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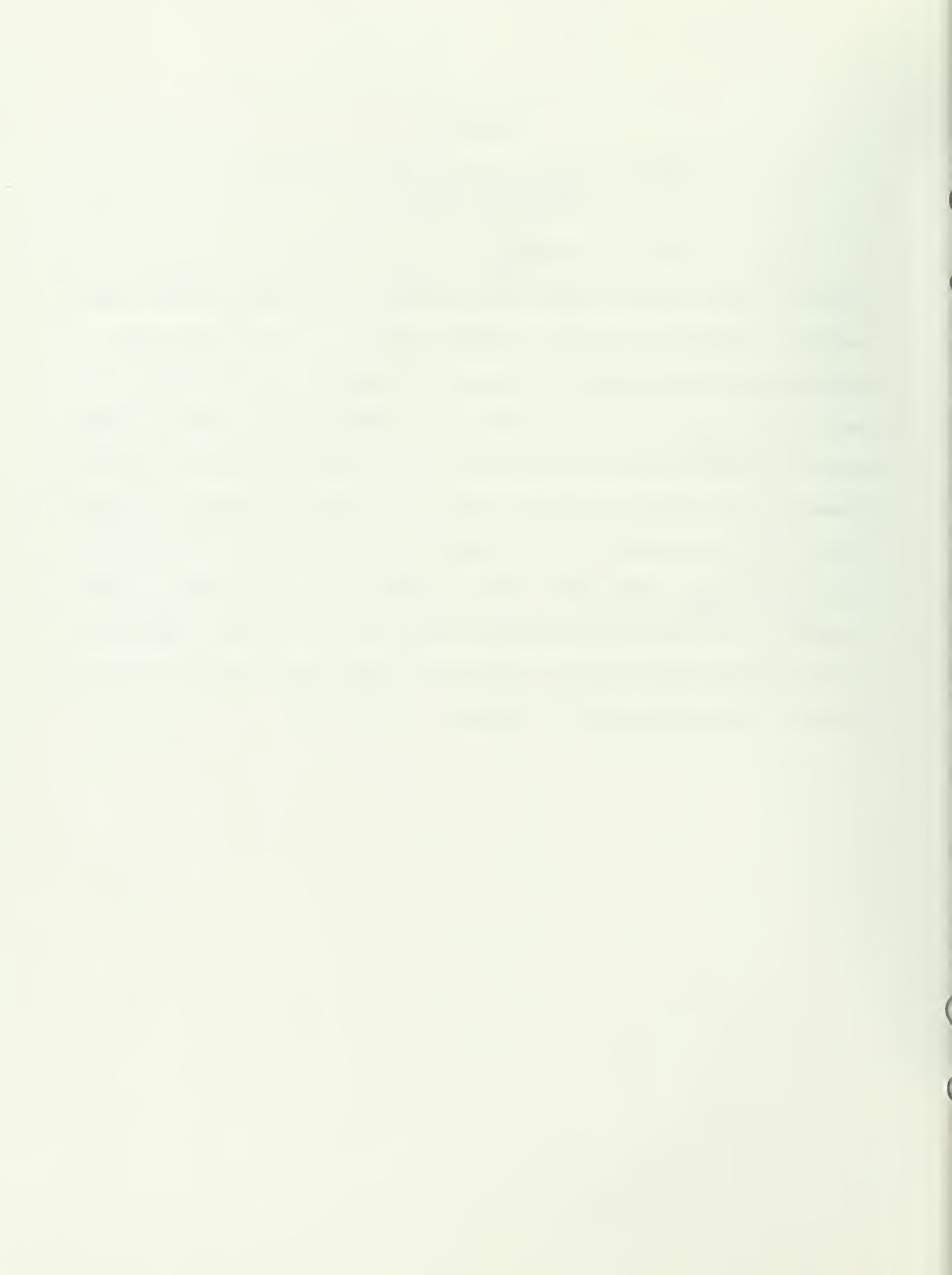
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ABSTRACT

Taxonomic Cognitive Structures in Managerial Competitive Sensemaking

We report the results of research conducted to explore the cognitive structures used to define competitive boundaries among small retailing organizations. Drawing from theories of human cognition, we first discuss the sensemaking problems facing the competitive strategist in understanding competitive environments. We then derive three propositions to explain how mental models of organizational forms are developed and used to delineate competitive boundaries. The results of Study 1 suggest that mental categories of organizational forms are polythetic, and that general categories of retail forms are perceived as largely independent sets of organizations. The results of Study 2 suggest that middle-level categories represent a psychological inflection point differentiating rivals from non-rivals. We discuss the implications of these data for various areas of organizational research.



Competition among organizations is an important facet of organizational activity. Since rivalry has typically been conceptualized as an environmental phenomenon, most organizational research on competition has focused upon the effects of competitive interdependencies on organizational strategies, structure, and survival (Khandwalla, 1981; Pennings, 1981). Thus, researchers have examined the relationship between competition and internal administrative structures and goals (e.g., Khandwalla, 1973), and have assessed the effects of competitive intensity on interorganizational coordination (e.g., Pfeffer & Nowak, 1976) and organizational longevity (Barnett & Carroll, 1988). However, as Khandwalla (1981) noted, competitive interdependence is not purely an environmental phenomenon, since there is a perceptual component to competitive interactions that creates and reinforces rivalry as much as is caused by it. Arguing against market determinism, for example, White (1981) maintained that competition is often created when two or more organizations begin to monitor and respond to each others' activities. White suggested that competition emerges from the mutually adjustive behavior of organizations who have defined each other as rivals. In Weick's (1979) terms, competition can be viewed as a situation in which decision-makers "enact" and objectify an implicit understanding of organizational interdependence.

To the extent that competitive interactions are structured by managerial perceptions, it becomes important to inquire about the social psychological factors influencing how organizations make sense of competitive environments. Recent "interpretive" approaches to organization-environment relations (e.g., Daft & Weick, 1984; Dutton & Jackson, 1987; Smircich & Stubbart, 1985) suggest that such sensemaking involves the cognitive structures decision-makers use to resolve the information processing dilemmas created by competitive conditions.

Unfortunately, the socio-cognitive elements of competitive interdependence have either been ignored in the literature or defined away by empirically unexamined theoretical axioms. Consequently, very little is known about competitive sensemaking.

The present research addresses this deficiency by examining how decision-makers resolve one core sensemaking problem--the definition of competitive boundaries. By "competitive boundary" we mean a perceived "gap" in the inter-organizational environment which for decision-makers differentiates rivals from non-rivals. We assume that some such differentiation is necessary in order to formulate a competitive strategy, since it is impossible to counter the actions of all known organizations simultaneously. Our major premise is that decision-makers define competitive boundaries by forming mental models categorizing organizational forms. This premise derives from substantial research on cognitive classification suggesting that beliefs about the environment are based upon a set of nameable categories denoting meaningful discontinuities in the flow of experience (e.g., Dougherty, 1985; Holland, Holyoak, Nisbett & Thagard, 1986; Kempton, 1981; Mervis & Rosch, 1981; Smith & Medin, 1981). Such work views individuals as "implicit taxonomists" attempting to categorize elements of the environment in which they live. In this paper, we will outline the cognitive dilemma faced by decision-makers when ascertaining competitive boundaries, derive three propositions suggesting how this dilemma might be resolved via implicit taxonomic activity, and provide empirical data to support our claims.

THEORETICAL BACKGROUND

The Problem of Competitive Boundaries

According to ecological theory, organizations compete when they are similar in form and require similar resources to survive (e.g., Hannan & Freeman, 1977; McKelvey, 1982). "Organizational form" can be defined as the configuration of attributes which contributes to the maintenance of an organization's activities and purposes (McKelvey, 1982). Two organizations are similar if they share many attributes. When critical resources are scarce, similar organizations are often "competitively interdependent" such that the resource acquisitions of one detract from the acquisitions of the others. This means that an organization's longevity depends upon its capabilities relative to those of existing rivals. In Aldrich's (1979) words, "Selection occurs through relative rather than absolute superiority in acquiring resources, and an effective organization is one that has achieved a relatively better position in an environment it shares with others, rather than the hypothetical 'best' position" (p. 30).

Although many factors influencing the selection and retention of organizational forms are beyond the control of individual decision-makers, even the most environmentalistic views of competitive interdependence recognize that organizations can exercise strategic choice in adapting to competitive exigencies (e.g., Aldrich, 1979; Hannan & Freeman, 1977; McKelvey, 1982). Indeed, most explanations for organizational responses to rivalry, such as game theoretic (e.g., Shubik, 1959), resource dependency (e.g., Pfeffer & Salancik, 1978), contingency (e.g., Khandwalla, 1981), and industrial economic (e.g., Porter, 1980) viewpoints, at least implicitly assume that strategy is involved in competitive adaptation. This being the case, a key strategic problem is the

"autogenic" (McKelvey, 1982) manipulation of organizational attributes to achieve an optimal fit with the environment. In solving this problem, decision-makers must inevitably consider the attributes of other organizations. On the one hand, strong pressures exist to imitate organizational forms that have been successful in exploiting environmental resources (e.g., Aldrich, McKelvey & Ulrich, 1984; DiMaggio & Powell, 1983; Hannan & Freeman, 1977). On the other hand, superiority in the acquisition of resources often stems from creating and sustaining attributes that are not easily replicated (e.g., Porter, 1980; Rumelt, 1984). To the extent that strategic choice is involved in competitive adaptation, the dual pressure to both imitate and differentiate means that an important interpretive responsibility of the strategist is to scan the environment, assess an organization's attribute similarity vis-a-vis others, and formulate plans to create that specific attribute configuration which balances similarities and differences in a profitable way (Aldrich et al., 1984).

It is in scanning other organizations and making attribute comparisons that the cognitive problem of competitive boundaries emerges. A rational assessment of an organization's strengths and weaknesses would compare all the focal organization's attributes with all known attributes of all other organizations. Such an analysis would permit domain choice to be based upon complete information about the resource potential of any particular attribute configuration. However, a fully rational assessment is impractical given imperfections in the flow of information about other organizations and the cognitive limitations of the strategist. Thus, at least part of the sense-making task inherent in rivalry involves establishing competitive referents

against which the focal organization can be compared. Ideally, the decision-maker would limit the range of comparisons to include primarily those organizations most similar in form to the focal organization, thereby defining a "boundary" differentiating rivals from non-rivals. However, a judgment concerning membership in either group would seemingly require a large number of organization-by-organization attribute comparisons. Inevitably, the decision-maker is faced with a boundary problem. Should all, some, or no other organizations be considered competitive benchmarks? How is a balance achieved between wanting to maximize information about rivals, and wanting to simplify environmental scanning and competitive monitoring?

Historically, this problem has been dealt with primarily by economic theorists who have outlined a priori criteria for classifying organizations into competitive groups (Scherer, 1980). According to the "industry" criterion, organizations compete when they share similar technological attributes and can produce similar outputs. Alternatively, the "market" criterion suggests that organizations compete when their output attributes fulfill similar client functions. Although defining competitive boundaries in this way simplifies the comparison problem, both criteria are unsatisfactory as cognitive accounts of how decision-makers define rivals in practice. First, both criteria are somewhat ambiguous. Robinson (1956) once argued, for example, that "A precise and meaningful definition of an industry is a vain objective" (p. 361). Similar complaints have been lodged against the market criterion as well (e.g., Day, Shocker, & Srivastava, 1979). Secondly, and perhaps most importantly, both criteria beg the question of competitive sensemaking since information about technology and/or product substitutabilities is often incomplete. Because of imperfect information, "industry" and "market"

discriminations are as much inference as fact, and such criteria cannot explain how strategists make such discriminations in an uncertain world.

Implicit Organizational Taxonomies

At the core of the competitive boundary problem is the need for what Schwenk (1984) has called "cognitive simplification." Somehow the decision-maker must delimit a cognitively tractable group of other competing organizations against which the focal organization can be compared. Current theories of human information processing suggest how this simplification might be accomplished (e.g., Anderson, 1983; Holland et al., 1986). Such theory argues that human cognition involves retrieving memory structures to organize and define environmental stimuli. One type of cognitive structure consists of mental categories that have been learned over time and which describe the important features of objects and events (Holland et al., 1986; Mervis & Rosch, 1981; Smith & Medin, 1981). By retrieving a cognitive category from memory, an individual accesses an information base and nomenclature for making discriminations among environmental elements. Since the competitive boundary problem is fundamentally a problem of discriminating rival from non-rival organizational forms, cognitive theory suggests that decision-makers define competitors by applying mental categories to describe organizational similarities and differences. We offer three propositions concerning how such categorization occurs.

Proposition 1: Managerial observers make sense of organizational diversity by constructing cognitive categories describing organizational forms. Such categories are polythetic "feature sets" of attributes perceived as typical of most organizations defined within those categories.

Although McKelvey has argued that no complete inventory of organizational attributes exists in the literature, for purposes of a cognitive analysis (e.g., Garner, 1978) an "attribute" can be defined as any perceptually irreducible aspect of an organization that is judged to exist by managerial observers. Perceived organizational attributes can encompass product classes offered, organizational structure, and managerial skills (Walton, 1986). In a simple case, for example, the category "fast food restaurants" might be used to describe organizations that are perceived to have "limited menus," "quick service," "low square footage," and "franchised ownership." The term "polythetic" means that no organization in a category is perceived to have all the attributes associated with that organizational form, and no attribute is possessed by all organizations. That is, categories have a graded rather than all-or-none boundary. Research on categorization suggests strongly that members sharing many attributes are judged to be more typical of the category than borderline members sharing only a few attributes (e.g., Rosch & Mervis, 1975; Dahlgren, 1985; Fehr & Russell, 1984). Rosch and Mervis (1975) labeled typical members of the category "prototypes," and argued that prototypes represent the perceived central tendency of the category as a whole.

Given the variety of sources used by decision-makers to scan the competitive environment (Aguilar, 1967), categories can develop either out of direct experience or indirectly from other social sources such as trade publications, established research channels, or local folklore. In the former case, categories develop from comparing attributes of actual organizations. Directly perceived categories must result from "focused sampling" (Holland et al., 1986), since the range of organizations actually encountered by a single person is limited. In the indirect case, attributes are assumed to exist because

credible sources have reported this to be so. Indirect information provides a point of contact between a priori categories, such as specific "industries" or "markets," and the implicit categories of organizational actors. This would be the case, for example, when a particular industry classification (e.g., the Standard Industrial Classification, Value Line) becomes internalized as a system of managerial beliefs. Either by direct or indirect means, Proposition 1 implies that managers acquire a rich nomenclature for describing organizational forms and their perceived characteristics.

Proposition 2: Managerial categories of organizational forms are structured into hierarchical cognitive taxonomies.

According to Rosch (1978), a cognitive taxonomy is "... a system by which categories are related to one another by means of class inclusion" (p. 30). Several theorists have suggested that taxonomies represent an efficient way for the human information processing system to store categorical information (Anderson, 1983; Holland et al., 1986). Moreover, the existence of taxonomic cognitive structures has been confirmed in a number of studies (e.g., Adelson, 1985; Kempton, 1978; Metzger & Williams, 1966; Rifkin, 1985). In managerial taxonomies, specific organizations are grouped into abstract categories, and these form categories of even greater abstraction. By accessing any portion of the taxonomy, the decision-maker retrieves a nomenclature and feature set describing organizational forms at a certain level of generality.

Proposition 3: The managerial naming and describing of organizational forms occurs at intermediate levels of category abstraction.

Hierarchical cognitive structures mean that descriptions of organizations can be obtained from categories at more than one level of generality. A "men's clothing store" is also a "clothing store" and a "retailer." This immediately raises the question of what level is used when naming organizational types. In this regard, cognitive research suggests that one level of abstraction is more "basic" and used more frequently than others. Rosch, Mervis, Johnson, Gray, and Boyes-Braem (1976) argued that the basic level of abstraction is the level that carries the most information about the environment. Data provided by Rosch et al. and others (e.g., Murphy & Smith, 1982; Rifkin, 1985) indicate that the basic level is usually of an intermediate level of generality. Very abstract categories have too few attributes to be very informative of environmental diversity, and extremely specific categories are often very overlapping. Rosch et al. (1976) posited that middle level categories strike a balance between richness and simplicity, and form a conceptual center of gravity around which knowledge about the environment is organized.

The Present Research

The theory embodied in these propositions offers a solution to the problem of simplifying competitive comparisons. A cognitive taxonomy of organizational forms is a memory representation of organizational diversity. Although limits to attentional resources (e.g., March & Simon, 1958) prevent access to all taxonomic levels and categories simultaneously, the decision-maker can retrieve portions of the taxonomy to summarize a selected sector of the organizational field. What is retrieved is not necessarily an image of particular organizations, but feature sets of attributes typical of most organizations. Thus,

the strategist can compare attributes of organizational types rather than the idiosyncratic attributes of individual organizations. In this way, boundary definition and competitive scanning can occur at a higher level of abstraction. Once general competitive boundaries have been defined, presumably from comparing the attributes of organizational categories, a more concentrated effort can be made to understand those particular organizations that are most similar in form to the focal organization.

The present research was conducted to examine the validity of this argument within the "retailing" sector of a small U.S. city (1980 pop. 94,000). The site's small size and geographical separation from other towns suggests that it represents an isolated community of organizations engaged in mutual competitive monitoring and the reciprocal adjustment of organizational attributes. Managers of businesses were asked questions about their knowledge of local retailers and their perceived competitors. Drawing from Proposition 2, a preliminary study isolated a subset of the taxonomic nomenclature used by managers to describe organizational forms in the community. Study 1 draws from the first proposition by testing whether the internal structure of organizational categories is polythetic, and examines the relationship between this internal structure and perceived competitive threats. Study 2 draws from Proposition 3 and assesses the level of abstraction at which organizations are spontaneously classified and competitive boundaries defined.

Studying cognitive categorization requires identifying the prevalent taxonomic structure existing in the minds of the target sample. Two inter-related methodological decisions must be made. First, it must be decided whether to focus upon the unique organizational knowledge of individual respondents or to develop a representation of the shared understanding

existing in the sample as a whole. The present research sacrifices the former in favor of the latter. Second, a specific method for uncovering a consensual taxonomy must be selected from several that have been used in previous cognitive research. These include categories derived from researcher intuition (e.g., Cantor, Mischel & Schwartz, 1980), from examining natural language (e.g., Berlin, Breedlove, & Raven, 1974; Rosch & Mervis, 1975), and from numerical clustering techniques (e.g., Roberts, Morita, & Brown, 1986). We followed the guidelines set out by Metzger and Williams (1966) for the "standard taxonomic interview" in which respondents are asked to make actual category-subcategory judgments in the environmental domain of interest. The specific interview procedure derives from Kempton (1978) and Adelson (1985).

The preliminary study uncovered the taxonomy shown in Figure 1. Beginning at the root category "retailers," successive randomly selected samples of

 Insert Figure 1 about here

local managers were interviewed and asked the question, "What are all the different types of _____ here in (the town) that you can think of, or are they all the same?" Responses were recorded verbatim and coded according to the procedure described in the Appendix. The first sample of respondents named a total of 52 immediate subtypes of local "retailers."¹ Since generating the entire taxonomy encompassing all 52 categories was too unwieldy, only the "groceries" subcategory was selected for further expansion. This decision was based upon an informed estimate of the number of food retailers in the town. Another sample was asked to list subtypes of "groceries," and these were coded as well. This procedure was used iteratively until most respondents noted that all organizations within a specified

category were "all the same." The cognitive structure shown in Figure 1 represents the collective understanding of 77 managers, and was used in Studies 1 and 2 to test hypotheses about the categorization of organizational forms and the perception of competitive boundaries.

STUDY 1

Retrieving a portion of the cognitive representation shown in Figure 1 means accessing both a label and a set of features for describing an organizational form. Using this category scheme, decision-makers can define the focal organization by matching its known characteristics with the typical attributes of an organizational category. This is consistent with Alpert and Whetten's (1985) suggestion that "organizations define who they are by creating or invoking classification schemes and locating themselves within them" (p. 267). Such matching is often evident in spontaneous statements of organizational identity such as "We're a 'drug store'," or "We're in the 'food business'." Each definition seemingly implies a perceived competitive set, since matching an organization to a category means that the decision-maker views the focal organization as more similar to some organizations than others. One question raised by Figure 1 concerns how decision-makers segment competitive boundaries "horizontally" at any given level of abstraction.

This question was addressed in Study 1 at the level of "retailers" and its immediate subordinate categories. A number of possibilities were examined. All 52 categories at Level 2 in the figure presumably are viewed as sharing at least some attributes because all are perceived as "retailers." If a manager places his or her business into a subcategory such as "groceries" or "book stores," this commonality might mean that all "retailers," hence all

subcategories, are perceived as equally strong competitive threats. However, the polythetic nature of cognitive categories suggests that prototypical subtypes might be viewed as stronger rivals than non-prototypical categories. This is consistent with Aldrich et al.'s (1984) claim that "centroid" members of an organizational population are often used as competitive benchmarks. Finally, the 52 subcategories should vary in how similar they are to the manager's own category. This similarity gradient might be used to define competitive boundaries such that subtypes perceived as most similar to one's own will be rated as the strongest competitive threats.

Method

Study 1 employed two independent samples of retailing managers from the target community. All respondents were the owner-managers or non-owning general managers of their business, and all had responsibility for "keeping track of the competition." To minimize reactivity effects, the two samples responded to different questions about the attributes of organizational forms, prototypicality, and perceived competition. The 25 respondents in Sample 1 were randomly selected to represent 25 of the 52 categories listed at Level 2 in the figure. These respondents were used to obtain ratings of prototypicality for each subtype. Interviews took place in the respondent's offices. The 52 category names were printed on index cards, one to a card. When a card was shown, respondents rated how well that subtype fit their "image" of a local "retailer." The cards were shown in random order. Judgments of typicality were obtained using the 7-point scale: 1 = "fits very poorly my idea of a retailer," 4 = "fits moderately my idea of a retailer," and 7 = "fits very well my idea of a retailer."

Sample 2 consisted of 25 respondents from the same population as Sample 1 and was used to generate both attributes for some of the "retailing" subtypes and judgments of perceived competition. Attributes were obtained for 25 of the 52 categories selected to represent the entire range of typicality on the basis of the means and variances of the Sample 1 ratings. The selected subcategories are noted in Table 1. Sample 2 respondents were randomly selected to represent businesses from each of the 25 chosen subtypes (this was later verified in the interview). These respondents first rated the extent to which each of the total 52 "retailing" subtypes was a competitive threat to their own business using the scale: 1 = "not a competitor at all," 4 = "moderate competitor," and 7 = "very strong competitor." Respondents then listed perceived attributes for five of the 25 chosen subtypes, counterbalanced such that five respondents produced attributes for each subtype.

Respondents listed a total of 624 attributes. To ensure that attributes used in other analyses were not idiosyncratic to a single manager, the individual listings were coded into 93 general attributes according to the procedure described in the Appendix. The attributes spanned a wide range of organizational characteristics, such as structure, location, service, "atmosphere," product classes, and so forth. For example, the category "drug stores" was defined as "selling magazines," "having extended hours," "being chain-owned," "well-lit," "selling drug products," and "having good locations."

Results and Discussion

The Internal Structure of Retailing. Before examining the competitor ratings, it is useful to discuss several aspects of the data that indicate how respondents organized the 52 subtypes within the general category

"retailers" (Proposition 1). As can be seen in Table 1, the prototypicality

 Insert Table 1 about here

ratings varied markedly across the subcategories, ranging from 2.56 in the case of "tax advising shop," to 6.52 in the case of "groceries." This difference is reliable according to a sign-test on the two distributions ($p < .001$). Thus, respondents did not view all subcategories as equally representative of the "retailer" superordinate. Consistent with Proposition 1, the attribute data on the 25 selected subtypes indicate clearly that the "retailer" category was viewed as polythetic. The number of attributes mentioned for each category averaged 9.8 ($SD = 3.53$). Approximately 32 percent of these were unique to a particular subtype, and 81 percent were shared by fewer than three categories. Only one attribute was perceived to be common to more than nine categories, and no attribute was shared by all 25 categories.

Some of the subtypes shared more attributes than others, however, and the data are consistent with the suggestion that category prototypes are those subcategories perceived to share the most attributes with others. A "family resemblance" score was computed for each of the 25 categories (see Table 1) by weighting each attribute by the number of categories sharing that attribute [see Rosch & Mervis (1975) for details]. Kendall statistics computed between the mean and median typicality ratings (from Sample 1) and the family resemblance scores are reliable ($\gamma = .36$, $p < .01$ for mean ratings, $\gamma = .29$, $p < .05$ for median ratings). Taken together, these data provide strong evidence for the polythetic nature of managerial "retailer" categorizations.

Perceived Competitive Threats. The competitor ratings provided by Sample 2 suggest how the structure of "retailer" subtypes might relate to the

definition of competitive boundaries. The low means and medians shown in Table 1 indicate that most respondents rated most Level 2 subcategories to be marginal competitors of their business. However, not all subcategories were rated equally, since a large difference existed between the respondent's own category and the 51 other "non-self" categories. Across all respondents, the average competitor rating for the "self" category was 6.96 ($SD = .196$) while non-self ratings averaged 1.18 ($SD = .39$). In short, the major competitive boundary defined using Level 2 categories was between self and non-self "retailer" types.

A plausible explanation for this sharp boundary is suggested by the attribute data. Similarity scores were computed for each pair of the 25 Level 2 categories for which attributes were obtained. Similarity was defined as $(A \cap B)/(A \cup B)$, where A and B are the respective sets of attributes. Although a few subtypes shared as many as 30 percent of their attributes, the average percentage overlap was only 7.4 percent ($SD = 4\%$). Given this low level of perceived similarity, it is not surprising that further analyses revealed that the relationship between self/non-self attribute similarity and rated competition was on the whole minimal. However, an interesting positive relationship serves to qualify this conclusion. Non-self competitor ratings were significantly correlated with mean and median prototypicality ratings ($r = .33$ and $.34$, $p \leq .01$), indicating that category prototypes were perceived as stronger competitive threats. To examine this further, the selected 25 subtypes were split into high and low typicality groups using a mean of 4.64 as the cutoff. Similarity scores computed between pairs both within and between these groups indicated that highly prototypical categories were perceived to share an average of 12 percent of their attributes (consistent with earlier

findings) compared to 7.5 percent for the lows ($t(11) = 2.81, p < .05$). The cross group average was 7 percent. This pattern was replicated in the competitor ratings as well: respondents within the high group rated each other stronger competitors ($M = 1.49, SD = 1.04$) than the within group ratings of the lows ($M = 1.12, SD = .53, t(11) = 3.4, p < .01$). Cross group ratings were not different, and both were lower than ratings among the high group. These data suggest that although the major competitive discontinuity was defined at the boundary of the self category, managers of prototypical "retailers" constituted a weak competitive group in that they perceived slightly more similarities among each other and viewed each other as slightly stronger competitive threats.

STUDY 2

The first study forced managers to retrieve and manipulate information at a high level of abstraction. A question left unanswered is whether managers would use this abstract level to define their organizations and competitors if permitted to freely access categories from any level in Figure 1. Proposition 3 suggests that categories of moderate abstraction would provide the most information about organizational forms. On the one hand, managers are likely to see too few defining attributes among all "retailers" to narrow the range of competitive comparisons in a cognitively tractable way. Indeed, the results of Study 1 corroborate this by showing that the immediate subordinates of "retailers" were viewed as largely independent sets of organizations. On the other hand, very specific categories, such as "warehouse" and "full-service supermarkets" might be associated with feature sets rich enough to delimit a small number of organizations, but they are likely to share many of the same

attributes. Because of such similarity, perceived competitive boundaries are not likely to distinguish among specific categories as they did the general categories of Study 1. In short, Proposition 3 suggests that a psychological inflection point should exist midway within Figure 1. Categories above this point should be associated with fewer attributes, and perceived competitive boundaries should distinguish among various organizational subtypes. Categories below this inflection point should be associated with more attributes, and perceived competitive boundaries should not distinguish among organizational subtypes. Using the terminology of Proposition 3, the perceived inflection point is the "basic" level of category abstraction, and should be the taxonomic level where a significant increase in the number of perceived attributes occurs relative to more general levels. Moreover, the basic level should be the level spontaneously chosen by managers when asked to categorize their organization and define competitors.

Method

To limit the complexity of the research design, the study focused upon the darkened sub-taxonomy shown in Figure 1. To establish the psychological validity of this structure in more detail, eight managers, four who identified themselves in one of the Level 4 categories and four from non-grocery businesses, were asked to judge the structure's acceptability. Respondents rated their agreement with each type-subtype pair (e.g., whether "supermarkets" were a type of "grocery," etc.), and with the structure as a whole ("In general, how much do you agree with this classification of businesses in the area?"). All ratings were on 5-point scales ranging from 1 = "do not agree at all" to 5 = "agree completely." Strong support for the validity of the sub-taxonomy was

evident. The modal rating for each type-subtype judgment was 5, and all but one response fell between 4 and 5. All respondents gave the highest rating when asked to indicate their general agreement with the sub-taxonomy as a whole.

The sub-taxonomy was used in the main interview to determine the level of spontaneous business and competitor categorizations. All respondents for the main interview were from the same community as respondents in Study 1. A few had participated in either Study 1 or in the verification interview several months earlier. Using phone and business directories, it was estimated that 31 local businesses were classifiable into one of the four Level 4 categories of Figure 1. Head managers from 29 of these 31 (93%) agreed to participate in the study. All respondents had competitive scanning duties as part of their job.

Respondents first categorized their own business by answering the question, "Assuming I knew nothing about what type of business this is and you wanted to describe it to me, what type of business would you call this?" The categorization was recorded verbatim. Respondents then categorized their "major competitors," defined as "all those types of local businesses that influence your business and that you watch on a relatively frequent basis." Half of the respondents provided self categorizations first, and half categorized their major competitors first. Next, "secondary competitors" were categorized, or "all those types of businesses that might influence your business but that you don't spend much time thinking about or watching."

Respondents then listed attributes for one of the four levels in the darkened sub-taxonomy of Figure 1. Each respondent listed attributes for two categories at the same level of abstraction. Since "retailers" and "groceries"

were single categories, two contrasting categories at the same level were generated to balance the number of categories each respondent received. To do this, 10 additional retailers were asked: "If a local business is not a 'retailer' (or 'grocery'), what type of business would you say it might be?" "Wholesalers" and "clothing stores" were two frequent responses, and were used as contrasts for "retailers" and "groceries" respectively. In total, six respondents listed attributes for "retailers" and "wholesalers," six for "groceries" and "clothing stores," five for "supermarkets" and "convenience stores" and 12 were distributed across the four categories at Level 4.

Next, respondents were shown each of the eight categories in the sub-taxonomy, one at a time and in random order, and were asked to provide a yes or no answer to the question, "Would you consider all types of _____ to be major competitors of your own business?" (e.g., "Would you consider all types of 'groceries' to be major competitors of your business?"). This question was asked to ascertain the level of the taxonomy at which most respondents made no competitive distinctions among category subtypes. Finally, respondents were shown four index cards, each with one of the Level 4 categories printed on it. They were asked to choose the one category that best fit their own business or to use an "other" category if they felt their business did not fit any of the four subtypes. All respondents used one of the Level 4 categories, verifying that the sub-taxonomy was relevant to their organizations.

Results and Discussion

Spontaneous Categorizations. Respondents mentioned 29 self (one per respondent), 46 major competitor ($\bar{M} = 1.96/\text{respondent}$; $SD = 1.40$) and 50 secondary competitor ($\bar{M} = 1.34/\text{respondent}$; $SD = 1.34$) categories. These were

written individually on index cards and given to two judges who independently placed each card into that one of the eight categories in the sub-taxonomy of Figure 1 "most similar in meaning." Judges were instructed to use an "other" category if a response did not match any of these eight. Interjudge agreement was 88 percent, and the few disagreements were resolved through discussion.

Ninety-three percent of all self-categorizations were within the taxonomy, indirectly supporting its validity for the respondent sample. The first row of Table 2 provides the number and percent of self categorizations coded at each taxonomic level and the "other" classification. Categorizations within

 Insert Table 2 about here

"supermarkets" and "convenience stores" were significantly more frequent than those in either "groceries" ($\chi^2(1) = 13.00, p \leq .01$) or the combined Level 4 categories ($\chi^2(1) = 13.76, p \leq .01$).

Most respondents cited only a single major competitor class, and 76 percent of these were within the sub-taxonomy of Figure 1. Of the 29 major competitor categories mentioned first (a rough measure of psychological salience), 93 percent were coded into the taxonomy. The second row of Table 2 gives the mean number of major competitor categories per respondent at each level. Respondents cited "supermarkets" and "convenience stores" as their major competitors more frequently than either "groceries" ($t(28) = 3.42, p \leq .01$) or the "other" category ($t(28) = 8.73, p \leq .01$), the two next most frequent classifications. Seventy-six percent of the respondents mentioned at least one major competitor category at Level 3, compared to 31 percent and 38 percent at Level 2 and the "other" category respectively. Row 3 of Table 2 gives the number and percentage of the 29 major competitor categories mentioned first.

Level 3 nomenclature was more frequent than Level 2 ($\chi^2 = 12.00, p \leq .01$), and 70 percent classified their first mentioned competitor at the same level as the self categorization.

The fourth row of Table 2 shows the mean number of secondary competitor categories mentioned per respondent at each level as well as the "other" category. The "other" category was mentioned most frequently, and it is significantly greater than Level 3 ($t(28) = 4.22, p \leq .01$), the next most frequent categorization. Only 28 percent of all secondary competitor categories were coded within the taxonomy. Of those that were, Level 3 nomenclature was used most frequently.

Perceived Competition. The spontaneous categorization data indicate clearly that most respondents defined their own organization as a "supermarket" or a "convenience store," and their major competitors as being primarily other "supermarkets" or other "convenience stores." It is interesting to note that no respondent used the term "retailer" to define self or competition, and very few used terms equivalent to Level 4 nomenclature. This suggests that the categories "supermarkets" and "convenience stores" were the psychological inflection point, or basic level, around which competitive boundaries were defined. If so, respondents should perceive discontinuities among higher level categories, and should not see all higher level categories as major competitors. Conversely, few discontinuities should be perceived below Level 3 such that all lower level categories are perceived as major competitors. That is, all types of "supermarkets" or "convenience stores" should be viewed as major competitors, but not necessarily all types of "retailers" or "groceries."

This argument is supported by the yes/no competitor ratings obtained from respondents at each level of the sub-taxonomy. No respondent perceived all

types of "retailers" as major competitors, and less than half rated all "groceries" as such. However, 96 percent of the respondents perceived either all "supermarkets" or all "convenience stores" as major competitors. Thus, the vast majority of respondents made no competitive distinctions among the organizational forms described at Level 4, although many managers perceived competitive discontinuities among forms at Levels 1 and 2.

Organizational Attributes. The attribute data reinforce the special status of Level 3 nomenclature. Respondents listed 344 individual attributes across all levels of the sub-taxonomy. These were coded with the same procedure as used in Study 1 (see Appendix). This resulted in 45 attributes for the eight categories in the sub-taxonomy plus the two filler categories, "wholesalers" and "clothing stores." As in Study 1, the attributes encompassed many organizational characteristics. For example, "retailers" were described with such attributes as "low profit margins," "being expensive," and "having local advertising." "Supermarkets" were described as "clean," "well-staffed," and "having good selections of groceries." According to the theory underlying Proposition 3, the basic level of categorization should be the level at which attributes provide the most information about similarities and differences among organizational forms. This argument was examined using several different definitions of "information."

One possibility is that basic categories had more attributes than more general categories. This was tested by computing the number of attributes associated with each category in the sub-taxonomy. Row 5 of Table 2 shows the average number of attributes per respondent per category at each level. Although the linear trend is statistically reliable, no differences existed

between any two contiguous levels. Thus, no single level was associated with a significant increase in the total number of attributes.

The attribute structure of the sub-taxonomy revealed a number of redundancies from one level to the next. Seventy-five percent of the attributes mentioned by respondents for "retailers" were also mentioned for at least one other level. This redundancy makes a simple attribute count at each level somewhat ambiguous. Another possibility is that basic level categories had a significant increase in attributes added at that level when compared to higher level categories. This was tested by computing two indices: the number of added attributes per respondent per category at each level, and the percentage of added to total attributes for each respondent at each level. Rows 6 and 7 of Table 2 provide average data for these indices. No indices were computed for "retailers" since it had no superordinate category. Contrasts revealed that Level 3 categories generated a greater number of added attributes than those at Level 2 ($t(9) = 2.24, p \leq .06$), but did not differ from Level 4 categories. Level 3 categories also had a higher percentage of added to total attributes than categories at Level 2 ($t(9) = 2.33, p \leq .05$), while again not differing from Level 4. These data suggest that the basic level of organizational categorization is the level at which a significant increase in added attributes occurs relative to more general levels.

An even stronger view of the basic level recognizes that information is provided not simply by the number of attributes, but also by how distinctive those attributes are when compared to other categories at the same level. The basic level of categorization should be that level at which organizational categories are associated with an increase in the number of added and distinct attributes. This idea was tested by subtracting from the number of added

attributes (the index computed above) all attributes which were shared with the other category at the same level. This index provides a measure of the distinctiveness of a category relative to another. Row 8 of Table 2 provides the average number of distinctively added attributes per respondent per category at each taxonomic level. When compared to Level 2 categories, Level 3 categories were associated with a marginally significant increase in distinctiveness ($t(20) = 1.83, p \leq .10$). Levels 3 and 4 did not differ.

GENERAL DISCUSSION

Taken together, the above data provide a reasonably clear view of how decision-makers sort through the diversity of organizational forms and define competitive boundaries. First, the results support the contention that managers employ cognitive categorization schemes to simplify the organizational field. The results suggest that managerial categories are polythetic (Proposition 1) and hierarchically organized (Proposition 2). The results also suggest that the managerial categorization of organizational forms occurs along a strip of experience comprised of an information-rich middle level of abstraction (Proposition 3). Second, the data reveal how managerial categorizations structure the definition of competitive boundaries. Study 1 indicates that abstract organizational types such as "groceries" and "restaurants" are perceived as largely independent, and competitive boundaries are defined to be consistent with these recognized discontinuities. Study 2 suggests that the preferred middle level categorization represents a competitive inflection point such that subtypes of organizations below this level are seen as competitively equivalent, and subtypes above this level are viewed as competitively discontinuous.

Before discussing the implications of our findings, it is important to note a serious limitation of the research and to qualify the conclusions that have been reached. Only one organizational category ("retailers") was sampled from a relatively stable well-understood environment. A detailed focus upon an isolated community of organizations is justified as a way of describing the intersubjective understanding of local ecological conditions. The problem, however, is that the results could be idiosyncratic to that environment. There is good reason to believe that our data may not generalize to all types of conditions. In very simple environments with a small number of organizations, in highly unstable environments, or in resource-rich "pre-competitive" environments, the ability and/or motivation to classify organizational forms and define competitive boundaries might be too low to produce complex cognitive representations. Moreover, the type of organization sampled would seem to be important as well. Managerial categorizations of large multidivisional and conglomerate organizations operating in several local environments could add an order of complexity not present in our focus upon small homogenous business units. All of these possibilities must be followed up in future research if managerial competitive sensemaking is to be fully understood.

This limitation aside, our research has implications for work being done in a number of areas of organizational science. First, the data speak to issues concerning an organization's adaptation to competitive conditions. The cognitive constraints implied by both the horizontal competitive distinctions observed in Study 1 and the vertical limitations of Study 2 suggest that respondents had a narrow competitive focus upon a small number of other firms. This is consistent with previous research. Gripsrud and Gronhaug (1985) studied managers of groceries in a small Norwegian city and observed that,

although approximately 50 grocery establishments were in business at the time, 90 percent of the respondents cited five or fewer organizations as competitors. The data are also consistent with Aldrich et al.'s (1984) argument that competitive strategy takes place at the "micro-niche" level where a small group of similar organizations struggle for slightly different resource positions. The present research provides the cognitive underside of this argument by suggesting that the micro-niche is perceptually defined for managers by a classification scheme delimiting similar organizational forms. In this sense, the competitive inflection point observed in Study 2 isolates the organizations that are perceived as major rivals. Once this cut is made, the set of competitors can be monitored and their threat reduced via an appropriate strategic response.

The structuring effect of a cognitive taxonomy raises questions about the ability of decision-makers to reconceptualize their competitive environment when the pattern of interorganizational dependencies change. According to the ecological perspective, competition links environmental change with organizational success and failure (Freeman & Hannan, 1983). When environmental contingencies shift, it would thus seem necessary for strategists to redefine their competitive referents and adapt accordingly. In Hannan and Freeman's (1977) view, however, inertial forces often prevent organizations from adapting in this way. It would seem that one important source of inflexibility is the cognitive inertia that stems from a well-articulated conception of competitive boundaries. As decision-makers come to understand stable environments, it is likely that perceived competitive boundaries become more and more specific to the point where only a few other organizations are viewed as rivals. When macro-environmental shifts occur to support entirely new populations of

organizations, the competitive relevance of new rivals will likely be downplayed or missed completely. Astley (1984), for example, noted the case of The Great Atlantic and Pacific Tea Company whose managers failed to reconceptualize their "food business" to accommodate competitors who combined food and non-food items for higher profit margins. Levitt's (1975) well-known case of "marketing myopia" similarly argued that executives of U.S. "railroads" might have averted decline by redefining competitive boundaries to include other "transportation" firms. One might speculate that these competitive blind spots resulted from anachronistic mental models describing ecological conditions that no longer existed.

The present research also has implications for scientific taxonomies of organizational forms. Arguments have been made promoting the classification of "industries" (e.g., Standard Industrial Classification, 1972), "product markets" (e.g., Weitz, 1985), "strategic groups" (e.g., Porter, 1980), and "organizational species" (McKelvey, 1982). The goal of all such arguments is to simplify organizational diversity and identify competitive discontinuities from an "objective" point of view. Our research departs from this perspective somewhat by suggesting that it is meaningful to describe competitive boundaries from an insider's "subjective" point of view. At minimum, "cognitive systematics" is a useful adjunct to more numerically-based classification procedures. McKelvey & Aldrich (1983) noted the difficulty of classifying organizational forms and suggested that "conventional wisdom" is a necessary ingredient in isolating groups of organizations to describe. In this sense, the perceptions of managers operating within an environment can be used to make tentative first cuts in the description of organizational populations. Porter (1980) made a similar point in outlining procedures for identifying intra-industry

strategic groups. A focus upon managerial taxonomies merely makes systematic the managerial commonsense that has been investigated in a rather ad hoc way.

More interestingly, our studies raise the possibility that managerial perceptions of organizational forms essentially define the most important competitive groups. Weick (1979) argued that organizations often create their environments by constructing interpretations and then acting as if such interpretations are true. When extended to the problem of competitive definition, Weick's argument gives substance to Robinson's (1956) claim that boundaries among firms might be important only because they exist in the minds of managers. Managerial classification schemes provide the cognitive foundation for the mutual awareness discussed by White (1981) as inherent in competitive interactions. Thus, for example, when a group of managers define their businesses as "clothing stores" or "supermarkets," their understanding of the competitive environment is crystallized within a mental model, and their competitive focus is slanted toward organizations they perceive as members of the same competitive set. It is easy to see how such perceptions might eventually become objectified and institutionalized through such devices as trade associations, specialized publications, and a particularistic language for describing local ecological conditions. In the philosopher Wittgenstein's (1958) terms, "industries," "strategic groups," and so forth might be language games in which the participants enact mental models specifying who should be watching whom. This sort of reasoning is evident in Huff's (1982) claim that industry groups are characterized by a shared understanding of industry conditions. If this subjectivist perspective holds, it will be impossible to classify and understand organizational forms, at least at the micro-niche

level, without describing the mental models which motivate mutually adjustive competitive activities.

Competitive enactment has important, albeit speculative, implications for traditional arguments relating market structure to competitive interdependence. In industrial economic theory, market structure is seen to range from pure competition, where many small firms with low market power struggle for survival, to pure monopoly, where a single firm dominates as the sole supplier of goods or services (Scherer, 1980). The mutual awareness characterizing competitive enactment is typically considered a feature of oligopolistic environments where moderate degrees of concentration lead to organizations being strategically interdependent (Pennings, 1981). Our results suggest, however, that even in the relatively atomistic environment of retailing, decision-makers construct a subjective reality of cognitive oligopolies to make sense of local competitive conditions. We have suggested that such cognitive activity stems from the press to simplify interorganizational comparisons. Many theorists have argued that organizations attempt to reduce or absorb environmental uncertainty (e.g., Pfeffer & Salancik, 1978; Thompson, 1967). The use of simplifying mental models to impose order on atomistic competitive conditions is one way uncertainty can be reduced. This argument runs counter to claims that uncertainty is curvilinearly related to market concentration such that oligopolistic contexts produce the highest degrees of unpredictability (e.g., Pennings, 1981; Pfeffer, 1972). This latter perspective rests upon the assumption that atomistic environments are randomly deterministic. However, there is much evidence in the social psychological literature suggesting that randomness is aversive and that individuals attempt

to create certainty via cognitive activity, even if such certainty is inaccurate (e.g., Nisbett & Ross, 1980). Festinger (1954) argued thirty years ago that individuals will use similar others to obtain information about the validity of opinions, capabilities, and behaviors when objective benchmarks are unavailable. A cognitive taxonomy, creating an oligopolistic subjective reality, allows the decisionmaker to compare the focal organization to similar others, thereby obtaining useful information about organizational strengths and weaknesses.

Finally, our data add to the literature on managerial cognition. In recent years, increased attention has been given to the problem of how managers make sense of organizational environments (e.g., Daft & Weick, 1984; Dutton & Jackson, 1987; Kiesler & Sproull, 1982; Smircich & Stubbart, 1985; Sims & Gioia, 1986). However, as Daft and Weick (1984) noted, very little research has been done to uncover the nature of managerial cognitive structures. Most of the existing empirical work has focused upon managerial "causal maps" (e.g., Bougon, Weick, & Binkhorst, 1977; Ford & Hegarty, 1981; Salancik & Porac, 1986; Stubbart & Ramaprasad, 1987). The present research adds to this literature in two ways. First, it expands the research focus to an additional class of cognitive structures. The theory on cognitive classification is well developed and can be helpful in understanding phenomena that are not easily accounted for by cause map concepts (e.g., Dutton & Jackson, 1987). Second, the present research demonstrates the utility of studying managerial cognition in the context of specific problems. Previous cognitive research can be criticized for being vague and general in conceptualizing the cognitive problems facing the decision-maker in scanning the environment. It is not surprising, therefore, that such research has been

largely unconnected to other areas of the organizational literature. Our research shows that a cognitive approach can supplement and extend other work on organization-environment linkages if the cognitive problems created by such linkages are clearly articulated and the sensemaking activities of managers described in detail. A more focused approach to managerial cognition might eventually be able to untangle the theoretical difficulties created when the subjective reality of organizational participants comes into contact with the objective constraints of the organizational environment.

FOOTNOTES

¹The category "retailers" was assumed to be the most general category relevant to the respondent sample. As Hunn (1977) has noted in the context of anthropological research on categorization, the choice of a "unique beginner" category is always a matter of researcher judgment. "Retailers" seemed to us to be a good choice given its widespread use in everyday language and government economic documents. Moreover, pilot research suggested that respondents really did not use category names of any greater degree of abstraction.

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APPENDIX

Generating Retailing Subtypes in Study 1

The respondents used to generate "retailing" subtypes generated a total of 206 individual listings. These were coded by three judges working together with a three-step procedure. First, all compound listings were broken into individual subtypes--e.g., the response "jewelry and gift store" was separated into "jewelry store" and "gift store." Second, all modifying terms were dropped to standardize the level of abstraction--e.g., the response "men's clothing store" was changed to the more general "clothing store." Finally, all redundant listings were summarized into single categories when two out of three judges agreed that the listings referred to the same category of local business--e.g., the listings "food stores," "grocery stores," and "supermarkets" were all collapsed into the general category "grocery stores." The above procedure netted the 52 subtypes used in Study 1 (see Table 1).

Coding Attributes Used in Studies 1 and 2

Respondents in both studies were asked to generate attributes for varying categories of retailing businesses. Their specific instructions were to list as many characteristics of a category of business that they could think of. The same coding scheme was used in both studies to collapse individual listings into more general attribute categories. First, each individual listing was printed on an index card. These cards were shuffled and presented independently to two judges. Each judge was asked to categorize the listings on the index cards such that listings with similar meanings were placed in the same category. The categories of one of the judges was randomly chosen as a reference standard, and the extent to which the other judge categorized attributes

into similar categories was noted. When the second judge matched two attribute listings that were not matched by the reference judge, this disagreement was noted. Most of the category judgments were straightforward, and the judges agreed on 88.7 percent and 88 percent of the listings in Studies 1 and 2 respectively. Any disagreements were then brought to the judges' attention, and they resolved the discrepancies through discussion. The frequencies of individual listings in each category were noted, and only those categories with listings by two or more respondents were included in any resulting attribute analysis. The two sets of attributes for Studies 1 and 2 are available from the authors upon request.

Table 1

Summary Statistics for Prototypicality, Family Resemblance, and Competitor Measure in Study 1

Subtype ^a	Prototypicality				Competition	
	Mean	Median	SD	FR	Mean	SD
Variety Store ^b	5.28	6.00	2.19	38	1.80	1.50
Poster Store	5.68	6.54	1.84	--	1.24	.67
Rental Store ^b	4.00	4.08	2.20	--	1.40	1.26
Health Club ^b	2.68	2.20	1.75	30	1.36	1.22
Home Repair ^b	2.88	2.20	2.03	39	1.40	1.32
Tax Shop ^b	2.56	1.46	2.06	43	1.36	1.32
Novelty Shop	5.48	6.13	1.92	--	1.32	.75
Restaurant ^b	4.24	4.67	2.33	54	1.56	1.56
Shoe Repair	3.48	3.58	1.94	--	1.04	.20
Clothing Store ^b	5.72	6.77	2.17	76	1.48	1.30
Mail/Package	3.20	3.00	1.85	--	1.00	.00
Auto Dealer	5.04	5.94	2.23	--	1.36	1.32
Audio/Video	5.80	6.29	1.61	--	1.12	.44
Movie Theater ^b	3.60	3.00	2.43	55	1.32	1.22
Art Supply ^b	5.64	6.61	2.06	50	1.80	1.66
Housewares	5.88	6.67	1.90	--	1.56	1.32
Food Catering	3.52	3.80	2.10	--	1.12	.44
Tavern/Bar	4.28	4.40	1.99	--	1.40	1.08
Fabrics	5.32	6.00	1.97	--	1.12	.33
Legal Service	3.08	3.00	2.16	--	1.12	.44
Auto Repair ^b	3.16	2.88	2.08	15	1.48	1.66
Department Store	5.88	6.72	1.86	--	1.96	1.51
Hospital	2.60	1.46	2.24	--	1.00	.00
Building Supply	4.56	5.00	2.24	--	1.28	1.21
Book Store ^b	6.28	6.77	1.65	43	1.60	1.35
Grocery	6.52	6.91	1.42	--	1.68	1.35
Gift Shop ^b	6.40	6.67	.96	47	1.76	1.45
Drug Store ^b	6.36	6.81	1.52	61	2.04	1.86
Cable T.V.	3.40	3.80	2.12	--	1.28	1.21
Sporting Goods	5.80	6.67	1.98	--	1.16	.47
Dry Cleaner	4.08	4.63	2.34	--	1.00	.00
Travel Agency ^b	3.60	3.63	1.96	37	1.24	1.20
Shoe Store ^b	5.96	6.67	1.81	58	1.28	1.21
Gas Station ^b	5.44	5.86	1.66	42	1.52	1.66
Film Development ^b	4.08	4.14	1.89	37	1.56	1.68
Hotel/Motel	3.48	2.67	2.31	--	1.00	.00
Hardware Store	5.72	6.72	2.15	--	1.52	1.08
Animal Grooming ^b	2.96	2.38	2.01	20	1.28	1.21
Record/Tape ^b	5.92	6.72	1.89	50	1.32	1.21
Hairdresser ^b	3.64	3.80	2.29	71	1.20	1.00
Real Estate	3.28	3.25	2.07	--	1.12	.60
Kennel ^b	2.64	1.46	2.08	36	1.40	1.41

Table 1 (cont'd.)

Subtype ^a	Prototypicality				Competition	
	Mean	Median	SD	FR	Mean	SD
Tanning Spa	3.32	3.00	2.17	--	1.52	1.50
Furniture	5.64	6.61	2.08	--	1.04	.20
Bank ^b	3.44	2.40	2.40	33	1.52	1.42
Optician ^b	4.64	4.86	.41	41	1.24	1.20
Card Shop	5.86	6.54	1.64	--	1.72	1.21
Jewelry Store ^b	6.16	6.61	1.36	72	1.60	1.44
Photocopy ^b	4.32	4.13	2.23	27	1.44	1.33
Janitorial	3.16	3.00	2.04	--	1.12	.60
Ice Cream ^b	5.08	6.00	2.25	6	1.32	1.25
Car Wash	3.20	2.38	2.20	--	1.16	.80

NOTE: Prototypicality and competition ratings are based upon 7-point scales, with higher numbers indicating greater prototypicality and perceived competition respectively. Family resemblance (FR) scores are explained in the text.

^aIn the actual study, an attempt was made to keep the subtype phrases as close in meaning to the original listings as possible. Also, an attempt was made to keep the phrases relatively comparable in length. In the interests of brevity, some of the subtype phrases in the table are not exactly identical to the wordings used in the study.

^bThese 25 categories were those from which Sample 2 respondents were drawn and for which attributes were generated. Family resemblance (FR) scores were computed only for these subtypes.

Table 2

Categorizations, Attributes, and Self Rating at Each Level of Taxonomy and "Other" Category (N = 29)

Variable	Level				Other
	1	2	3	4	
<u>Categorizations:</u>					
Self ^a	0 (.00)	6 (.20)	19 (.66)	2 (.07)	2 (.07)
Major Competitor ^b	0 (.00)	.31 (.46)	.79 (.48)	.07 (.36)	.37 (.66)
First Major Comp. ^a	0 (.00)	7 (.24)	19 (.66)	1 (.03)	2 (.07)
Second Competitor ^b	0 (.00)	.31 (1.17)	.72 (1.99)	0 (.00)	1.28 (1.26)
<u>Attributes:</u>					
Total per Category ^b	3.33 (1.50)	3.83 (1.33)	4.70 (2.17)	5.33 (2.44)	
Added per Category ^b	--	.50 (1.22)	2.10 (1.14)	2.29 (1.99)	
Percent Added/Total ^a	--	.12 (.31)	.44 (.11)	.41 (.26)	
Added and Different per Category ^b	--	.58 (1.16)	1.5 (1.17)	1.2 (1.44)	

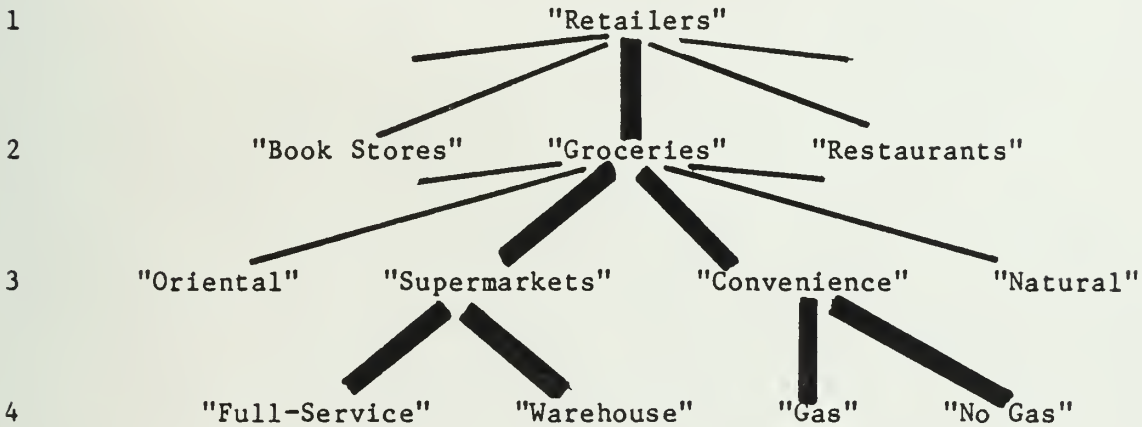
NOTE: Categorizations are based upon the entire sample of 29 respondents. Attributes are based upon the following: n's: L1(6), L2(6), L3(5), and L4(12)

^aEntries represent frequencies. Numbers in parentheses are percentage of total (N = 29) of sample.

^bEntries are means per person. Numbers in parentheses are SD's.

Figure 1

Taxonomic Structure Generated By Managerial Respondents



NOTE: At Level 2, a total of 52 subcategories of "retailers" were uncovered. Only three are shown. At Level 3, nine subcategories of "groceries" were uncovered. Only four are shown. The darkened portion of the taxonomy was the focal structure in Study 2.

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