (Clipson, et. al 1984). Growing concerns for environmentally friendly designs are causing some furniture designers to work closely with clients to develop designs which are novel compared to existing products. More common, however, is the situation where a new design is simply an improvement on an existing design offered by the same company or a competitor (Tierney 1995).

Bloch (1996) and Durgee (1988) point out two distinct streams of thought regarding the cognitive processing by which product beliefs are derived - holistic processing and atomistic processing. When holistic processing is involved, the product is evaluated as a whole and not merely as a collection of parts (Holbrook and Moore 1981). This type of processing follows the precepts of Gestalt psychology, which claims that a whole is more than a sum of separate parts (e.g.; Murray 1995, Katz 1950). With character-marked furniture, this has implication in terms of whether character-marks are seen as a distinct attribute or as part of a holistic piece of furniture. Atomistic processing, evolving from structuralist psychology (Kimchi and Goldsmith 1992), involves a consideration of individual product elements and the fit among them, resulting in a linear processing of information (Bloch 1996, Durgee 1988, Greene 1965). A similar process has been referred to as the piecemeal approach (Stayman, Alden, and Smith 1992, Fiske 1982).

Character-marks must fit into an overall product concept that involves such attributes as style, function, price, and overall look or feel for a fashion product like furniture. Some styles or looks will likely be more appropriate for character-marks than others. It will not be acceptable to simply use character-marks in all furniture products for the sake of lumber cost or yield improvement alone.

Proposition 4 - Attention must be paid to the overall product concept (e.g., style, function, price) when using character-marks in a furniture group.

Interaction with Retailers

Solomon (1988) points out that much of the workings of product selection occur prior to involvement by end consumers. An extensive, multi-layered filtering system exists which reduces ideas for new products to a small fraction of the original pool, such that a minority of product choices are actually left to be made by end consumers. This system consists of a *creative subsystem*, composed of such persons as designers, a *managerial subsystem* that includes all persons responsible for screening creative ideas (including retail buyers, editors of style magazines, and manufacturers), and a *communications subsystem* such as trade magazines and advertisers that decide messages content. All players in this system serve as gatekeepers, deciding what product choices consumers will ultimately be able to make. Often, this system can lead to a greatly reduced set of choices for the end consumer, with a high degree of convergence on the underlying themes of product offerings. This is due in large part to the fact that analysts are increasingly relying on the same data sources when making new product decisions. Ultimately, however, producers are operating in competitive markets, so filtering is done with perceived consumer wants and needs in mind (Solomon 1988).

The overwhelming majority of household furniture is promoted and sold directly to retailers, with wholesalers being only a minor distribution channel (Sinclair 1992). Furniture Markets are the primary marketing tool for household furniture manufacturers (Sinclair 1992). Markets are a type of trade show, consisting of large, permanent showrooms where furniture manufacturers exhibit their lines to retailers, in settings much like the living rooms, dining rooms, and bedrooms of final consumers. Trade show activities have been found to represent about 25 percent of the promotional budgets of typical U.S. businesses, second only to personal selling budgets and ahead of print advertising and direct mailings (O'Hara and Herbig 1993). Trade shows are a unique promotional activity in that they bring customers directly to sellers, resulting in a high number of potentially interested individuals in one location at one time (O'Hara and Herbig 1993, Kammer 1991). Furniture Markets are especially important when distribution strategies for household furniture are considered. The bulky nature of

furniture products makes it difficult to travel to retailers with new products. In addition, as a fashion product, retailers are often reluctant to make purchases without being able to actually see the physical product in front of them (Bennington 1985).

It has been found that about 51 percent of retailers' yearly orders are placed during the six weeks after Market (Michael and Smith 1996). Other authors have claimed that manufacturers obtain up to 40 percent of their orders during Market periods (Skinner and Rogers 1968). There are several major Markets held throughout the United States, most being held biannually. Major Markets are held in Atlanta, Dallas, Chicago, San Francisco, and High Point, North Carolina. The Market at High Point is the world's largest (Sinclair 1992). Smaller, regional Markets are held in Tupelo, Jamestown, Seattle, Minneapolis, and Los Angeles. Major international Markets are held annually in Cologne, Germany; Milan, Italy; and Tokyo, Japan (Michael and Smith 1994, Sinclair 1992).

It is important that retailers accept character-marks in the products they purchase for sale so that such products can ultimately reach consumers. The furniture industry has traditionally been viewed as a "push" industry, where manufacturers present their offerings to retailers at Market functions, retailers chose from these offerings what they feel will be successful in the current marketplace, and consumers then make their purchases from this reduced set of products (Bennington 1985). Reliance on such push strategies assumes that personal selling efforts by retailers will affect consumers' purchasing decision to some extent (Michael and Smith 1995). For example, research by one solid wood case goods manufacturer found that 74 percent of the company's initial product knowledge was passed on to consumers by retail floor salespeople (Sumter Cabinet Company 1998). Thus the first market that needs to accept character-marked furniture are retailers. This is not to say that consumer acceptance of character-marked furniture is not important. Ultimately, consumers must be willing to purchase character-marked furniture if the product is to be successful. However, manufacturers and retailers are important in that they determine to a large extent whether consumers will have that opportunity.

Proposition 5 - Rejection of character-marked furniture will come primarily from retailers due to the push nature of distribution in the furniture industry.

The objective of this study was to identify critical issues affecting the use of character-marks in hardwood furniture. In particular, factors associated with successful use of character-marks were sought from companies that have had success producing and marketing character-marked furniture. It was expected that differences would exist among the sample companies regarding the extent of character-marks used in their respective product lines (i.e., some companies would tend to use more character-marks than other companies). In addition to investigating the preceding Propositions at an aggregate level, a categorization scheme was developed as the basis to make comparisons between companies that tended to use character-marks and companies that tended to not use character-marks in their products. It was expected that companies tending to use character-marks would differ from companies not tending to use character-marks with regard to the preceding Propositions, due to the importance of these factors to the product development process. Thus Proposition 6 will also be investigated.

Proposition 6 – Companies that tend to use character-marks will rely more on designers and involve different functional areas when deciding to use character-marks than companies that tend to not use character-marks. Companies that tend to use character-marks will also follow more proactive design strategies and face less rejection from retailers than companies that tend to not use character-marks.

METHODS

Qualitative Research

The data generated in this study were primarily qualitative in nature. While it is generally recognized that quantitative data is expressed with numbers, qualitative data can be expressed as words, pictures, drawings, paintings, photographs, films, and videotapes (Tesch 1990). The primary form of qualitative data, however, is words. Qualitative measures are advantageous in that selected issues can be studied in depth and detail with no predetermined constraints involving categories of analysis - such

categories often emerge from the data (Patton 1990). Miles (1979) claims that qualitative data are rich, full, earthy, holistic, and have unimpeachable face validity. Yin (1981) has argued that the distinguishing characteristic of case studies, a common qualitative methodology, is that they examine contemporary phenomenon in real-life context. Some authors have noted a growing trend in social and behavioral science methodology that places less emphasis on numbers and more emphasis on observation and asking people questions (Tesch 1990).

Qualitative measures sometimes suffer from generalizability problems, however, because they seek very detailed information about a small number of cases. Issues of reliability are often more difficult to resolve with qualitative methods, as the researcher is the instrument of data collection, not a questionnaire as in quantitative methods (Kvale 1996, Patton 1990). The use of an interview schedule with identical questions being asked of each interviewee reduces the emphasis on the researcher as the instrument of data collection, thus enhancing reliability and objectivity. A systematic scheme for data collection was utilized in the present study to avoid some of the pitfalls of qualitative data collection and analysis. Such pitfalls often include leaping to conclusion based on limited data, being overly influenced by the more elite respondents, and inadvertently dropping disconfirming evidence (Eisenhardt 1989).

Presenting qualitative data in a systematic format helps maintain a "chain of evidence" which clearly shows how conclusions are reached from analyzing such data (Yin 1981). Miles (1979) claims that there are very few guidelines for protection from self-delusion and presentation of invalid and unreliable conclusions based on qualitative data analysis. It is therefore important that a clear "explication of procedures" is presented with qualitative analysis so that the reader can retrace the steps in a particular analysis, seeing what results arose from what data (Kvale 1996). The data for this study are presented in a systematic format for each company, with frequent use of direct quotes from respondents. All conclusions are also referenced to relevant companies.

Data Collection

The population of interest was large case goods manufacturers in North Carolina and Virginia. Large companies were of interest because such companies have the greatest

influence in the marketplace and are large hardwood lumber consumers. The geographic region was of interest because a large concentration of major case goods manufacturers are clustered in this region (Furniture Design and Manufacture 1997). Approximately 30 percent of the case goods manufacturers appearing in the list are located in North Carolina or Virginia. This concentration allowed for economical use of on-site interviews for gathering in-depth qualitative data. A sampling frame was constructed by identifying all companies manufacturing bedroom and/or dining room furniture and located in North Carolina and Virginia appearing in the *Furniture Design and Manufacture* (1997) list of the top 300 furniture manufacturers. This list represents the 300 largest furniture and cabinet companies in North America based on total sales. It was therefore considered to be a valid list of large furniture manufacturers. The smallest company in this list had sales of \$12 million in 1996.

The initial sample frame contained 31 companies. During the course of setting up interviews, it was determined that four companies did not belong in the frame (the companies produced furniture products other than bedroom or dining room furniture), bringing the adjusted sample frame size to 27 companies. Companies were randomly selected to be interviewed. A broad range of product price-point markets existed within the sample, as indicated by Table 3.1. Glaser and Strauss (1967) recommend a process of "theoretical sampling" whereby differences in cases are maximized to capture as much of the variability in the population as possible. Price-point is important in the furniture industry because it often affects the type of product produced (solid wood versus veneers, composite versus solid cores, etc.), and the type of customer base a furniture manufacturer targets. Both of these issues can affect character-mark usage policy. For simplicity, a price-point scale was developed ranging from "low" to "high" across an 11-point scale. Such a scale was able to capture much of the subtle differences between companies in price markets served. Since most companies operate across a range of price-points, each company was assigned a score that represents a range. The price-point scores were assigned based on information from the interviews, as well as personal knowledge of the companies' product line gained from several visits to retail stores.

Table 3.2. Number of interviews by position in the company.

Position in the company	Number of interviews
Vice President/Manager of Merchandising	5
Vice President/Manager of Sales	4
Vice President/Director of Product Development	3
Vice President of Marketing	2
Assistant - Product Development	1
Designer (in-house)	1

Data Analysis

Analysis of the data began by transcribing the recorded interviews. These transcriptions served as the "raw" data for the research. The raw data were then organized around the proposed substantive areas previously discussed. A data form was then assembled for each company, serving as the "coded" data which was used to develop a case study for each company. When developing the case studies, the proposed substantive areas were combined into two subheadings, a *product development* subheading and a *marketing/selling* subheading.

Companies were classified based on their character-mark usage strategy. Four different classifications emerged from the data. Each category was assigned a name based on the most important feature of the category. In addition to information gathered from the interviews, personal observation of character-mark usage strategy was used as secondary information to develop the classification scheme. The character-mark usage categories were established based on a combination of a) what was reported in the interviews, b) personal observation of the companies' products at the International Home Furnishings Market in High Point, North Carolina in the springs of 1997 and 1998, and c) personal visits to several retail stores. Sometimes company promotional material was also used to verify a company's character-mark policy.

A brief case study is presented below for each sample company. Included in each case study is an explanation of why the company was assigned to a category, issues related to how character-marks fit into the product development and marketing/selling

substantive areas at the company, and a summary of important points. Information across categories is then summarized to make 14 points regarding character-marked furniture, and differences between categories are discussed.

RESULTS

Character-mark Usage Categorization Scheme

Table 3.3 shows the breakdown of sample companies by character-mark usage category. To maintain confidentiality, companies were assigned a letter for identification purposes. Based on personal observation, the extent of character-marks reported to be offered by the respondents' companies might have been somewhat overestimated in some cases, in terms of both size and quantity. Also, in some cases, physical distressing was so equated with character-marks that respondents referred to them equally, although it was apparent that physical distressing was used much more frequently than naturally occurring character-marks. Despite the implication from the category titles, which are descriptive and relative to the sample, it should be kept in mind that character-mark usage in the sample frame was generally somewhat limited.

Table 3.3. Number of companies classified as belong to each character-mark use category.

Category	Number of firms classified as:
Focused Users	4 (Companies A-D)
Common Users	4 (Companies E-H)
Conditional Users	4 (Companies I-L)
Reluctant Users	4 (Companies M-P)

The remainder of the RESULTS section is centered on the company categorization scheme shown in Table 3.3. In general, character-mark usage declines as the categories proceed from "Focused Users" to "Reluctant Users". For the basis of comparison (i.e., investigation of Proposition 6) the "Focused Users" and "Common Users" were classified as character-mark *Users* (Companies A-H), while the "Conditional Users" and "Reluctant Users" were classified as *Non-users* (Companies I-P). Although these labels imply that the later category does not use character-marks at all, the label is only meant to imply that companies in the later category use markedly less character-

marks than do companies in the former category. Differences between the *Users* and *Non-users* are discussed in the SUMMARY OF FINDINGS section. Below are descriptions of the category characteristics and case study results for each company.

Category I - “Focused Users”

The most important criterion for membership in the “Focused Users” category was a *specific* attempt to include and promote character-marks in a *select* number of furniture groups. Companies in this category also had several groups that specifically did not have character-marks. It is important to note that the character-mark effort did not necessarily have to be successful for inclusion in this category. For some companies, the effort was quite successful. Others have either discontinued the character-marked lines entirely or substantially reduced the number of character-marks and maintained the group after product failures due to the marks. The product failures have stemmed from both retailers and final consumers. The decision to use character-marks was either primarily look- or cost/yield-driven¹, depending on the company. The most common types of character-marks used in this category are knots and mineral streaks. Table 3.4 shows profiles of companies in the "Focused Users" category.

¹ Although both lumber cost reductions and yield improvements are generally assumed from increased character-mark usage, this point needs some clarification. The easiest way to increase yield is to simply buy better grade lumber. In this scenario, however, lumber costs will obviously go up, reducing feasibility for most companies. However, if more character-marks are used within a company's current lumber grade mix, this will reduce lumber costs due to increased yield. In this scenario, cost and yield are closely related. Also, if a company decided to buy lower grade lumber, a subsequent increase in use of character-marks would likely be needed to realize any reductions in overall lumber costs. Here, too, cost and yield are related. For the remainder of this research, "cost/yield" will be used to represent the *economical* basis for using more character-marks. This will be different from a "look" or *style* basis for use of character-marks.

Table 3.4. Profiles of members of the "Focused Users" category.

Company	Product Mix	Wood Materials	Price-point	Size
A	bedroom, youth, dining room, occasional, upholstery	veneer - oak, ash, maple, cherry, mahogany, pine	6-7	2800
B	bedroom, dining room, occasional, upholstery	solid/veneer - cherry, oak, mahogany	6-7	5000
C	bedroom, dining room	solid - oak, soft maple, cherry	5-6	1000
D	bedroom, dining room, occasional, entertainment centers, upholstery	veneer - cherry, oak, pecan, hickory, ash, pine, mahogany, maple	8-9	7000

Company A

Basis for Membership in the "Focused User" Category

While Company A has two solid pine suites which include knots, the specific attempt to include character-marks in a hardwood group occurred in 1995 when the Company used oak lumber graded 2 Common, and included many of the knots, in a bedroom group. The Company has also attempted to use knotty oak veneer. Neither attempt has proven to be very successful.

The decision to use 2 Common oak was largely based on cost/yield. However, it was also felt there could be a "marketing handle" of saying the furniture was "rustic" and "casual", which was the direction the Company felt the market was going at the time. The character-marked line had a wood tone finish, which allowed the marks to show through. The standards for what marks were acceptable and not acceptable were set at dime-sized for knots and eraser head-sized for knot voids. Although these standards were set somewhat arbitrarily, the Company felt they were large enough to allow for adequate yield to realize the cost reductions associated with using the lower grade lumber.

The character-marked product failed, due largely to rejection at the final consumer level. While retailers often liked the look of the character-marked group, and subsequently purchased it, feedback from consumers was quite negative. The negative reaction was often due to specific knots or marks on the furniture. The Company has stopped using character-marks and has no plans for using them in the near future.

Key Quotes: "it (the basis for the decision to use character-marks) was yield, but obviously it's got to look right"

"we go out and buy a lesser grade oak, then all the sudden we have to start grading it out, we're better off buying a better grade oak"

"every time I've tried to use them (knots), it comes back to bite us"

"the knots were a real objection"

"my experience is I don't want to fool with it (character-marked furniture) anymore"

Synopsis of Design Management Characteristics

- Product Development

There are two departments primarily responsible for product development in Company A. These include the marketing/selling department and the product development department. The design function is integrated into the marketing side of the company - there is not a separate design department. Character-marks are not drawn in the designer's sketches of a new piece, but rather are considered as part of the finish or wood selection by the committee. Design committee meetings might start with product development presenting ideas for new product, followed by marketing/selling responding with a sales forecast. Manufacturing, represented by plant managers, are included early in the process. On occasion, the company will include dealers and key salespeople in the product development process in a focus-group type setting, and sometimes it is done entirely in-house. Both ways have been successful.

The ratio of contract to in-house designers in Company A is about 50/50. Designers are expected to come up with solutions to problems, such as developing different twists for more traditional styles. The primary responsibilities of designers are the design and hardware of a new group. They can also give opinions on finish, but the finish decision is ultimately left to the marketing and product development sections. Designers are only marginally involved with the final decision to use character-marks.

Key Quotes: "they (designers) need to know the overall flavor of the group, but they really don't get involved in that (use of character-marks)"

- Marketing/Selling

In general, Company A has had more problems with acceptance of character-marked furniture with final consumers than with retailers. Retailers actually bought the furniture because “they liked the look”, but customers were not so ready to accept the product. Often, specific marks on specific pieces were enough to turn consumers off.

The interviewee used such terms as "casual", "rustic", and such phrases as "enhance the look", and "add some character" in regard to the advantages of including character-marks in furniture. However, a major disadvantage is that consumers want "uniformity" in their furniture. Consumers might refuse the furniture because of a specific knot appearing on a given piece of furniture, or because their furniture does not have the same placement of character-marks as the piece they saw on the retail floor.

Key Quotes: "obviously we thought it would look better, and we would have a marketing handle of saying, hey, it's rustic and there might be knots in it and that sort of thing"

"if we have any variation in the lumber, I mean even a mineral streak or whatever, people seem to go nuts over it"

“it’s the consumers giving feedback to the retailers . . . and you’ll have knots in there and they won’t like that mark”

“the (final) customer comes in and says, I don't like that knot right there, or I don't like this"

Summary for Company A

Several considerations are important when analyzing Company A's attempt at marketing character-marked furniture. First, the decision was based more on cost/yield improvements than look. Although the company felt it would have a "marketing handle" by using character-marks, it seems this was a secondary consideration. The second consideration involves pricing. Company A sold the character-marked group at a "little bit lower" price because it "doesn't look as expensive, so we geared toward a lower-priced product". A third consideration involves company image in the marketplace at the consumer level. The interviewee was concerned that the company was perceived by consumers as having higher quality furniture, and that character-marked furniture might

be more acceptable from lower end manufacturers. Company A has also apparently had problems with consumer acceptance of physical distressing in their product.

It is important to understand Company A's attitude toward character-marked furniture. Cost/yield was the overriding reason for use of character-marks. The company considered, whether implicitly or explicitly, character-marked groups to be inferior to their cleaner groups. Perhaps the best evidence for this was the lower price for the character-marked group versus comparable groups in the product line. This attitude is also evident from the feelings of the interviewee that it might have been the Company's image for quality in the marketplace that was an impediment to use of character-marks - perhaps consumers would be more willing to accept character-marks from manufacturers at lower price-points.

The decision to use character-marks in the specific group was not necessarily part of the original product concept. It was considered more of a finish issue, determined when the selection of wood species was made. Although the possibility of character-marks was talked about in the beginning, no designer sketches ever included character-marks, and designers had little say in the final decision.

For the time being, Company A has no new plans for trying to include character-marks in their product. The Company simply does not feel that such marks are acceptable to consumers. Ironically, the interviewee expressed serious concerns about the quality and price of hardwood lumber. The Company has turned largely to finishes as a means of dealing with lumber quality issues. Finishes are becoming more important as a way to hide defects on veneers as well. The Company has also developed hang-tags to explain the natural variability in wood, often in the form of disclaimers.

Key Quotes: "that's (use of character-marks) not necessarily in the beginning stages when we do it (discuss the idea of using character-marks)"

"it may be the company in the marketplace, and how we're perceived, and what they'll accept from us versus what they might accept from another manufacturer at a lower end"

"It used to be when we developed a suite and we knew we were going to get good grade lumber, and we could put whatever finish we wanted on it. Well, now it's a constant battle. There's more emphasis I've seen in the last 3 or 4 years put on this lumber species and that finish than ever before, simply because of the issues with the grades of lumber and finishing is playing a big part . . . just to get around the problems with the lumber."

"we're finding we have to have hiding power with our finishes to overcome just the character-marks in the veneer"

"we have to develop hang-tags on most of our furniture, not for information of just talking about the product, you know the collection and what it is, but as a disclaimer, saying these knots are character-marks, because otherwise they (consumers) just don't understand"

Company B

Basis for Membership in the "Focused User" Category

Company B has several furniture groups that contain character-marks, such as small knots, in style categories the Company feels are appropriate for such marks. However, the Company has one line with more prominent character-marks which has been particularly successful, due in part to the current popularity of the style category in which it fits.

The decision to use character-marks is always based more on look than cost/yield improvement, although cost/yield improvement is a welcome byproduct of a successful look. The successful character-marked line was made from solid hardwoods, with knots as big as a quarter if they were perfectly sound. Voids as large as dime-sized were filled and also used.

The character-marked line was the result of an endorsee arrangement, which was an important determinant of the use of character-marks. The Company ultimately had to reduce the number of character-marks initially desired by the endorsee in order for the product to become successful.

Key Quotes: (referring to the basis for the decision to use character-marks) "look, and yield improvement, I mean if you can sell it and that helps your yield, then that's the best of both worlds"

"select lines, we have the one line that has the (large) character-marks in it"

"some of them bought it, some of them said that they would buy it if it had fewer knots in it, and after awhile, when we backed down some, it really took off"

Synopsis of Design Management Characteristics

- Product Development

Although three persons make most new product decisions (the President, and Vice-Presidents of Marketing and Product Development, respectively), the President is the most influential participant. An important source of new ideas for Company B are potential endorsees that come to the company with new ideas. This is due largely to the company's reputation for coming out with innovative new products, and being a proactive design company. Representatives from manufacturing are involved very early in the process to determine the manufacturing feasibility of the designers' sketches of new product ideas. Company B has developed an image of product innovativeness in the marketplace. This attracts endorsees, which bring specific ideas to the product development process. Endorsees can be the impetus to use character-marks in a group.

Company B currently employs five in-house designers and retains one contract designer. Designers are primarily responsible for developing ideas into sketches and drawings of new furniture pieces and groups. Designers at Company B do have some say on the use of character-marks. The interviewee feels designers at Company B are given more consideration concerning their opinions on character-marks than at most other companies, because of the experience Company B has had with character-marked furniture.

Key Quotes: "if they (designers) came in and suggested we use character-marks, around here it would be accepted real well, I mean we would try it."

"if they (designers) took it someplace that had not had the experience that we've had, they might have a hard time getting it across to them"

- Marketing/Selling

Company B felt that retail buyers who came to market liked the "overall presentation" of the successful character-marked group. However, the Company's salespeople needed to be educated to educate retailers about what to expect with the character-marked group. Education regarding the background of the endorsee and how that related to the overall product concept (i.e. a certain amount of "romance" was inherent in the endorsee's lifestyle and work, and the endorsee specifically "liked wood, and the natural look of wood") was also necessary. Although the retail associates might have been a little skeptical of the character-marked product at first, they began liking it when customers began liking it. This was also true of the company's salespeople.

The interviewee used several phrases to describe the product advantages character-marks can offer, such as "natural look of the wood", "casual kind of feel", and "a more relaxed feeling." The interviewee felt that the successful character-marked line did not need to be specifically promoted as character-marked, because customers see the character-marks as part of the furniture, not as something that needs specifically singled out. Certain styles, such as more casual 18th Century and southwestern, take character-marks more readily than others, such as formal French or Italian Provincial.

Key Quotes: "if all the sudden it pops up one day, here's this group on the floor, and it's got knot holes and streaks and stuff in it, and they've (retail floor associates) never seen anything like it before, they don't know whether it's going to sell or not"

"the (company's) salespeople had to go through a certain amount of success before they accepted the idea that we can sell furniture with knots in it"

"we don't promote it (the successful character-marked line) specifically, but they're there, and people see something they like in it, they may not know exactly what it is, but we feel like the character-marks do make it sell"

Summary for Company B

Like Company A, Company B feels that company image in the marketplace is an important contributor to the acceptability of character-marks. An apparent discrepancy exists, however in how the companies view the effect of their image. Although similar in

price-point, Company A feels this position might hinder their ability to use character-marks, while Company B feels they are in a suitable price-point for character-marks. The rationale for Company B's belief was as follows: customers who purchased an original bedroom group at a lower price-point probably purchased a printed group which was perfect in terms of wood grain and finish. When the same customer goes to buy their second bedroom at a higher-price point, it is likely solid wood or veneer, yet they expect it to look like their first, printed bedroom group. Thus consumers buying at lower price-points come to expect clean wood. Company B has also developed an image of innovativeness in the industry, which attracts endorsees. Endorsees often bring ideas like character-marks that they feel represent their lifestyles.

It seems a key factor in Company B's success with character-marks was patience. There was a learning curve associated with developing an optimal amount of knots. Initially, the company included too many character-marks (partially due to the wishes of the endorsee) and customers were slow to accept the product. Although demand existed for the character-marked line from the beginning, more sold as the company reduced the number of knots. The company learned of the need to reduce the number of knots primarily from feedback received by retailers and salespeople. The Company learned from the experience that while you can educate consumers up to a point about character-marked furniture, it's ultimately up to them whether and how much character-markings they will accept.

The interviewee felt that character-marks themselves are not necessarily a source of product advantage, it's actually the furniture itself that people really like - the character-marks might just be a part of that. This view represents a kind of Gestalt approach to product image where the product is viewed as a whole, and not as a sum of its parts. For Company B, the character-marks worked within the product concept first envisioned by the endorsee to make an acceptable product to consumers. According to the interviewee, success might have been a combination of the "romance" of the endorsee's work, the "naturalness" of wood, the "relaxed, casual feel" portrayed within a popular style category, and the corresponding character-marks, that worked together to portray the message the endorsee wanted to get across. It is interesting to note that the entire product concept was promoted, not just the character-marks.

It is also important to note that Company B has had success with physical distressing as well when it worked within the desired product concept. Distressing, like character-marks, is used to give a more “relaxed” feeling to the furniture when working with species that do not contain a lot of naturally occurring character-marks. There was also a learning curve associated with the distressing, as a tendency to over-distress was modified as consumer and retailer feedback was received.

Key Quotes: "what you'll find is, in the furniture business, it's easier to sell character-marks at the higher price-points than it is the lower price-points. . . it's the more sophisticated customer who will pay more money for what appears to be to some customers to be less valuable. . . some are not ever going to accept that"

"it's an education process up to a point, you can educate them, but after that if they don't like it, they don't like it. But if they like the look, but they object to the knots and stuff, then they'll tell people and the information gets back to us and we backed off on a little of it"

"they (consumers) liked the (character-marked) furniture, they accepted it and liked it, semi-liked the knots, but they overwhelmingly liked the furniture"

“we probably over-distressed it to start with”

Company C

Basis for Membership in the “Focused User” Category

Company C is primarily a producer of solid wood Early American and Colonial Country furniture, which is a narrower product line than the other members of the "Focused User" category. The Company has tried to include character-marks in a few of their lines, and have met varying degrees of resistance. Company C's best selling oak bedroom group (which was a lodge-type look), another oak bedroom group with a “Mission flair” and a “rustic look to it”, and a soft maple group (of casual contemporary styling) that contained mineral streaks, natural board coloration, and physical distressing, are examples of groups which were initially introduced as character-marked. Only the later has been favorably received by retailers, but even with this group the response was not overwhelmingly favorable.

The decision to use character-marks is usually based on look, although cost/yield improvements are a welcome by-product. In one group, the Company was able to use 2 Common maple and include many of the character-marks, thus realizing some lumber cost reductions. In oak, the size of the knots included were usually dime-size to nickel-size, although the Mission group had knots as large as a quarter.

In general, Company C has found it necessary to remove character-marks from their products. Only in the case of the soft maple group, which included mineral streaks, some small knots, and limited physical distressing, have dealers begun to accept character-marks. An interesting point is that the oak character-marked furniture groups (primarily knots) sold quite well once the character-marks were removed. While Company C is encouraged by the success of the maple group, they are currently unable to include knots in their "bread and butter" Early American oak groups, due largely to resistance at the retail buyer level.

Key Quotes: “we’ve got a problem with it (character-marked furniture). Now, we would like to keep them in, we have some groups we’ve introduced them in, going back a couple of years, and our dealers just don’t take to them. Whereas we find other companies, you know, higher end companies than us, they can get away with a lot of stuff like that, but for us, for some reason the mentality of our customers is just that they want a clean product”

“we had distressing to it (the Company's best-selling group), we had knots in it, the customers refused it, we took it out, and it sells great”

“the distressing is working on here (the maple group), as long as we don’t go too overboard”

Synopsis of Design Management Characteristics

- Product Development

Initially, the Vice-President of Merchandising reviews all new product ideas and design sketches. He then meets with the President of the corporation and the Sales Manager to review the direction the product line is going and to discuss trends in the marketplace. Consideration is given at this point to what the designers have sketched, and the direction that is taking the Company's product line. The Company has tried

additional innovative product and style ideas (i.e. use of character-marks, contemporary designs), but have had little success with such ventures.

Company C currently uses three contract designers for all design work. Designers' opinions concerning new product ideas carry substantial influence, including the use of character-marks in a new group. The interviewee believes designers are paid for their creativity and originality.

Key Quotes: “if you (the designer) were to say that this group is going to have these character-marks in it, they really make it work, or this group has to have this finish on it, because that’s the way you see it, then we’ve got to take your best judgment and go with it”

“I think we really need to let them (designers) decide what they want”

- Marketing/Selling

Because of the small store, rural, and traditional nature of Company C’s distribution network, retailers have been the biggest barrier to the use of character-marks. The Company’s customers have come to expect a certain type of product, and accept no variations. This has limited the Company’s ability to use character-marks as well as expand into new style categories, such as contemporary for more metropolitan markets. Also, a large percentage of the Company’s final consumer base are retired, preferring a more traditional product.

Even though the Company relies heavily on retailers for new ideas, the interviewee feels retailers sometimes have a very limited perspective on what types of furniture are selling well, depending on when you ask them. The interviewee feels therefore that designers' opinions would carry more weight than retailers' opinions if they suggested using character-marks in a new group.

The interviewee felt that character-marks can help make furniture look more “rustic” and fit particularly well with lodge-type styles. It was also felt that mineral streaks added “a lot of look” to wood furniture. A good example of the importance of look to the use of character-marks is the Company’s attempt to use knotty oak laminates on tabletops. The purpose was to make the tabletops look more like real oak material, but this too met with retailer disapproval. For Company C, the biggest disadvantage of using

character-marks was the traditional tastes of their retail network, who stereotyped the Early American styling of the Company as clean with little variation.

Key Quotes: “the retailers don’t even give the customers a chance to look at it (character-marked furniture), they just come in and say, forget it, I’m not going to buy it”

“we’ve tried some real contemporary groups, and we’ve tried some things maybe a little more cutting edge . . . but we’re not looked at as fitting in that market, and our typical dealer is saying, hey, we don’t want that, we still want Early American furniture”

“(when asked who’s opinion has the most weight when suggesting the use of character-marks) the designer, because hopefully he has a global view, whereas the retailer . . . his global view is just within those store walls”

“we had laminates made with knots in them, so it would look like what you would see in solid oak, forget it, our customers just weren’t there”

Summary for Company C

Company C has faced considerable resistance to character-marked furniture at the retail level. Often, their character-marked groups never make it to retail floors for consumer consideration. The interviewee felt his company has been largely “pigeon-holed” by their distribution network as a producer of clean Early American furniture, referred to as the Company’s “bread and butter.” One cause might be that this style is commonly knocked-off by imports, so it is a price competitive product. Dealers don’t want to see a lot of variation, whether natural or man-made, leaving companies no option but to compete on non-product factors such as price, service, etc. This is a problem for Company C related to their price-point and distribution network. The interviewee shared the belief of Company B that companies at higher-price points are better able to use character-marks. Company C was similar to Company A in that neither were able to do much physical distressing. As with character-marks, it was generally found to be unacceptable by their customers.

An important difference between Company C and Company B was that the character-marks were the single limiting factor to the success of the groups. Once the knots were removed from one of Company C’s bedroom groups, it became their best

selling group. Company B, however, found that character-marks, in the right quantity, enhanced their furniture. Company C's experiences therefore suggest more of a piecemeal approach to product image, where the character-marks were considered in isolation as a product feature, not as part of the whole product. It seems in the case of Company B, the look of the furniture "pulled" the character-marks even if the marks were not overwhelmingly preferred by customers, while in the case of Company C, the look of the furniture was inhibited by the character-marks, regardless of other product features.

There was little evidence of a learning curve with Company C regarding character-marks. When met with resistance, they simply removed them from the groups. This is in contrast to Company B, which reduced the amount of character-marks in their group until it was acceptable to consumers. Perhaps Company C was too impatient, or perhaps they simply did not have enough initial interest in the character-marked groups to afford them time to adjust. Company C is a smaller company with only about 6 active bedroom lines at any given time. They cannot afford to spend a lot of time "tweaking" any particular group to make it more acceptable. In the case of Company B, which is a larger company, there was enough initial interest in the character-marked group to allow for modifications based on dealer feedback. However, whereas Company A has given up completely on character-marks, Company C is finally beginning to see some success with a character-marked, distressed soft maple group.

Another issue regarding character-marks for Company C is company image in the marketplace. The interviewee expressed concern for the fickleness of dealers when it came to what styles were hot and selling well in the marketplace. Whereas Company C was in a position of *relying* on dealer's opinions on new products like character-marked furniture, Company B was in a position, due to their image as an innovative company, of *persuading* dealers of what would sell well. Dealers were therefore willing to give Company B's character-marked products a chance, despite some initial skepticism. Like Company A, Company C sees trends toward darker finishes, especially in bedroom furniture, as a way to deal with lower quality lumber.

Related to company image is price-point of the character-marked product. Company A specifically priced their character-marked line lower than their other products. Company B priced their character-marked line similarly or slightly higher than

the remainder of their groups. Company C, while pricing their character-marked lines the same as their other lines, operates at a slightly lower price-point than Company B, so their character-marked line was subsequently lower priced. Therefore, among the first three companies in the "Focused Users" category, the highest-priced character-marked group has been the most successful.

Key Quotes: “this type of look is knocked off by all the imports, and so it’s price competitive, so you really don’t have the luxury of taking the liberty of oh yeah, let’s do some knots, let’s do some distressing. The person buying this does not want to see a change.”

“even doing some things like physical distressing, which is real popular these days, we cannot go overboard. We have to just kind of keep it very subtle.”

“you walk on their floors (retailers), they’re willing to accept it from company A, B, C, D, but not from us”

“dark finishes are going to help out a lot”

Company D

Basis for Membership in the “Focused User” Category

Company D has large breadth in their product line, with a few groups containing character-marks. In some cases the character-marks are specifically promoted as part of the intended look of the group, and in some cases character-marks are used in conjunction with disclaimers when marks are simply inherent to the species being used. About 5-10 percent of Company D’s product line contains character-marks and/or physical distressing. In general, the Company has to be careful as to which groups can have substantial character-marks.

The decision to use character-marks is based primarily on the intended look of a new group, but manufacturing considerations (i.e. material costs and yield) are also important in the decision. The most common types of character-marked veneers used include knotty oak, "pecky" pecan, wormy maple, and pin knotty cherry. Pin knotty oak has been the most successful type of character-marked veneer used, while pin knotty cherry has been the least successful in terms of consumer acceptance. In knotty oak, the

maximum-sized knot allowed is generally dime-sized. This standard is based more on marketing than manufacturing, as larger knots could be successfully manufactured. With other types of character-marks, such as pecky pecan and cherry pits, mark size and/or quantity is more of a manufacturing-based decision. Company D also utilizes physical distressing in some of their product. Although character-marks and physical distressing often go together in terms of what they add to the intended look of a group, some of the company's product is made clean in terms of character-marks, and then physically distressed.

Company D has faced some resistance to its character-marked and distressed groups. It is believed that image in the marketplace, especially given the Company's strong brand awareness, is a limiting factor on the use of character-marks. It is also believed that some types of character-marks, such as knots, are more acceptable than are others, such as pitting in cherry. However, it is felt that the styles and looks which most successfully take character-marks and physical distressing are becoming more popular, so the company has experienced greater acceptance of its character-marked groups over the last 3-4 years.

Key Quotes: “there has been a resurgence in certain types of looks that remind a consumer of an aged antique. They want a type of furniture that is comfortable, is a lived-in type look. . .when you use these character-marks or whatever, you're not as inclined to worry about nicking it... character-marks allow it to be a little more livable”

“it's just the style in general, something that has a weathered finish, something that has an aged or antique finish, something that has a crackle finish, those are things people are comfortable with right now, so it allows you to actually use what some might consider a defect, and actually get credit for it”

“there's been a change in consumer taste that they find that (character-marks/distressing) more comfortable and acceptable”

“in pit marks in cherry and things like that, those are things you just get around with disclaimers. . .those are not things that you market as antique or aged or things of those natures”

“a distressed finish obviously gives you a little more freedom to use those sorts of things (character-marks)”

Synopsis of Design Management Characteristics

- Product Development

The actual product development committee consists of the Vice-President of Product Development and the Vice-President of Manufacturing. However, these members rely heavily on feedback from their respective staffs. There is also a person in charge of engineering, costing, and sourcing who is important to the process. Manufacturing considerations are a critical, and sometimes limiting, factor in all new product decisions at Company D. In conjunction with product development, manufacturing will make determinations concerning acceptable levels of defects, the effect of veneer grade on cost of the product, finishing ease, and wood species. The ramifications for character-marks are that wood species and finish will determine to a large degree whether character-marks and/or physical distressing will be used on a new group. Finishes are generally not seen as a way to deal with unwanted character-marks, the company prefers to simply buy clear veneers for cleaner-looking groups. Product development personnel often make the final decision concerning character-marks when viewing mock-ups.

Additional manufacturing considerations concerning character-marked furniture are that character-marked groups can be more labor intensive to manufacture than cleaner groups because of orientation issues as well as patching or repairing knots, when necessary. It is important that the knots are not "lined-up" on the furniture based on veneer placement. The Company has an extensive inspection program that monitors such issues before any furniture is shipped to customers.

Company D relies solely on free-lance designers for all design work. The designers' primary responsibility is to develop "silhouettes" of possible new groups, with finish, hardware, and wood species decisions coming later in the product development process. Thus designers never make sketches which include character-marks or physical distressing. Designers have some input at the new idea stage regarding the use of character-marks, but the Company's product development committee makes the final determination.

Key Quotes: “when you’re trying to put a product out there, you’re trying to blend what is the easiest to manufacture, what you can make the most profit out of, and then what does the consumer want”

“to obtain the right finish, it’s going to be predicated on what kind of wood species you use. You could use maple, you could use a number of options, and you can use a number of different veneers. We ended up using quartered ash veneers on that project, part of that is availability, part of that is cost, part of that is does the plant want to run that species, part of that is can the finishing people get a better finish off this species versus that”

“the discussion will be between us here in development and manufacturing of what’s an acceptable level (of defects), and then from there it will be well, if you can live with this, we can use this type of veneer. . .”

“we’re doing a mahogany group, that will also have a lot of character, and the decision was made to really switch from one type veneer that had a certain percentage of defects, to a lower cost veneer with a higher quantity of them but with relatively similar quality, because it will still achieve the same look that we wanted, but actually would bring the cost of the piece down. . .that is what the conversation amounted to”

“they (designers) have input to the extent that they can say I think that would look good, but they don’t have any decision-making authority, so the final decision would not be theirs”

“at the sketch stage, you’re looking at the silhouette. . .you tend to get the silhouette first and decide that you’re going to do the group, and then you decide on finish and the character-marks and what the look will be”

- Marketing/Selling

Training of company salespeople is a very important aspect to successfully marketing and selling character-marked furniture for Company D. However, the training does not stop there, as the information must be passed from the salespeople to retailers, and then on to the final consumers. However, the interviewee believed that changing tastes among consumers is beginning to make this task a little easier.

Most problems with acceptability of character-marks come from final consumers rather than retailers. One reason is that consumers are removed in the distribution chain, such that informational and educational messages must flow through several channels before reaching them. The other reason is simply that many consumers do not

understand the concepts of character-marks and physical distressing in the same terms as does the company. The interviewee felt it was difficult sometimes for persons in the industry to see furniture from a consumer's perspective. Examples of this issue concerning character-marks and physical distressing exist for Company D, as looks which were rejected by the Company in the product development process were later successful for competitors.

The interviewee felt certain looks or feels lend themselves well to use of character-marks, such as “antique”, “comfortable”, and “lived-in.” Finishes consistent with such looks, such as “weathered”, “aged”, “antique”, and “crackle” also take character-marks well. The interviewee also felt that character-marks were part of the “natural beauty” of certain woods. Certain styles, such as European and Victorian “lend themselves well to very weathered, waxy, distressed-type looks.” Contemporary looks, however, do not do well with character-marks.

Product disadvantages primarily center around the fact that many consumers view character-marks as defective, and this can especially be detrimental to companies with high brand awareness among consumers.

Key Quotes: “if we have done our job preparing our sales reps of what is an acceptable tolerance and what is not, if we have done a good job of marketing it properly that this is the beauty of the distressing, and they in turn have done a good job of training the retail salesperson, it is not a problem”

“you are dealing with a person in a retailer that is somewhat savvy, that has knowledge of your industry, and has fairly good product knowledge, and they will understand it (character-marks/distressing), but then it will get to the retail floor and the average person buys furniture once every so many years, his scope and his knowledge is much more limited. . . his frame of reference as far as what’s good looking furniture may go all the way back to what was in the parent’s house when they were kids growing up, and that’s where you have to affect some change”

“it’s a little frustrating sometimes though that we’ve gone through that exercise (combining distressing and character-marks into a look for a new group) and we have determined that the consumer would never accept that, you know, this particular way of doing it, and then we’ll go into the market and see two or three really good selling groups out there that, apparently it is acceptable”

“as early as 3 or 4 years ago you could take a group that was very heavily distressed, that a competitor would bring out, and they would sell it very, very well, and we could put the exact same piece in our line and we would have difficulty because a large number of our customers would say there’s something wrong with it”

“because they have heard of you, they have expectations of what your product is . . . we get phone calls, I paid all this money and I always wanted a (company name) suite, and it’s got this, this, and this”

Summary for Company D

Although Company D includes character-marks on only a small proportion of their product line, it appears that looks which offer good opportunities for use of character-marks are becoming increasingly popular. The Company has experienced increased acceptance of character-marks and distressing in their product in the last 3-4 years. However, the final decision to use character-marks on a new group is still very look dependent, and the Company feels some pressure in the marketplace to keep most of their product clean. Although cost considerations are important to product development at Company D, there is currently no major pressure to use more character-marks based on material costs alone. The determination of an “acceptable level of quality” is made in close conjunction with manufacturing on a group by group basis. The company feels that any increase in use of character-marks would affect the quality of their product line, especially since the Company operates at a relatively high price-point.

The manufacturing function has considerable influence over wood species and veneer grade decisions at Company D. From the manufacturing perspective, character-mark usage is based largely on cost considerations and the processing issues associated with specific types of character-marks, such as pecky pecan. Knot repair and orientation, as well as labor intensity, are additional manufacturing considerations. From the product development perspective, character-marks are primarily a finish and wood species issue, and evaluated primarily at the mock-up stage of the product development process.

Learning curves associated with character-marked furniture exist for both manufacturing and product development. From the product development standpoint, the learning curve involves how much character-marking or physical distressing to include. The interviewee felt that most companies using character-marks and physical distressing

often reduce the extent of such marks somewhat as the product development process proceeds. Feedback from consumers can be an important source of information for the learning curve. For Company D, final consumers are the primary source of complaints and rejection of character-marks in furniture, not retailers.

Company D is unlikely to substantially increase the use of character-marks in their product in the near future based solely on lumber cost/yield considerations. Rather, character-marks will only be used in conjunction with looks or styles that are felt to be enhanced by such marks. Currently, when the Company is producing a clean group, they buy cleaner veneer. Although it is generally recognized by the purchasing department that clean veneers are getting harder to come by, it is not considered a big enough problem to warrant using more character-marks at this time, especially when the look does not call for such marks. The Company does feel, however, that certain popular looks take character-marks well, and therefore currently have some character-marked products on the market.

Key Quotes: “the way it is in most companies, it (use of character-marks) tends to be a manufacturing-driven decision, along those lines, sales and marketing and product development develops the product, manufacturing can give a compelling reason that we can use this and it will save money, and then if we are happy with the look, then it will go. The flip side of that is product development can say it is very important that you use X, Y, and Z species, and if manufacturing says we ain’t going to use it, we ain’t going to use it. It’s not totally a manufacturing decision, but it’s driven a little from that side”

“what tends to happen is you bring it out with a certain degree of distressing, character-marks, and then a year later you go back and look at the case after it’s run through manufacturing two or three times, Mrs. Jones has called in to complain, and it won’t look anything like that”

“using defective veneers for the sake of using defective veneers is not gaining any popularity, but the styles that can incorporate that are growing more popular so you have the opportunity to do that more and more”

“I don’t see any pressure to put a lesser quality product out there, particularly at our level”

“I think consumers still have an expectation when they buy (company name) that it’s the best quality they can get, so we only use it (character-marks) when it would make sense in terms of the design we’re looking for”

Category II - "Common Users"

The most important criteria for membership in the "Common Users" category was general use of *small* character-marks like knots or pit marks in many groups as a matter of general manufacturing policy. Generally, the character-marks are not promoted as a selling point, but rather are viewed by the companies as inherent to the wood materials used. However, one company has been able to successfully equate character-marks with solid wood construction to enhance their product image. Although solid wood-construction companies might feel more pressure to include character-marks from a cost/yield perspective, this category includes veneer-construction companies as well. For the veneer-construction companies, the solid wood components are more likely to contain character-marks than the veneer components, but the veneers often contain character-marks as well. Most companies in this category report few problems with selling their character-marked products. Table 3.5 shows a profile of the companies in the "Common Users" category.

Table 3.5. Profiles of members of the "Common Users" category.

Company	Product Mix	Wood Materials	Price-point	Size
E	informal dining room, bedroom, curios, bar stools, rockers	solid - oak, cherry, maple, poplar, birch, beech	6-7	500
F	bedroom, dining room, occasional, entertainment	solid - oak, cherry, maple, pine, ash	7-8	2700
G	bedroom	veneer - pine, cherry, oak, ash	5-6	1500
H	bedroom	veneer - oak, pine, cherry, maple	5-6	800

Company E

Basis for Membership in the “Common Users” Category

While Company E includes species-specific character-marks in most of their furniture groups, they are sometimes reluctant to do so because they feel there is a lack of understanding of the worth of such marks among consumers. The Company feels that manufacturing solid wood furniture, however, necessitates the inclusion of some markings. Although the Company tries to remove as many character-marks as possible, it is felt some types of marks, such as worm holes in maple, are better selling tools than others, such as knots in oak, due primarily to look.

The Company feels that voids in knots are a more important issue than the actual size of the knot itself. If the knots are sound, then sizes up to a fifty-cent piece might be used. The Company also does physical distressing when it enhances the look of the furniture, but sometimes receives complaints from final consumers that their furniture “has a bunch of dents in it.” The Company feels that if retailers educated consumers more about character-marks and physical distressing, fewer problems would exist.

Company E is considering using more 2 Common lumber in the near future to replace some of the 1 Common lumber the company currently uses. Although the company has no major plans to significantly change their current character-mark policy, this move suggests an increase in character-mark usage.

Key Quotes: “for oak and things like that you’re going to have some knots but as far as knot holes and things like that we try to eliminate that as much as possible”

“a knot or something is part of the wood, so that’s part of what you’re buying, part of a solid wood suite, so while we cannot eliminate it totally, we do try to make it as clean as possible”

“that’s (knot indentations) perceived as a problem, even if it’s really not. . . it’s not so much the size of the knot. . . as long as there’s not a big indentation there”

“with cherry and oak you tend to have to be a lot cleaner than you do with the wormy maple, but with oak you are going to get some knots, I mean you can’t avoid it with oak, you will get some knots and things, but we generally do try to put as few of those in as possible, but with wormy maple, it can be a selling tool”

Synopsis of Design Management Characteristics

- Product Development

New product decisions are primarily made by the President of the Company and the Sales Manager. The relatively small size of the Company reduces the personnel available for an actual design committee. One of the first decisions in the product development process is determining whether new product ideas are feasible for the Company's solid wood manufacturing facilities. This is related to the importance of making price-point to Company E. At times, manufacturing limitations reduce the Company's ability to make price-point for more expensive furniture groups or pieces. Sometimes retailers will come to the Company with specific requests for new products since the Company is a solid wood manufacturer.

Company E utilizes one outside design company for all design work. This includes a main designer and his team. The Company personnel work closely with the design company throughout the product development process. The Company would take seriously a recommendation by the main designer to use character-marks in a new furniture group.

Key Quotes: "that (manufacturing) plays just as big a role as style does, because if we can't hit that price-point with that style then we're dead in the water"

"(the designer) is constantly out there looking for new things and staying in touch with what's going on in the marketplace"

"we listen very much to what (the designer) has to say"

- Marketing/Selling

The interviewee felt that retailers could do more to educate consumers concerning character-marks, distressing, as well as other aspects of solid wood furniture, such as swelling or warping, and even brand name recognition. In general, retailers do not have problems accepting the Company's character-marked furniture. However, the interviewee felt part of the problem was consumers not recognizing the character-marks or physical distressing on the floor samples, and then being surprised when their actual furniture arrives.

Company E believes specific types of character-marks, like wormy maple, can be selling tools. Character-marks are believed to be most acceptable in "casual" looks. Wormy maple can add "a real country rustic feel" to the proper type of design. The interviewee also felt that character-marks were "part" of a solid wood suite. Physical distress marks were also referred to as "part" of the look. Retailers, it is believed, could do a better job of getting these points across to final consumers.

Key Quotes: "there's definitely a lot of room for retail education to be passed on to the consumer"

"if the (retail) salesperson does not point it (character-marks, physical distressing) out, and the salesperson isn't going to point it out because it's there in front of them (consumers) a lot of times, that can be a point"

"something the retailer does not do is educate the consumer, on the fact that a knot or something is part of the wood, so that's part of what you're buying, part of solid wood suite"

"we can get by with more defects, so to speak, with that (wormy maple) than say, with cherry"

Summary for Company E

While Company E's primary reason for including character-marks is cost/yield, it is felt that such marks could also be used as a product enhancement, associated with solid wood furniture. However, it does not appear the Company has made any substantial effort to promote it's furniture as such. Instead, it is felt the retailer should do more to educate consumers concerning the presence of character-marks and/or distress marks in the furniture. The interviewee used an analogy of scarred leather which although is more natural, is often avoided by consumers in favor of leather with few or no scars. Without this awareness at the consumer level, the Company tries to use a little character-marking as possible, although some use cannot be avoided. It is felt knot voids are a much bigger perceived problem among consumers than knot size, thus the Company fills knot voids in their furniture.

An important issue with Company E when developing new products is hitting the desired price-point. Given the Company's manufacturing facilities and use of solid wood furniture parts, certain wood species and styles are easier to work with than others. For

example, the Company feels it works better in oak than it does in cherry. There are also certain styles that are more difficult for the Company to manufacture than others. Thus the inclusion of character-marks is a way to deal with the yield/cost issue, and mainly why the Company's furniture generally contains such marks. Perhaps more cost gains could be realized if the Company developed it's own promotional strategies to compliment retailers' efforts which induced more of a look focus in the minds of consumers.

Key Quotes: "how many corners are we going to have to cut, if at all, to hit that price-point, and are we really going to be able to make that suite with all the strengths of the (style), all the strengths of the finish, all the strengths of the wood species, in something we can market to our customers?"

"a knot or something is part of the wood, so that's part of what you're buying, part of a solid wood suite"

Company F

Basis for Membership in the "Common Users" Category

Company F bases use of character-marks in their furniture largely on the fact that they make only solid wood furniture. Character-marks are considered to be inherent to the wood that goes into the Company's product, and salespeople are trained to sell the marks as features of solid wood.

The decision to include knots is based on a combination of cost/yield and look for Company F. By promoting the concept of the quality of solid wood furniture over veneered furniture, the Company has been able to use character-marks to their advantage. While there are no rigid standards as to the size of the character-marks included in the Company's furniture, half an inch is a loose guide. The Company also does considerable physical distressing, often simulating naturally occurring character-marks, to attain a more casual feel in certain furniture groups.

The Company currently faces little resistance from retailers concerning character-marks, and feels little pressure to reduce the number or size of marks used, or to hide character-marks with darker finishes. The interviewee believes that it is easier to include

character-marks in solid wood furniture than veneered furniture due to the thinness of veneer.

Key Quotes: “we leave them (character-marks) in all of them (groups)”

“in solids we can’t sit there and sand down until we get the perfect board”

“we teach people to sell it with it in there, gum pockets, small knots, things like that”

“we do quite a bit (of physical distressing)...in today’s market a more casual feel with distressing will sell better than the formals”

Synopsis of Design Management Characteristics

- Product Development

There are three different functions responsible for product design in Company F, including marketing, design, and sales. Subsequently, the design committee is composed of the Vice-Presidents of Marketing and Sales, respectively, the in-house Designer, and the President of the Company. Although not specifically a member, the Vice-President of Production goes to all the design committee meetings. An important source of new product ideas for Company F are endorsees. Usually, the endorsees initiate contact with the Company, which stands out since it is a full-line solid wood furniture manufacturer. The committee would decide collectively on the use of character-marks when the decision of a finish was made. However, since finish is the primary responsibility of the designer, he would likely initiate the use of character-marks. Usually, the order of product development at Company F is theme, wood species, and finish, with style tying in to all elements.

Company F utilizes one in-house designer. The designer is an important participant in the product development process, as evidenced by his membership on the design committee. The designer is therefore involved with most new product decisions. The designer’s primary responsibility is the physical product, including such features as finish, hardware, and tops.

Key Quotes: “the four of us just sort of work on it”

“we give him (the designer) direction as to what we would like, and then we might make some suggestions

“they (potential endorsee) come to us and want a manufacturer to make furniture”

“if he (Vice-President of Production) says we can’t do something then we go a different direction. . . they’re involved in it from the start”

“it’s (the decision to use character-marks) something we all would decide on, when we decide on a finish, some finishes would show more characteristics than others”

- Marketing/Selling

Company F generally has no problems selling character-marked furniture to retailers. The Company's salespeople are trained to sell the character-marks as part of the Company's solid wood product. It was felt that selling the furniture as character-marked up front went a long way toward acceptance of the Company's product by retailers. The Company's hang-tags are often used to explain and promote the intentional inclusion of character-marks.

Company F feels that the advantages of character-marked products are inherent to the use of solid wood in all their groups. In general, character-marks are "part of the look" of the Company's product. Words such as "characteristics" and "marks" were used as opposed to "flaws" in the wood. The term "beautiful" was also used. The interviewee also felt that with solid wood furniture, no two pieces are alike. The Company feels that character-marks "fit very nicely" with Country, Southern European, Arts and Crafts, and Mission styles. It was also felt that the look of furniture in the middle-upper price-points has more opportunity for use of character-marks than furniture at the very high end.

Key Quotes: "we do a lot of sales training showing that it's there and a lot of it is the characteristic of the wood and a lot of it we put in there, it's part of the look. They sell it up front that way. It would be a problem if we didn't sell it up front that way"

"if you sell it to a customer for what it is instead of what it isn't up front it's easier. If you say that's not what you're going to get, you're going to get another one out of the warehouse, you've got problems."

"the beauty of solid wood is no two pieces are alike"

"we really consider that stuff to be marks, not flaws"

Summary for Company F

Company F has followed a marketing strategy of equating character-marks with solid wood furniture. The Company believes that solid wood furniture is perceived by consumers to be more valuable than veneered particleboard furniture, and has focused on promoting character-marks as inherent to solid wood. The Company feels it is both necessary and desirable to include many of the natural characteristics of wood in their solid wood furniture. Based on the widespread acceptance of their furniture by retailers, it seems the strategy has been successful. The Company is also able to include physical distressing on many of their products, such as wormhole distressing that simulates naturally occurring wormholes.

An important factor in Company F's success with character-marked furniture is the training salespeople receive. Salespeople are taught to sell the character-marked solid wood furniture concept, and the Company's attitude is that no two pieces of solid wood furniture are the same. The furniture is sold up front not necessarily as character-marked, but as containing the features inherent in solid wood products.

Although the Company generally includes character-marks in their products, they feel that certain styles take marks more readily than do others. The interviewee believed that companies producing veneered furniture may be forced in some cases to remove character-marks because marks like gum pockets or knots became holes in 1/32" veneer. The interviewee also believed that the look of furniture at the very high-end greatly limits the use of character-marks.

It should be noted that Company F's general use of character-marks involves smaller marks than would be included in groups that would be specifically promoted as character-marked from other companies. In the case of specific endorsed products, however, Company F might include larger character-marks if desired by the endorsee. Company F also feels that casual styles, which are more acceptable for use of character-marks, are currently selling better than more formal styles.

Key Quotes: "it's a concept, people perceive solid wood as being worth more than particleboard with veneers"

"all of them (groups) have the characteristics in there and we sell it as being part of the product"

"in today's market, a more casual feel with distressing will sell better than the formals"

Company G

Basis for Membership in the "Common Users" Category

The attitude of Company G is that small character-marks that are not "objectionable" can generally appear in the Company's product, whether in solid wood components or veneer. The basis for this attitude is that such marks are inherent to the wood. However, the Company is sometimes particular about the groups that include character-marks. For example, there is an ash group that is specifically not character-marked, and several others that are quite clean in appearance, based on the intended look of the groups. Company G is also careful not to include too many character-marks in any one piece. None of the Company's groups are specifically promoted as character-marked. The Company also does physical distressing on some groups.

Key Quotes: "you wouldn't want a drawer front that had 15 knots in it, but as long as it has 2 or 3. . ."

"we wouldn't want a piece of a drawer front or top just to be totally like the measles full of knots"

"I don't think this company would ever market a product just for that reason (as character-marked). We do it (develop new product) because there is a need in our line for a particular category. Now in that category if that was the criteria then we would look into it, but we've just never run into that."

Synopsis of Design Management Characteristics

- Product Development

The design committee at Company G is composed of the Chairman of the Board, President of the Company, Senior Executive Vice-President of Manufacturing, Executive

Vice-President of Manufacturing, Senior Vice-President of Sales, and Vice-President of Sales. As indicated by the committee membership, the company is organized around a manufacturing department and a sales department. Company G is very manufacturing oriented, with representatives from manufacturing playing an important role in new product decisions. The product development committee's primary responsibilities are determining the style categories of need and screening designer sketches within those categories.

Company G utilizes three independent designers for all of their design work. The outside designers answer primarily to the sales department. The designers are given a style category, and expected to develop an initial pool of drawings, which are then reviewed and screened by the design committee. The designers provide no feedback concerning the use of character-marks, character-marks are more a function of the finish and wood species used. However, the designer's opinions concerning trends in the marketplace are given consideration.

Key Quotes: “we are very manufacturing oriented, and that's why a lot of times we might miss a real good suite, because the manufacturers can't make it”

“we don't pay any attention to that (character-marks, at the design stage)”

- Marketing/Selling

The interviewee felt that retailers do not mind character-marks as long as the marks did not “look objectionable.” The extent of a character-marking on a piece of furniture, as a conditional factor to use, was mentioned several times by the interviewee. Apparently the Company has established what it feels to be a level of objectionable character-marking in conjunction with acceptance by retailers, in terms of both size and quantity. None of the companies groups are specifically promoted as character-marked.

Company G tends to think of character-marks as “beauty marks” rather than defects in the wood. They also feel themes such as “no two pieces are alike” and “wood is natural” can help make character-marks more acceptable. The interviewee felt that manufacturers have had some success at educating consumers concerning the naturally occurring features of wood. However, the interviewee felt there was a difference between *acceptable* and *desirable* when it comes to character-marks.

Key Quotes: “unless it looks objectionable, I don’t think they (retailers) care a bit”

“I think that, as manufacturers, we’ve maybe semi-educated them (consumers) to. . . wood is natural, no two pieces are the same, never will be, and that these are beauty marks rather than. . . being a disadvantage”

(when asked if there might be anything consumers find desirable about character-marks) “well I’m not sure that they deem them desirable. . .”

Summary for Company G

Although Company G places limits on the number of character-marks on any given piece, and some of their lines are specifically clean, it maintains the notion that character-marks are simply part of the wood material being used and thus generally acceptable in furniture. The Company is aware of other companies actually adding artificial character-marks to enhance the look of the furniture, but feels no need to offer that in their product line.

The interviewee felt that the Mediterranean look of the 1960s opened the door for use of character-marks and physical distressing. However, Company G does not intend to offer anything more in the way of character-marks in their product line in the near future. While character-marks are often used in both solids and veneers, the interviewee felt that veneers let you be more selective as to where the marks are placed. The interviewee also felt that current slowdowns in the industry can help offset quality and cost issues associated with the hardwood lumber supply.

Key Quotes: “there are actually manufacturers doing details to add to furniture, you know, knots, to add character. We don’t use that, but we know it’s available”

“I think in veneers you have a better chance of spreading the knots out, where in solid lumber, you just take whatever it is”

Company H

Basis for Membership in the “Common Users” Category

Company H generally includes small character-marks in most of their furniture groups, often with no specific promotional effort. Since small character-marks are generally used as a matter of manufacturing policy, the types of marks depend on the

species of solid wood or veneer being used. Since Company H makes extensive use of veneers, character-marked veneers often appear on their product, along with character-marked solid drawer fronts. The decision to include character-marks is based primarily on lumber cost/yield. Company H's philosophy is that character-marks are a natural part of the wood they use, and that small character-marks are acceptable to retailers and consumers.

Company H has few problems with their character-marked furniture, as long as they are handled properly in manufacturing (i.e., the knots are not falling out). However, depending on the group, the amount of character-marking and degree to which the group is promoted as character-marked will differ. The interviewee feels that the future quality and availability of hardwood lumber might someday require more extensive use of character-marks.

Key Quotes: "they all have them, every group has them, cherry pit marks, worm holes in the wormy maple, knots in the oak and pine"

"we make 5 or 6 oak groups, and they all have knots in them"

"we use small, tight knots"

(when asked if specific groups are promoted as character-marked) "it depends on the group"

Synopsis of Design Management Characteristics

- Product Development

There is not a specific design committee at Company H, but most new product decisions are made within the sales/marketing department. Representatives from the production department are included in the process "from the very beginning." Company H begins the process by knowing their niche in the marketplace, and both the retail customer and ultimate customer are taken into account when developing new products. For example, the Company feels that their customer base (operating at a medium price-point) is not so sophisticated as to be concerned with using only plantation-grown mahogany or responding to environmental promotional themes associated with character-marked furniture.

Company H retains two free-lance commission designers for all of the Company's design work. The designers' primary responsibility is to develop designs, which are screened by the sales/marketing department. The designers also do all the detail work, drawings, and manufacturing dimensions for accepted designs. While the designers have little say in the use of character-marks, they sometimes specify a species for a certain design, which has implications for the kind of character-marks present.

Key Quotes: "knowing our niche in the marketplace and our ultimate consumer and our particular retail customer. . . we're looking for what they need"

"they (designers) might specify that they would like to see a certain species used in a particular design"

- Marketing/Selling

Retailers do not generally have problems with Company H's character-marked furniture as long as the marks are handled properly in manufacturing. Although the interviewee felt that retailers would have problems if the knots were loose and falling out, the Company's retail customers generally do not have problems with small cracks in the knots. In general, retailers do not prefer cleaner furniture over furniture containing character-marks.

The interviewee feels that character-marks are "natural to the wood" and thus there is no problem associated with including them in furniture. However, character-marks will be more of an advantage in certain styles, such as antique reproductions, and thus promoted more in some cases.

Summary for Company H

A good example of Company H's "no big deal" approach to character-marks came when asked why pine furniture tends to have more knots than oak furniture in today's marketplace. When asked this question, the interviewee responded, "there's not as many knots in oak as there are in pine." Knots and other character-marks are considered a natural part of the solid wood parts or veneers used to make furniture. As long as the marks are sound, the Company does not experience problems from retailers or final consumers. An interesting point is that Company H operates at a medium price-point, a

price-point where several other companies (i.e., Companies B, C, M, O) indicated it was harder to sell character-marked furniture. However, this is consistent with the opinion of Company A, who feels consumers accept character-marks more at lower price-points. Perhaps it is the *promotion* of character-marked furniture at lower price-points that is difficult, not the inclusion of small character-marks as a matter of manufacturing policy.

Although Company H is classified as a "Common User" of character-marks, it is still selective to some degree concerning the extent of character-marking and the degree to which a furniture group is *promoted* specifically as character-marked. The Company still believes that some styles or looks, such as antique reproductions, take character-marks better than others such as contemporary.

The interviewee felt that the quality and availability of hardwood lumber could become a problem in the future. If this were to occur, inclusion of more character-marks would be a way Company H would cope. The interviewee believed this could be done with little additional marketing effort. A major reason why this would be necessary is cost - the company would not be able to afford to buy the additional lumber necessary to make yield if scarcity or quality problems caused lumber prices to rise. One reason this may be true is that the Company purchases only locally produced hardwood lumber.

Key Quotes: "I've never known anyone to say I won't buy that just because it has too many knots in it"

"if it (local hardwood lumber) gets more scarce I think maybe we will start using more. . . we won't be able to cut as much out for yield, we can't afford to"

Category III. - "Conditional Users"

The most important criterion for membership in the "Conditional Users" category is that the decision to use character-marks is almost exclusively based on the *style* or *look* of the particular new group. Additional important criteria are that the character-marks are generally somewhat limited in size and number, and often combined with physical distressing. Although somewhat less important, wood material costs/yield can be a secondary consideration in the decision to use character-marks, but are often viewed as a positive consequence of the look or style consideration. Companies in this category are generally content with their current character-marked strategy, and plan to use small character-marks in the near future only when such marks match or enhance the intended look or style. Table 3.6 shows profiles of the companies in the "Conditional Users" category.

Table 3.6. Profiles of members of the "Conditional Users" category.

Company	Product Mix	Wood Materials	Price-point	Size
I	bedroom, dining room, occasional, entertainment, upholstery	veneer - hard maple, soft maple, pine, cherry, ash, oak	8-9	1600
J	bedroom, youth bedroom	veneer - oak, pine, maple	2-3	1200
K	bedroom, dining room, upholstery, home office, entertainment	veneer - oak, ash, maple, pecan, pine	5-6	5500
L	bedroom, dining room, upholstery, occasional, entertainment	veneer - oak, maple, cherry, pine	4-5	8000

Company I

Basis for Membership in the "Conditional Users" Category

Company I manufactures about 13-14 complete case goods lines (including bedroom, dining room, and occasional), and about half of those call for character-marks and/or distressing. In addition to several types of character-marked veneers (i.e. pin knotty hardwood and pine, ash burls), the Company also has plans to use soft maple

lumber graded 2 Common in a group in the near future. The Company's physical distressing efforts include both denting/beating and simulation of natural marks like worm holes.

The decision to use character-marks in any given group is primarily based on the intended look of the group. However, cost/yield improvements associated with use of such marks are acknowledged. The size of character-marks that are acceptable is group specific. In the Company's oak group, the size of the knot is not as important as whether the knot is solid or loose. In general, however, the character-marks are relatively small.

While the company occasionally receives complaints regarding distress marks or character-marks from consumers, there are no plans to alter the current character-mark/distressing policy. Most complaints involve specific marks or the fact that a consumer's new group does not have the same knot placement as the floor sample in the retail store.

Key Quotes: "it (use of character-marks) just depends on what kind of look we're going for"

"a group that we're getting ready to introduce has got pin knotty veneer, some of the pine veneer may come in with bigger knots, which might be acceptable on another group, but it's not acceptable on this group, we want pin knots, because that's the look we're going for"

"it (knot size) depends on what is standard for the group"

"about half of our wood products groups call for either not perfect wood, or what I think of as perfect is no knots, or physical distressing"

"we're developing a group right now that we're using 2 Common soft maple on, that we want to have some mineral streaks in it, we want to have these things"

"purchasing is not going to spend extra money to buy wood that we don't need for the group"

Synopsis of Design Management Characteristics - Product Development

Although not specifically referred to as the "design committee", the executives primarily responsible for new product decisions include the Product Development

Manager, the Sales Manager, the in-house Designer, and the Vice-President of Manufacturing. While most new product ideas originate from the designer, the other members screen the designer's drawings and provide overall direction to the Company's product line. Other important decisions made by the committee include wood species and finish. Manufacturing considerations are also made at committee meetings. Regarding character-marks, discussions over yield improvements (or lack thereof) associated with using character-marks occasionally occur at committee meetings. The Company also occasionally develops endorsed groups.

Company I utilizes one in-house designer for all design work. The designer is a prominent member of the design committee, and has considerable influence over the finish and species used on any given group. The designer is likely to be the first to suggest the use of character-marks on a group, but his suggestions are subject to approval by the remainder of the design committee.

Key Quotes: "there's been some discussion in our product development meetings. . . we'll use 1 Common maple in a group, and the next group we run will be 2 Common, and the boards that we use are not getting the yield, we are not getting the yield we expected (because of too much defecting in the plant)"

"we have a group that is very formal, very traditional. . . it is not physically distressed, we don't leave knots, things like that"

"we've got a group that is highly physically distressed, with worm holes, with chains, before the finishing process is started"

"his decision is probably not graven in stone, but he is the designer"

- Marketing/Selling

Although Company I gets occasional complaints from consumers who didn't expect their furniture would be character-marked and/or physically distressed, it is currently not a big enough problem to stop these practices. The interviewee felt that consumer awareness of character-marking and physical distressing is increased by the Company's education of sales representatives. The sales representatives must then educate the dealers, who must then pass the information on to consumers. Sometimes, however, this information does not make it to the final consumer. An example of

Company I's efforts to educate dealers are catalogs which show full page pictures of each finish, showing every type of possible mark.

The interviewee felt that old- or antique-type looks are currently popular in case goods. The interviewee also felt that country or casual looks provide the best opportunity to use lower grade wood because it looks more like "what you expect if you're trying to imitate something your grandfather built." French Provincial furniture also takes character-marks well, whereas more formal styles, like Queen Anne, do not.

Key Quotes: "I'm sure it's (complaints) an industry-wide problem, not just with the wood being knotty but with the physical distressing"

"as long as people understand what they're buying, we're not going to have that problem"

"I think it has to do with us educating the sales reps and the dealers and the dealers educating the consumer to what they're going to get"

"what seems to be in is furniture that looks like it's been sitting in your grandmother's barn for 200 years, and that's the kind of look that people want, so we're not going to try to use perfect wood to do that, wood with no knots, or anything like that, we want a used, rough, hewn look, we use rougher looking wood"

Summary for Company I

For Company I, at least in the near future, the decision to use character-marks will be based primarily on style and look, and often done in conjunction with physical distressing. Although cost/yield improvements associated with using lower grade lumber in some groups is sought, this is a secondary consideration. Although darker finishes might occasionally allow for use of more character-marks in some groups, Company I prefers to simply buy cleaner wood when the group calls for such a look. In this way they are not dependent on darker finishes as some other companies indicated.

Regarding pricing, all of Company I's products are comparably priced to each other. Thus the pricing decision for a group is usually independent of whether the group is character-marked. There is therefore not likely to be any pricing cues taken from customers concerning the company's character-marked lines, except that the company operates in a medium-high price-point.

Company I has found it necessary to deal with manufacturing issues associated with use of character-marks. The problem was an initial lack of understanding in the plant that a group made from 2 Common maple was supposed to have more character-marks than a previous group made from 1 Common maple. As a result, the company was initially not getting the anticipated yield (or anticipated look) because too many character-marks were being defected and removed.

In addition to training people in the plant, the Company also feels it is important to train salespersons and dealers about what the Company's finishes look like. This information, it is hoped, is then passed on to consumers. The Company has no plans to alter their character-mark usage strategy in the near future.

Key Quotes: "you can get away with a lot of things with the darker finishes"

"we really don't try to hide the grade of the wood, we're not trying to hide a lesser grade of wood, there's no need for that, if we need a better wood, we'll just use that kind of veneer, or that kind of solid"

"there's not a relationship (between price and character-marks). . . most of our stuff is pretty much comparably priced from one group to the next"

"people out in the plant, they look at this and say maple, the last time we used maple (there was a different standard for acceptable character-marks, based on the group). . . we've got to educate our people more, so that they know what we consider . . . acceptable"

"I think it (use of character-marks) is always going to be based on style"

Company J

Basis for Membership in the "Conditional Users" Category

Company J is also very style- and look-conscious when deciding to use character-marks in a new furniture group. In addition to character-marked solids and veneers (i.e., pin knotty oak), the Company also makes use of physical and finish distressing. For Company J, cost/yield considerations are clearly secondary to look considerations when determining whether to use character-marks. Generally the character-marks, when used, are relatively small in size.

Based on look, Company J feels character-marks and physical distressing are closely related concepts in terms of what they add to a group, namely "casualness." When complaints are received from consumers concerning character-marks and distressing, they generally involve specific placement or quantity of marks on the purchased piece versus what was seen in the retail store. These complaints are not numerous enough, however, to warrant a change in the company's character-mark strategy.

Key Quotes: "we currently handle that (character-marks) depending on the style of furniture it is, some style categories the customer expects to see character-marks and in others they does not"

"if we are using a contemporary, for example, we would generally cut a defect out of that because they expect it to be clean, sleek, and the wood to be perfect in that situation"

"if you were to clean up some of our offerings and not have character-marks, it might look foreign to the customer, whereas other styles tend to be perfect for a cleaned up look"

"they (character-marks and distressing) tend to go together, absolutely"

"I think every company will get some charge backs and some defects, what the customers consider to be defects"

Synopsis of Design Management Characteristics

- Product Development

The management team, with input from designers and manufacturing, make all new product decisions, such as finish and hardware. The Company generally develops new product in style categories where it is felt voids exist in the existing product line. Manufacturing considerations first occur when mock-ups are built. An important duty of the management team is to maintain the desired look within the bounds of the manufacturing capabilities of the company. The management team thinks of terms of "positives" and "negatives" when deciding whether to include character-marks and distressing in new furniture groups.

The Company uses only free-lance designers. Often, free-lance designers retained by the company will go on design trips with the product development team for new

product ideas. Designers work with the management team on finish and hardware issues, but do not necessarily have considerable influence over the decision to use character-marks.

Key Quotes: "we'll consider those (changes based on manufacturing) along the way, but we'll also consider what those changes are doing to the look of the case, because there has to be a nice marriage between these two"

"we kind of work it (character-marks) through the system as, is this a positive or a negative, and in some cases it is and in some cases it isn't. So when we feel like it is a negative we'll cut it out"

- Marketing/Selling

Company J will sometimes engage in educational activities with retailers, informing them that certain groups might contain character-marks, due to the styling and species of the group. The Company would stress the "casual" and "relaxed" feeling intended by use of such marks. These messages are somewhat general in nature, serving more as disclaimer-type messages rather than actual promotional messages.

According to the interviewee, most product advantages associated with character-marks apply to physical distressing as well. Terms such as "casual", "relaxed", "real wood", "the beauty of that knot will be part of the look", and "nature of the particular wood that was used" were all used by the interviewee. Ultimately, however, it is felt that character-marks provide product advantage more to some looks or styles than to others. For example, contemporary styles do not take character-marks well, whereas Mediterranean looks can take such marks. Casual looks, whether country styling is involved or not, also take character-marks well.

Key Quotes: "we might educate our retail customer and tell them, if you receive this product on your floor, you will see some defects because this is the nature of the particular wood that was used, and this particular look. . . to give it a more casual, relaxed kind of feeling"

"we don't say this (group) is going to have this (kind of character-mark)"

"in some style categories the customer expects to see character-marks"

Summary for Company J

Company J tends to think of character-marks and physical distressing in terms of the feelings they impart to certain kinds of looks or styles. They therefore often occur simultaneously on the Company's products. Little consideration is given to associated improvements in wood material cost/yield. Company J's attitude toward character-marks such as knots is that they *become* character-marks, in the proper groups, when they are intentionally not defected out during the manufacturing process.

Company J's furniture groups that contain character-marks are not priced any differently than the rest of the product line. However, the Company does operate at a lower price-point, where several companies indicated it was harder to sell character-marked furniture.. The interviewee felt that larger character-marks, namely knots, are more acceptable in pine than in hardwoods like oak. The interviewee credits this to the fact that pine inherently has more knots, and therefore consumers have become accustomed to seeing them more in pine than in hardwoods like oak.

Key Quotes: "as it (pin knotty oak) goes through the plant system they will leave in every knot they see, and it will become a character-mark"

"for us, that's (pricing of character-marked furniture) not a big issue, not at all"

"the character of pine is that it generally has more knots, the customer has become accustomed to seeing them, so they are much more acceptable in pine"

Company K (based on telephone interview - no recorded conversation)

Basis for Membership in the "Focused Users" Category

Company K is a large company with a diverse distribution network. The Company includes character-marks on some of its groups, primarily for the intended look. However, lumber cost/yield improvements are a secondary reason. Although most of the Company's product line remains clean, there are plans to introduce some character-marked pieces at the next furniture Market.

Some examples of character-marked materials that Company K has recently introduced include knotty oak veneers, mineral streaked maple solids and veneers, knotty pecan, knotty pine, and several pin knotty hardwood veneers. Knot size for a soon-to-be introduced knotty oak veneer table will be about quarter-sized, specifically bigger than pin knots. The tables will also be promoted as character-marked in the company's product catalog. Low-grade maple solids and veneers were also recently used to add mineral streaking to a table group. Company K also uses physical distressing on some of their product, often in conjunction with character-marks.

Company K also makes extensive use of finishes to hide certain character-marks, particularly mineral streaks or other color markings. The Company feels that uniformity of color is an important issue for their product line.

Synopsis of Design Management Characteristics

- Product Development

There are five members that sit on the product development committee at Company K. One member, the vice-president of merchandising, oversees the design staff. The interviewee felt that all members of the committee got along well during most product development projects.

Finishes have become an important way to deal with character-marks deemed undesirable or "less select" by the Company. Groups that can take darker finishes can use discolored wood because finishes allow the Company to "marry" all the pieces in a group.

The decision to use character-marks is primarily a wood species issue at Company K. For example, knotty oak veneer was considered along with solid oak, clean oak veneer, ash solids and ash veneers in a recent product development project. Knotty oak veneer was chosen, due largely to look, price-point, and finishing considerations. Company K does not price character-marked groups any differently than comparable (i.e. species, style, price-point), cleaner groups in the product line.

Company K currently utilizes in-house designers for all of their design work. Designers are relied upon for their "eye and feel" in the design stage of product development. Although the product development committee has to have "faith" in what

designers suggest, all final product design decisions are made by the committee. This is true for character-marked furniture as well - designers' opinions are seriously considered, but the final decision lies with the committee.

- Marketing/Selling

Company K generally does not receive complaints from retailers or consumers regarding their character-marked products, especially when dealing with veneers. With solid pine, however, complaints about "bleeding" around knots will occasionally be received. The Company feels no pressure based on retailer complaints to stop using character-marks in select groups.

Company K does not think in terms of "character-marks" so much as what wood features add to the look of a new group. Company K has promoted their character-marked groups as "dark antique brown finish on knotty oak veneer". The interviewee also felt that mineral streaks added a "natural look" to certain styles. However, mineral streaks or other types of discoloration in the wood are often the most unacceptable due to a lack of "uniformity" in either a single furniture piece or among the pieces in a group. A particular disadvantage of using character-marks is that the furniture a consumer receives at home will not have the same knot distribution as the sample on the retail floor. In particular, the interviewee felt that Mission styles have to be more clean because they do not take character-marks well.

Summary for Company K

Company K is a large company, able to make large cuttings due to the volume of furniture sold and numerous plants. The Company also sells to a large number of retail locations. Although the majority of the company's product line is clean, there are examples of specific recent attempts to use and promote character-marks in some groups. The interviewee feels that uniformity is the largest impediment to use of character-marks, especially with coloration markings like streaks and stains. With character-marks like knots, the decision is based primarily on look, but desired price-point is an important secondary consideration.

Company L

Basis for Membership in the "Conditional Users" category

Company L, a large company that makes extensive use of veneers, uses character-marks for a combination of look and cost/yield improvements. Neither reason, however, seems to be more important than the other. The Company often orders specific kinds of veneer (i.e. pin knotty oak, pin knotty cherry) which fit the look and are cheaper than better grades of veneer. The Company also has several groups that are made from clean veneer.

The knot size on the veneers used by Company L depends on the species. For pine, the knots can be as large as 1 1/4", while for hardwoods like oak, knots are seldom larger than 1/8". The Company also sometimes uses worm-hole-no-defect maple and cherry, primarily because of cost. This material is especially useful with darker finishes. The Company does physical distressing, often on character-marked groups. Company L also does some vinyl wrapping over MDF, and some of the pine wraps are printed with character-marks.

Company L promotes their character-marked groups by personal selling at market and through literature the Company distributes. The promotion is usually limited to describing the type of wood material used (i.e., pin knotty oak).

Key Quotes: "we use what they call pin knotty, or pecky oak, where's there's just fine knots in the oak, that's just a little bit cheaper, because it's a little lower grade, and if you're looking for something that's got a little bit more character to it, you're not looking for a real clean group, we will use it"

"if we do something like that (use character-marks) it will be. . . featured (at Market) by our salespeople. . . and then it will be highlighted in the literature also"

Synopsis of Design Management Characteristics

- Product Development

Company L is a relatively large company. Senior management makes most new product decisions at Company L. Basic product descriptions, such as style, finish, and price-point are given to the company's designers, which make initial sketches. These sketches are screened by the management team, and more detailed drawings are produced

by designers. These drawings are then sent to the plants for mock-ups to be manufactured.

Company L utilizes mostly in-house designers, with about 15 percent of their product manufactured outside the company or designed by outside designers. While the designers' role at Company L is to give advice to management and do sketching, drawing, and scale and detail work, they generally have little influence over the decision to use character-marks. Use of character-marks falls within the finish decision in the product development process.

Key Quotes: "we (designers) don't make decisions, we direct and give advice"

"a lot of times they've already decided upon what finish they want to go with, usually they're just looking for something in a light contemporary or a dark cherry, and then we (designers) try to point them in the direction that we think the market is going"

- Marketing/Selling

Company L makes specific attempts to inform retailers of the character-marks appearing in their groups. For example, retail buyers are informed of the use of character-marks on Company L's groups when they walk through at Market. Thus some salesperson training is involved. Character-marked groups are also highlighted as such in the company's product literature.

The interviewee felt that "antique" looks provide the best opportunity to use character-marks, because such looks tend to be more "rustic". It is felt that casual looks will remain popular for a long time, but that casualness has changed since the early 80s. Then casual meant dark, high gloss pine. Today, casual refers more to "weathered, light finish, pines and oaks, antique finishes". While physical distressing and character-marks go together when producing rustic looks, sometimes character-marks, such as bird's eye maple, are better left to stand alone.

Key Quotes: "at Market it will be featured by our salespeople, when they walk through they will say select pin knotty oaks, or pin knotty cherry"

"you wouldn't have distressing on bird's eye maple, but you have the entire look of the group is created almost by the actual flaw in the wood"

Summary for Company L

Although look is important to the decision to use character-marks, Company L is probably the most cost conscious member of the "Conditional Users" group. Company L is relatively large, and makes extensive use of veneers in their product. It should also be noted that the size of character-marks allowed in the hardwood veneers used is somewhat small. The standard for pine knots is much larger, and the Company even prints some knotty pine on their vinyl wraps. Company L does not price their character-marked groups any differently than their other groups. The interviewee felt that material costs becomes a bigger issue when dealing more with solid wood manufacturing.

Category IV. - "Reluctant Users"

The most important criteria for membership in the "Reluctant Users" category is a general reluctance to use character-marks in all but a very few groups. These companies also tend to use physical distressing more than natural character-marks, and often equate the two features in terms of what is added to the look of their groups. The decision to use physical distressing or character-marks is almost exclusively *style- or look-dependent*, with very little consideration of cost/yield benefits. Wormholes are generally the most acceptable type of character-marks for these companies, and often simulated with physical markings. There is no indication that member companies plan to use much character-marking anytime in the near future, due in part to the belief that wood supplies from other countries can be used if lumber becomes too expensive domestically. Table 3.7 shows profiles of companies in the "Reluctant Users" category.

Table 3.7. Profiles of members of the "Reluctant Users" category.

Company	Product Mix	Wood Materials	Price-point	Size
M	bedroom, entertainment centers, wall units, home office	veneer - oak (red and white), cherry, pine, mahogany	7-8	1850
N	bedroom, dining room, occasional, executive	veneer - oak, maple, hickory, mahogany, pine	9-10	1000
O	bedroom	veneer - pine, oak, cherry, poplar, ash	5-6	1200
P	bedroom, dining tables, occasional, art/home decoration	veneer - walnut & maple burl veneers, mahogany veneers and solids	10-11	3100

Company M

Basis for Membership in the "Reluctant Users" Category

Company M generally uses physical distressing more than character-marks. One common type of physical distressing, however, is simulation of natural worm holes. The Company displays a reluctance to use natural character-marks like knots in all but a very limited number of groups. One successful imported group, made of a foreign hardwood, is the Company's only real attempt at using a substantial amount of character-marks (knots), and this is based solely on the intended look. Many of the Company's groups are specifically kept clean in appearance, including pine groups. In addition to the worm hole distressing, some groups are beat with chains to produce dents, marks, etc. when such marks are deemed desirable to the look. Even though physical distressing is generally equated with natural character-marks in terms of what it adds to the furniture, distressing is used much more often.

Although worm holes appear to be the character-marks of choice, it is felt that knots are more acceptable than streaks or stains in the wood. Company M currently gets about 40 percent yield from red oak and 30 percent yield from white oak (1 Common), due primarily to the fact that most character-marks are removed from oak furniture parts. It is also believed that cherry yield is generally higher than oak yield because cherry is

"just a cleaner wood." Wormy maple, although used primarily for look, is acknowledged to be cheaper than cleaner maple. Some groups with ray flecks are the only type of character-marks occurring on oak. Sometimes cherry and mahogany are also worm hole distressing.

Although Company M has some concerns regarding regional availability and quality of hardwood lumber, there is no indication natural character-marks will be used more frequently anytime soon. The Company simply prefers a cleaner look in their product, especially in hardwoods like oak and cherry.

Key Quotes: "in something like oak, we wouldn't want knots"

"we're looking for a pretty clean look (in a particular oak group), even though it's rustic. . . so we wouldn't want a big knot in there"

"in Mission styling and in any kind of Victorian oak or nostalgic looks, that's (ray flecks) very acceptable, but that's not a knot"

"when you get into 18th century, real pure 18th century furniture, mahogany and cherry, those (character-marks) are not a good thing and we try to avoid them there, but the style of furniture, particularly over the last 5 years, has become more casual, it's still a nice traditional look, but the finishes have become lower sheen, and we actually in many cases, we'll physically distress it"

Synopsis of Design Management Characteristics

- Product Development

The management within the marketing department, as well as the President of the Company, serve as the committee which does all aspects of product development, from traveling for new ideas to talking with customers and sales representatives to reviewing sketches with the designers. The Company relies on finishing companies to produce finishes for new products, and sometimes consults with these companies concerning the type of finish to assign to a new group. Decisions on finishes can have important ramifications for use of physical distressing. The Company also makes frequent use of meetings with dealers and sales representatives, whether to discuss designer sketches or physical mock-ups. Manufacturing considerations are usually brought into the process at the point where the mock-ups are made.

The Company utilizes free-lance designers for all their design work, from helping generate new ideas to sketches to mechanical drawings of mock-ups. Often, the designers' color renditions of ideas for new groups will include drawn-in physical distressing when appropriate. The designer's sketches are also presented to retailers to get feedback before mock-ups are made.

Key Quotes: "we work with the finishing companies, we go to the finishing company and we say, that's an antique cherry and maple we want a very distressed, low sheen finish on that, or we may ask them, what do you think"

"that's the distressed cherry. . . and you can see how they (designers) even render those to make them look that way"

"we'll take some sketches and we'll run it by retailers. . . they'll tell us, you're on the right track, no that's not right for my market"

- Marketing/Selling

Despite rather extensive use of physical distressing in its product, Company M has experienced some problems regarding retailer complaints. For example, two prominent department stores asked the Company to take the distress marks off, because consumers did not understand the concept. Upper end retail customers, with a more sophisticated consumer base, however, tend to have fewer problems. The interviewee felt that an education process is involved. Informing retail salespeople about the distressing and including information in brochures is the extent of promotion of distressing/character-marks. Education can only go so far, however, and in the end, it is left for the consumer to decide.

The interviewee felt that the trend toward "casualness" over the last five years has been favorable for use of character-marks/distressing, partly due to the popularity of lower sheen finishes. Furniture with an "antique" feel is especially prone to having character-marks/distressing perceived as a benefit. Associated with antique is "aged", "worn", and "beat-up." The interviewee felt that styles such as pure 18th century do not take character-marks/distressing very well, while Mission, Victorian, and nostalgic or lodge type looks can take such marks. It was also felt that the fact that no two pieces of furniture look alike is the "beauty of wood."

However, the interviewee felt that there were potential disadvantages to character-marked furniture as well. In terms of character-marks, consumers may feel the product contains "inferior wood", while with physical distressing, the consumer may feel that their furniture is "damaged" or "defective." There are also consumers who believe the their furniture will look exactly the same as the furniture on the retail floor.

Key Quotes: "you've got to. . . get it (product education) down through the ranks, but you know in the end, it doesn't matter what the retailer thinks, it matters what the consumer thinks"

"the thing that appeals to most people about character-marks is that it looks a little bit like an antique, it reminds them of something that was in their grandmother's house. . .it fits a certain type of customer that wants that, obviously there are some who don't want that"

Summary for Company M

Although the concepts of character-marks and physical distressing are similar in theory for Company M, physical distressing is relied on much more to add casual, antique feels to selected groups. It seems a concern of Company M regarding the use of character-marks is the perception of inferior wood by consumers. Worm holes and ray flecks represent the Company's most substantial effort to use character-marks on domestically manufactured hardwood products, and worm hole distressing is often used. Small knots might also be allowed in some pine groups. In the imported hardwood group that contained character-marks, the knots were combined with other aspects of the group, such as hardware, to help better achieve the desired lodge-type look. This fitting of character-marks into the entire product concept is similar to what other companies have successfully done with character-marks (i.e., Company B).

Designers are involved early in the product development process, and have some influence over the decision to use physical distressing. The use of finishing companies, for finish production and consultation, can also have an influence on the distressing that goes into Company M's products. It is felt that the currently popular antique looks, which encourage physical distressing, could trend out as fast as they have come into style. Such style fluctuations can affect what companies do with physical distressing/character-marks.

Even with physical distressing, Company M has to be somewhat careful as to the type of consumer to which their products are sold. Lower end consumers do not appreciate the concept of distressing as much as consumers at the higher end. While the company will continue to make use of physical distressing, increased use of character-marks is not likely, especially in oak and cherry.

Key Quotes: (referring to the imported character-marked group) ". . . big knots, look at that hardware, the whole look is trying to look like an aged, worn, beat-up antique"

"right know the trend is toward more distressed, antique-looking furniture, that could turn on a dime tomorrow"

Company N

Basis for Membership in the "Reluctant Users" Category

Company N makes extensive use of physical distressing, and very limited use of character-marks. The concepts are equated, however, in terms of what they add to the look of furniture. The decision to use distressing/character-marks is quite style specific, with little consideration of cost. Company N also engages in a great deal of worm hole distressing, with manual worm holes sometimes appearing with natural worm holes on the same group.

When working with oak, the largest allowable size for knots is dime-sized. Knots in pine can be larger, especially in veneer where there is a solid core for support. In general, the company uses only small character-marks, although 2 Common oak is occasionally used in some groups when the intended look can take some character. Company N has no intentions of increasing the amount of character-marks used in the near future.

Key Quotes: "it (use of character-marks) really depends on the collection itself, whether it should be a clean look or whether it can be distressed, we do a lot of physical distressing in our product"

"it (use of character-marks) really depends on the style of the group, if we have a contemporary collection we can't put character-marks in and get by with it. If you're doing distressed old-world mahogany or pine bedroom, then you certainly can allow certain character-marks into it, because it would be inherent to the overall finish"

"we'll. . . manufacture some knots, little beauty marks, in the piece with a small iron or something" (actual reference to physical distressing)

(the biggest reason for use of distressing/character-marks) "primarily related to the style we feel like we're trying to emulate"

"we might save a little bit by buying 2 Common oak, but it's maybe for a purpose, it's for the look, it marries well with the finish"

- Product Development

The Vice-President of Marketing makes most new product decisions - there is no committee per se. However, the Sales Manager, who oversees about 35 sales representatives, meets frequently with the Vice-President of Marketing and has substantial influence in the process. Manufacturing considerations are made early in the process, with designers often meeting directly with plant managers.

The decision to use distressing/character-marks is made at the time of finish selection, which is carried out with the assistance of finishing companies. Thus this decision is left primarily to the marketing management. The Company considers such activities as design, sample production, selling, and going after new distribution as part of the marketing function or "package."

Company N relies solely on contract designers for all design work. The designers' primary responsibility is selection of hardware and overall detail of the product. Designers also have input for new product ideas. Designers have little influence over the finish decision, which is where distressing/character-marks decisions are made.

Key Quotes: "typically the finish aspect is done separately from the design, we like to go to. . . finishing people and look at a whole board of finishes and say, let's pick that one, and they may or may not have character-marks, it may have distress marks, it may not, but we try to marry up the finish along with the veneer to the design period"

"(the designer) is responsible for making sure that the product can be made"

"most good designers keep abreast of what's happening by reading various publications and looking at style magazines"

- Marketing/Selling

Retailers generally don't have problems with Company N's distressing/character-marks because the Company seeks out feedback from retailers, regarding both distressing/character-marks specifically and general new product ideas. The Company believes that retailers know best "what customers will buy", and have a good understanding of the proper amount of distressing/character-marks to allow. Even consumers who appreciate physical distressing or character-marks in their furniture can sometimes feel like it's overdone. Catalog promotion aimed toward retailers would stress the inherent nature of marks to wood.

The interviewee felt that "antique" looks provide the best opportunity to use physical distressing/character-marks. Another term used for distressing/character-marks was "beauty marks." The Company's philosophy toward physical distressing/character-marks is that style derivations from the 18th century are most appropriate for distressing/character-marks, as "distressed" and "time-worn" would be promoted to "try to keep it from looking brand new." Additional promotional themes might include "inherent nature of the wood" and "inherent beauty of the wood itself." rather than "character-marks" A major disadvantage of character-marks can be a notion that such marks represent "inherent weaknesses" in the wood. Disadvantages of distressing can be a belief that the furniture has been "damaged." Also, the Company believes contemporary looks are not appropriate for physical distressing/character-marks. The interviewee cited Spanish looks of the 1970s as an example of a style that was considerably character-marked.

Key Quotes: "any time you get big knots, I do think there is a limit to how far you can carry those kinds of knots, because customers look upon them sometimes as weaknesses"

"we would probably put something in the catalog to the effect that the inherent nature of the wood may have some small knots or whatever, and cannot be considered to be defects. . . we wouldn't call them character-marks, we would just say we consider them to be part of the inherent beauty of the wood itself"

"back in the 70s the so-called Spanish look was real hot, and it had tons of character-marks, but you couldn't give away Spanish today, so who knows"

Summary for Company N

An important characteristic of Company N is the equating of character-marks with physical distressing. Thus there is a notion that the Company uses more character-marks than what are actually being left in the furniture. In this way Company N appears similar to fellow "Reluctant User" Company M. However, the two companies have other things in common as well. For example, both make extensive use of finishing companies, which adds an additional player in the physical distressing/character-mark decision. Also, neither company expressed serious concern for availability or quality of wood materials in the near future. Both companies feel that overseas markets will be able to make-up any possible shortage in domestic lumber.

Company N gives the outside designers it retains significant responsibility for manufacturing considerations in the product development process. These designers, however, have almost nothing to do with finish decision, specifically the use of physical distressing/character-marks. However, the designers are responsible for the hardware on new groups, which must be consistent with the finish.

The decision to use physical distressing/character-marks remains well within the realm of look and style for Company N. With little concern for current wood material availability and quality, the company attempts to match finishes to style periods. The interviewee felt therefore that distressing/character-marks increase and decrease in usage in relation to the popular styles. For example, if the market turns more toward contemporary looks, physical distressing/character-marks will be used less frequently than they currently are with the recent popularity of more casual looks. Even when casual looks are popular, however, it is quite possible for distressing/character-marking to be "overdone", and retailers usually have the best perspective on what consumers will

believe to be an acceptable level. In this sense, Company N relies on retailer feedback to help them through the distressing/character-marking learning curve mentioned by several other companies.

Key Quotes: "when contemporary comes back in style, you won't see any character-marks, it has to be perfectly clean"

"I think it (use of distressing/character-marks) will always be tied in with the design of the furniture"

"there are certain woods that are getting pretty expensive, cherry would be one. . . but there seems to be an unending supply, there's always good mahogany around. . . if it doesn't come from one country it will come from somewhere else. . . I don't see any near term problem with almost any kind of wood we need"

"they (retailers) have a good feeling of at what point you can go (with physical distressing/character-marks), only so far, and what point you better stop"

Company O

Basis for Membership in the "Non-Users" Category

Company O removes all character-marks from their hardwood groups as a general rule. The manufacturing system is set up to remove natural markings from the lumber as it is processed into furniture parts. Even with pine, the Company is cautious concerning knots, removing most knots larger than a dime. It is believed, however, that knots are more acceptable in pine simply because pine tends to have more knots than hardwoods.

Although the Company physically distresses some groups, considerable problems with consumer acceptance of distressed furniture has been experienced. It is generally believed that the Company's consumer base, at a medium price-point, does not fully understand or appreciate character-marks or physical distressing.

There is no indication that Company O will increase the use of character-marks in its furniture in the near future. The Company simply believes such marks are unacceptable to their customers, and currently feels little pressure to increase yield or reduce lumber costs.

Key Quotes: "the way we grade our lumber and cut lumber to make furniture, we cut most of the knots out. . . even out of pine

" you can't cut them all out, if they're real small and things like that, but if they're sizeable at all and they're going in to a drawer front, we simply cut it out. . . we have a very automated lumber system, and it's (character-marks) automatically cut out "

"I just don't think our customer base would be as involved in something that has a natural growth to it, a knot or whatever it might be"

"occasionally we will get into. . . distressing of the product. . . and in some cases we have to discontinue doing that because people just don't understand it"

"we consider it (knots) a defect"

Synopsis of Design Management Characteristics

- Product Development

The design committee at Company O is composed of the Merchandising Manager, Senior Vice-President of Marketing, and the President of the Company. The marketing department and sales department are separate. Manufacturing considerations are first made when samples are constructed, and correspondence continues as changes are made to the pending new groups. Company O relies heavily on an "intelligence network" of salespeople and retailers to develop new product ideas.

Company O currently uses contract designers for all design work, but sometimes there is a mix of in-house and contract designers. Designers retained by the Company are initially given the design category, general price-point, and sometimes specific types of pieces to include when given a new design project. Although designers have occasionally come to the Company with the idea of using character-marks in a new group, the Company often overrides the decision, because they believe they have a better handle on what their customers want than the designers do.

Key Quotes: "everything in our company is done by committee"

"there's really not a crystal ball out there, I think everyone in our business just sort of looks around and says, this is something that is really selling"

"we feel like we as the sales force in marketing here know more about what our customer really wants than the designer (regarding character-marks)"

- Marketing/Selling

Retailers are important to Company O's non-use of physical distressing/character-marks because they have a good understanding of the extent of character-marking that is acceptable for furniture consumers and when the character-marking or distressing has been overdone. In this way retailers form a link between the Company and final consumers. The interviewee felt retailers' opinions concerning character-marks holds more weight than those of designers and company salespeople.

Company O generally believed that the advantages of character-marks are best realized in furniture sold at higher price-points. However, themes such as "natural growth" and "characteristics of the wood" can be associated with character-marks. Most of the Company's customers, however, view character-marks as "defects" in the wood. It is felt the Company's customers also have a problem understanding physical distressing.

Key Quote: "in fact, they (the company's consumer customer base) would probably not like it (character-marks) because they consider it a defect, where someone with a little bit higher income could really appreciate and would probably look forward to having some character-markings on their group"

"they think that when you first build a piece of furniture, you sand it to where it's so slick and nice and smooth that it's just unreal, and then you go back and beat it up a little bit, and you put some distressing on it, they don't understand that"

Summary for Company O

Company O is somewhat firm in its position of generally not allowing character-marks in any of its hardwood groups, and only small knots in its pine groups. The Company, which operates at a medium price-point, feels that clean furniture is what their customer base both expects and appreciates. Several other companies shared the opinion that consumers in higher price-points are more receptive to character-marked furniture. Even with the Company's pine groups, knot size has to be kept somewhat small.

Like other companies, Company O has experienced a learning curve associated with finding an acceptable level of character-marks and physical distressing. This feedback has been received primarily from retailers, a critical link in the "intelligence network" the Company feels keeps it abreast of what is happening in the marketplace.

All new product decisions at the Company are made by committee, with little input from designers. Designers are expected to design products within well-established boundaries related to style category, price-point, etc. Designers therefore have very little influence over the decision to use character-marks. In reality, this means most attempts by designers to use character-marks are overridden at Company O. The interviewee felt there were no major lumber availability or quality problems for the near- or long-term, and there is little evidence the Company will increase character-marks use anytime soon.

Key Quotes: (concerning acceptable knot size in pine) "well, it's arbitrary. . . it's over the years what people have complained about and what the retailer accepts, and won't accept, and the telephone calls we get back in saying, we just can't accept this, our customer won't accept it"

"we just pretty much talked to our people in the plants and said you can't let the big ones go, preferably you don't want to throw away a lot of wood, but . . ."

"I'm going to say short term, long term both, I think in the United States we're probably growing more lumber today than we're using"

Company P (based on walk-through interview at company's showroom - not recorded)

Basis for Membership in the "Reluctant User" Category and Synopsis of Design Management Characteristics

Company P is a very high-end manufacturer, with a product mix ranging from chairs, tables, and beds to lamps and artwork. The Company considers itself to be reproduction specialists, particularly of styles from the 18th century. All of the Company's manufacturing facilities are located overseas, and the Company produces many labor-intensive products. The Company has developed an exclusive network of

distributors, with a strong brand image within the network. The Company therefore does no advertising.

Company P makes extensive use of veneers, with plywood and particleboard cores. Species like walnut and maple are shipped from the United States, and are often burlled. The Company also uses plantation grown mahogany. Burls and worm holes are the most common types of character-marks used, although sometimes the worm holes are manually produced. Physical distressing for more antique looks is also sometimes carried out. In general, little character-marking is used in the Company's products, as such decisions are based primarily on look and style.

The Company has a great deal of breadth in its product line, and it is felt the Company has the manufacturing capabilities to do "almost anything", from traditional furniture pieces to decorations and specialty items. Travel is an important source of new product ideas, and the Company uses one in-house designer. Most new product ideas come from the Vice President of Marketing, allowing the designer to focus on design activities.

Company P represents a high-end company that for style and look reasons makes little use of character-marks. The Company's relatively low production costs make it unlikely that lumber utilization will be a substantial impetus for increased use of character-marks in the near future. None of the Company's groups are promoted as character-marked, and distressing is generally used more often than natural marks.

SUMMARY OF FINDINGS

The following summary presents the findings in relation to the Propositions developed in the literature review. A few issues emerged from the data that were not part of the original Propositions and are also reported. Although aggregate results are generally reported, findings indicated in italics are issues that emerged as being associated with the categorization scheme: character-mark *Users* (Categories I and II) and *Non-users* (Categories III and IV). Recall that character-mark *Users* are classified as Companies A-H and *Non-users* are classified as Companies I-P.

Each finding is referenced to at least one company. This was done to maintain a "chain of evidence" (Yin 1981) between the qualitative data and reported findings, and to

indicate issues with a substantial amount of evidence. The distribution of the number of times a company was referenced was normally distributed ($P > 0.15$ for Kolmogorov-Smirnov), with a mean of 11.5 and a standard deviation of 5.7. This indicates that few companies were under- or over-represented in the results, suggesting the results were generally not overly influenced by more lengthy or articulate interviews.

Product Development

1. *Considerable deference can be given to designers in the early stages of product development when suggesting use of character-marks (Company B, C, E, I, K). Designers can also have a great deal of influence in the final decision to use character-marks (Companies B, C, E, F, I), or very little influence (Companies D, G, H, L, M, N, O, P).* This depends largely on the designers' primary responsibilities within the companies' product development process. These findings partially support Proposition 1. However, the role of designers in the use of character-marks appears to be company specific. It appears that *Users* of character-marks give designers a larger role in the decision to use character-marks.
2. The decision to use character-marks is primarily a finish or wood species decision in the product development process (Companies A, D, F, G, H, K, L, M, N). Character-marked materials, such as knotty oak veneer, are often seen as one of several possible wood species/finish choices that can include cleaner or better-grade materials (Companies D, K). Thus the decision to use character-marks is generally a group-by-group decision rather than part of an overall effort to use character-marks in all groups. For example, the need to make a desired price-point or reduce material costs can sometimes be an impetus for use of character-marks in a new furniture group (Companies A, D, E, I, K). These findings support Proposition 2.
3. Standard sizes for knots in oak groups can be pin-sized (Company J, L), dime-sized (Companies A, D, F, N), dime-sized to quarter-sized (if sound) (Companies B, C, K), or the size of a fifty-cent piece (if sound) (Company E). *The establishment of oak knot size can be driven primarily by production considerations (Companies A, C, E, F, G, H) or*

marketing considerations (Companies B, D, I, J, K, L, N). Oak knot soundness is sometimes considered to be more important than size (Companies A, B, E, I). Even though manufacturing standards regarding knot size might exist, such standards are often reached somewhat arbitrarily (Companies A, F, O). Sometimes companies have communication problems between marketing and production concerning character-marks, such as yield being different than anticipated (Company I) and letting dark lumber be processed for groups with light finishes (Company A). These findings support Proposition 2. It also appears that knot size is driven primarily by production consideration for *Users* and marketing considerations for *Non-users*.

4. *Character-marks will do best when they fit well within the entire product concept, i.e. the style, image, look, and price of the group (Companies B, D, F, M).* This fits with a more holistic product evaluation process. For example, promoting the concept of quality associated with solid wood furniture can help make character-marks more acceptable when they are equated with solid wood (Company F). *This also requires training of company salespeople (to subsequently educate retailers) concerning the entire product concept (Companies B, D, F).* These findings support Propositions 2 and 4, and tended to involve character-mark *Users*.

5. *Endorsements might help character-marked furniture when the product concept fits with what the endorsee is trying to portray (Companies B, F).* This means that character-marks will be a part of the new product idea from the beginning, not determined later in the product development process, such as during the finish selection (i.e., Companies A, D, K). *A reputation for product innovativeness or design proactiveness, in addition to attracting endorsees, can give retailers the incentive and confidence they need to try a manufacturer's character-marked group (Company B).* Strong brand awareness, however, can hinder efforts to use character-marks due to consumers' expectations of quality (Company D). These findings support Propositions 3 and 4. Although few sample companies were actually involved with endorsed groups, they were classified as character-marks *Users* and reported that endorsements can make character-marks more acceptable.

6. The use of character-marks is generally look- or style-specific (Companies A, B, C, D, H, I, J, K, L, M, N, P). Styles most suitable for character-marks include casual 18th Century, Southwestern, Southern European, French Provincial, Mediterranean, Arts and Crafts, Mission, Spanish, as well as any type of "lodge", "antique", or "nostalgic" looks. Some finishes are also more appropriate for character-marks (Companies D, L, M), including "weathered, waxy, distressed-type looks", "weathered light finishes", and "lower sheen finishes". Even for look- or style-driven companies (regarding character-mark usage), cost/yield improvements are an acknowledged, positive *consequence* of including character-marks (Companies B, C, I, K, L, M, N). These findings support Proposition 4.

7. Based on the widely held belief that certain styles take character-marks better than others, trends in popular styles might currently be the single greatest factor to the acceptance of character-marked furniture. Some companies are seeing an increase in the popularity of styles that favor character-marks (Companies B, C, D, F, I, L, M), while a few are seeing a decline in popularity for such styles (Companies A, N). The use of darker finishes, when consistent with product styling, is an additional way to deal with lower quality lumber (Companies A, C, I, K). Some companies are seeing an increase in the popularity of darker finishes, particularly for bedroom furniture. These findings support Proposition 4.

8. There might be a learning curve associated with successful inclusion of character-marks/physical distressing regarding how much to include (Companies B, C, D, N, O); however, such a curve will not be as useful when specific, individual character-marks are the sources of objection (Company A). Companies might occasionally experience frustration over other companies being able to sell comparable character-marked furniture (Company C), or deciding not to use character-marks and then seeing successful character-marked groups in the marketplace (Company D). This finding emerged as an issue that was not proposed at the outset of the study.

9. There is often a lack of serious concern over future availability/quality of hardwood lumber among marketing/sales/product development personnel (Companies G, M, N, O); thus pressure to reduce material costs or increase yield is not often a major factor in the decision to use character-marks. However, concern over regional availability and quality of hardwood lumber can be an impetus for use of more character-marks for some companies (Companies A, H). This finding emerged as an issue that was not proposed at the outset of the study.

Marketing/Selling

10. *Potential product advantages offered by character-marks include “casualness” (Companies A, B, E), a “rustic” look or feel (Companies A, C, E), that “no two pieces are alike” (Companies F, G), a “relaxed” look or feel (Companies B, J), “old” or “time worn” or “something your grandfather built” (Companies I, M, N), and as “beauty marks” or “beautiful” (Companies D, F, G, M, N). Potential product disadvantages associated with use of character-marks include a lack of “uniformity” in the furniture (Companies A, K, M), a notion on the part of consumers that character-marked furniture pieces are “defective” or “damaged” (Companies D, M, N, O), and that the furniture is made from “inferior wood” (Companies M, N). These findings support Proposition 4. It appears that product advantages related to “old-ness” are more important to *Non-users*. It also appears that *Non-users* are more concerned about perceived product quality when using character-marks than are *Users*. It is interesting to note that product advantages related to the environmental benefits of using character-marks were seldom mentioned.*

11. Rejection of character-marked furniture can come from either the retailer (Companies C, M) or the final consumer (Companies A, D, E). Consumers' limited frame of reference concerning quality furniture can be the largest cause of rejection (Companies B, D). Character-marked or physically distressed furniture positioned at higher price-points, with a more sophisticated customer base, is more likely to be successful (Companies B, C, D, F, M, N, O, P). Companies at more middle price-points, however, can successfully use small character-marks in some groups (Companies G, H, J, K, L). It appears that promotion may be the difference in character-mark usage between

companies at higher and lower price-points - character-marks can be *promoted* more effectively at higher-price points. These findings partially support Proposition 5. While retailers were frequently the source of character-mark rejection, some companies reported that final consumers were the biggest barrier to acceptance of character-marked products.

12. It is important to educate sales reps to educate retailers about character-marks so that the product can be "sold up front" as character-marked (Companies B, D, F, G, I, J, L, M); however, the information might not always reach the final consumer (Companies E, I, M). Written promotional material, such as brochures, catalogs, and hang-tags, can be an important source of product information regarding character-marks, whether for promotional purposes (Companies D, F, K, L, M, N) or as disclaimers (Companies A, D). These findings indirectly support Proposition 5, as they represent activities aimed at retailers in the distribution chain.

13. *Physical distressing can be equated with character-marks in terms of what it is (Companies M, N), or what it can add to the look of a group (Companies B, D, I, J, L). Companies might sometimes emulate natural character-marks with physical distressing, particularly in the case of worm holes (Companies I, M, N, P). Some companies are quite comfortable with physical distressing while being more cautious with using character-marks (Companies M, N, P). However, if a company has problems with acceptance of character-marks in their products, they will likely have problems with acceptance of physical distressing as well - the two concepts are closely related in the minds of consumers (Companies A, C, D, E, O).* These findings emerged as issues that were not proposed at the outset of the study. It appears that *Non-users* are more willing to use physical distressing in place of character-marks than *Users* (for example, to emphasize a certain look or feel), and are generally more comfortable with the concept of physical distressing.

14. Character-marked groups can be priced lower than average in a company's product line (Company A), higher than average (Company B), or about the same (Companies C,

D, I, J, L). This finding emerged as an issue that was not proposed at the outset of the study.

CONCLUSION

Evaluation of the Propositions

It appears that the study's five propositions were generally supported by the case studies. Proposition 1, which stated that designers would have an important role in the decision to use character-marks, was partially supported. Designers generally had some influence over character-mark use decisions, based on the finding that most product development managers would at least listen to such suggestions when made by designers. However, in some companies, the designers' role in suggesting and determining character-mark usage was quite small. In these companies, designers were given rigid assignments where intended product attributes were clearly outlined by management. While it was expected that more companies would rely on designers' extensive product knowledge when determining product features, designers are important players in character-mark decisions and should not be forgotten by change agents attempting to promote increased use of character-marks by large case goods manufacturers.

Proposition 2, which stated that multiple functional areas would have influence over use of character-marks, was supported by the interview data. While some new product decisions involving character-marks, such as finish and style, are made primarily by the marketing function, other issues like lumber/veneer grade and character-mark size often involve input from both the manufacturing and marketing functions. This implies that arguments for increased use of character-marks that are based on yield improvement alone will likely not be enough to affect change among large case goods manufacturers. It is therefore important to understand the needs of both the manufacturing and the marketing functions when attempting to promote increased use of character-marks.

Proposition 3, which stated that companies with more proactive design strategies would be more likely to use character-marks, was supported based on limited data. There are few truly novel product designs in bedroom and dining room furniture, and only a small number of sample companies emerged from the interview data as exhibiting substantial design and product proactiveness. However, the interview data suggests that

these companies were more willing to use character-marks than companies with less design proactiveness or more traditional markets.

Proposition 4, which stated that attention must be paid to the overall product concept when using character-marks, appears to have been particularly important to successful use of character-marks. Furniture is a complex product, with both fashion and function elements, and many interacting attributes. It is issues like these, which are difficult to quantify in questionnaire research, that are tailored for in-depth investigation such as is possible with case study research. The good news for character-mark usage is that most respondents indicated growing popularity for styles and finishes that were casual or relaxed, and were thus consistent with use of physical distressing and/or character-marks.

Proposition 5, which stated that retailers would be the biggest source of rejection for character-marked furniture, was partially supported. In some cases it was the final consumers that ultimately rejected character-marks. It was apparent from the interview data that retailers are more like manufacturers than final consumers in their product knowledge. Thus retailers might appreciate and understand features like physical distressing and character-marks more than final consumers. As a result, retailers might purchase character-marked groups for resale only to find consumers reject such looks. More education aimed at final consumers, from both manufacturers and retailers, could help reduce consumers' misconceptions concerning product features like physical distressing and character-marks. An example of an informational need among consumers that came up frequently in the interviews was the lack of brand awareness in the case goods industry.

Due to the case study nature of the interview research, it was difficult to make broad generalizations concerning trends in company characteristics based on the categorization scheme. However, evidence of trends did emerge for some issues, as suggested by Proposition 6. For example, it appeared that endorsements and consideration of the overall product concept were more prominent considerations among *Users* of character-marks than *Non-users*. There was also evidence that *Users* gave designers more influence in the determination to use character-marks in new furniture groups. Regarding functional area involvement in the decision to use character-marks,

there was evidence that *Users* based knot size more on production considerations while *Non-users* based knot size more on marketing considerations. It also appeared that *Non-users* often substituted physical distressing for character-marks when certain looks were desired, and that some *Non-users* manually simulated character-marks like worm-holes. When *Non-users* used character-marks, it was more likely to be based on a desire to make a furniture group look "old", while the potential product advantages of using character-marks were more diverse for *Users*. Thus, in terms of designer involvement, functional area involvement, proactive design strategies, and attention to the overall product concept, there was some support for Proposition 6. In the case of rejection of character-marked products by retailers, no differences emerged between the two groups.

Company Demographic Issues

It appeared that companies producing solid wood furniture experienced more pressure from a utilization standpoint to use character-marks than companies primarily using veneer. Of the three companies surveyed that produce only solid wood furniture, and the one company that produces both solid wood and veneered furniture, all were classified as either "Focused" or "Common" users. Whereas companies producing solid wood furniture generally need to include some character-marks in their product, companies producing primarily veneered furniture generally use character-marks more for the desired look it added to the group. However, it is possible for solid wood companies to promote the look side of character-marks (i.e., Company F), and for veneer companies to use character-marks more for cost/yield reasons (i.e., Companies G, H, O). It is also important to note that even veneer-construction often involves some solid parts (i.e., drawer fronts) which provides veneer-construction companies additional opportunities for use of character-marks.

It also seemed evident that *Users* of character-marks tended to operate at either a high or low price-point, while *Non-users* operate closer to middle price-points. The combined standard deviation of price-point scores for the "Focused Users" and "Common Users" categories was 1.07, while the combined standard deviation of price-point scores for the "Conditional Users" and "Reluctant Users" was 2.71. This suggests that the *Non-users* category contained companies at higher and lower price-points (i.e., greater

variance) than companies in the *Users* category. This finding is consistent with the interview findings. Respondents indicated that companies at the low end often have more "unsophisticated" customers or customers that expect the consistency of printed furniture in real wood furniture. At the very high end, customers also do not expect character-marks due to the styling and image of quality associated with higher-end furniture. It is at the upper-middle price-points that consumers both appreciate character-marks and the popular styles are appropriate for such marks.

Study Limitations

All of the companies in the sample were located in North Carolina and Virginia, suggesting that generalizability outside this region might be inappropriate. However, the results should be generalizable to most large case goods companies, being cautious of potential geographic variation. Potential sources of geographic variation might include markets served and Furniture Markets attended. There is likely to be less geographic variation concerning general marketing and manufacturing issues. Firm size is likely to be a more serious threat to the generalizability of this research, as smaller companies will likely have a less complicated product development process, and therefore face fewer constraints when developing character-marked products. Issues affected could include smaller product development committees, less complicated manufacturing systems, and less exposure to designers and retailers.

It is important to remember when reading these results that just because something did not come up in an interview, that doesn't necessarily mean it is not true for the company, but perhaps that it was not discussed. Every effort was made by the researcher to structure every interview equally in terms of subject areas covered, but interview dynamics make it impossible to ask every question exactly the same way or in the same order to every interviewee. As indicated in the SUMMARY OF FINDINGS, certain findings have a substantial amount of evidentiary support. However, other points, with fewer affirmations, may represent specific company attributes that make them unique among the sample companies. It is exactly these points which may hold the clues to success in using character-marks, as few companies have experienced success with using character-marks on a large scale. For example, it appeared to be very important to

some companies that character-marks fit within the overall product concept, which can often be enhanced by such features as endorseees and solid wood construction. As this study was drawing to a close, a large case goods company introduced a new endorsed group that made use of character-marks. Similar to the endorsed groups investigated in the present study, it appeared that this group's endorsee was consistent with a styling and overall look that was enhanced by character-marks.

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CHAPTER 4
AN ANALYSIS OF FURNITURE RETAILERS'
PERCEPTIONS OF CHARACTER-MARKED FURNITURE

ABSTRACT

The objectives of this research were to determine how character-marks were perceived within hypothetical furniture product profiles and the intangible attributes associated with character-marked furniture among a sample of retail buyers and managers. Increased use of character-marks in hardwood furniture products has received attention recently as a means for furniture manufacturers to realize more efficient lumber utilization. However, little information exists concerning furniture retailers' perceptions of character-marked furniture. Conjoint analysis was used to determine the level of character-marks most acceptable in solid oak household furniture. Preference for character-marks was somewhat linear in relation to character-mark size, based on both *buying consideration* and *relative price* product evaluations. The presence or absence of character-marks was found to be quite salient to product evaluations. The intangible furniture attributes of *rustic* and *antique* looks were most associated with character-marked furniture. Information from this study was useful for determining the potential for push-type promotion of character-marked furniture, and the content of promotional messages aimed at retailers.

INTRODUCTION

The role of marketing in the promotion of environmentally conscious product design and consumption has received considerable attention (e.g., Lozada and Mintu-Wimsatt 1995, Mackoy et al. 1995). Much of the discussion concerning marketing and the environment has centered on the notion that markets for environmentally friendly products exist, when such products are promoted in an appropriate manner. It is argued that the principles of marketing are well suited to encourage more responsible and efficient use of natural resources, whether aimed at industrial or consumer segments. Research from the forest products literature has attempted to identify consumer segments

for wood products that are receptive to environmental marketing themes (e.g., Ozanne and Smith 1996, Ozanne and Vlosky 1996).

Wood-based industries are often particularly sensitive to issues such as efficient resource utilization due to their reliance on a raw material base for which there are many competing uses (e.g., forest recreation and wildlife habitat). In particular, use of character-marks in hardwood furniture products has received attention as a potential means of extending the forest resource and lowering raw material costs for manufacturers (Buehlmann et al. 1998, Araman 1979). This appears to be a timely issue, as a recent survey indicated that nearly 50 percent of the 25 largest residential furniture manufacturers in the United States and Canada were either *extremely* or *very* worried about wood supply issues. In addition, 30 percent indicated that they were more concerned about wood supply issues now than a year ago (Adams 1998). Thus, furniture manufacturers can face pressure from both the supply and demand sides of the business to make more efficient use of hardwood resources. However, most hardwood furniture is currently produced from primarily character-free parts.

Although it has been claimed that responsibility for promoting acceptance of character-marked woods lies with furniture manufacturers (Buckley 1996, Wilhelm 1994), it is unclear whether push- or pull-type promotional strategies would be more effective in generating demand for character-marked products. This study investigated perceptions of character-marked hardwood furniture among a sample of furniture retail buyers and managers. Such information can be used to determine the potential for push-type promotion of character-marked furniture.

Conjoint analysis was used to determine the importance of wood material grade to perceptions of hardwood furniture products, in relation to other important furniture attributes. The primary objective of this research was to determine how knots, a specific and common type of character-mark, were perceived within hypothetical product profiles (including part grade, style, finish, and aspect variations) categorized as solid oak household furniture of country/casual styling. In addition, several intangible attributes potentially associated with character-marked furniture were investigated.

PREVIOUS WORK AND HYPOTHESES

A Conceptual Framework for Analysis

Bloch (1996) claims that psychological response to product form involves both product beliefs and categorization issues, as shown in Figure 4.1. If a positive response to a product is generated from cognitive processing, positive behavioral responses are likely to follow. In the context of the present study, behavioral response was measured for furniture retailers in terms of buying consideration and relative price for 16 furniture product prototypes that are fractional factorial combinations of important furniture attributes. One of these attributes, termed *Part Grade*, was of particular interest in this study because it involved different sizes of knots.

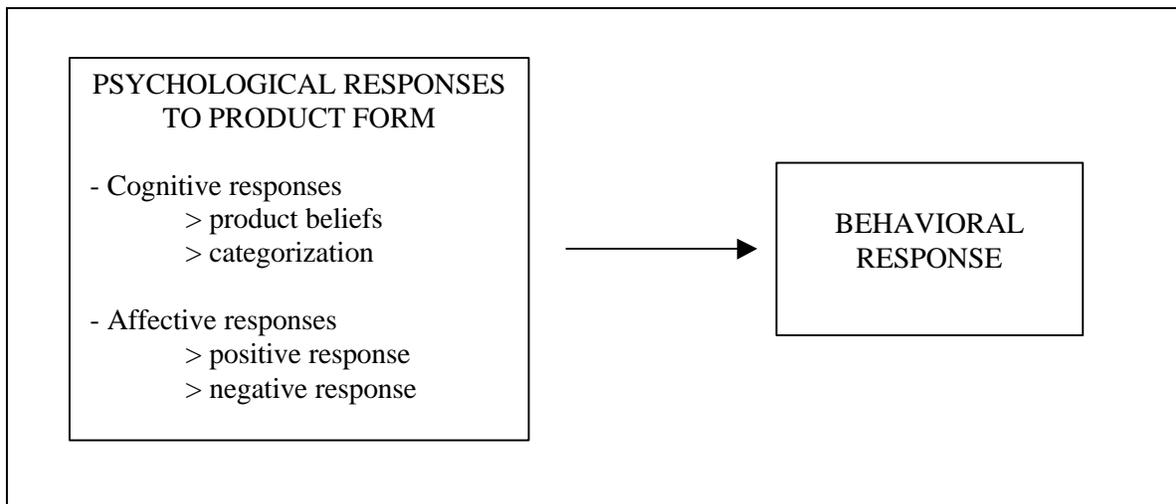


Figure 4.1 - A conceptual framework for studying response to product form (Bloch 1996).

Product Beliefs and Categorization

Product Beliefs

Bloch (1996) and Durgee (1988) point out two distinct streams of thought regarding the cognitive processing by which product beliefs are derived - holistic processing and atomistic processing. This has implications in terms of whether character-marks are seen as a distinct product attribute or as part of a holistic piece of

furniture. When holistic processing is involved, products are evaluated as a whole and not merely as a collection of parts (Holbrook and Moore 1981). This type of processing follows the precepts of Gestalt psychology, which claims that a whole is more than a sum of separate parts (e.g., Murray 1995, Katz 1950). Further, Gestalt psychology claims that the internal nature of the whole rather than characteristics of individual elements determines product characteristics. Properties such as symmetry and spatial relations are important to holistic processing (Kimchi and Goldsmith 1992).

Atomistic processing, evolving from structuralist psychology (Kimchi and Goldsmith 1992), involves a consideration of individual product elements and the fit among them, resulting in a linear processing of information (Bloch 1996, Durgee 1988, Greene 1965). A similar process has been referred to as piece-meal processing (Stayman et al. 1992, Fiske 1982). It can then be said that belief about a product is simply the sum or average of the beliefs about the product's individual attributes (Sujan 1985, Fiske 1982). Katz (1950), for example, points out that when one eats vanilla ice cream, the taste impression is a function of multiple attributes that can be summed to provide a measure of the overall sensation. Such an equation might appear as:

$$\text{taste impression of vanilla ice cream} = f(\text{cold} + \text{sweet} + \text{vanilla aroma} + \text{softness} + \text{yellow})$$

Anderson (1978) points out several studies that have found algebraic equations that modeled the cognitive integration of judgment variables. Such models have included addition, subtraction, multiplication, and division terms, as well as combinations of functions. Furthermore, such models have been both qualitative (verbal equations) or quantitative in nature. While much of Anderson's (1978) discussion centers around psychological phenomenon, his ideas should be applicable to judgments about products as well when the product is viewed as a unique collection of attributes, such as when atomistic processing occurs.

Product Categorization

It has been claimed that categorization, or perceiving of two or more distinguishable objects equivalently, is one of the most basic functions of living creatures (Mervis and Rosch 1981). Categorization research suggests that individuals attempt to form beliefs about new products by placing them in stored mental representations or categories (Mandler 1982). Such representations are commonly referred to as schemas and serve as the basis for understanding product categories. Once a product is categorized, it is perceived to be similar to other products in the category. Bloch (1996) posits that categorization decisions can be reached via both holistic and atomistic processing. Thus, a product might initially be perceived holistically, and if sufficient interest is generated, might be decomposed into its component parts (Bloch 1996, Kimchi and Goldsmith 1992).

Individuals develop product categories by learning what attributes are important to products in a category, what prices are typical, and the extent to which the category contains homogenous or differentiated products (Hutchinson and Alba 1991). New products are placed into categories if they are judged to have a high degree of similarity with prototypes of the category (Bloch 1996, Medin and Smith 1984). Often category boundaries are not well defined, allowing for some degree of "noise" in interpretation of membership (Mandler 1982, Mervis and Rosch 1981). Categorization is important to marketing because unusual new products that are not easily categorized can lead to frustration on the part of consumers and retailers (Bloch 1996, Stayman et al. 1992, Cox and Locander 1987, Cohen 1981). Also, categorization is important in the case of a new brand being introduced into a familiar product class - consumers must be made aware of how the new brand is differentiated from existing brands in the same category if the product is to be successful (Hutchinson and Alba 1991).

Fiske (1982) claims that categorization involves matching an experience (such as exposure to a new product) to structured prior knowledge, thus facilitating efficient information processing. Prior experience with products therefore plays a critical role in categorization by providing a set of attributes of the most usual instance or exemplar of the category. In this way, new products are categorized, and the emotive effects associated with the category can quickly be accessed and applied to the new product

(Sujan 1985, Fiske 1982). It has also been suggested that the relationship between variables in a category and the relationship among those variables in a new product is what allows for categorization, not just the fact of the schema and event sharing the same variables (Mandler 1982).

Mervis and Rosch (1981) describe a three-level hierarchy of categorization, consisting of a superordinate level, a basic level, and subordinate level. The basic level generally serves as the reference level for most individuals. Other authors have referred to a similar hierarchy of categorization, with levels corresponding to product class, product type, and brand. An example of a product class is "cars", while a product type would be "sports cars" and a brand would be a "Nissan 300ZX" (Sujan and Dekleva 1987). In this scheme, the *product type* level serves as the basic level. The basic level is important because that is the level at which individuals naturally tend to categorize objects. At the basic or product type level, attributes which describe the category are easily understood and distinct, and allow for the most inferences to be drawn about a new product.

The basic level is also the level at which distinctive properties are common to most category members but absent to most nonmembers (Medin and Smith 1984). The ability to make inferences at the brand level drops off, such that the product type level allows for the most inferences to be made (Sujan and Deklova 1987). For example, individuals are likely to see sports cars and mini-vans as distinct categories with easily identifiable attributes, but within the sports car class differences between brands are likely to be less clear. Likewise, it would be harder to make meaningful inferences about a product class like cars (e.g., "have wheels", "have engines") than about types of cars (e.g., "fast", "not much passenger room" for the sports car type).

It is important that categorization not be left to chance, but that marketers consider how they want customers to categorize a product in relation to existing products (Bloch 1996). Murphy and Enis (1986) have referred to furniture as a shopping good, characterized by the significant amount of time and money consumers are often willing to spend in search of this product, and the moderate amount of risk associated with mis-purchase. In light of the limited problem solving process consumers are likely to utilize when shopping for furniture (Murphy and Enis 1986), context becomes important in

mental representations of categories in that different properties of the product may be brought to mind depending on the situation in which it is encountered. For example, although a basketball will always be perceived as being round, its ability to float might only be brought to mind when it is seen on the water (Medin and Smith 1984). This categorization factor should be taken into account when developing promotional activities, because emotions are often attached to categories in the minds of consumers, such that certain emotive evaluations can be made based on the category into which a new product is placed (Fiske 1982, Cohen 1981).

Schema Congruity

The congruity of a new product with an existing product schema is an important element of the categorization literature. Mandler (1982) proposes a framework that predicts the relationships between levels of congruity with an activated schema (i.e., the category that comes to mind when a new product is experienced) and the type of evaluation and emotional or affective intensity generated when a subject is presented with a new product. This framework is presented in Figure 4.2. When congruity exists between a new product and the activated schema, a positive evaluation will generally result, but with little emotive intensity. Mandler (1982) refers to such instances as "cold" positive judgments. In the case of slight incongruity, a positive evaluation will generally result because the subject can assimilate the mild incongruence, fitting the product into the activated schema. Such assimilation activity generates more emotive activity than the congruence case. When severe incongruence is realized, the subject will generally try to accommodate the product into the activated schema, often with little success. Such lack of success will then lead to a negative evaluation. An example of this phenomenon was apparent when clear cola products were introduced.

Mandler's (1982) framework also allows for schema switching in the case of severe incongruity. Stayman et al. (1992) found empirical evidence that such switching only occurred when verbal product descriptions were being evaluated. In the case of visual product evaluation, such switching did not appear to take place, suggesting subjects attempted to accommodate the product within the originally activated schema.

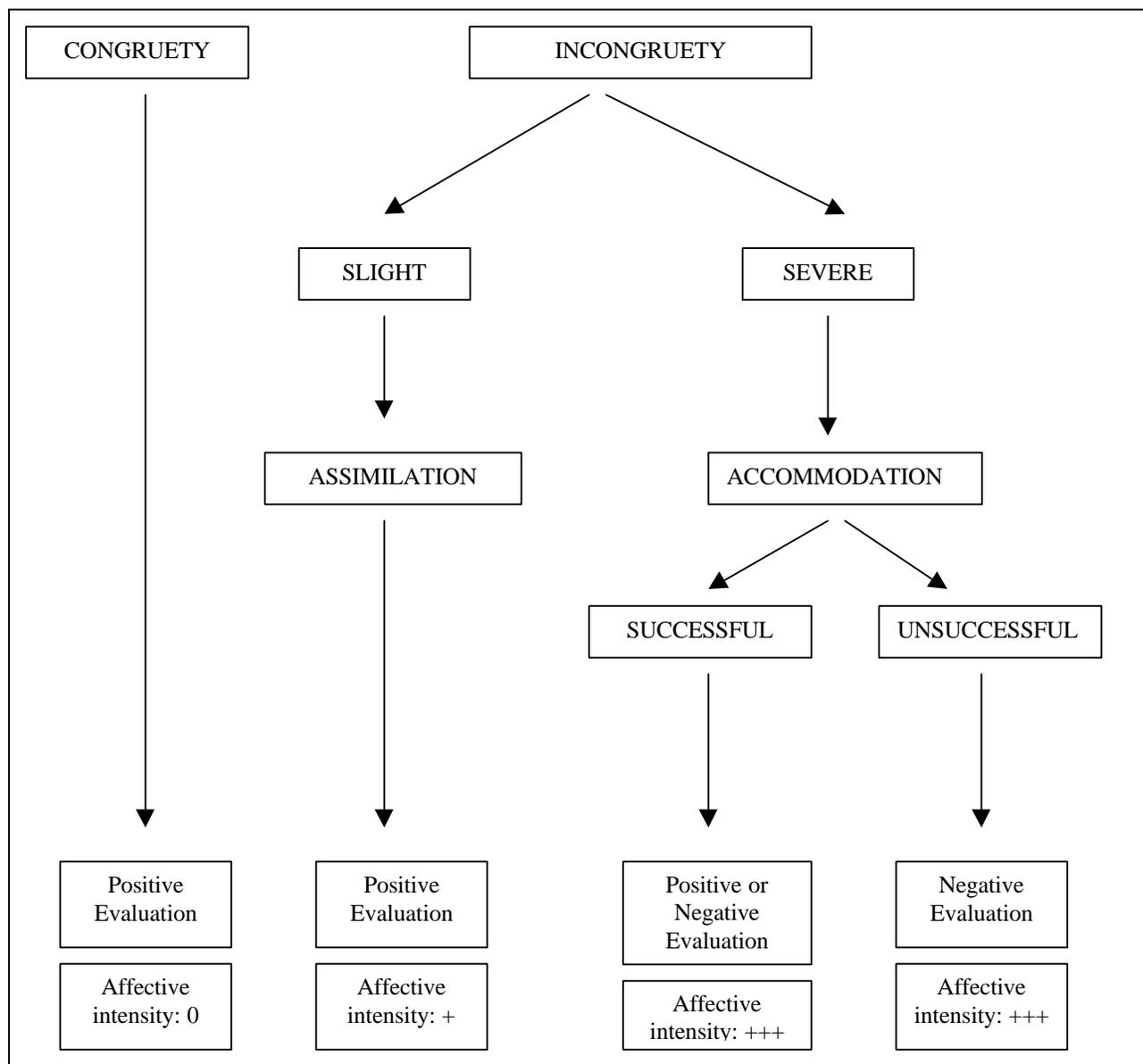


Figure 4.2. A framework for understanding product congruence and evaluation (Mandler 1982).

When categorization is not possible (i.e. severe incongruence exists between a current stimulus and prior experience), a piecemeal-type processing has been found to take place which takes specific attribute information into account, resulting in slower impression formation times (Sujan 1985). Fiske and Pavelchak (1986) have also

suggested that the type of processing, whether holistic or attribute-based, depends on whether there is congruence or incongruence with the schema activated when a new product is experienced. However, Stayman et al. (1992) found evidence that more holistic, schema-driven processing occurs even in instances of extreme incongruence, leading to negative product evaluation due to the frustration associated with not being able to accommodate the incongruent product into the activated schema. Such schema-based processing helps explain the inverted-U shape pattern of evaluative judgments along the continuum of congruity, moderate incongruity, and severe incongruity discussed by Mandler (1982) and Meyers-Levy and Tybout (1989). If attribute-level processing only were occurring, one would expect a monotonic function based on the decreasing utility of increasing levels of incongruity (Stayman et al. 1992).

Several researchers have observed the inverted-U shaped congruity phenomenon. Meyers-Levy and Tybout (1989), for example, found that moderate levels of congruity with existing product classifications led to more favorable evaluations of new product offerings than did high levels of congruity or extreme incongruity with existing product classifications among soft drinks and fruit juice. Similar findings were obtained by Stayman et al. (1992), who found that moderate incongruity between product trial experience and a written pretrial description lead to a more favorable evaluation, more thoughts about the product, and more consumption of the product in a laboratory setting than conditions of congruity or incongruity. Both Meyers-Levy and Tybout (1989) and Stayman et al. (1992) based their experiments on fruit juice and soft drink categories. Meyers-Levy and Tybout (1989) caution that results might be different for different types of products (specifically products that evoke more intense emotional effects and require high involvement purchasing decisions, such as furniture) and among persons with different levels of experience such as novices and experts. Other authors have also claimed that congruity between products may be perceived differently between experts and novices (Sujan and Dekleva 1987, Mervis and Rosch 1981).

The key attribute that was investigated in this study was *Part Grade*, which involved the sizes of knots in samples of solid oak household furniture. The *Part Grade* attribute was varied at three different levels, including *no knots*, *small knots*, and *large knots*). Varying an attribute at three levels enables the researcher to determine the nature

of the attribute structure (i.e., whether preference for the attribute levels is linear, monotonic, U-shaped, etc.). Based on the preceding review, it is reasonable to expect that the preferred *Part Grade* level will be *small knots*, representing the level with moderate incongruity to the respondent's understanding of oak household furniture (Mandler 1982). Currently, most oak furniture is essentially knot-free.

The remaining product attributes investigated in this study, including *Finish*, *Style*, and *Aspect*, were varied at levels consistent with current market preferences, thus no schema congruity issues were expected with these attribute levels. Based on the literature described above, the first hypothesis investigated in this study was:

Hypothesis 1: The preference structure for the conjoint attributes will appear as follows:

1a) The level of moderate incongruity in the *Part Grade* attribute (*small knots*) will be preferred to the congruent level (*no knots*) and the incongruent level (*large knots*).

1b) There will be no significant differences in preference among the levels of the *Finish* attribute, since all will be congruent with existing market conditions.

1c) There will be no significant differences in preference among the levels of the *Style* attribute, since both will be congruent with existing market conditions.

1d) There will be no significant differences between the levels of the *Aspect* attribute, since both will be congruent with existing market conditions.

Product Attributes

In the context of this study, it was important to understand the product attributes that were the most important to retailers in shaping their attitude toward character-marked furniture. In categorization theory, attributes are critical in that they are the means by which objects are made to fit concepts of similarity (Mervis and Rosch 1981). According to Mervis and Rosch (1981), categories can be described in terms of either features or dimensions. Features tend to be qualitative in nature, and for furniture might include such properties as "legs" or "wood". Category explanations utilizing features are

decompositional or atomistic in nature, and the same feature need not be equally applicable to every member of the category. Dimensions, on the other hand, are generally used to describe quantitative properties, such as "size". Every object in a given category can be assigned a value on a dimension, and dimensional descriptions generally are associated with relatively holistic representations of categories. Smith (1992) notes that dimensions are often measured in levels of the dimension (whether metric or nonmetric), while features are dichotomous variables, measured in a "feature-present" or "feature-absent" manner. Metric dimensions could include the sizes available for a shirt, while nonmetric dimensions might include the different fillings available in a sandwich. An example of a feature is whether or not a sandwich has pickles (Smith 1992).

Category attributes, whether features or dimensions, can be combined in different ways (Mervis and Rosch 1981). Attribute combinations are termed separable if they are perceived in terms of the separate attributes involved. Similarities between specimens (products) are therefore determined by comparing product values on each of the component attributes. Integral combinations, however, are those combinations where two attributes are not considered separately. In this case, a change in one attribute causes a product that is different as a whole rather than different for the one attribute only. Integral combinations therefore lead to more holistic judgments of similarity (Medin and Smith 1984, Mervis and Rosch 1981).

Durgee (1988) conducted research to determine the atomistic elements that best described several consumer products. Determining the attributes which best describe a product and understanding the fit among these attributes in the mind of consumers can be used to develop effective promotional campaigns. In this sense, consumer products can be compared to a work of art, which leads viewers (or consumers) through a three-stage process of expectancy, tension, and resolution. Both consumer products and works of art such as plays and paintings embody conflicts, contrasts, sequences of events, odd shapes, and ordering of attributes. Often, the specific product attributes are sources of tension that the consumer might find delight in resolving through such mechanisms as design, thus leading to an attitude toward the product (Durgee 1988). Blasko and Mokwa (1986) point out several examples from advertising where an apparent paradox (tension) is combined into a phrase which provides a message (resolution) about the product.

Inferences about product attribute evaluations can be drawn from the psychology literature as well. Wallsten and Budescu (1981), for example, found that experienced clinical psychologists utilized a more complex evaluation method than advanced clinical psychology graduate students in their evaluation of a 14-factor personality profile. The graduate students tended to use only the 2 or 3 most salient factors in an additive fashion, while the clinical psychologists often utilized 4 to 7 factors. These authors concluded that complex tasks could be approached with additive models that considered only the most salient of several possible factors among experienced evaluators although experience did seem to play a role in the complexity of the evaluation task.

Monroe (1977) suggested that when product quality is defined in terms of product engineering, experts would be more likely to consider all attributes in making a product evaluation while novices would be more likely to select one or two attributes from the total set. Hutchinson and Alba (1991) found that subjects tended to use a subset of two or three attributes from a larger set in making product evaluations. The fact that salience was weighted differently among the attributes investigated tended to suggest that subjects were using attribute-specific rules (i.e., atomistic processing) for evaluation as opposed to holistic type processing (Hutchinson and Alba 1991).

In the context of this study, it was expected that the incongruence associated with the *Part Grade* attribute would give it more salience in the minds of respondents. Such salience would make *Part Grade* an important attribute to product evaluation, if only a subset of the attributes were used to make product evaluations. The fact that the *Part Grade* levels were qualitative rather than quantitative should enhance this effect, as suggested by Mervis and Rosch (1981).

Hypothesis 2: The *Part Grade* attribute will be the most important to the buying consideration evaluation due to its salience among the other furniture product attributes

It has been shown in several categorization studies that the relative weights given to product attributes vary depending on the *context* of the evaluation task (Smith 1992). Contextual factors can also have a confounding effect in interpreting price-quality relationships (Monroe 1977). The type of product evaluation task has been shown to

affect the type of categorization processing that occurs among subjects. Ostrom and Iacobucci (1995), for example, found that the relative importance of different service attributes varied depending on whether the evaluation task involved a measurement of anticipated satisfaction, value, or likelihood of purchase. Hutchinson and Alba (1991) found that product judgments made in *categorization-type* tasks were based primarily on evaluations of subsets of specific attributes (i.e., atomistic or piece-meal processing), while *price-estimation* tasks involved more holistic-type processing which took more attributes into account. Thus, the weight given to a particular attribute by a consumer might be different depending on the type of task involved. In general, weights were more similar across all attributes in the price-estimation task than in the categorization task, where only one or a few attributes were weighted significantly higher than remaining attributes, suggesting that the salience of attributes was perceived as being more nearly equal in the price estimation task. However, even in the price-estimation experiment, there were differences in the perceived salience of attributes - these differences were just smaller in magnitude than differences detected in the categorization experiment. Hutchinson and Alba (1991) conclude that the subjects in their experiments seldom used true holistic processing.

Two different dependent measures were used in the present study to determine whether attributes were weighted differently depending on the type of product evaluation task. One dependent measure involved the extent to which respondents would consider buying each product for their market (hereafter referred to as *buying consideration*). The other involved the relative price respondents would assign to each product (hereafter referred to as *relative price*). In addition to serving as a surrogate measure for product quality (Murphy and Enis 1986) the *relative price* measure provided an opportunity to evaluate the effect of different dependent measures on attribute salience. Based on the preceding review of the literature, the *relative price* measure should result in similar salience among attributes (i.e., a more holistic evaluation), whereas *the buying consideration* measure should result in more of an atomistic-type of evaluation. In summary, Figure 4.3 shows a framework for investigating character-marked furniture incorporating the preceding literature review and hypotheses.

Hypothesis 3: The *Part Grade* attribute will decrease in importance relative to the other attributes when product evaluation involves pricing considerations, suggesting a more holistic processing mechanism

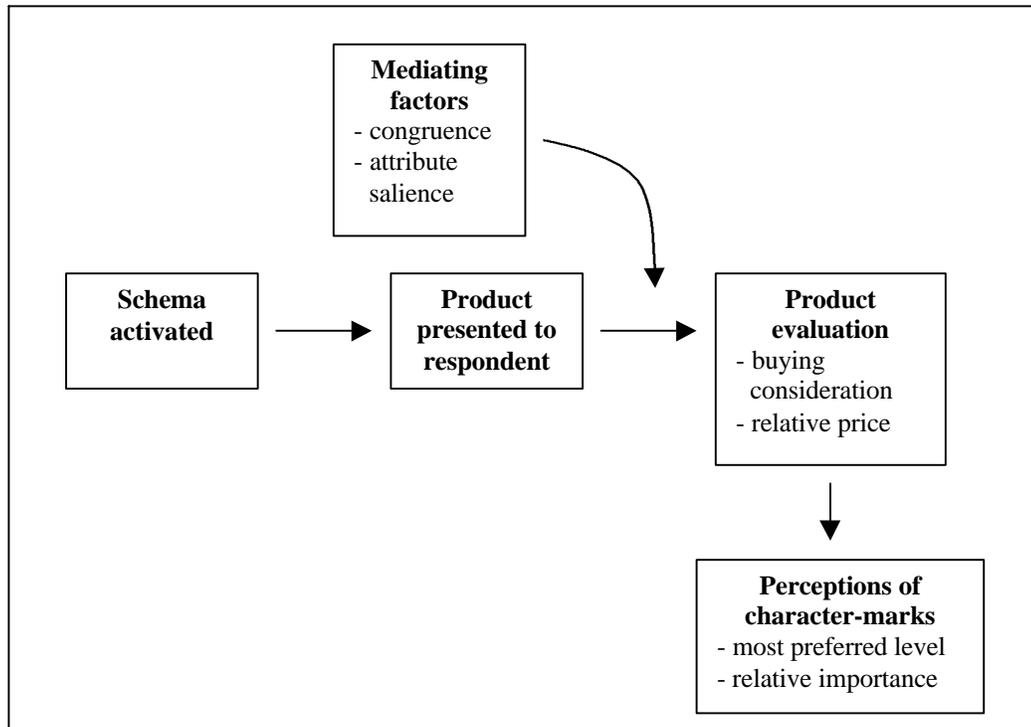


Figure 4.3. A theoretical framework for investigating character-marked furniture.

Intangible Product Attributes Associated with Character-marked Furniture

The conjoint analysis used in this study investigated only tangible furniture product attributes. In addition to determining the potential for character-marked furniture among retailers based on these tangible attributes, an investigation of intangible product attributes potentially associated with character-marked furniture was also conducted. Wood products such as household furniture often have an emotive as well as a physical dimension (Blomgren 1965). Marketers should therefore not overlook the intangible benefits associated with wood (Dichter 1964). The emotive elements of wood are likely to be particularly important to promotion of character-marked furniture, especially if it is found that the *Part Grade* attribute is important to product evaluation.

Content analysis of existing promotional themes in the literature as well interviews with marketing representatives at large furniture manufacturers was used to generate a list of potential intangible product attributes associated with character-marked furniture. Some of these attributes were mentioned more by manufacturers than by the existing literature. For example, manufacturers tended to focus more on what character-marks added to the look of furniture groups (e.g., *casual* or *rustic* looks), whereas themes from existing literature focused more on the environmental benefits of using more of the natural variation of wood. However, it is retailers' perceptions that are particularly important if manufacturers follow push-type promotional strategies. Thus, an understanding of retailers' perceptions of character-marked furniture were sought.

Hypothesis 4: There are differences between intangible product attributes potentially associated with character-marked furniture, based on evaluations by retailers

Application of Conjoint Analysis

Durgee (1988) claims it is useful to break products down into their basic elements or attributes, which can then be measured to determine the ways a product impacts perception. Medin and Smith (1984) propose that, to the extent categorization tasks follow a model of linear separability, linear decision-making models like conjoint analysis serve as useful tools for studying categorization issues. Conjoint analysis is a method of product evaluation whereby the relative importance subjects assign to product attributes can be determined, as well as the utilities they attach to levels of these attributes. The structure of a subject's preferences for attribute levels, given an overall evaluation of product profiles composed of different levels of important attributes, can also be determined (Green and Srinivasan 1990). The researcher determines the attributes and levels at which the attributes are varied. The attribute levels are then combined in a factorial fashion into various combinations (in the form of product profiles) which subjects are asked to evaluate with either a ranking or rating measure (Malhotra 1996, Green et al. 1981).

Conjoint analysis is a decompositional method in that *overall* product evaluations are broken down into utility scores and relative importance scores for each constituent

attribute. Compositional methods, on the other hand, measure subjects' beliefs about each attribute individually, usually with the use of simple-scaled questions, and determine from the most important attributes what type of product is desired. In reality, however, products are bundles of attributes, such that consumers cannot buy individual attributes. With compositional methods, subjects might rate every variable as important, and there is no way to explain interdependencies among attributes (Reddy and Bush 1998). Conjoint analysis has its roots in traditional experimentation, and arose from the need to analyze the effects of independent variables that are qualitatively specified or weakly measured (Hair et al. 1987).

Once utility scores for each attribute level have been derived, the overall utility for any combination of attribute levels can be determined. For example, the utility of the most preferred product and the relative importance of each attribute to overall product evaluation can be determined (Malhotra 1996, Hair et al. 1987). An advantage of conjoint analysis is that data analysis can be carried out at the individual as well as the aggregate level - a conjoint equation is generated for each individual in an analysis (Hair et al. 1987, Graf et al. 1993).

In the context of this research, conjoint analysis can be seen as bringing together Bloch's (1996) ideas concerning product beliefs and categorization. Evaluations regarding the acceptability of furniture samples with character-marks can be measured based on how different attribute combinations are rated in terms of *buying consideration*, which is a type of categorization with schema congruity implications, and *relative price*, which is an indirect measure of quality and thus also a type of categorization. For example, conjoint analysis will reveal which *Part Grade* level was rated highest, and how important *Part Grade* was compared to the other attributes in forming product beliefs. No assumptions regarding the type of processing used (i.e., atomistic or holistic) was explicitly made, but based on the previous discussion of the literature both will be assumed to exist to some degree. Rather, the amount of variance in the dependent measures explained by the study attributes will be measured. Conjoint analysis only attempts to *fit* an additive model; it does not necessarily assume such a model to be a *literal* portrayal of reality (Green and Srinivasan 1990). Evidence can be gathered, however, about what kinds of processing are taking place by determining the relative

importance each attribute has to the evaluation decisions. For example, if all the attributes have relatively equal importance, this can be interpreted as evidence for holistic processing.

Some assumptions were made in the conjoint analysis conducted in this research based on the preceding review of the literature. First, following the logic of Mervis and Rosch (1981), the attributes were considered as dimensions rather than features. The attributes were non-metric dimensions in that they were categorical in nature. Second, following Mervis and Rosch (1981) and Sujana and Deklewa (1987), the samples were designed to coincide with the basic or product type level of the categorization hierarchy. The wood samples were presented with pictures that put the samples in a real-life context. Rosch (1976) found that when individuals were presented with a three-level hierarchy consisting of "furniture", "chair", and "easy chair", "chair" was found to be the basic level category. Thus, it is expected that more inferences can be made about character-marked *dining room furniture* (i.e., product types) than about character-marked *furniture* (i.e., product class) in general.

While interactions have traditionally been assumed to be insignificant in conjoint studies, two-way interaction effects may be important when investigating products for which styling and aesthetic features are important, such as furniture (Green and Srinivasan 1990, Carmone and Green 1981). Interactions above two-way interactions become quite difficult to interpret and result in large losses in degrees of freedom. There is empirical evidence that suggests conjoint models with interaction terms are lower in predictive validity than main effects models (due to a loss in degrees of freedom). Therefore, the increased realism reflected in models containing interactions might not be enough to offset the lost in predictive accuracy (Green and Srinivasan 1990). In addition, main effects models have been shown to be robust, even when interactions are present (Carmone and Green 1981).

In the context of this study, all two-way interactions with the *Part Grade* attribute were tested. Beyond that point, too many degrees of freedom were lost. This is a common problem in conjoint analysis (Ostrom and Iacobucci 1995). Many studies are designed such that no interactions can be tested. For example, the average industrial application of conjoint analysis has used 16 product profiles to estimate parameters for

eight attributes varied at three levels each (Green and Srinivasan 1990). The present study was also based on 16 product profiles, but parameters were estimated for only four attributes, two varied at three levels and two varied at two levels.

METHODS

Sampling and Data Collection

Sample Description

The population of interest for this study was retail store managers and buyers in central and southwest Virginia, and central North Carolina. As a fashion product, furniture is regionally marketed, often with substantial differences in preferences for styles and finishes among regions. Thus, product studies involving furniture are best conducted on a regional basis. Mean household income for 48 counties in the primary market region of the companies represented in the sample was \$29,842. Mean population per county was 65,760 (U.S. Bureau of the Census 1994). The furniture market in the region can generally be described as somewhat traditional, with preferences for medium finishes and casual or 18th century styles. For companies with stores in multiple locations, respondents were instructed to evaluate the products based on their market within the study region.

The sample frame was constructed from the *Furniture Today* (1997) list of the top 100 retailers in the study region, as well as all known local independent dealers. Companies were contacted at random from the sample frame to be interviewed. The final sample contained 19 respondents from 17 locations, 14 of which were listed by *Furniture Today* (1997). The positions of the persons interviewed are provided in Table 4.1. Due to the nature of the persons interviewed, most had direct responsibilities for buying new products for their companies. Some of the store managers, managing specific store locations for larger companies, did not have direct responsibility for purchasing. However, these persons indicated that they provided feedback to buyers, based on what was selling in their respective stores. Table 4.2 also shows that the sample was slightly biased toward larger companies. This helped insure a large effective coverage of the population of interest, which was 86% of total sales of companies listed by *Furniture Today* (1997) with headquarters (and subsequent market presence) in Virginia and North

Carolina. When the positions of the respondents are taken into account (many having direct influence over buying decisions for their respective companies), it is believed a good estimate of the potential for character-marked furniture was generated in this study.

Table 4.1. Positions of respondents within their respective companies.

Position	Number of Respondents
Buyers/Merchandisers	6
Store Managers	5
Store Owners	4
Interior Designers (with buying responsibilities)	2
Assistant Store Managers	2

The somewhat small sample size was a function of the data collection strategy, which involved on-site presentation of actual product samples to respondents. Use of product samples was believed to be more content valid than pictorial or verbal representations would have been (Malhotra 1996, Bloch 1995). It has been claimed that actual product samples are particularly appropriate for studies associated with product styling (Green and Srinivasan 1990), such as this study. A large-scale mail survey would have necessitated pictorial representations of the product samples, which would not have resulted in realistic evaluations.

The sample consisted of respondents representing a relatively wide price range for bedroom and dining room groups. The mean price ranges are shown in Table 2. The sample was split somewhat evenly in terms of company price-points, with slightly over half (n=10) operating at relatively high price-points. This insured that a wide-ranging perspective on character-marked furniture was obtained for the study region. A cluster analysis (hierarchical, using Ward's method) on utility scores indicated that no well-defined clusters emerged based on price-point or membership in the *Furniture Today* (1997) list. Thus the data were analyzed for the aggregated sample.

Table 4.2. Demographic information for sample companies.

price range for bedroom group ¹	price range for dining room group ²	price-point ³	number of sources for bedroom	number of sources for dining room	employees per store (median)	employees per store (mean)
\$1356-\$6564	\$1706-\$8205	7.2	16.4	14.6	14.0	34.9

¹ mean range for a 5-piece bedroom group

² mean range for table, four chairs, and china

³ price-point as indicated on an 11-point scale (1-low, 6-medium, 11-high)

Table 4.3 indicates that upholstery accounted for nearly one-third of sales of companies included in the study. The dining room and entertainment categories, the products of interest in this study, accounted for just over 20 percent of sales among the sample companies. However, the results of this study should be generalizable to other types of primarily wood furniture, such as bedroom and occasional, which accounts for most of remaining sales.

Table 4.3. Business by product category among companies included in the study.

Product Category	Percent of Business
Upholstery	31.5
Bedroom	21.9
Dining Room	12.6
Living room/Occasional	11.7
Entertainment	7.5
Kitchen/Casual Dining	6.1
Home Office	4.1
Juvenile Furniture	3.5
Other	0.9

Data Collection

For the conjoint analysis, respondents evaluated 20 solid oak furniture products, each based on a wood sample and a designer's color rendition of the entire piece. The products were referenced as *country/casual-styled* at the outset of data collection to address the context issues associated with categorization, as discussed in the literature

review. The wood samples included panel doors from an entertainment center and corners from a dining room table. Appendix F shows examples of two of the dependent measure stimuli. Data were gathered via questionnaire booklets administered on-site at store or corporate locations. The designer's renditions and the wood samples included different part grades, finishes, and styles, as indicated by the fractional factorial design. Each wood sample and picture were shown to the respondent simultaneously, and removed from sight before the next evaluation began. Respondents were not able to see previous samples as the evaluation tasks proceeded.

Respondents evaluated each sample two different ways, namely in terms of *buying consideration* and *relative price* as discussed in the review of the literature. On the questionnaire, *buying consideration* was operationalized with the following phrase: "I would consider buying this furniture product for my casual/country-style market." The associated 7-point rating scale was anchored by "strongly disagree" and "strongly agree." Similarly, *relative price* was operationalized with the following phrase: "Compared to other casual/country-style groups, this product would be accepted by my market at a retail price:", and was measured with a 7-point scale anchored by "lower than average" and "higher than average." Both evaluations were made upon the same viewing of each sample, with each page in the questionnaire booklet corresponding to a wood sample and associated picture.

Before data collection began, respondents were presented with two large pictures of an entire group in an actual home interior setting, rendered by the same designer who made the drawings of the individual pieces used in the evaluation tasks (see Appendix F for an example). Each picture illustrated one of the two styles contained in the conjoint design, and contained small character-marks. These pictures showed an entire group, and were intended to give respondents an idea of the overall product concept and to put the evaluation tasks in context. This was important since case goods tend to be bought in groups, and not as individual pieces as were represented by the wood samples and designer's renditions of the individual pieces. However, it was obviously impossible to present the respondents with entire groups, thus the pictures and wood samples were used for the actual evaluation tasks. From a theoretical standpoint, these pictures served to activate the schema for country/casual-styled oak furniture as perceived by respondents.

In addition to the conjoint evaluation tasks, additional questions were asked related to potential intangible furniture attributes associated with character-marked furniture. For these questions respondents were presented once again with two of the wood samples used in the conjoint analysis. The final set of questions appearing in the questionnaire booklet involved demographic information about the respondents' respective companies.

Conjoint Design and Data Analysis

Conjoint Analysis

The initial step in the conjoint analysis was a determination of attributes and corresponding levels to be investigated. Table 4.4 shows the attributes and levels used in the study. These attributes and levels were developed with guidance from representatives from academia and the furniture industry. Ozanne and Smith (1996) also found the study attributes to be important to furniture products. The list contained attributes important to the wood household furniture product, but was not so long as to be unmanageable for sample construction and data collection purposes. Bateson et al. (1987) found evidence in a review of conjoint studies that increasing the number of factors or levels within factors reduces both reliability and validity. Therefore, a conjoint study should only include the most salient product features (Malhotra 1996).

Table 4.4. - Attributes and associated levels used to develop the wood samples and pictures for the conjoint analysis.

ATTRIBUTES	LEVELS
1. Part Grade	a. no knots (clean) b. small knots ($\leq 1/2$ " in diameter) c. large knots (≤ 1 " in diameter)
2. Finish	a. clear b. medium cherry c. distressed
3. Style	a. Shaker b. French Provincial
4. Aspect	a. horizontal b. vertical

Appendix E shows a complete list of the attribute level combinations that served as evaluation stimuli in the present study. Since $3 \times 3 \times 2 \times 2 = 36$ combinations were possible with a full factorial design of all attribute levels, a fractional factorial design was employed. The Bretton-Clark (1990) CONJOINT DESIGNER© computer software program produces fractional factorial designs for conjoint analysis that are orthogonally arrayed such that all main effects and selected interactions can be derived. A design that utilized 16 product stimuli was selected, which resulted in a number of stimuli to parameter ratio (n/T) of 2.3 and 9 degrees of freedom for the main-effects model. Any n/T ratio greater than 1.0 allows for estimation of all model parameters (Bretton-Clark 1990). The lowest possible degrees of freedom with this design would be 5, assuming a *Part Grade x Finish* interaction. The last four stimuli listed in Appendix E served as holdout cards and were used to assess the reliability of the estimated model. Including the four hold-out samples, respondents evaluated a total of 20 product profiles.

The next step was a determination of an appropriate treatment of the independent variables in the conjoint model. There are several models available that can be used to define the utility functions for each attribute (Reddy and Bush 1998). Model choice depends on several factors, including the type of attribute measure (continuous or discrete), the nature of the relationship between the attribute and dependent measure for the product (linear or curvilinear), and the number of required parameters to be estimated in the final model. The *part-worth model* is appropriate when the attributes (i.e., the regressors) are categorical in nature. Neither a linear nor curvilinear relationship needs to be assumed for the part-worth model - preference for such attributes can change unequally from one level of the discrete variable to the next. The number of parameters needed to estimate this model is one less than the number of levels of the attribute (Green and Srinivasan 1990). The part-worth model was used in this study for each of the four attributes since all were categorical. The part-worth model is described as follows (Reddy 1994):

$$U_{jn} = \sum_{i=1}^t f_i(X_{jni})$$

where:

U_{jn} = the total utility (preference) for the j^{th} stimulus for the n^{th} respondent

f_i = the function denoting the part-worth of different levels of X_{jni} for the i^{th} attribute

X_{jni} = the level of the i^{th} attribute for the j^{th} stimulus facing n^{th} respondent

$i = 1, 2, \dots, t$ denotes the set of t attributes that compose the stimuli

t = the total number of attributes

The rating scales, being interval in nature, allowed for ordinary least squares regression to be used to estimate part-worth preference models for each individual respondent. Ordinary least squares regression has become a common method in conjoint analysis (Green and Srinivasan 1990), and has been found to have comparable cross-validity with other estimation procedures such as MONANOVA and logit analysis when full profiles are used as stimuli (Jain et al. 1979). The discrete attribute levels were effects coded to produce dummy variables. The following regression model was used to provide inputs for the part-worth conjoint models for the two types of product evaluation:

$$EV_j = \beta_0 + \beta_1x_{1j} + \beta_2x_{2j} + \beta_3x_{3j} + \beta_4x_{4j} + \beta_5x_{5j} + \beta_6x_{6j} + \epsilon_j$$

where:

EV_j = evaluation rating assigned by respondent to the j^{th} profile

β_0 = intercept term

$\beta_1, \beta_2, \dots, \beta_8$ = regression coefficients

x_{1j} and x_{2j} = the level of the *part grade* attribute in the j^{th} profile

x_{3j} and x_{4j} = the level of the *finish* attribute in the j^{th} profile

x_{5j} = the level of the *style* attribute in the j^{th} profile

x_{6j} = the level of the *aspect* attribute in the j^{th} profile

ϵ_j = random error term

j = profile number (1,2,...,16)

Dummy variables were used to represent the independent variables, and were coded using an effects coding scheme. Effects coding uses "1", "0", and "-1" to represent categorical variables, while dummy-variable coding uses only "1" and "0". Thus, there is no need to determine a reference level of a nominal variable such as with dummy-variable coding (the reference level being coded with all "0"s) (Cohen and Cohen 1983). Similar to dummy variable coding, effects coding requires *attribute levels -1* variables (i.e., since *Part Grade* is varied at three levels, two dummy variables are needed in the regression model to represent all levels of *Part Grade*). Effects coding is useful in that when it is used, the regression coefficients show the effects of the treatments (Vogt 1993), and it is not necessary to solve several equations to derive utility scores (Malhotra 1996). Although the R^2 value and F -statistic will be identical for a model using the same data whether effects coded or dummy-variable coded, the regression coefficients will vary (Cohen and Cohen 1983).

The regression coefficients were used to derive utility scores for each attribute level according to the model presented above. The utility scores reflect how influential each level was in the respondent's evaluation of the product profiles. In addition, since the scaling is common across all attributes (the utilities are measured in common units by effects coding), and the independent variables are uncorrelated due to the fractional

factorial design being orthogonally arrayed, the overall utility for any product profile can be calculated by summing the corresponding utility scores. This can also be done for combinations of attribute levels not explicitly included as a stimulus in the fractional factorial design.

Once the utility scores for each attribute level were derived, it was possible to determine the relative importance of each attribute to the preference decision indicated on the dependent measure. If the relative importance of one attribute is found to be twice as high as another attribute, for example, it can be inferred that the first is twice as important as the second since the importance values are ratio-scaled (Graf et al. 1993). However, it has been noted that the number of levels at which the attributes are varied can influence the relative importance values (Green and Srinivasan 1990). Therefore, an attribute with substantially more levels than another attribute may appear artificially more important. One potential explanation for this occurrence is that an attribute that is varied at many levels may appear as though it should be considered to be more important to a subject in influencing overall evaluations (Green and Srinivasan 1990). This should not be a major problem in the present study since the difference in levels is small among attributes. The equation used to determine the relative importance of attributes is that used by Reddy and Bush (1998) and Malhotra (1996):

$$RI_j = \left(R_j / \sum_{j=1}^k R_j \right) 100$$

where:

RI_j = the relative importance of the j^{th} attribute (in percent)

R_j = the range of utility scores across the levels of the j^{th} attribute

k = the number of study attributes

Conjoint Validity and Reliability

In general, conjoint analysis has been shown to be a valid predictive technique (Green and Srinivasan 1990). The validity of the estimated model derived by this research was assessed in two ways. First, the goodness-of-fit was assessed using adjusted R^2 values. These values determined how well the selected models fit the data (Malhotra

1996). Adjusted R^2 values can also be calculated for aggregate models using the mean of the individual adjusted R^2 values. The CONJOINT ANALYZER© software takes the non-linear nature of adjusted R^2 values into account when calculating mean adjusted R^2 values (Bretton-Clark 1992). In social science settings, adjusted R^2 values of around 0.50 are considered as indicating good fit (Reddy and Bush 1998).

A second check on the validity of the model was conducted by comparing the relative importance scores derived from the conjoint utility scores to self-reported importance data collected from the questionnaire. On the questionnaire, respondents were asked to allocate 100 points to the attributes of *Style*, *Finish*, and *Wood material grade* based on the importance of each to consideration of purchase of a new furniture group for the respondent's casual/country market. This was designed to correspond with the *buying consideration* evaluation from the conjoint analysis. Consistency between the relative importance of the attributes between the two methods was assumed to be an indication of model validity.

Reliability is also a concern with conjoint analysis, but it has been found that conjoint studies tend to demonstrate acceptable reliability (Green and Srinivasan 1990). A check on the reliability of the derived models was carried out by analyzing the evaluations of the four holdout stimuli, which were not used to estimate the actual model parameters. The evaluations of the hold-out samples were predicted using the parameters estimated from the models, and compared with the actual evaluations provided by the respondents (Malhotra 1996). Mean product-moment correlations between actual and predicted values ranging from 0.36 to 0.92 have been reported in other conjoint studies (Bateson et al. 1987).

It should be noted that most conjoint studies refer to the above reliability check as a "cross-validation" check, implying that evaluation of hold-out data actually involves assessing model validity (e.g., Reddy 1994). However, Bateson et al. (1987) argue that validity checks should involve *maximally different* measures of the same trait, while reliability checks should involve *maximally similar* measures of the same trait. Following this logic, evaluation of hold-out samples resembles a reliability check more than a validity check. By the same reasoning, comparison of self-reported importance scores with importance scores generated through conjoint analysis is actually a validity

check. Thus, the evaluation of the hold-out samples in the present study was considered to be a reliability check, while the comparison of the self-reported importance scores to the derived importance scores was considered as a check for validity.

Measurement of Intangible Product Attributes

In addition to the conjoint analysis, data were gathered concerning the intangible product attributes potentially associated with character-marked furniture. A list of ten attributes was presented to respondents in the questionnaire booklet, referenced to two of the conjoint wood samples. Both samples were panels, Shaker-styled, and distressed-finished. However, one of the samples contained no knots (labeled "Sample 16"), and the other contained large knots (labeled "Sample 17"). Thus, the only difference between the two panels was in *Part Grade*. Respondents were asked to make comparisons between the two panels based on the extent to which the samples exhibited each of the ten intangible product attributes. Comparisons were made using a differential-type rating scale, anchored on each end by a "3" and the words "Sample 16 exhibits more" and "Sample 17 exhibits more." The mid-point of the scales was "0." Respondents were instructed to circle "0" if both samples exhibited equal amounts of the attribute. Two of the attributes were reversed coded as a validity check. These attributes included *casual look* (reversed coded as *formal look*) and *old-fashioned look* (reverse coded as *modern look*). For the purpose of analysis, the scale was transformed into a "-3" to "3" scale. Use of negative values was avoided on the questionnaire to avoid biasing results.

RESULTS

Model Specification

Although most conjoint models assume only main effects (i.e., no interactions between terms), the models in this study were checked for interaction effects. Due to limitations with degrees of freedom, not all interactions could be included in the models. However, each interaction between *Part Grade* and the remaining variables (*Part Grade* x *Finish*, *Part Grade* x *Style*, and *Part Grade* x *Aspect*) were evaluated in separate models to determine the extent of interactions present. As Tables 4.5 and 4.6 indicate, although interactions were sometimes present in the individual-level models, the models

containing only main effects was followed by the most respondents. Also, fewer problems with degrees of freedom restrictions were present with the main effects-only models, even though the models involving interactions between *Part Grade* and *Finish* resulted in the largest adjusted R^2 value for both types of evaluation. It is generally recommended that conjoint models have a n/T ratio of approximately 2.0 (Bretton-Clark 1992) to achieve acceptable precision. Finally, the main effects model demonstrated the highest product moment correlation between predicted and actual values for both evaluation scales. Thus, the main effects models were used for subsequent analyses. Tables 4.5 and 4.6 also indicate that the *price evaluation* model had a substantially higher adjusted R^2 value than the *buying consideration* model.

Table 4.5. Model specification data for dependent variable = *buying consideration*.

Model Parameters Included	adj. R^2	n/T ratio	degrees of freedom	percent of respondents following the model, compared to the main effects model	correlation between predicted and hold-out values
main effects	0.29	2.3	9	--	0.66
grade x style	0.24	1.8	7	5%	0.59
grade x aspect	0.30	1.8	7	16%	0.60
grade x finish	0.46	1.5	5	42%	0.48

Table 4.6. Model specification data for dependent variable = *relative price*.

Model Parameters Included	adj. R^2	n/T ratio	degrees of freedom	percent of respondents following the model, compared to the main effects model	correlation between predicted and hold-out values
main effects	0.40	2.3	9	--	0.73
grade x style	0.33	1.8	7	0%	0.65
grade x aspect	0.35	1.8	7	16%	0.70
grade x finish	0.53	1.5	5	32%	0.62

Regression Diagnostics

Three important issues associated with regression analysis, including multicollinearity among the regressors, the nature of the residual distribution, and heteroscedasticity, were checked to determine the appropriateness of regression as an analysis tool for the data. Table 4.7 indicates that the effects coded independent variables were not correlated with each other, thus multicollinearity was not a problem. The only correlations occurred between dummy variables measuring the same attributes, namely *Part Grade* and *Finish*. Therefore, utility scores generated from the main effects model can be summed to provide the overall utility for any stimulus profile, whether or not it includes combinations used in the fractional factorial design.

The results of this research are based primarily on individual-level regression models, with utility scores and importance measures averaged across respondents for the attributes and levels. Thus, checking assumptions requires consideration of individual-level data. Five respondents were randomly selected and checked for violation of regression assumptions for both the *buying consideration* and *relative price* models. All randomly selected respondents demonstrated normally distributed residuals for both models, based on visual inspection of histograms and Kolmogorov-Smirnov tests for normality. Scatterplots of the residual versus predicted response values indicated that heteroscedasticity was generally not a problem among the randomly selected respondents for either model. However, three of the ten scatterplots (5 respondents x 2 models each) indicated non-random trends, suggesting that the variance of the error term was not constant. Since this was a relatively uncommon occurrence, and since regression is generally robust to violation of assumptions (Pedhazur 1982), it was concluded that regression was a valid statistical tool for analysis of the study data.

Table 4.7. Correlations between effects coded independent variables.

	Grade1	Grade2	Finish1	Finish2	Style	Aspect
Grade1	1.0					
Grade2	-0.4	1.0				
Finish1	0.0	0.0	1.0			
Finish2	0.0	0.0	-0.6	1.0		
Style	0.0	0.0	0.0	0.0	1.0	
Aspect	0.0	0.0	0.0	0.0	0.0	1.0

Utility Scores for Attribute Levels

Tests for normality were conducted on all utility score (n=19) distributions for each attribute level, using Stephen's modification to the Kolmogorov-Smirnov one-sample test. These tests indicated that all of the data followed a normal distribution, thus parametric statistics were used in all subsequent analyses.

All data analyses were based on aggregated results across individuals. Often for marketing purposes, it is more meaningful and manageable to have aggregate level data than individual level data, especially when the number of respondents is large (Moore 1980). Once the individual conjoint models were derived, it was possible to aggregate the individual models by simply averaging utility scores for each attribute level. However, it is important to aggregate in a meaningful manner - there should be a basis for aggregation. Otherwise, average utility scores may simply reflect the middle of two extremes, where no real person exists (Moore 1980). One basis for aggregation is a homogenous population in regards to the variables being investigated (Hair et al. 1987). Sample homogeneity was assessed using cluster analysis. The cluster analysis was conducted using the individually-derived utility scores as clustering variables (Malhotra 1996, Moore 1980, Reddy and Bush 1998). No clearly definable clusters emerged, thus the data was analyzed at an aggregate level.

Buying Consideration Model

Table 4.8 indicates that the *Part Grade* level of *no knots* was preferred over *small knots*, which was preferred over *large knots* when evaluation was based on buying consideration. The preference structure appears to be nearly linear in nature, declining as

knot size increases. All levels of the *Part Grade* attribute were significantly different from each other, based on Fisher's LSD post hoc test. It appears that the *Finish* level of *medium cherry* was most preferred, followed by *distressed* and *clear*. The *medium cherry* level was significantly higher than both the *distressed* and *clear* levels. No significant differences existed between the levels of *Style* and *Aspect*. Figure 4.4 shows a visual display of the preference structures for the attribute levels. It appears from the intercept value that respondents generally rated the profiles near the middle of the *buying consideration* scale, regardless of attribute combination. This suggests that the profiles were constructed in such a way as to be realistic to respondents.

Table 4.8. Utility scores, ANOVA results, and post hoc comparisons for each attribute level based on the *buying consideration* model.

Attribute	Level	Utility Score	Standard Error	ANOVA F-statistic	P value
Part Grade	no knots	0.35 ^a	0.12	10.2	0.00
	small knots	0.02 ^b	0.08		
	large knots	-0.37	0.13		
Finish	clear	-0.13	0.10	3.6	0.03
	medium cherry	0.26 ^c	0.10		
	distressed	-0.13	0.15		
Style	Shaker	-0.01	0.05	0.02	0.88
	French Provincial	0.01	0.05		
Aspect	vertical	0.08	0.08	2.07	0.16
	horizontal	-0.08	0.08		
intercept		4.44	0.24		
adjusted R ²		0.29			

^a *no knots* significantly different than *small knots* ($P=0.04$) and *large knots* ($P=0.00$)

^b *small knots* significantly different than *large knots* ($P=0.02$)

^c *clear* significantly different than *medium cherry* and *distressed* ($P=0.02$)

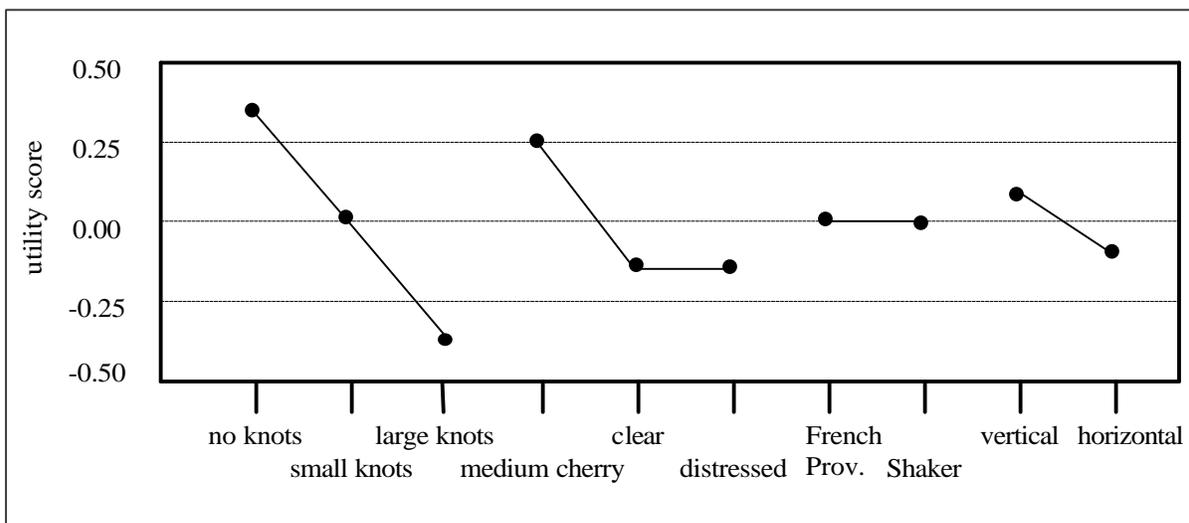


Figure 4.4. Preference structures for the attribute levels based on buying consideration.

Relative Price Model

Table 4.9 indicates that a linear structure existed for preference for the levels of the *Part Grade* attribute, declining from *no knots* to *small knots* to *large knots*, when evaluation was based on relative price. Interpreted, this means that the *no knot* level contributed most to the ability to price the furniture samples relatively high. All three levels were significantly different from each other based on Fisher's LSD post hoc test. The *Finish* level of *medium cherry* was preferred to both the *clear* and *distressed* levels. While no evidence of differences between the two *Style* levels emerged, there was a significant difference between the *horizontal* and *vertical* levels of the *Aspect* attribute. The intercept value suggests that respondents generally rated the profiles near the middle of the *relative price* scale. Figure 4.5 shows a visual display of the preference structures for the attribute levels.

Table 4.9. Utility scores, ANOVA results, and post hoc comparisons for each attribute level based on the *relative price* model.

Attribute	Level	Utility Score	Standard Error	ANOVA F-statistic	P value
Part Grade	no knots	0.47 ^a	0.11	18.1	0.00
	small knots	0.00 ^b	0.06		
	large knots	-0.47	0.14		
Finish	clear	-0.14	0.09	8.8	0.00
	medium cherry	0.39 ^c	0.11		
	distressed	-0.25	0.15		
Style	Shaker	-0.05	0.08	0.94	0.34
	French Provincial	0.05	0.08		
Aspect	vertical	0.13 ^d	0.07	7.08	0.01
	horizontal	-0.13	0.07		
intercept		4.37	0.18		
adjusted R ²		0.40			

^a *no knots* significantly different than *small knots* ($P=0.00$) and *large knots* ($P=0.00$)

^b *small knots* significantly different than *large knots* ($P=0.00$)

^c *medium cherry* significantly different than *clear* ($P=0.00$) and *distressed* ($P=0.00$)

^d *vertical* significantly different than *horizontal* ($P=0.01$)

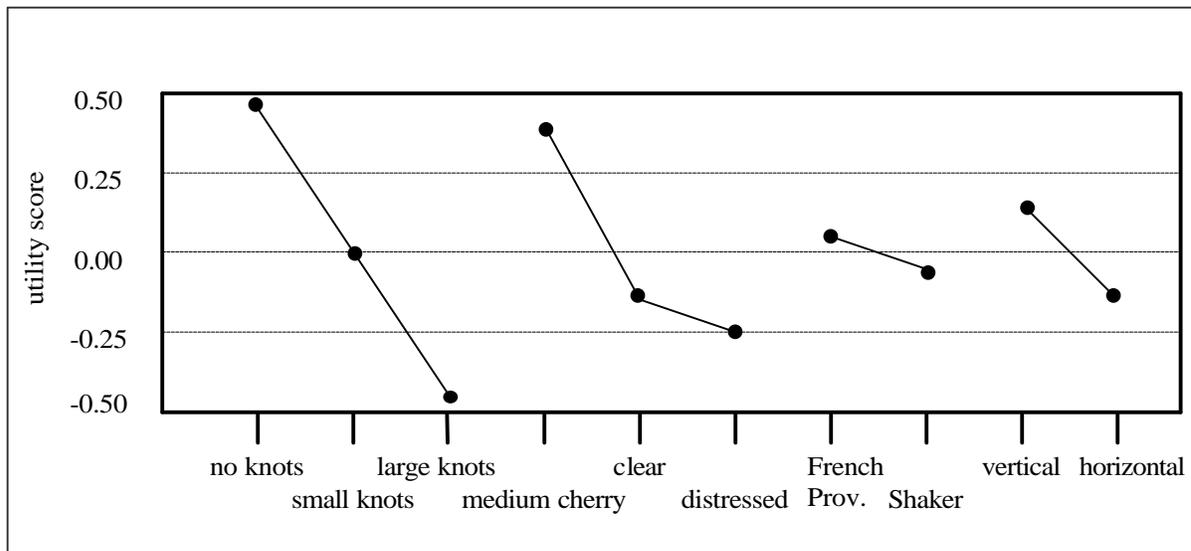


Figure 4.5. Preference structures for the attribute levels based on relative price.

Relative Importance of the Attributes

Table 4.10 indicates that the *Part Grade* attribute was the most important to the buying consideration and relative price evaluations of the product profiles. This attribute was nearly twice as important as the next most important attribute (*Finish*) in the buying consideration evaluation and nearly 1.5 times as important as the *Finish* attribute for the relative price evaluation (since there is a true zero, the relative importance values are ratio-scaled). The *Aspect* attribute was a distant third in importance for both types of product evaluation tasks. The *Style* attribute appeared to be quite unimportant in the conjoint analysis. Table 4.11 indicates that the deviations among the relative importance scores for the attributes was not statistically different between evaluation tasks, suggesting that attribute salience was somewhat similar across evaluation tasks.

Table 4.10. The relative importance of the attributes to the *buying consideration* and *relative price* product evaluation tasks.

Attribute	Relative Importance to <i>Buying Consideration</i>	Relative Importance to <i>Relative Price</i>
Part Grade	55.8	48.4
Finish	30.2	33.0
Style	1.6	5.2
Aspect	12.4	13.4

Table 4.11. Comparison of the standard deviations of the relative importance scores for the *buying consideration* and *relative price* models, based on a two-sample F-test of the variances.

Model	Standard Deviation of Relative Importance Scores	F-statistic	P-value
Buying Consideration	23.7	1.47	0.38
Relative Price	19.5		

Overall Utilities for Different Product Profiles

The conjoint analysis results allow for "what-if" analysis concerning ratings for different attribute combinations (Graf et al. 1993). This can be done by simply adding the utility scores for each combination of attribute levels (including the intercept) since the models are additive and all independent variables were equally scaled.

Buying Consideration

Under the *buying consideration* model, the highest rated combination of attribute levels was *no knots, medium cherry, French Provincial, and vertical*. Substituting the utility-score for each level and adding the intercept term yields the total utility for this product profile (recall that product evaluation was based on a 7-point rating scale). Similarly, the lowest rated combination of attribute levels can be calculated, and included *large knots, clear (or distressed), Shaker, and horizontal*. The calculations appear below:

$$4.44 + 0.35 + 0.26 + 0.01 + 0.08 = 5.14 \Rightarrow \text{highest rated profile}$$

$$4.44 - 0.37 - 0.13 - 0.01 - 0.08 = 3.85 \Rightarrow \text{lowest rated profile}$$

Relative Price

The same analysis can be done for the *relative price* model. The highest rated combination of attribute levels included *no knots, medium cherry, French Provincial, and vertical*, as indicated below (recall that product evaluation was based on a 7-point rating scale). The lowest rated combination associated with the *relative price* model included *large knots, distressed, Shaker, and horizontal*. The total utilities for these combinations appear below:

$$4.37 + 0.47 + 0.39 + 0.05 + 0.13 = 5.41 \Rightarrow \text{highest rated profile}$$

$$4.37 - 0.47 - 0.25 - 0.05 - 0.13 = 3.47 \Rightarrow \text{lowest rated profile}$$

Reliability and Validity Checks

Reliability

As shown previously in Tables 4.5 and 4.6, the product moment correlations between the predicted values and actual values for the four hold-out product profiles was 0.66 for the buying consideration model and 0.73 for the price model, suggesting acceptable reliability. The average absolute difference between predicted and actual values was 0.80 for the buying consideration model and 0.75 for the price model. These values are small enough in magnitude to indicate acceptable reliability for the evaluation tasks.

Validity

Table 4.12 indicates that the check for validity based on comparisons of self-reported and conjoint-derived relative importance values yielded mixed results. The values for the *Finish* attribute were nearly identical, suggesting a valid model. However, the magnitude of differences between the values for *Grade* and *Style* were quite large, suggesting differences between the conjoint analysis and typical attribute importance. This could be a result of the specific levels of the *Grade* and *Style* attributes investigated. For example, in the conjoint study, both levels of *Style* could be categorized as country/casual-type styles. If respondents saw the *Style* levels as being similar, this would drive down the importance of the *Style* attribute in the conjoint analysis. When a broader range of styles is considered, such as for the company's entire product mix, *Style* appears to become a more important factor to buying consideration, as was self-reported. In a similar fashion, the fact that most furniture currently does not include character-marks might have drove down the importance of the self-reported value.

Table 4.12. Relative importance of the study attributes to buying consideration, as measured by the conjoint analysis and self-reported values.

Attribute	Relative Importance - Conjoint	Relative Importance - Self-Reported
Grade	55.8	25.7
Finish	30.2	30.4
Style	1.6	43.9
Aspect	12.4	--

Analysis of Intangible Product Attributes Associated with Character-marks

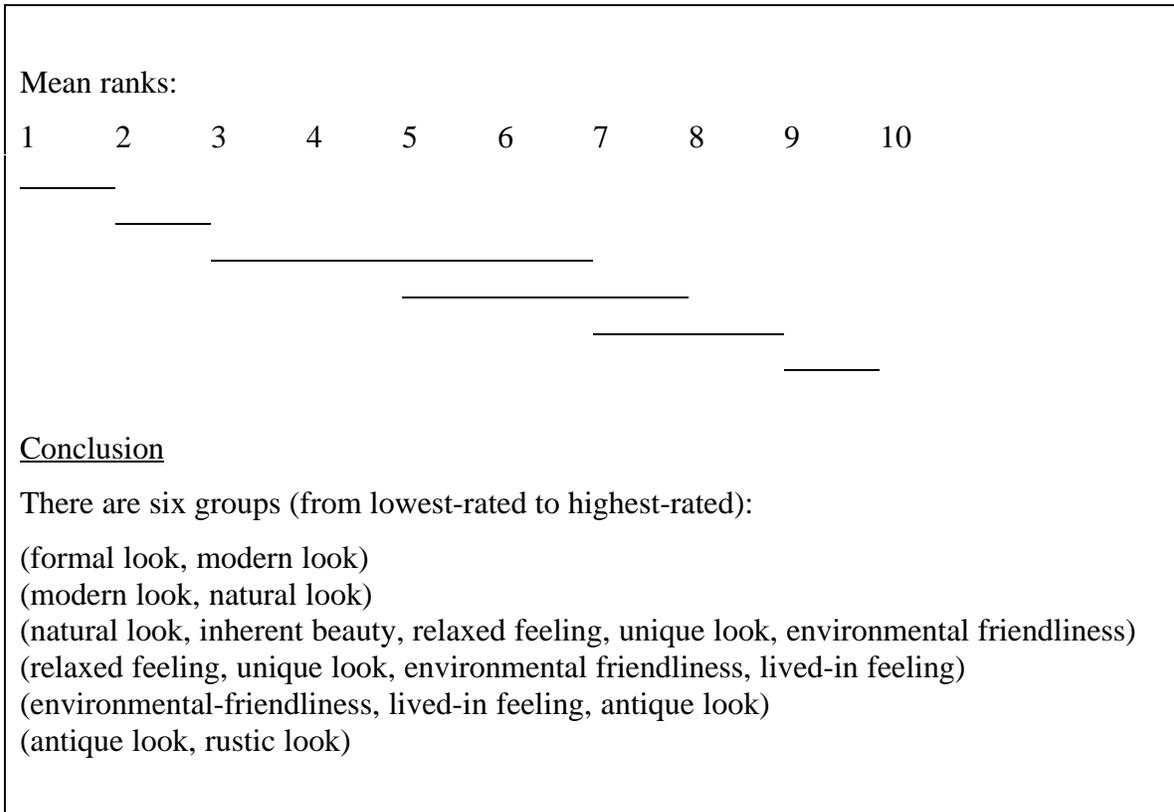
Table 4.13 indicates that significant differences existed between the intangible character-marked furniture attributes. Due to the non-normal nature of the data distributions, nonparametric statistics were used for analysis. Table 4.14 indicates that *antique* and *rustic* looks were most associated with the character-marked sample, while *formal* and *modern* looks were the least associated with the character-marked sample (these were the reverse-coded attributes). Since the reverse-coded attributes were the least preferred, there is evidence that the rating procedure was valid. Commonly discussed promotional themes for character-marked furniture, such as naturalness, inherent beauty of wood, and environmental friendliness, did not appear to be associated with the character-marked furniture sample, based on visual inspection.

Table 4.13. Medians, mean ranks, and results of Kruskal-Wallis test for character-marked furniture attributes.

Attribute	Median¹	Mean Rank	H statistic	P value (2-tailed)
1. Formal look	-1.0	37.4	55.7	0.00
2. Modern look	-1.0	43.8		
3. Natural look	0.0	74.0		
4. Inherent beauty	0.0	77.9		
5. Relaxed feeling	0.0	85.6		
6. Unique look	0.0	87.3		
7. Environmental friendliness	0.0	92.2		
8. Lived-in feeling	1.0	105.2		
9. Antique look	1.0	114.9		
10. Rustic look	2.0	129.5		

¹ scale converted to range from "-3" to "3"; negative magnitudes indicate that the attributes were associated more with the character-mark free sample; "0" indicates that the attribute was equally exhibited by both samples

Table 4.14. Pair-wise comparisons among the intangible attribute ratings, based on Mann-Whitney U tests ($\alpha=0.05$).



CONCLUSIONS

Evaluation of the Hypotheses

Hypothesis 1

It appeared that Hypothesis 1, which stated that the moderately incongruent *Part Grade* level of *small knots* would be most preferred was not supported by the data generated in this study. Although the incongruent level of *large knots* was the least preferred, as expected, the preference structure was linear rather than the inverted-U shaped predicted. Respondents preferred *no knots* to *small knots* and *large knots* in a somewhat linear fashion for both evaluation tasks. This suggests that the relationship between congruity and preference (in terms of buying consideration and relative price) was linear among respondents. Since the respondents had considerable experience with wood household furniture, experience with the product class could have been a

confounding factor to these results. The results might have also been different if respondents evaluated the profiles based on personal preference rather than on the basis of buying consideration and relative price for their respective companies. This could be the topic of another study, investigating whether retailers' personal preferences are consistent with what they purchase for their customer market.

Hypothesis 1 also stated that there would be no differences between the levels of the remaining attributes since these levels were congruent with existing market conditions. This was partially supported by the data. The *medium cherry* level of the *Finish* attribute was preferred to the remaining levels for both evaluation tasks. *Finish* is a highly variable furniture attribute that can change rapidly in the marketplace. It was indicated during the interviews that medium cherry was the most consistent (i.e., congruent) with existing market conditions, suggesting again that the relationship between attribute congruence and preference (i.e., buying consideration and relative price) was linear.

There were no differences in preference between the levels of *Style* for either evaluation task, as predicted. This suggests both levels of this attribute were equally congruent with existing market conditions, or that the levels were not different enough from each other to effect preference. Finally, there was a difference between the levels of the *Aspect* attribute for the *price evaluation* model. Since entertainment centers are generally more expensive than dining room tables, this may be reflected in *vertical* surfaces contributing significantly more to price evaluation than *horizontal* surfaces.

Hypothesis 2

Hypothesis 2, which stated that the *Part Grade* attribute would be the most important to the evaluation tasks due to its salience compared to the other variables, was supported. *Part Grade* accounted for 55.8 percent and 48.4 percent, respectively, of the importance to the buying consideration and relative price evaluations. The fact that two variables out of four emerged as substantially more important to the evaluation tasks suggests that a subset of the attributes, namely *Part Grade* and *Finish*, served as the primary cues for evaluation. However, it should also be kept in mind that a substantial

proportion of the variance in the evaluation scales was not explained by *any* of the study attributes.

Hypothesis 3

Hypothesis 3, which stated that the importance of the *Part Grade* attribute would decline from the *buying consideration* evaluation to the *relative price* evaluation, was not statistically supported. The evidence was very weak that attribute importance was more balanced for the price evaluation task, as was predicted. Respondents tended to rate the profiles similarly across both evaluation scales. This could be a result of methodology, or could indicate a positive relationship between the intent to buy a new product and the product's potential to be priced higher than average in the existing product mix. It could also indicate that respondents had difficulty distinguishing between the two evaluation scales. This methodology issue could have been removed to some extent by presenting respondents with the profiles two different times, once for the buying consideration evaluation, and a second time for the price evaluation. However, there are always trade-offs between the amount of data gathered, respondent fatigue, and the time respondents have to participate. Based on the adjusted R^2 values, it appeared that the *relative price* model was actually a better model than the *buying consideration* model.

Hypothesis 4

Hypothesis 4 was supported by the data. Significant differences emerged between the intangible product attributes potentially associated with character-marked furniture. It appeared that *antique* and *rustic* looks were the most associated with character-marked furniture, and that *formal* and *modern* looks were least associated with the character-marked sample, based on visual inspection. This was expected since the latter attributes were reversed-coded as a validity check. Much of the existing literature on promotion of character-marked products has centered on messages such as environmental friendliness and the natural beauty of wood. The results of this research suggest that such messages may not be the most appropriate, especially when targeting retailers for character-mark promotion. Instead, promotional themes should be focused more on what character-

marks add to the look and feel of hardwood furniture products. Rustic and antique looks appeared to hold the most potential for use of character-marks from a retailer perspective.

Study Limitations

This study faced limitations common to conjoint analysis. One limitation involved degrees of freedom. Due to the number of attributes and levels, there were limited degrees of freedom associated with the 16 product profiles that were evaluated by respondents. However, the n/T ratio of 2.3 was considered good by conventional conjoint analysis standards. The larger limitation associated with degrees of freedom was the inability to take interactions among the regressors into account. Although there were enough degrees of freedom to check all two-way interactions with *Part Grade*, substantial precision was lost in equation estimates when interactions were included in the models. In the case of the *Part Grade* \times *Finish* interaction, which would involved four additional parameters in the equation, it was felt there were simply too few profiles to adequately estimate the interaction terms.

Another common limitation faced in this study, which was related to degrees of freedom, was the limited set of attributes and attribute levels considered. In effect, this study was a random effects-type study, where differences between attribute levels indicate more of a general difference between all attribute levels rather than differences between the specific levels investigated. However, attribute levels were chosen to portray congruence with existing market conditions, except in the case of *Part Grade*.

The adjusted R^2 values obtained in this research (0.29 for the buying consideration model and 0.40 for the price model) were somewhat low by conventional standards, particularly in the case of the buying consideration model. However, Pedhazur (1982) claims that values of adjusted R^2 as low as 0.10 are generally considered substantial in behavioral research. This study involved visual evaluations of actual product samples, which is somewhat uncommon to most conjoint studies. Most studies involve verbal or pictorial representations of product profiles. Thus, it is believed that the relatively low R^2 values portray a more realistic evaluation task than what exist with verbal descriptions or pictures.

A likely cause for the relatively low R^2 values is the nature of wood itself. Even though the sample attributes were controlled, variance in color and knot appearance existed between the samples and affected respondent evaluation in some cases (as indicated by some respondents during the interviews). Such variance is nearly impossible to completely control, especially in the mass production operations that would be experienced by manufacturers attempting to produce products like the study samples. This illustrates one of the problems associated with production of character-marked furniture. Even though *quantitative* standards exist (in this study, the standard was knot size), it is difficult to control for *appearance* of the knots in a consistent manner.

IMPLICATIONS

The results of this study suggest there is both good news and bad news for character-marks in hardwood furniture. Although knot-free samples were most preferred by a sample of retail buyers and managers when conducting buying consideration and relative price evaluation tasks, small knots were preferred to large knots. Thus, opportunities for use of small character-marks appear to exist for manufacturers willing to break from existing marketplace norms. It appeared that a linear relationship existed between congruence with existing marketplace norms and preference for character-marks, so use of character-marks, at least for now, must be subtle to be congruent with existing standards of no or very few knots. This study suggests opportunities may exist for knots in oak furniture that are less than or equal to ½" in diameter.

The results also suggest that retail buyers and managers evaluate knots in a somewhat atomistic manner, as knot size and presence accounted for substantial influence over product evaluations. Thus, promotional efforts are likely to be needed when selling character-marked furniture to retailers since character-marks will be a salient (and incongruent) product attribute. It then becomes important to understand the intangible attributes associated with character-marked furniture so that effective promotional messages can be developed. It appeared that furniture with rustic or antique looks provide the best opportunities for use of character-marks. Messages stressing the environmental or natural aspects of character-marked products may have limited effectiveness among furniture retailers.

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CHAPTER 5
FINAL THOUGHTS AND RECOMMENDATIONS

SUMMARY OF FINDINGS

Interview and mail surveys of large case goods manufacturers in Virginia and North Carolina revealed that the decision to use character-marks, and the size and extent of character-marks included in new furniture products, involves multiple functional areas within the company, including the marketing, production, and design functions. Thus, increased use of character-marks in hardwood furniture must be based on acceptance by each of these functions and take into account interaction between these functions. It will not be enough to simply promote the cost savings associated with character-mark use in order to affect change in the furniture industry. The marketing function within the company must also have a compelling reason to include character-marks, based on the intended look of new furniture products. For nearly every company in the sample, the intended look or style of the group was the most compelling reason for use of character-marks. While cost-savings were sometimes seen as a positive consequence of use of character-marks, it was often not the overriding reason for use.

When using character-marks, it appears that the marks must fit within the overall product concept, including such tangible product attributes as style, finish, and hardware. However, more intangible product attributes, such as the look or feel of the group, also appeared to be critical to success. Endorsements seemed to provide an ideal way to capture the essence of the intangible product features that can help character-marks become an integral part of the overall product concept. The issue of cognitive processing by customers also comes into play at this point. Companies with success using character-marks appeared to have affected a somewhat holistic response to their character-marked products, while companies with product failures associated with character-marks have generated more of a piece-meal reaction, as indicated by frequent rejection due to specific marks on the furniture.

Another way to influence the intangible aspect of success with character-marks is with promotional efforts. A number of potential promotional themes were revealed in this research. It appears that the most successful promotional themes center on stressing

the *casual* or *rustic* aspect of the furniture. Promotional themes centered around "*oldness*" or the *antique* nature of the furniture also appeared to be promising. An interesting finding was that environmental messages did not appear to hold much potential in association with character-marked furniture at either the manufacturer or retail level. This finding is consistent with Ozanne and Smith (1996), who found that only small consumer market segments existed that were favorable to environmentally marketed household furniture. Four variables comprising an environmental factor, including *environmental impact*, *environmentally certified*, *from sustainable forest*, and *origin of wood* were rated 18th, 20th, 22nd, and 23rd, respectively, in importance out of 24 furniture attributes. Although two segments were uncovered for which environmental marketing were important, representing 39 percent of the sample, the Ozanne and Smith (1996) findings suggest environment-based promotions may not be effective on a large-scale basis. Perhaps this message simply is not salient in the minds of many consumers when household furniture is considered.

A problem with development and promotion of character-marked furniture is an apparent gap in product knowledge between manufacturers and retailers, and the final consumer. Several manufacturers indicated that they were reluctant to use character-marks in new furniture groups because they did not feel their customer base would "understand" the concept. This was the notion even when manufacturers themselves liked the look of character-marks in certain groups. Experience with a product class has been shown to affect how information about a product is evaluated and classified (Meyers-Levy and Tybout 1989, Sujana and Dekleva 1987, Mervis and Rosch 1981, Wallsten and Budescu 1981). The fact that manufacturers and retailers differ from consumers in their degree of expertise could mean consumers view character-marked furniture differently than manufacturers and retailers. This problem is exacerbated by the general lack of consumer research in the furniture industry.

There can be problems with both retailer and consumer acceptance of character-marked furniture. About half of the companies interviewed indicated that final consumers were at least as large of an obstacle as retailers regarding acceptance of character-marked furniture. This illustrates the importance of character-mark acceptance at all points in the distribution chain. Some companies indicated that they are effective at

training their own sales force to sell character-marked products to retail buyers, but they have little control over retailers training their respective sales forces to sell character-marked products to final consumers. Some manufacturers felt that final consumers would be more willing to buy character-marks if they were more informed of the concept, namely that knots were not *inherently weak* or a sign of *defective* furniture when properly handled during manufacture.

An important set of findings in this study involved differences between companies that tended to use character-marks and companies that tended to not use character-marks in some of their product lines. The most prominent difference appeared to be the basis for knot size in oak groups. For companies classified as *Users* of character-marks, it was generally the manufacturing function that determined knot size in furniture groups. For *Non-users*, however, it was generally the marketing function that made such determinations. Another prominent difference between groups was the perceived product advantages associated with use of character-marks. Non-users indicated that furniture with an "old" or "antique" look provided the best opportunities for use of character-marks. Designers also seemed to have more influence over determination of product characteristics, like wood material, among the *Users* category, suggesting that the creative abilities and opinions of designers should be relied upon when developing character-marked products. This finding agrees with other authors discussing designers' role in product development (e.g., Topalian 1980, Kotler and Rath 1984).

An investigation of the product development process among the sample companies indicated that there are a number of stages in the process that are important to use of character-marks in a new group. Each new product screening, whether internal or external, provides situations where negative feedback can be provided concerning character-marks. While this process resulted in an optimal amount of character-marking from a marketing standpoint for some companies, other companies exhibited a tendency to quickly back off the character-marking in a new group when negative feedback was received. Although this is a logical reaction, it appears that companies with success using character-marks have exhibited a certain degree of patience. Initial resistance on the part

of both company and retail salespeople subsided as character-marked groups began to sell.

The results of this study indicated that retailers preferred solid oak furniture of country/casual styling with no knots. There appeared to be a somewhat linear relationship between knot size and product evaluations based on buying consideration and relative price. Furniture with no knots was most likely to be considered for purchase, followed by knots ½" or less in diameter and knots 1" or smaller in diameter. Similar results were obtained for evaluations involving relative product price – there was a negative relationship between relative price and knot size. *Part Grade* and *Finish* emerged as the most important attributes to the two types of product evaluations. Thus, it is not likely that retailers will simply overlook character-marks, as the presence of such marks appeared to be a salient product feature. Similar to manufacturers, retailers perceived *rustic*, *casual*, and *antique* looks to be the intangible furniture attributes most associated with character-marks. The relatively low adjusted R² values generated in this study were likely a function of wood itself. Even with quantitative controls concerning knot size in the furniture samples, knot appearance varied. This points out the difficulty associated with production of character-marked furniture by manufacturers. Although quantitative standards can be set at the rough end, no two pieces will look the same.

IMPLICATIONS: CHARACTER-MARKS IN THE BIG PICTURE

The interview data suggested that there are three basic elements to operating profitably in the household furniture industry. These elements include a) the ease with which products can be manufactured, b) profit margin, and c) meeting customer wants and needs. It is interesting to consider these elements in regard to character-marked furniture, as respondents discussed during the interviews and on the questionnaires.

Production of hardwood furniture with character-marks presents manufacturing problems for the manufacturer that do not exist when primarily defect-free pieces are cut for furniture parts. Standards must be established at the rough mill as to what constitutes an acceptable character-mark, both from a manufacturing and marketing standpoint. For example, it is often possible to manufacture furniture parts with knots larger than what is considered acceptable by the marketing function. On the other hand, plant personnel

might occasionally defect too many character-marks when the marketing function actually intended a character-marked look in a new group. In addition to such communication issues, manufacturing issues such as repair and orientation of character-marks must also be considered, putting more pressure on quality control personnel and potentially slowing the manufacturing process. While these issues were uncovered in the present research, more manufacturing-specific research appears to be needed to address these issues.

Potential for increased profit margin is generally considered to be the most influential reason for promoting increased use of character-marks in hardwood furniture (in addition to the environmental benefits provided, such as extending the hardwood resource). Research has suggested that increased use of character-marks can result in substantial yield improvements at the rough mill (Buehlmann, Wiedenbeck and Kline 1998; Araman 1979), which are assumed to translate into cost savings since less lumber can be used to produce the same amount of product. This will be true as long as the increased costs of manufacture, as discussed above, do not consume the savings generated from lower lumber costs. The present research suggests that marketing and product development personnel for large furniture manufacturers think in terms of look rather than cost savings when discussing character-marked furniture. However, many interviewees did consider cost-savings to be a positive (but secondary) consequence of using character-marked woods in their products.

The final consideration of character-marks in the big picture of the furniture industry is how such marks fit with what customers, including both retailers and final consumers, want in their furniture products. The results of this research suggest that dealers preferred furniture with no knots when evaluating solid oak samples of country/casual styling. However, the gap in preference was large between small knots and large knots, suggesting that knot size does matter to dealers.

An important finding of the present research is that there is a large gap between the product knowledge of manufacturers and retailers compared to final consumers. This problem is exacerbated by the fact that very little direct consumer research is done by the furniture industry. Secondary sources of product information are often sought, such as visits to retail stores. However, several cases were reported where manufacturers and

retailers agreed that a physically distressed or character-marked group was highly fashionable, only to find that consumers did not approve of such marks. On one hand, the solution to such problems would appear to be more direct consumer research on the part of manufacturers. However, there also appears to be a need for increased education of consumers concerning furniture products in general, and character-marked furniture products specifically. Manufacturers have limited much of what they know about consumer response to character-marks on tradition, what they have seen happen to other manufacturers in the marketplace, or their own experiences with a limited number of character-marked product introductions. Very little empirical evidence exists concerning consumer response to character-marked hardwood furniture. The current marketplace simply does not have enough examples for consumers to illustrate their preference concerning character-marks.

RECOMMENDATIONS

1. More character-mark exposure at the sources of new product ideas, essentially moving the concept to the earliest stages of product development

Solomon (1988) points out that much of product selection occurs prior to involvement by end consumers. Multi-layered filtering systems exist that reduce ideas for new products to a small fraction of the original pool considered by manufacturers, such that a small proportion of product choices are eventually left to be made by end consumers. All players in this system serve as product design gatekeepers, deciding what choices consumers will ultimately be able to make. Often, this system can lead to a greatly reduced set of choices for the end consumer, with a high degree of converge on the underlying themes of product offerings. This is due in large part to the fact that analysts in many industries are increasingly relying on the same data sources when making new product decisions (Solomon 1988).

Kron (1983) also points out that standards of taste and style in furniture are determined to a substantial degree by editors of shelter magazines. These editors serve as accreditors of certain designs by deciding which products to include in their publications. Retail buyers and consumers then take cues from such magazines in their subsequent

purchases. However, the results of this research suggest that manufacturers also take cues from such sources for new product ideas to some extent.

In the furniture industry, evidence of the filtering system described by Solomon (1988) and Kron (1983) and the resulting converge in design is apparent. If editors of shelter magazines can be encouraged to increase manufacturers', retailers', and consumers' exposure to character-marked products, the concept of character-marks in hardwood furniture might gain wider acceptance in all channels of the distribution chain. Manufacturers might then be persuaded to consider using character-marks in new products at the outset of the product development process (i.e., when new product ideas are generated), rather than waiting until finish and wood grade/species decisions are made later in the process. This would result in manufacturers being more committed to character-mark usage in new product lines, since character-marks would be part of the original product concept.

2. Encourage designers to recommend character-marked woods more in new furniture products

The results of this research suggested that designers are involved in determining new product characteristics like wood species and finish in many companies. Designers for some companies also specified (or at least suggested) character-marks on occasion. Most companies reported that they would at least consider using character-marks in a new group if the designer made such a suggestion. Oakley (1984) claims that designers are generally more aware of and sensitive to trends in natural resources availability than management personnel, such as furniture manufacturers. Designers might therefore be particularly receptive to messages concerning the environmental benefits of character-mark use, and be in a position to affect change. However, contract designers, working on commission, may actually have negative incentive to use character-marks until more wide-spread acceptance is realized in the marketplace, since their income rests almost exclusively on the success of the groups they design.

3. Pay attention to the entire product concept

It will not be acceptable for manufacturers to simply start using character-marks in all furniture products. This research suggested that consideration of style, finish, hardware, and the overall look of a furniture group must be made in conjunction with use of character-marks. It appeared that furniture products with *casual* or *rustic* looks were appropriate for character-marks in the minds of manufacturers and retailers. Additional looks, such as *old* or *antique* looks, also appeared to hold potential, especially for manufacturers that seldom use character-marks. Price is another important furniture attribute. It appeared that character-marked furniture priced in the upper-middle price-points was most likely to be successful. This is likely due to the perception and expectation of quality, as well as the customer base, associated with higher-end furniture.

Ozanne and Smith (1996) found that approximately 16 percent of their sample of consumers comprised a factor that was environmentally conscious and not price-sensitive concerning wood household furniture. In addition, this segment was quality-and style-conscious, and felt intangible attributes were important to furniture products. This could represent an ideal market segment for character-marked furniture, with consumers that consider price, environmental consciousness, and the overall product concept when making household furniture purchases.

4. Patience

Most companies in the sample that had success with manufacturing and selling character-marked hardwood furniture lines had experienced a "learning curve" to some degree. This learning curve involved both manufacturing and marketing considerations, and generally resulted in a reduced amount of character-marking in the line by the time the product was in the marketplace for a short time. Opportunities for reducing the amount of character-marking in a new line occur throughout the product development process, and many companies reported that character-marks were eventually dropped from many lines, or the lines were discontinued altogether. Companies with success at selling character-marked furniture exhibited a certain degree of patience, giving the product a chance to be accepted, even when met with some initial resistance by both company salespeople and retailers. If more companies were willing to give character-

marked products an adequate chance in the marketplace, perhaps the concept would achieve a critical mass and become more widespread. However, it is also understandable that many furniture companies, particularly smaller manufacturers, cannot afford to introduce character-marked products and simply wait for them to become acceptable. But larger manufacturers, that have paid attention to the overall product concept, should be willing to withstand some initial resistance when introducing character-marked lines.

5. Increased promotional efforts by both manufacturers and retailers

The results indicated that in addition to specific promotion of character-marked furniture, there is a lack of general promotional activity within the industry, throughout the distribution chain. Several companies indicated that most furniture promotion is based more on price than actual product features. A frequently cited example involved the almost complete lack of brand awareness at the consumer level regarding wood household furniture. Manufacturers tend to follow push-type strategies when promoting their products, hoping retailers will pass product information on to final consumers - this may or may not happen.

Several companies indicated that training of its salespeople concerning character-marked product was critical to its success. However, success with selling character-marked furniture also requires retail salespeople to be knowledgeable about the product. Greater product knowledge concerning character-marked furniture on the part of retail salespeople will likely be needed to make character-marked furniture more acceptable in the marketplace. However, development of point of purchase promotional materials, such as hang-tags or brochures, on the part of manufacturers can help retailers sell character-marked groups. Some manufacturers indicated that this was being done already, but much of the existing point of purchase material associated with hardwood furniture is more in the form of disclaimers than actual product promotion.

6. Remember that multiple functional areas are involved

Much of the discussion concerning character-mark use in hardwood furniture is centered on the yield gains possible at the rough mill and associated lumber cost savings. However, manufacturers will generally face additional production costs when making

character-marked products, at least initially. In addition, the marketing function within a company must have a compelling reason to use character-marks, based on style and design considerations. It is unlikely that character-marks will ever be used in a company's entire product line, but rather in select groups whose look and styling is consistent with such marks. In summary, successful development of character-marked furniture products affects multiple functional areas in a furniture company, and should be considered in light of the entire product development process.

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APPENDIX A – Examples of models of the product development process.

Figure A-1: Key steps in new product development projects, according to Souder (1987).

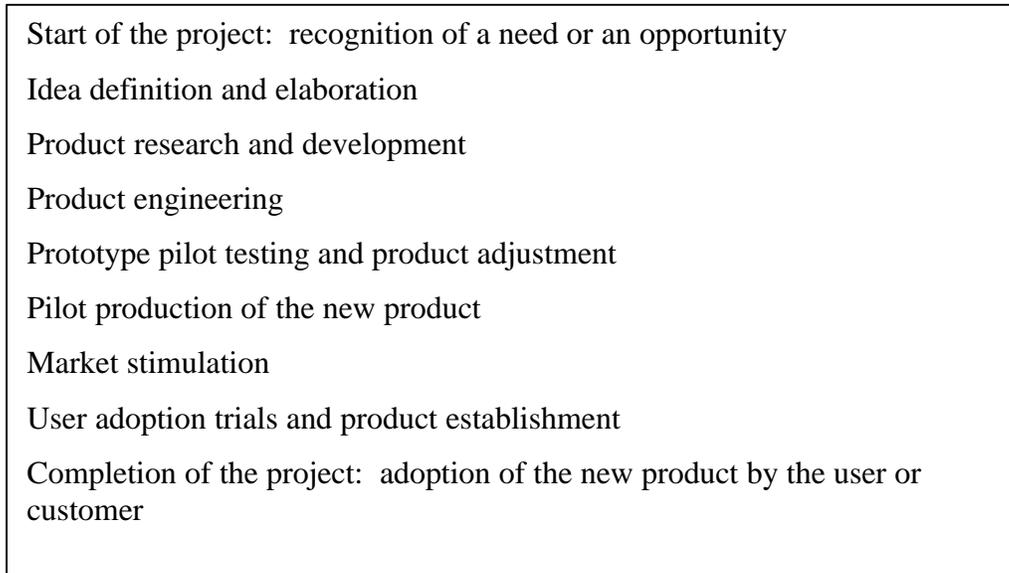
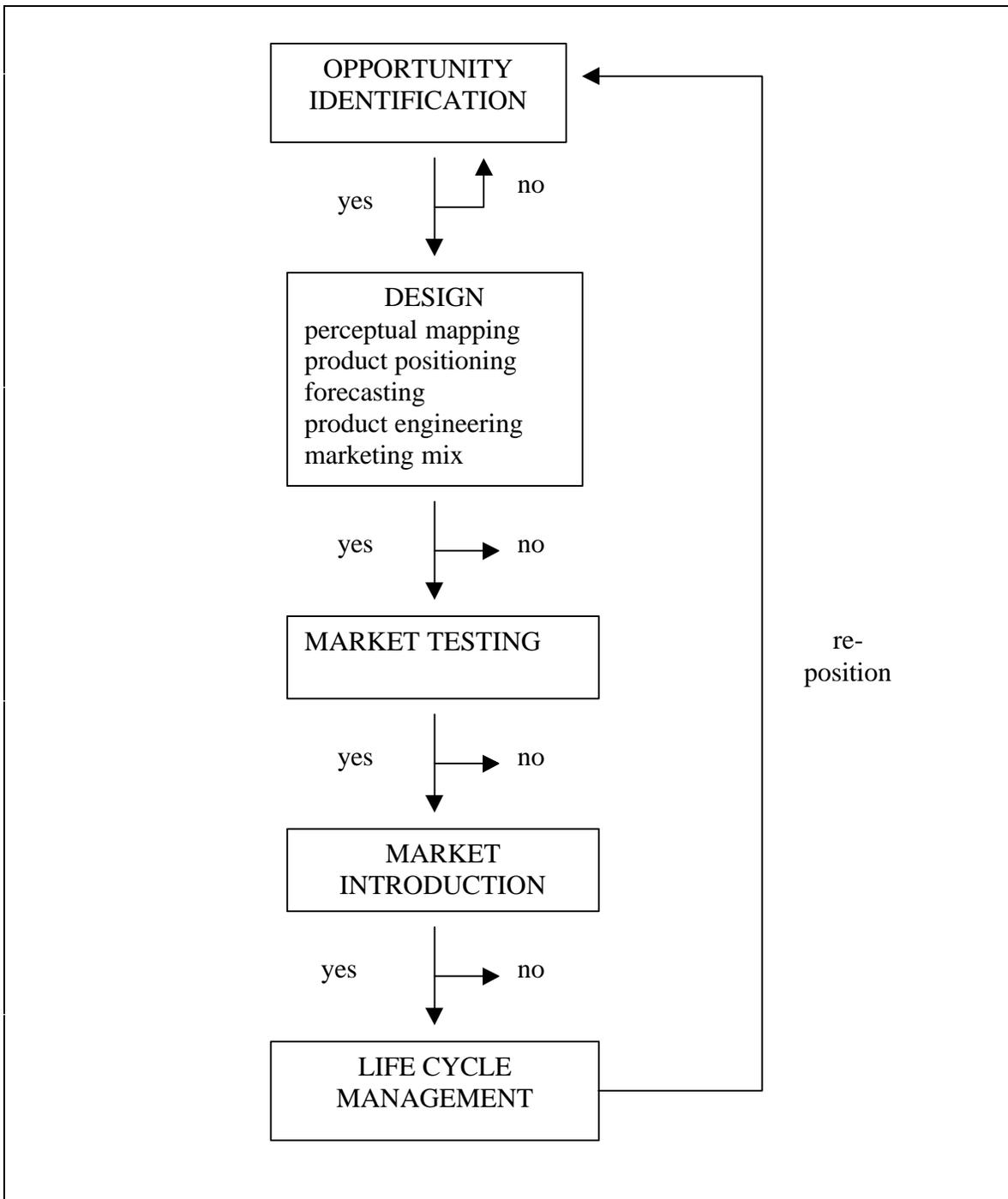


Figure A-2. An outline of key steps in the Crawford (1983) model of the product development process.

- I. New Product Strategy
- II. Concept Generation
 - A. Product category definition
 - B. Ideation
- III. Concept Evaluation
 - A. Concept testing
 - B. Screening
 - C. Prototype testing
 - D. Product-use testing
 - E. Market testing
 - F. Financial evaluation
- IV. Commercialization
 - A. Pre-launch preparation
 - B. Announcement
 - C. Beachhead
 - D. Growth
- V. Review and Evaluation

Figure A-3. Summary of the Urban, Hauser, and Dholakia (1987) model of the development process for proactive products and services, with details of the Design stage.



APPENDIX B – Question schedule used during on-site interviews with furniture manufacturers.

1. What do you make here? Roughly, what is the percent of sales or output?
2. What species are primarily used?
3. Do you use solid wood, veneer, or both? Is there both on each piece?
4. At what price-point is most of your furniture sold?
 - a.)

low						med.					high
1	2	3	4	5	6	7	8	9	10	11	
 - b.) what are some other major players at that price-point?
5. Describe briefly your distribution network, or the types of retail stores you sell to (full-line furniture stores, department stores, own retail stores, etc.)
6. What is your product strategy regarding the use of character-marks (i.e. knots, worm holes, stain, etc.) in your product line, do you let them in all of your lines, some of your lines, none of your lines, etc.?
 - price-points
 - specific lines
 - promotion
 - visible/nonvisible
7. What were the reasons for undertaking this strategy?
8. What were the most critical issues surrounding this decision (production, promotion, training, etc.)?
9. Concerning knots, about what size do you currently allow in your pieces?
10. Are there written rules for what constitutes an unacceptable defect? How were these arrived at?
11. Do you ever have problems with consumers and distressing (i.e. complaints, surprise, etc.)
12. Think about the way a typical new furniture group passes from new idea to market introduction here. Do certain steps in this process stick out in your mind?

13. When is the decision made as to what wood to use?
14. Who or what starts trends in the marketplace? Is the industry more push (manufacturers) or pull (customers)?
15. Where does design "fit" into the above process? Where is the design function housed?
16. Are sales and marketing the same department here or separate? Please explain (personnel, function, etc.)
17. How are group names arrived at?
18. What is the typical life cycle for a wood bedroom or dining room suite?
19. Do you feel the country look will be around for awhile more, is it on it's way out?
20. What are the implications for character-marked furniture? What are the implications for finishes and hiding power?
21. At what point in the product development process are manufacturing considerations made regarding the feasibility of new product production? What about financing considerations?
22. Do you use in-house designers, consultant designers, both, or none?
 - _____ in-house
 - _____ contract
 - _____ both >> what is the ratio of in-house to consultant _____
 - _____ none
23. What are the designer's responsibilities in a typical project?
 - In-house :
 - Contract:
24. Is the incorporation of character-marks more likely to be part of the designer's instructions when a new project starts (i.e. in the design brief), or more likely to originate from the designer during the course of the design process?
25. Based on the commission method of payment for contract designers, is there actually negative incentive for designers to work on groups which contain character-marks?
26. If the designer, retailer, or salesperson suggested the use of natural character-marks in a line of country-style furniture, who would you believe first?
27. a.) Does this firm utilize design committees?

b.) Describe the composition of your design committee. Is the same committee and process used each time, or does it depend on the product?

c.) If no, then how is product development controlled?

28. What do you feel would be the biggest reasons for consumer rejection of character-marked hardwood bedroom/dining room furniture (or if character-marks become larger)?

29. What are the attitudes of retailers toward character-marked furniture? Are they currently willing to buy/sell it? At what price-points?

30. So what will you do with character-marks in the future? (use more, cover-up, cut out, etc.)

APPENDIX C –The questionnaire used in the mail survey.

The purpose of this survey is to better understand the product development process in the furniture industry. Information provided during interviews with 16 case goods manufacturers in North Carolina and Virginia was used to identify ten stages or steps in the typical product development process, including:

- Stage 1 - Identify opportunity/need for new product**
- Stage 2 - Generation of new product ideas**
- Stage 3 - New product information given to designers**
- Stage 4 - Designer activities**
- Stage 5 - Initial new product review**
- Stage 6 - Mock-up construction/manufacturing issues**
- Stage 7 - Intermediate new product review (generally centered around mock-ups)**
- Stage 8 - Pre-market**
- Stage 9 - Prepare for Market**
- Stage 10 - Market Introduction**

I am now interested in determining how realistic Stages 1-7 are for your company. I am particularly interested in how the decision to use character-marks fits into the product development process. By “character-marks” I am referring to *naturally* occurring features of wood, such as knots, which are typically graded against in hardwood lumber and veneer. These are different from physical distress-marks that are manually produced.

1. The following question asks about activities that might be included in each Stage of the product development process. Please indicate the extent to which your company undertakes each of the activities listed under each Stage, using the following 7-point scales:

Stage 1. Identify opportunity/need for new product

Activities	<i>never</i> included at this Stage							<i>always</i> included at this Stage
determining voids in existing product line	1	2	3	4	5	6	7	
learning of popular style categories in the marketplace	1	2	3	4	5	6	7	
looking at competitors' products within targeted style categories	1	2	3	4	5	6	7	
formation of basic product concept or theme	1	2	3	4	5	6	7	
Are decisions concerning use of physical distressing/character-marks generally involved at this Stage? <input type="checkbox"/> Yes <input type="checkbox"/> No								

Stage 2. Generation of new product ideas

Activities	<i>never</i> included at this Stage	<i>always</i> included at this Stage
travel by product development or marketing personnel (to furniture stores, antique stores, etc.)	1	7
feedback from retailers/dealers	1	7
feedback from sales representatives	1	7
seeking input from designers	1	7
reading various forms of printed media (home and style magazines, trade publications, etc.)	1	7
Are decisions concerning use of physical distressing/character-marks generally involved at this Stage? <input type="checkbox"/> Yes <input type="checkbox"/> No		

Stage 3. New product information given to designers

Activities	<i>never</i> included at this Stage	<i>always</i> included at this Stage
desired style category given to designers	1	7
desired finish given to designers	1	7
desired wood species given to designers	1	7
desired price-point given to designers	1	7
desired geographic market region given to designers	1	7
Are decisions concerning use of physical distressing/character-marks generally involved at this Stage? <input type="checkbox"/> Yes <input type="checkbox"/> No		

Stage 4. Designer activities

Activities	<i>never</i> included at this Stage							<i>always</i> included at this Stage
	1	2	3	4	5	6	7	
sketches/drawings of proposed designs prepared by designers	1	2	3	4	5	6	7	
product characteristics (i.e., wood species, finish, hardware) suggested by designers	1	2	3	4	5	6	7	
manufacturing capabilities of the company considered by designers	1	2	3	4	5	6	7	
Are decisions concerning use of physical distressing/character-marks generally involved at this Stage? <input type="checkbox"/> Yes <input type="checkbox"/> No								

NOTE: Please indicate the number of designers you use that are currently:
in-house or staff _____
contract or free-lance _____

Stage 5. Initial new product review

Activities	<i>never</i> included at this Stage							<i>always</i> included at this Stage
	1	2	3	4	5	6	7	
product development committee reviews designers' sketches	1	2	3	4	5	6	7	
determination of product characteristics (i.e., wood species, finish, hardware) by product development committee	1	2	3	4	5	6	7	
manufacturing representatives review designers' sketches for production feasibility	1	2	3	4	5	6	7	
Are decisions concerning use of physical distressing/character-marks generally involved at this Stage? <input type="checkbox"/> Yes <input type="checkbox"/> No								

Stage 6. Mock-up construction/manufacturing issues

Activities	<i>never</i> included at this Stage						<i>always</i> included at this Stage
mock-ups are built	1	2	3	4	5	6	7
manufacturing feasibility determined during mock-up construction	1	2	3	4	5	6	7
manufacturing alterations made to the new designs to increase the ease of manufacture	1	2	3	4	5	6	7
Are decisions concerning use of physical distressing/character-marks generally involved at this Stage? <input type="checkbox"/> Yes <input type="checkbox"/> No							

Stage 7. Intermediate new product review (generally centered around mock-ups)

Activities	<i>never</i> included at this Stage						<i>always</i> included at this Stage
product characteristics visibly reviewed by product development/marketing personnel	1	2	3	4	5	6	7
product alterations made to enhance the desired look of the group	1	2	3	4	5	6	7
price established for the new group	1	2	3	4	5	6	7
Are decisions concerning use of physical distressing/character-marks generally involved at this Stage? <input type="checkbox"/> Yes <input type="checkbox"/> No							

2. Which Stage in the preceding model is the ***MOST CRITICAL*** when deciding whether to include character- marks in a new furniture group (*please check only one*):

- Stage 1 – Identify opportunity/need for new product
- Stage 2 - Generation of new product ideas
- Stage 3 - New product information given to designers
- Stage 4 - Designer activities
- Stage 5 - Initial new product review
- Stage 6 - Mock-up construction/manufacturing issues
- Stage 7 - Intermediate new product review (generally centered around mock-ups)

The remaining questions involve issues specifically associated with use of character-marks, as well as some basic demographic questions.

3. For each of the following issues related to a typical new product development project, please indicate whether the *Manufacturing/Production* function or the *Marketing/Product Development* function has more influence over the final decision. If both functions have equal influence, circle "0".

	<i>Manufacturing/Production</i> has more influence			Equal in- fluence	<i>Marketing/Prod. Dev.</i> has more influence		
Issues							
Wood species used	3	2	1	0	1	2	3
Finish used	3	2	1	0	1	2	3
Lumber/veneer grade used	3	2	1	0	1	2	3
Decision to include character-marks	3	2	1	0	1	2	3
Size of the character-marks used	3	2	1	0	1	2	3

4. Please indicate how critical each of the following issues are when introducing a **hardwood** character- marked furniture group **with knots larger than pin-size** on **visible surfaces**. (*You can answer this question on the basis of experience or expectation, depending on your company's situation*)

	not a problem at all							major problem
Issues								
Acceptance by <i>retailers</i>	1	2	3	4	5	6	7	
Acceptance by <i>final consumers</i>	1	2	3	4	5	6	7	
Performance of <i>company salespeople</i> concerning promotion of the product	1	2	3	4	5	6	7	
Performance of <i>retail floor salespeople</i> concerning promotion of the product	1	2	3	4	5	6	7	

APPENDIX D – Composition of the product development committees among the sample companies, as indicated in the interviews.

- Company 1: "the VPs upstairs" (a designer's perspective)
- Company 2: "the management group"
- Company 3: the Vice President of Marketing and the Sales Manager
- Company 4: the Company President, most of the marketing department
- Company 5: the In-house Designer, the Product Development Manager, the Sales Manager, and the Sr. Vice President of Manufacturing
- Company 6: "a committee-type deal" including the Company President, Merchandising Managers, and the Sr. Vice President of Marketing
- Company 7: the Vice Presidents of Sales, the Vice Presidents of Manufacturing, the Chairman of the Board, the Company President, and sometimes designers are also invited
- Company 8: the Company President, the Vice President of Marketing, the Vice President of Sales, and the In-house Designer
- Company 9: the Company President and the Sales Manager
- Company 10: the Company President, the Vice President of Product Development, and the Vice President of Marketing (but the President most influential)
- Company 11: the Company President, the Marketing and Sales Department, the Production Department
- Company 12: the Vice President of Merchandising, the Company President, the Sales Manager
- Company 13: the Marketing, Sales, and Product Development teams, and sometimes dealers and key salespeople
- Company 14: the Vice President of Product Development and the Vice President of Manufacturing
- Company 15: the Vice President of Marketing and the In-house Designer
- Company 16: the Vice President of Merchandising, the Company President, members of the Marketing and Production Departments

APPENDIX E - List of product profiles (attribute level combinations) for conjoint analysis

Profile Number	Part Grade	Finish	Style	Aspect
1	no knots	clear	Shaker	horizontal
2	small knots	clear	Shaker	horizontal
3	small knots	clear	Shaker	vertical
4	small knots	clear	French Provincial	vertical
5	no knots	distressed	French Provincial	horizontal
6	small knots	medium cherry	French Provincial	vertical
7	small knots	distressed	Shaker	vertical
8	small knots	distressed	Shaker	horizontal
9	large knots	distressed	French Provincial	vertical
10	small knots	clear	French Provincial	horizontal
11	large knots	medium cherry	Shaker	horizontal
12	no knots	medium cherry	Shaker	vertical
13	small knots	medium cherry	French Provincial	horizontal
14	large knots	clear	French Provincial	horizontal
15	no knots	clear	French Provincial	vertical
16	large knots	clear	Shaker	vertical
Holdout Profiles				
17	no knots	distressed	Shaker	vertical
18	small knots	medium cherry	Shaker	vertical
19	no knots	clear	French Provincial	horizontal
20	large knots	medium cherry	French Provincial	horizontal

APPENDIX F - Pictures of product profiles serving as dependent measure stimuli for the conjoint analysis.

Figure F-1. A picture of Sample 11 (large knots, medium cherry, Shaker, horizontal) and corresponding drawing.



Figure F-2. A picture of Sample 15 (no knots, clear, French Provincial, vertical) and corresponding picture.

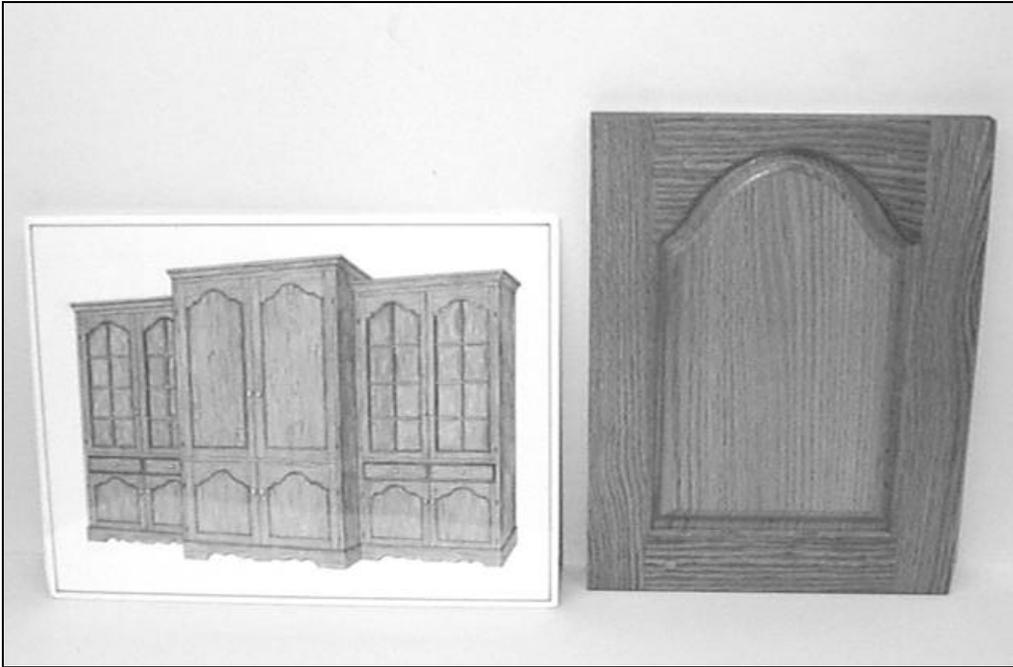
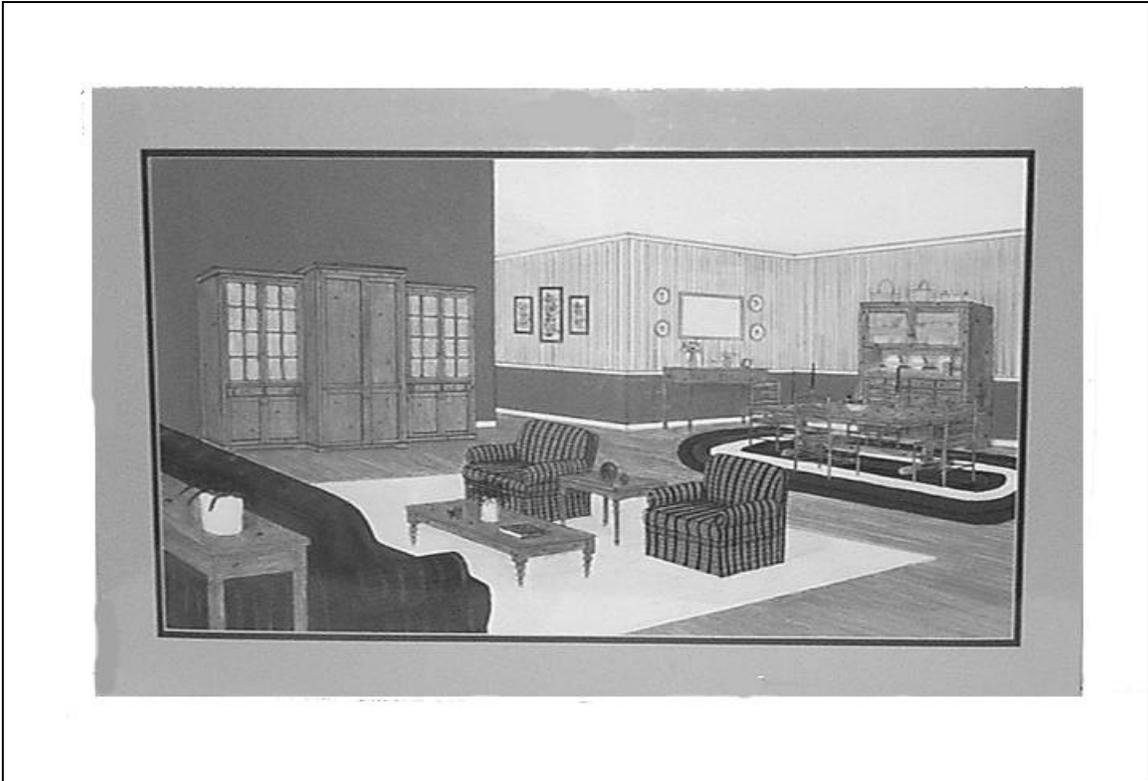


Figure F-3. One of the two pictures (Shaker style) used to initiate data collection, by putting the evaluation tasks in context and activating the schema for country/casual style oak furniture.



VITA

Matthew Scott Bumgardner was born in London, Ohio on December 8, 1970. He was raised in Mechanicsburg, Ohio. Mr. Bumgardner received a B.S. in Forest Resources Management from the Ohio State University in June of 1993. He went on to earn an M.A. in Public Administration and an M.S. in Natural Resources Policy from Ohio State in 1995. In August of 1998, Mr. Bumgardner completed the requirements for the degree of Doctor of Philosophy at Virginia Tech, where he was a Cunningham Fellow and recipient of the 1997 Steven A. Sinclair Scholarship in Forest Products Marketing.