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Market pioneers outsell later entrants in both consumer and industrial markets. Entry barriers arising from preemptive positioning and switching costs have been advanced to explain this market share difference, termed "pioneering advantage." However, empirical studies show that pioneering advantages are present even in mature markets in which brands reposition and switching costs are minimal. In these cases, the authors argue that pioneering advantage can arise from the process by which consumers learn about brands and form their preferences. This process can produce a preference structure that favors the pioneer, making it difficult for later entrants to "compete away" the pioneer's large market share, even if brands can reposition and switching costs are minimal.

Consumer Preference Formation and Pioneering Advantage

In many markets, leading brands outsell their rivals for years and sometimes decades. For example, Ivory Soap dominated its market in 1923 and continued to do so in 1983 (*Advertising Age* 1983). Market share differences are especially large for brands that entered early in the product life cycle, so-called "market pioneers" or "first-movers." Though many are not strictly the first entrant (e.g., Miller's Lite Beer was preceded 15 years earlier by Rheingold's Gablinger's) and many fail as Bowmar did in the calculator market, *surviving* early entrants or market pioneers appear to have significantly larger shares than *surviving* later entrants in both consumer and industrial markets (Robinson 1988; Robinson and Fornell 1985; Urban et al. 1986). This difference, termed "pioneering advantage," is well illustrated by Wrigley's chewing gum, which dominates its market more than *six decades* after its introduction.

This advantage is remarkable in many respects. It appears resistant to competitors' actions, surviving the introduction of new brands, innovation by existing rivals, price competition from generics or imports, and shifting consumer tastes. Wrigley's advantage, for instance, has withstood competitive attacks through product differentiation (e.g., Dentyne), innovation (e.g., Carefree), price competition from less-well-known brands, and shifting consumer tastes. This experience suggests that the mechanism producing pioneering advantage somehow slows the natural forces of competition, making it difficult for later entrants to "compete away" a pioneer's advantage.

Entry barriers arising from preemptive positioning and switching costs have been advanced as one explanation.[1] If brands locate in a product space, as discussed by Hotelling (1929), an early entrant can preempt later ones by adopting the "best" market position, leaving smaller or less attractive segments for others (e.g., Lane 1980; Prescott and Visscher 1977). If later entrants cannot reposition, they must offer "something extra" such as a bargain price to gain market share, which makes competition for them more costly, discouraging entry and keeping the pioneer's share large.

Switching costs created by uncertainty about later entrants' quality or user skills can have a similar impact on competition. Schmalensee (1982) shows that if trial

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[1]See Lieberman and Montgomery (1988) for an excellent review.

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is necessary to verify a brand's quality and the pioneer achieves a high rate of penetration, its product is less risky, forcing later entrants to cut price or offer some premium to compensate for risk and induce trial. So long as trial of later entrants remains low and their quality remains unknown, the pioneer will retain its high market share.

Brand-specific user skills also can create switching costs. If the product use requires a significant degree of brand-specific knowledge and if the pioneer achieves significant penetration, the resulting base of pioneer-specific knowledge will make trial of a later entrant costly. Stigler and Becker (1977) show that these user skills can create market share differences even if consumer tastes are identical and are fixed (see also Fornell, Robinson, and Wernerfelt 1985).

Empirical studies show that entry barriers are an important source of pioneering advantage (e.g., Robinson and Fornell 1985), but they also show that pioneering advantages are present in markets in which brands can reposition and switching costs are minimal. For example, Urban et al. (1986) show that Miller's Lite Beer retains its pioneering advantage, even though most consumers are aware of its major rivals (Budweiser and Schlitz), brands reposition, and user skills are unimportant. In cases like this, a pioneer's advantage must arise from something other than preemptive positioning or switching costs.

We argue that the process by which consumers learn about brands and form preferences for them has an important role in creating an advantage for pioneers in such cases. Our explanation has two components. First, in the early stages of many markets, consumers may know little about the importance of attributes or their ideal combination. For example, 100 years ago few people were likely to have strong opinions about how sweet or carbonated a cola should be. A successful early entrant can have a major *influence* on how attributes are valued and on the ideal attribute combination. Cola-Cola, for example, may have had a significant impact in its early years on the formation and evolution of individuals' preferences for colas. This influence can shift individuals' preferences to favor the pioneer over later entrants, leading to a market share advantage.

Second, we argue that this learning process can produce a competitive advantage apart from influencing the consumer's ideal combination of attributes: the pioneer can become strongly associated with the product category as a whole and, as a result, become the "standard" against which all later entrants are judged. Kleenex, Xerox, and Jello are obvious examples. Being strongly representative, the pioneer is *competitively distinct,* which makes competing away its high share difficult for later entrants, especially for low-priced copies or so-called "me-too" brands.

We develop this explanation, outlining the conditions under which it will operate, and deduce a set of testable hypotheses. We examine them for two novel product categories. In both cases, we experimentally construct

an emerging market, varying the order of brand entry across different experimental groups in addition to varying the types of competitors that subsequently enter. Analysis shows that preferences are influenced by the order of entry, as we predict. Moreover, the preference-formation process produces a preference structure that makes a pioneer's market share largely invulnerable to competitors even if switching costs are minimal and brands can reposition. This advantage arises independently of product characteristics and is due entirely to order of brand entry and the role of the pioneer in forming preferences for brands in the category.

Our analysis has important implications beyond explaining pioneering advantage. First, we propose and provide evidence that preferences are endogenous, evolving with the market as Kahneman and Snell (1988) and others suggest, in contrast to the widely held view that they are fixed (e.g., Stigler and Becker 1977). Among other things, the analysis suggests that *influencing* preferences, not simply *responding* to them, may be an important objective of marketing strategy. Second, we offer strategies for competing with market pioneers, including me-too strategies. Me-too strategies are generally thought to be ineffective; however, our analysis shows they can be effective under certain conditions.

We begin our discussion with an examination of the learning mechanism that produces a preference structure favoring a pioneer. Next, we explain how that structure leads to a competitive advantage for market pioneers. Our experiments then are described and the results reported. In the final sections we discuss the results and their implications, extensions of the theory, and associated future work.

BUYER LEARNING AND PREFERENCE FORMATION

We consider preference formation for multiattribute products and services. We limit our analysis to product categories for which the contribution of product attributes or features to overall brand value and the ideal attribute combination is ambiguous. For example, if one purchases a down quilt and receives from it a certain measure of value, the contribution of the percentage of goose down fill to that overall value is ambiguous. As a result, the ideal percentage of goose down fill also is ambiguous. Other examples include the flavoring of soft drinks, features of computer programs, and combinations of ingredients in vitamins. We exclude categories for which the value of attributes and their ideal combination is unambiguous.

Learning about novel products such as these presents a very difficult and complex problem for consumers. Knowledge about the category is initially minimal and consumers are exposed to products sequentially—first the pioneer and subsequently later entrants. As a result, consumer preferences are likely to evolve through time, updated through heuristic judgment processes (Kahneman and Snell 1988; Tversky and Kahneman 1974). We follow consumer learning about these products through

three stages. First, we consider the consumer prior to exposure to any brand in the category. Second, we examine the impact on buyer preferences of initial trials of the pioneer. Last, we consider the evaluation of multiple brands that typically enter after a pioneer (including both me-too brands and differentiated entrants).

In all three stages, we consider only *surviving* or so-called *successful* market pioneers and assume that their success is due in part to a high rate of market penetration. We do not consider how pioneers achieve this high rate of penetration, but instead examine how their success produces a competitive advantage over rivals.

Preferences Prior to Trial

Prior to trial, preferences may be "weakly formed" because the category is novel and buyers know little, if anything, about it. Even if buyers have objective information on brand attributes, the value of an individual attribute or the superiority of one attribute combination over another may not be obvious (cf. Howard 1989; Howard and Sheth 1969). Hence individuals may be largely indifferent between alternatives over some relevant range. In a spatial sense, the distribution of ideal points or vectors across consumers—the taste distribution—may be approximately uniform as shown in Figure 1, a two-dimensional market with roughly uniform distribution of ideal points (A) and the corresponding average ideal point (B). Attribute weights used to value brands also will be tentative.

Updated Preferences

Buyers update their preferences through trial. In the case of an emerging market, trial implies sampling the pioneering brand, perhaps repeatedly and for an appreciable period. For example, Cool Whip pioneered its market and 18 years elapsed between its introduction and the entry of a competing brand. However long, this period of single-brand use influences the preference structure for the type of products we consider.

Buyers sample the pioneering brand and, lacking information to the contrary, attribute a successful outcome to its attribute combination (Meyer 1987). In doing so, buyers may develop a naïve theory relating brand features to value, which advertising and repeat purchase reinforce (Hoch and Ha 1986; cf. Deighton 1984). Thus, buyers learn through trial how to value attribute combinations. Because their experience is limited to a single brand, however, they learn to value the pioneer's attribute combination and update their preferences accordingly.

In spatial terms, individuals shift their ideal points toward the pioneer's position to reflect their learning as shown in Figure 2. Both the taste distribution and average ideal point shift toward the pioneer's location. This shift occurs *independently* of the characteristics of the pioneer. With different characteristics, the taste distribution would shift in another direction, provided the value of brand attributes and the ideal attribute combinations are ambiguous. If both are well known to buyers, no shift will occur. Hence,

H₁: The consumer taste distribution shifts toward the pioneering brand's position, provided the value of attributes and the ideal attribute combination are ambiguous.

Attribute weights are updated by a similar process.[2] Originally they are somewhat tentative, but are influ-

Figure 1
HYPOTHETICAL PRIOR (A) TASTE DISTRIBUTION AND (B) CORRESPONDING PERCEPTUAL MAP WITH AVERAGE IDEAL POINT

Figure 2
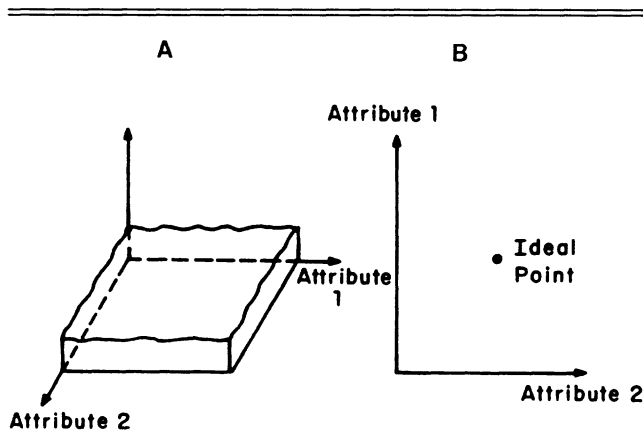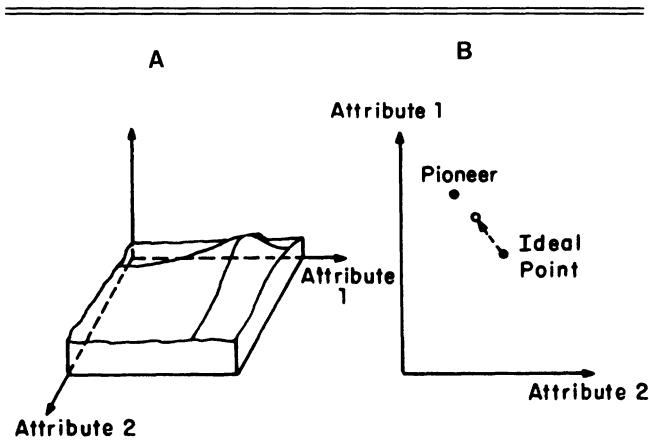### HYPOTHETICAL (A) TASTE DISTRIBUTION AND (B) PERCEPTUAL MAP UPDATED AFTER PIONEERING ENTRY

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[2]The distinction between attribute values and combinations or levels can be made as follows: let $v_{ij} = \beta_i |x_j - x_i^*| + \gamma_i |y_j - y_i^*|$ where v_{ij} is the value individual i attaches to brand j, (x_j, y_j) is the position of brand j in an x-y space, (x_i^*, y_i^*) is individual i's ideal point, and β_i and γ_i capture the value of being closer to the ideal point. Here, preferences are characterized by *both* ideal points (x_i^*, y_i^*) and attribute values (β_i, γ_i).

enced by the pioneer if no objectively superior weights exist. The pioneer defines the relative attribute importance in brand evaluation and choice. For example, in the market depicted in Figure 2, buyers may value attribute 1 highly because the pioneer is strong on that dimension, but may find attribute 2 less valuable. A brand strong on attribute 2 but weak on attribute 1 would be poorly rated. If the pioneer were in the bottom right of Figure 2B, the situation would be reversed. More formally,

H$_2$: Attribute weights shift toward the relative attribute strengths of the pioneer, provided the contribution of brand attributes and the ideal attribute combination are ambiguous.

This preference-learning process is well illustrated by the Chesebrough-Ponds experience in the petroleum jelly market. In 1880, Vaseline was introduced and advertised as a healing agent of unsurpassed purity. Sampling Vaseline, a translucent, highly pure gel, buyers learned that its attributes produced an effective wound preparation and, generalizing from this observation, inferred that the effectiveness of a petroleum jelly lies in its translucence and purity. Subsequent trials and advertising of course confirmed this conjecture. Thus, translucence came to be favored over opacity (H$_1$) and translucence as opposed to, say, thickness gained more importance in brand evaluation (H$_2$).

Recent studies of category learning lend further credence to this learning mechanism. A variety of organizing principles have been advanced as bases for generalizing consumer knowledge, including scripts, schemas, explicit rules, and categories (Alba and Hutchinson 1987; Marks and Olson 1981; Meyer 1986; Sujan 1985). Elio and Anderson (1984) examined order effects in learning of category structure. They found that category generalization and resulting category expectations are strongest when learning is based on a limited set of highly representative examples. Thus, expectations of subsequent category members reflect prior experiences. Learning from a single example such as a market pioneer represents an extreme version of this mechanism. Variation in repeated trials of the pioneer is zero, so by default the pioneer becomes highly representative and a good example of the category.

Though these results were obtained for perceptual judgments, Barsalou (1985) describes a similar mechanism for evaluative judgments. For goal-derived categories (groupings of products based on a common function like "diet foods"), he shows that the typicality of an item or its "goodness"—tantamount to an evaluation—increases with the number of times a person experiences the item as a member of that category and with the proximity of the item's attributes to category ideals (e.g., zero calories for diet foods). In an emerging product category, ideals are inferred by the consumer from experience with the pioneer. Thus the pioneer's attributes naturally are placed close to the category ideals.

Furthermore, frequency of experience with the pioneer will be greatest, by default (assuming high penetration), again increasing its goodness in the category. Together these two factors make the pioneer highly representative. In the extreme, they make it uniquely representative of the category, as when the pioneer is synonymous with the entire product class (e.g., Levi's, Kleenex, or Jello).[3]

PERCEPTUAL DISTINCTIVENESS AND COMPETITIVE ADVANTAGE

A pioneer typically is followed by the introduction of competing brands. Later entrants include me-too or copycat brands claiming to be just like the pioneer but less expensive and differentiated entrants offering significantly different attribute combinations. For example, Figure 3 shows our hypothetical market after the entry of three new competitors, a me-too brand and two differentiated entrants.

The learning mechanism we propose predicts a market share advantage for the pioneer over differentiated later entrants. Differentiated brands are less preferred because of a greater difference between their attribute combination and the ideal one, all else equal, and the inferred attribute weights favor the pioneer.

However, this mechanism raises a fundamental issue: later entrants appear to have an incentive to reposition

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[3] See Carpenter and Nakamoto (1987) for a more detailed discussion of the behavioral foundation for this learning mechanism.

Figure 3
HYPOTHETICAL PERCEPTUAL MAP AFTER MULTIPLE-BRAND ENTRY
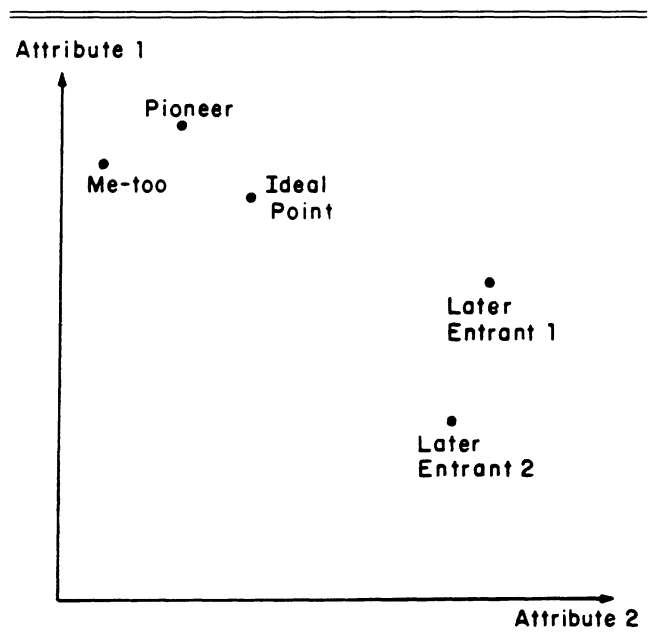
toward the pioneer, increase their market share, and compete away the pioneer's advantage. A similar incentive has been shown in models of spatial competition if price-cutting is limited. What discourages brands from doing so and protects the pioneer's advantage?

Prototypicality

In our framework, protection is provided by the prototypicality or distinctiveness of the pioneer. Consumers appear initially to organize product knowledge around prototypical examples, using them as cognitive referents (Medin and Schaffer 1978; Sujan 1985). The pioneer has a unique distinctiveness derived from its being representative of the category. Being perceptually distinct, the pioneer overshadows brands positioned nearby, especially me-too brands that often rely on the pioneer to establish their identity. Thus, me-too brands suffer in comparisons with the pioneer despite their proximity to the ideal point.

Moreover, as later entrants position closer to the pioneer, they become *less distinct* and the pioneer *more distinct,* increasing the relative perceptual prominence of the pioneer, provided ideal attribute combinations and weights are ambiguous and if price differences between brands are small in absolute terms (e.g., low-priced consumer products). If the ideal attribute combination can be determined objectively and prices are high, later entrants may well be able to overcome the distinctiveness of the pioneer (e.g., personal computers). Therefore, comparisons drawn with the pioneer invariably favor it, so long as ambiguity remains, and produce a market share advantage for it.

Differences in distinctiveness translate directly into market share differences. The more similar the pioneer and its me-too, the greater the relative advantage of the pioneer and, thus, the greater its advantages over the me-too. The more dissimilar the two brands, the smaller the pioneer's relative advantage and hence the more nearly equal their market shares. For example, in Figure 3, the advantage of the pioneer over its me-too brand will increase the closer the me-too brand is positioned to the pioneer. Hence,

> H₃: The market share of the pioneer in relation to its me-too increases with the perceived similarity between the two, provided individuals' attribute weights and ideal points are ambiguous.

Furthermore, price-cutting by me-too brands has little impact on the advantage of the pioneer. Being closer to the pioneer, the me-too brand is less distinct than the pioneer, so any price reduction has a smaller impact, all else equal, than a similar price reduction by a more differentiated rival. For example, in Figure 3 a 10% price cut by the me-too brand reduces the pioneer's share less than an equal price cut by either of the other later entrants. More formally,

> H₄: The impact of a competitor's price reduction on the pioneer's market share increases with the perceived differentiation of the competitor.

Pioneering brands, according to H₃ and H₄, have a perceptually based competitive advantage that insulates them from competitors and may actually *reverse* competitive forces. Attempts to cut price and reposition toward the pioneer—to "compete away" its high share—*increase* the pioneer's advantage. Hence me-too brands fail in part because they are overshadowed perceptually, not because of price competition as is often suggested (e.g., Lane 1980). Me-too brands are unable to generate sufficient market share to remain viable, even with a low-price strategy, if they are perceived as very similar to the pioneer. This situation puts intense pressure on the me-too brand to lower prices further to generate additional volume, but not on the pioneer, so price-cutting should be asymmetric with the me-too lowering price but not the pioneer. Federal Express is one example of this phenomenon; Purolator Courier has aggressively attacked Federal Express principally on price, yet has had difficulty building share while Federal Express' market share and price have remained relatively high (Carpenter 1987).

Overcoming Distinctiveness

H₃ and H₄ also suggest a strategy for me-too brands to overcome their principal competitive disadvantage—a lack of distinctiveness. A later entrant can diminish the impact of the pioneer's distinctiveness and increase its own by moving away from the pioneer. Doing so, it can establish or develop a new location as a desirable one, shifting at least a portion of the taste distribution toward its position and achieving a higher degree of relative prominence.

Consequently an effective strategy for a me-too brand is to copy a differentiated brand, not the pioneer. Positioning closer to a differentiated entrant helps develop recognition for the market segment and increases the relative prominence of both the distinctive entrant and its copycat. Furthermore, by decreasing the relative distinctiveness of the pioneer, this segmentation strategy increases the market shares of both differentiated brands at the pioneer's expense. The me-too brand in Figure 3 could reduce the pioneer's advantage by copying later entrant 1 or 2 rather than the pioneer. More formally,

> H₅: The market share advantage of the pioneer decreases as the similarity between the differentiated later entrant and its me-too increases, provided attribute weights and ideal combinations are ambiguous.

Summary

The preference-formation process produces a competitive advantage for pioneers in two ways. First, a pioneer *develops* the best position by shifting the taste distribution toward its position and by influencing the attribute weights buyers use to evaluate brands. Shifting preferences toward its own position generates a high share for the pioneer and a smaller share for later entrants. However, shifting the taste distribution and attribute weights

does not protect the pioneer's high share from competitors.

A second brand-specific effect does. Because the pioneer has a central role in category preference formation, the pioneer becomes prototypical of brands in the category. Prototypicality protects the pioneer's high share from competitors; attempts to position close to the pioneer and the ideal point and reduce price may, contrary to the prevailing view of competition, increase the pioneer's market share.

Neither component excludes a role in pioneering advantage for preemptive positioning or switching costs. Both superior position and significant switching costs may contribute to the advantage of the pioneer along with any impact of the pioneer on the evolution of preferences. However, the preference-formation process can produce a pioneering advantage, as we have argued, even if there are no superior positions, all brands are well known, and no user skills are necessary. Moreover, if we assume preferences are fixed and brands are undifferentiated, entry barrier explanations make no predictions about how entry will affect preferences or about how the perceived similarity of brands affects pioneering advantage.

EXPERIMENT 1

Our first experiment is an initial test of the mechanism we propose, designed to demonstrate its existence and examine features of its operation. We focus on an emerging market in which a pioneer enters first, followed by later entrants including copycat and differentiated brands. In this first experiment, we test H_1, H_3, and H_5.

Method

To test these hypotheses we experimentally constructed an emerging market. Six hypothetical variants of a computer software package purporting to identify potential sources of financial aid for students were designed. The brands differed on five dimensions—number of financial aid sources identified, difficulty of use, time required to run the program, amount of documentation, and price. The six brands are profiled in Table 1. Each brand was described in a paragraph ostensibly paraphrasing advertising copy, including claims justi-

fying the superiority of a brand's attribute combination. No brand-specific skills were developed.

The basic structure of the market defined by these brands is shown in Figure 4. Two brands, G and K, were used as market pioneers and are called "reference" brands. For each subject in the experiment, one of these brands was the pioneer and the other took the role of a distinctive follower. Brands P and W were (respectively) copycat brands to brands G and K, advertised as equivalent products at a lower price. These four are the brands of central interest.

Forty-eight MBA students participated in the experiment as a course requirement. Subjects first read a short description of the product's function, then a description of the pioneer. Half of the subjects saw brand G first and the other half saw brand K first.

At this point, the ambiguity of the ideal attribute combination was manipulated. After exposure to the pioneer, subjects were asked to imagine that they had purchased the product and had successfully obtained financial aid by using it. Half of the subjects then were asked to write a description of product characteristics that led to the successful outcome. This was the ambiguous condition, in which subjects inferred criteria for good product performance. The other subjects read an analysis, purportedly prepared by experts, specifying ideal attribute levels. This information made the me-too copy of the nonpioneer reference brand the optimum for all subjects. If brand G was the pioneer, the rule implied that brand W was the superior product; if brand K was the pioneer, brand P was superior. This manipulation constituted the objective ideal point condition. All four combinations of ideal point revelation and pioneering brand were included in a 2 × 2 factorial design with 12 subjects given each combination.
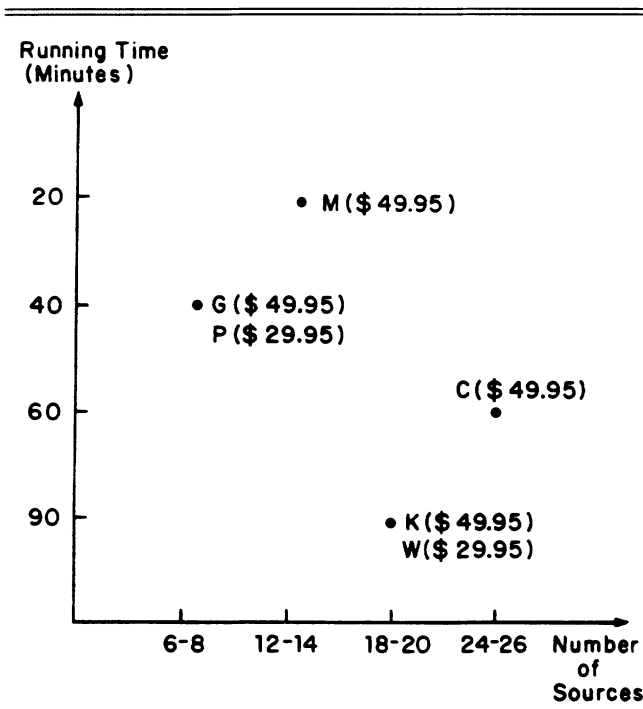
After the subjects had read or written brand evaluations, they were asked to imagine that they were considering buying the product again and were presented five new brands described as later entrants. Subjects then were asked to specify the ideal characteristics of the product on the five dimensions used to describe the product.

At this point, a one-hour delay was imposed during which subjects pursued an unrelated task. The purpose of the delay was to avoid short-term memory effects on

Table 1
BRAND PROFILES FOR EXPERIMENT 1

Brand	Number of sources identified	Required to run (min.)	Instruction manual (pages)	Technical difficulty	Price ($)
G	6–8	40	40	Moderate	49.95
P	6–8	40	40	Moderate	29.95
M	12–14	20	65	High	49.95
K	18–20	90	10	Low	49.95
W	18–20	90	10	Low	29.95
C	24–26	60	25	Moderate	49.95

Figure 4
PRODUCT-MARKET CONFIGURATION (FOR THREE OF FIVE ATTRIBUTES)

Running Time (Minutes)

20 — • M ($ 49.95)

40 — • G ($ 49.95)
      P ($ 29.95)

60 — C ($ 49.95) •

90 — • K ($ 49.95)
      W ($ 29.95)

6-8   12-14   18-20   24-26   Number of Sources

brand perceptions. After the delay, subjects were asked to indicate brand preferences and to rate the similarity of the brands. To rate preference, subjects allocated 100 points over the six brands to reflect their relative preferences, which we treat as a surrogate for market share. Finally, pairwise similarity ratings on an 11-point scale were collected for all 15 brand pairs.
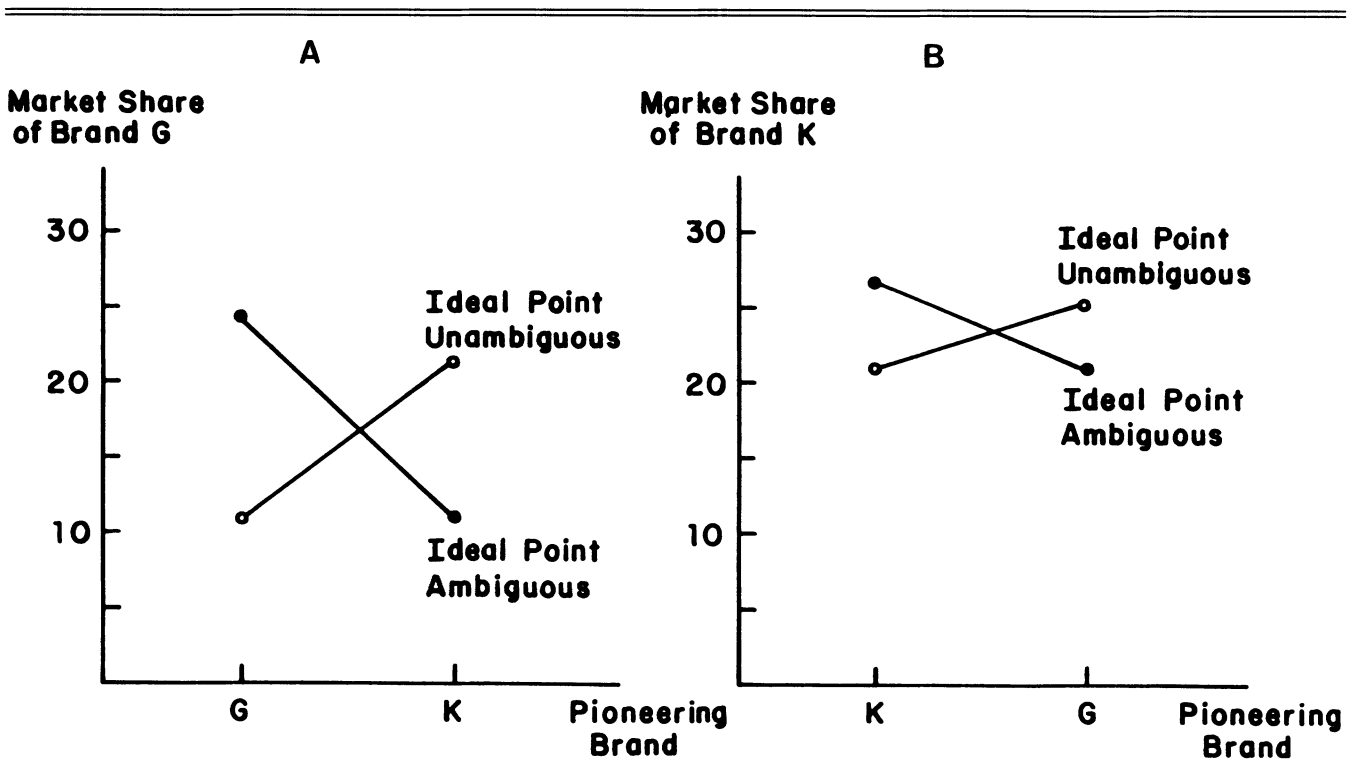
Results

We first examine overall preference shares of later entrants and pioneers and the prototypicality of pioneers as manipulation checks.

Pioneering advantage. Our analysis predicts that the pioneer will gain the largest preference share when the ideal point is ambiguous, regardless of its position. Mean preference shares for brands G and K, shown in Figure 5 for each cell, support this prediction. When brand G is the pioneer and the ideal point is ambiguous its share is roughly twice as large as brand K's, as shown in Figure 5A. When K is the pioneer the pattern is reversed; brand G receives a large share only when K is the pioneer and the ideal point is objective (in which case brand G's me-too, P, is specified as the ideal product), benefitting G. This situation gives rise to the observed interaction. A similar albeit weaker pattern is seen for brand K, as shown in Figure 5B.

To test the significance of these differences, we com-

Figure 5
PREFERENCE SHARES FOR BRAND G AND BRAND K

A

Market Share of Brand G

Ideal Point Unambiguous

Ideal Point Ambiguous

G   K   Pioneering Brand

B

Market Share of Brand K

Ideal Point Unambiguous

Ideal Point Ambiguous

K   G   Pioneering Brand

puted the difference in preference shares between brands G and K and submitted it to an analysis of variance with pioneering and the ideal point revelation as factors. The interaction is significant ($F_{1,44} = 6.88; p < .05$). Further, for the ambiguous ideal point cells, the difference should increase when G is the pioneer and decrease (becoming negative) when K is the pioneer. A one-sided t-test for this contrast is consistent with this prediction ($t_{44} = 1.91$; $p < .05$). Therefore, pioneering brands have a larger preference share, regardless of their characteristics, provided the ideal point is ambiguous.

Prototypicality. Our analysis predicts that the pioneer is perceived as more prototypical, which shields it in one sense from competitors and yields it a significant advantage in relative preference. This preference difference arises from a fundamental difference in the perceptual structure caused by pioneering. A brand should be perceived as more similar to others when it is the pioneer—more representative—but also it should dominate others—be more distinct.

To examine the prototypicality of pioneers, we use the *nearest neighbor* statistics developed by Schwarz and Tversky (1980) and Tversky and Hutchinson (1986). They propose two measures—*centrality* and *reciprocity*—based on similarity judgments and the concept of nearest neighbor to analyze perceptual structure. A brand's nearest neighbor is the brand to which it is perceived to be most similar. The centrality of a brand is the number of brands for which it is the nearest neighbor; a brand perceived as highly similar to more brands is more central. The reciprocity of a brand is the rank of that brand in the order of similarity of all brands to its nearest neighbor; a higher rank—greater relative similarity—indicates a more symmetric or reciprocal perception whereas a lower rank indicates an asymmetry in perception. For example, consider brand G in our hypothetical market. If pairwise similarity judgments indicate that G is most similar to P of all brands, then G is P's nearest neighbor. If G is the nearest neighbor of P only, then G's centrality is 1. Further, if for brand G, P ranks second in similarity relative to all others, then P's reciprocity is 2.

For our study, the centrality and reciprocity of a brand should vary systematically with pioneering. We expect pioneering to *increase* a brand's centrality. Being more prototypical, a brand should have more near neighbors when it is the pioneer than when it is not. Furthermore, we expect pioneering to *reduce* a brand's reciprocity. Because the pioneer is more prototypical, its nearest neighbor (its me-too) will be perceived as *more similar* than it would be if both were later entrants (cf. Tversky and Hutchinson 1986).

Analysis of these statistics shows a significant impact of pioneering in the ambiguous condition. Measures of centrality and reciprocity of the reference brands were computed for each subject and treated as repeated measures in an analysis of variance with pioneering and ideal point ambiguity as between-subjects factors. The interaction of pioneering and ideal point ambiguity is significant ($F_{1,44} = 4.45, p < .05$).

The pattern of nearest neighbor statistics for brands G and K is shown in Figure 6. For the ambiguous condition, mean centrality for brand G rises from 1.15 to 1.33 when it pioneers the market and brand K's mean centrality increases similarly from 1.52 to 1.68. Also, as predicted, mean reciprocity for each brand falls when it is the pioneer, from 1.47 to 1.06 for G and from 1.21 to 1.04 for K. This pattern of results is consistent with the prototypicality effect we hypothesize. Pioneering brands evidently are perceived as more central and the pioneer's me-too brand is perceived as relatively more similar than is the case when the same two brands enter the market later.

These analyses indicate that our manipulations produced (1) an advantage arising from the order of entry and (2) a difference in the perceived prototypicality of brands for the pioneering brand. Both effects are limited to the ambiguous condition. To test our hypotheses explicitly, we next examine the resulting patterns of preference in greater detail.

Ideal point shifts. H_1 predicts that the perceived ideal product will depend on whether brand G or K is seen first and on whether the ideal point is ambiguous. As a test we computed mean values for the ideal number of sources identified and ideal time required to run. Figure 7 shows the locations of brands G, P, K, and W and the four average ideal points for each subject group for a portion of the product space. Subscripts denote which brand entered first (G or K) and whether the ideal point was ambiguous (A) or unambiguous (U).

The pattern of ideal points is as we predict. If the ideal attribute combination is ambiguous, the ideal point shifts toward the position of the pioneer—whether it is G or K—as shown in Figure 7 by I_{GA} being closer to brand G and I_{KA} being closer to brand K. If the ideal attribute combination is unambiguous, the ideal point shifts toward the objectively superior brand (here, brand P if K was the pioneer and brand W if G was the pioneer) as shown in Figure 7 by I_{GU} being closer to brand K and I_{KU} being closer to brand G. Interestingly, not all buyers' ideal points shifted to the objectively superior one; some buyers continued to prefer the pioneer, even in the face of strongly contradictory evidence.

We analyzed the underlying data by computing the absolute difference between reported ideal values and those for brand G and brand K for three characteristics (number of sources, running time, and documentation length) which we denote D_{Gi} and D_{Ki} ($i = 1, 2, 3$ for the three characteristics). The difference between these values was computed (that is, $D_{Ki} - D_{Gi}$) and analyzed via MANOVA with pioneering and ideal point ambiguity as factors.

The pattern of results suggests that, when the ideal attribute combination is ambiguous, the ideal points shift toward the position of the pioneer as indicated in Figure 7. The only significant effect is an interaction between pioneering and ideal point ambiguity ($F_{3,41} = 4.87; p < .01$). The effect is eliminated if "optimal" attribute levels are revealed. In univariate analyses of the ambiguous

Figure 6
IMPACT OF PIONEERING ON BRAND CENTRALITY AND RECIPROCITY
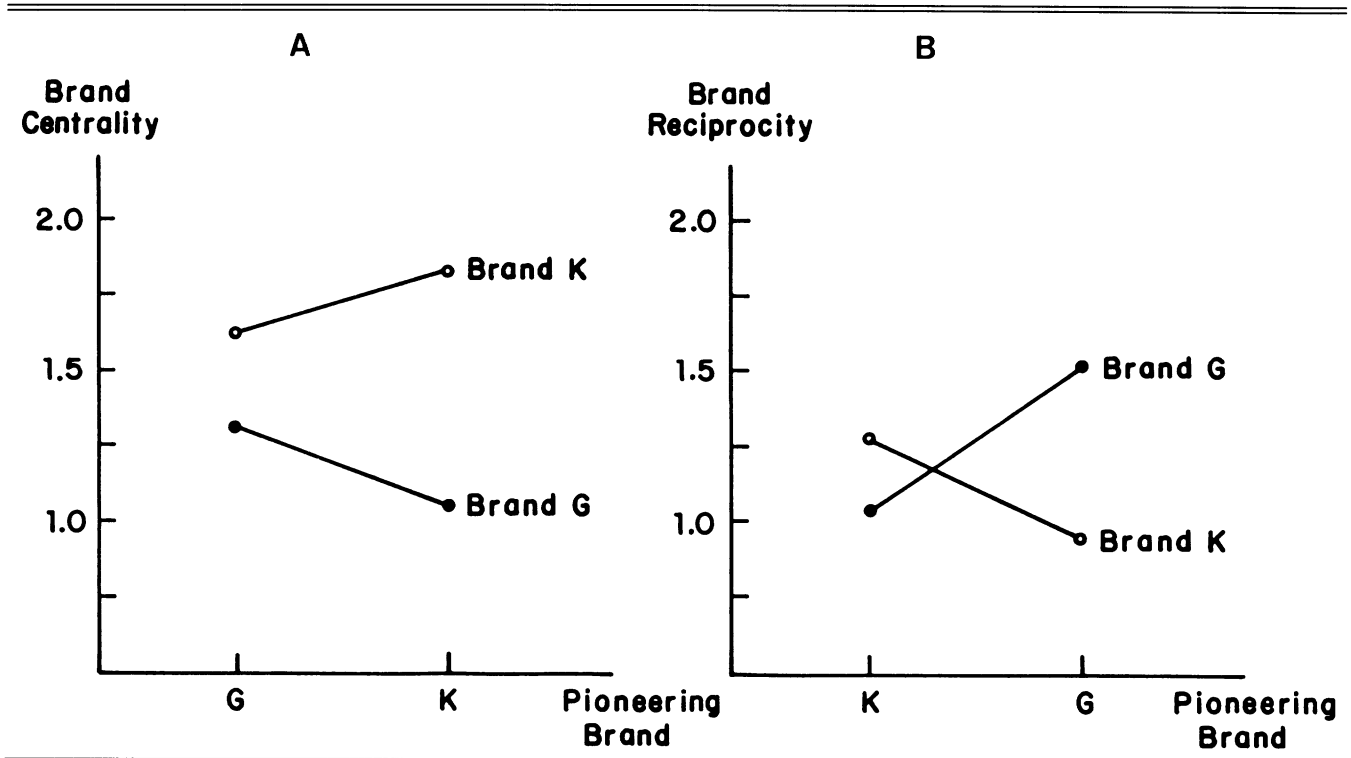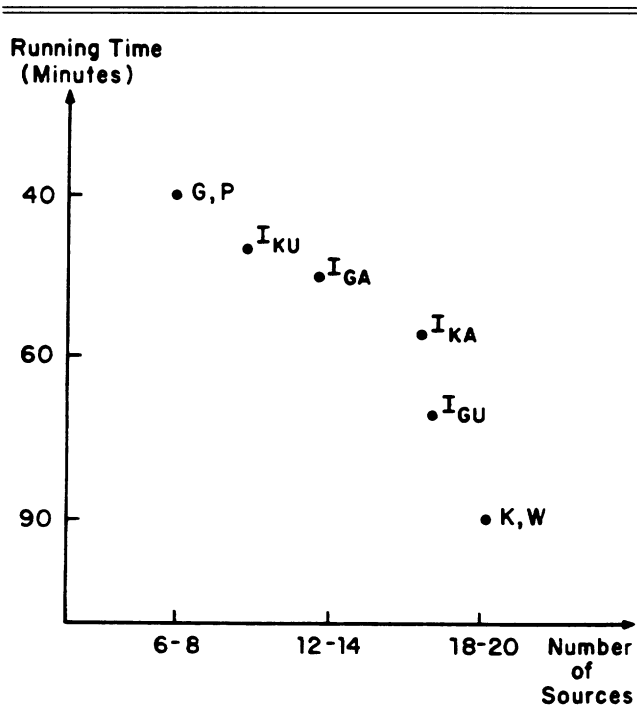

Figure 7
PERCEPTUAL MAP WITH IDEAL POINT POSITIONS BY EXPERIMENTAL CONDITION

cases alone these differences are not statistically reliable. However, that effect may be due in part to the fact that they were collected before the delay and the recency of exposure to later entrants may have weakened the pioneering effect.

These results suggest that, as in the case of preference shares, ideals tended to favor the pioneer regardless of the position it adopted. This situation occurs so long as the ideal attribute combination is ambiguous. Objective ideal point information appears to overwhelm experience. This finding suggests, contrary to models of preemptive positioning, that pioneers *develop* the best positions rather than simply preempting them. Moreover, preferences seems to be at least partly endogenous, rather than fixed as commonly assumed. Preference evolution appears to depend on the order of brand entry in the market.

Pioneer versus later entrants. We test H_3 and H_5, which make predictions about the preference share differences between the pioneers and later entrants, by first calculating the difference in preference shares between pioneers and me-too brands as share(G) − share(P) and share(K) − share(W). Terming this difference "relative advantage" and denoting it by $RA(G)$ and $RA(K)$, respectively, we model it as

$$(1) \quad RA(j) = \alpha_1 + \alpha_2 S(G,P) + \alpha_3 S(K,W) + \alpha_4 P_G$$
$$+ \alpha_5 P_G S(G,P) + \alpha_6 P_G S(K,W)$$

where:

$RA(j)$ = relative advantage of brand j = G or K,
$S(G,P)$ = the similarity of brands G and P,
$S(K,W)$ = the similarity of brands K and W, and
P_G = 1 if G is the pioneer.

H_3 and H_5 make predictions about the signs of coefficients in equation 1. When brand G is the pioneer, equation 1 is

$$RA(G) = (\alpha_1 + \alpha_4) + (\alpha_2 + \alpha_5) S(G,P) + (\alpha_3 + \alpha_6) S(K,W).$$

When the ideal point is ambiguous, H_3 and H_5 imply that brand G should gain relative advantage from pioneering $(\alpha_1 + \alpha_4 > 0)$, from greater similarity to brand P $(\alpha_2 + \alpha_5 > 0)$, and from greater dissimilarity between brands K and W $(\alpha_3 + \alpha_6 < 0)$. When brand K is the pioneer, equation 1 reduces to

$$RA(K) = \alpha_1 + \alpha_2 S(G,P) + \alpha_3 S(K,W).$$

When the ideal point is ambiguous, brand K should gain relative advantage from increasing dissimilarity between brands G and P $(\alpha_2 < 0)$ and from increasing similarity between brands K and W $(\alpha_3 > 0)$.

We estimate equation 1 for each condition separately. The results for the ambiguous condition are reported in Table 2. Overall the models predict well when the ideal point is subjective; R^2s range from .35 to .47. For brand G when the ideal point is subjective, these coefficients imply the following model.

$$RA(G) = 38.3 + 3.40 \, S(G,P) - 7.03 \, S(K,W),$$

which shows that increasing similarity between G and P increases brand G's relative advantage, as does greater dissimilarity between brands K and W. For brand K the implied model is

$$RA(K) = 14.6 - 6.51 \, S(G,P) + 1.83 \, S(K,W),$$

which demonstrates a similar pattern. The revelation of the ideal point eliminates these relationships. Pioneering

Table 2
REGRESSION MODEL RESULTS FOR RELATIVE ADVANTAGE AS A FUNCTION OF BRAND SIMILARITIES WHEN QUALITY IS SUBJECTIVE

Variable	Relative advantage	
	Brand G	Brand K
Constant	7.60	14.60
Similarity (G,P)	−.93	−6.51[a]
Similarity (K,W)	−.37	1.83
P_G	30.70[b]	−41.60[b]
$P_G \times$ similarity (G,P)	4.33[b]	9.54[c]
$P_G \times$ similarity (K,W)	−6.66[a]	−2.86

[a] $p < .05$.
[b] $p < .10$.
[c] $p < .01$.

and brand similarity are virtually useless for predicting relative advantage when the ideal point is objectively revealed; R^2s drop to under .10.

These results support H_3 and H_5. Prominence or prototypicality achieved through market pioneering appears to offer some shield against competitors, reducing their ability to "compete away" the pioneer's share. Establishing a differentiated location as a niche, however, does reduce the relative prominence of the pioneer and thus its relative advantage.

Discussion

The results of the first study are very suggestive. As hypothesized, preferences shift in favor of the pioneer but only when the ideal attribute combination is ambiguous, which is consistent with the buyer-learning mechanism we propose. On the basis of this preference shift, later entrants are perceived as less ideal. Therefore, order of entry affects the structure of consumer preferences for brands in the category, yielding pioneers a superior position and a substantially higher share of buyers' choices.

The finding that similarity between the nonpioneering reference brand and its me-too decreased the relative advantage of the pioneer (and also its overall share) is also suggestive. As the similarity of these brands increases, the perceptual mass at a location distinct from that of the pioneer increases. A natural consequence would be for the consumer to split the market into subcategories, one centered around the pioneer and the other formed around differentiated brands. In terms of conceptualizing pioneer advantages, this finding suggests that pioneer advantages are to some extent local, restricted to perceptual locations relatively "nearby." What is "nearby" depends on the concentration of brands in different areas. A greater concentration of brands at a differentiated location increases the likelihood that those brands will be subcategorized and the product space segmented in the mind of the consumer. Indeed, a common brand introduction strategy is to introduce a new attribute that distinguishes the new brand in an attempt to establish a new subcategory (e.g., toothpaste in a pump container, designer jeans, decaffeinated sugar-free colas).

These perceptual effects suggest that a later entrant's competitive advantage depends on developing a sufficient level of distinctiveness. Greater prominence and greater concentration at a differentiated position increase the ability of later entrants to compete with the pioneer. The problem for the pioneer's me-too brand is that it differs only in terms of price, which may not be a meaningful difference, particularly when adjusted for perceived quality. Instead, differentiating the product by offering a more significant advantage seems necessary, which is consistent with Bond and Lean's (1977) study of the prescription drug industry in which later entrants were able to overtake the pioneers by offering new benefits.

EXPERIMENT 2

The goal of experiment 2 is to provide a stronger test of the impact of learning on preference structure. In design, it is similar to experiment 1 in which order of brand entry is varied, but here preferences are measured explicitly via conjoint analysis to test H_2 and H_4.

Method

The procedure was similar to that in experiment 1. Subjects were exposed to one brand in a novel product class, down quilts. Told that they had purchased a product from the category and it had performed satisfactorily, subjects were asked to explain why and state whether or not they would purchase from the category again should the need arise. For two-thirds of the subjects, this step was followed by exposure to a second brand; the other subjects were exposed to no other products. Finally, all subjects were shown eight hypothetical brand profiles, all different from brands already used, and asked to rank them, which formed a full-profile conjoint task.

Four brands used in the experimental market differed in terms of four attributes: type of down fill (mature goose and duck or duck only), fill rating (a numerical indicator of warmth), type of quilt cover (cotton or synthetic), and price. Brand A was filled with mature goose and duck down; brand B was filled with goose down only. The cover of brand A was said to be cotton, whereas brand B's cover was synthetic but tightly stitched to prevent bunching of the fill. Both had fill ratings higher than 500 (good) and both were priced at $395. The other two brands, C and D, were me-too brands said to be the same as A and B respectively but priced at $335.

The pioneering brand was manipulated; subjects saw either A or B. We also manipulated the type of second entrant; subjects saw either the other distinctive brand, a me-too brand, or no second entrant. Hence we had a 2 × 3 factorial design with pioneering brand (A vs. B) and type of later entrant (differentiated brand, me-too, none). Fifty-five MBA students participated in the study for course credit.

For the conjoint tasks, eight unnamed brands were profiled in terms of the same four attributes. The only difference was that a specific fill rating (525 or 575) was included. Each attribute assumed two levels, giving 16 hypothetical brands. None of these was identical to brands A, B, C, and D unless the inferior fill level was associated with the distinctive brand or the superior level was associated with the me-too. The eight brands formed a one-half orthogonal fraction of the full set. Subjects ranked brands from 1 to 8, 1 being best, and were asked to be careful in ranking both poor and good brands.

Results

To assess the impact of learning on preferences, we first analyzed preferences for brands A and B as a function of attributes. Rankings for the eight hypothetical brands were regressed on dummy variables representing the four attributes for each subject separately, so regression parameters indicate the predicted change in rank resulting from a change in attributes.[4]

Pioneering advantage. The impact of pioneering can be deduced by analyzing how rankings vary with the pioneering variable. We calculated rankings for brands A and B for each subject, assuming a 525 fill rating. Predicted rankings by the type of market pioneer are shown in Figure 8. We see that the combination of the pioneer is always preferred to other combinations, regardless of which brand entered first.

To analyze the underlying data, we calculated the difference in rankings predicted between brands A and B and used it as a dependent variable in an ANOVA with pioneering and the type of second entrant as factors. The results show that pioneering is the *only* significant factor ($F_{1,49} = 20$; $p < .001$). When brand A is the pioneer, the predicted difference in rank is -1.75, indicating that brand A would have a lower or more preferred rank. When brand B is the pioneer, the difference is 1.57, indicating that brand B would be preferred. Therefore, the resulting preference structure produces a pioneering advantage.

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[4]Though the dependent variable here is ordinal, metric analyses of such data are robust, differing little from nonmetric analyses (Carmone, Green, and Jain 1978; Churchill 1987).

Figure 8
PREFERENCE RANKING BY EXPERIMENTAL CONDITION
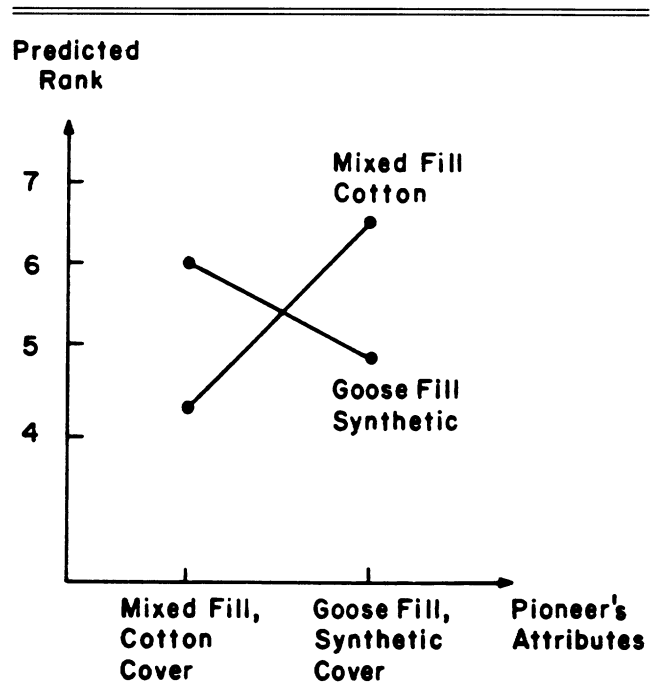
Attribute weights. We examined the impact of pioneering on attribute weights by analyzing differences in the attribute weights (regression coefficients) across individuals. The two pioneers differed on two dimensions, type of fill and cover. For these attributes, mean weight differences are consistent with H_2, showing a shift in favor of the pioneer. Figure 9 shows that for subjects who saw a pioneer with goose down fill only, changing to mixed fill lowers relative preference by 1.31. Similarly, for subjects whose pioneer had a cotton cover, changing to a synthetic cover increases the preference rank by 1.77, showing a drop in relative preferences.

The impact across all individuals was assessed by an ANOVA of regression parameters with pioneering and type of competition as factors. For these two attributes, the effect of pioneering is the *only* significant factor ($F_{1,49}$ = 8.12; $p < .01$ for fill and $F_{1,49} = 12.63; p < .001$ for cover). Therefore, for both attributes, changing levels away from the pioneer decreases preference, supporting H_2.

Pioneer versus later entrants. H_4 predicts that the impact of a competitor price cut will increase as the competitor becomes more differentiated. We tested that prediction by examining each individual's price coefficient and comparing across experimental groups. We predicted that price coefficients will be greatest (in absolute value) when the pioneer is followed by a differentiated entrant and smallest when the pioneer is followed by no other brand.

Differences in attribute weights for price are consis-

Figure 9
DECREASE IN PREFERENCE IN RESPONSE TO CHANGES IN ATTRIBUTES
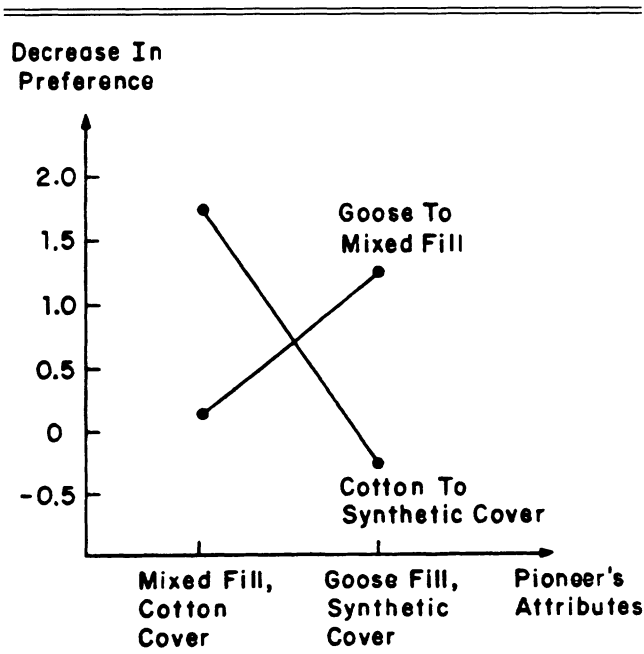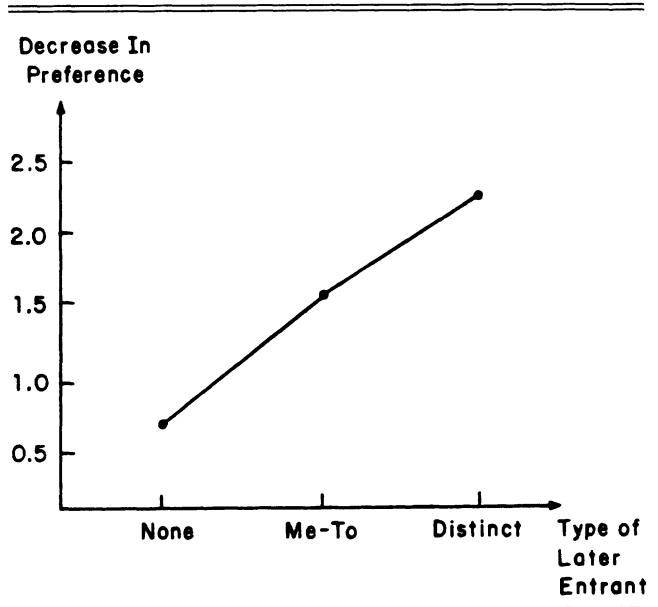

Figure 10
IMPACT OF PRICE CUT ON PREFERENCES FOR PIONEER

tent with this hypothesis, as shown in Figure 10. When no second entrant was introduced, a price cut produced an increase in preference of .667; when a me-too brand was introduced, preference increased 1.53; when a distinctive entrant was introduced, preference increased 2.23. These differences are significant, as demonstrated by analysis of variance ($F_{2,49}$ = .368; $p < .05$). Therefore, the impact of price grows with the differentiation of the second entrant, supporting H_4.

Discussion

In this experiment we focused on the impact of pioneering on the overall preference structure, rather than on the advantage of a specific brand. As predicted by our learning model, pioneering has a significant effect on preference structure. Derived attribute preferences favor attributes associated with the pioneer, whichever brand entered first. Thus, the pioneer strongly biases category preferences through prior exposure and successful outcomes.

This bias produces an advantage for the pioneer, provided penetration and trial are sufficient. Across both experimental groups, the pioneer is consistently the most preferred brand, yielding, in an actual market, the largest share. This finding is consistent with our initial results in experiment 1.

A differentiated competitor also has the strongest effect on the preference structure, as experiment 1 suggests. The more similar a me-too brand and a differentiated entrant, the lower the pioneer's share, suggesting that sufficient "mass" elsewhere in the market could segment it and thus affect the pioneer. In our second experiment, the type of second entrant had a similar effect

on the price sensitivity of the pioneer. The pioneer became increasingly price sensitive as the second entrant became increasingly differentiated. This finding suggests that more diverse competition (i.e., greater dissimilarity among brands) should produce more price competition.

Moreover, it suggests that price is least effective at stealing share from the pioneer for a me-too brand and most effective for a differentiated entrant. Cross-price elasticities, influenced by the perceptual prominence of the pioneer, therefore may vary *inversely* with interbrand distances. The implication is that me-too brands fail not *because* of price-cutting as some analysts argue (e.g., Lane 1980), but because price-cutting is *ineffective* for closely positioned brands.

IMPLICATIONS AND EXTENSIONS

Our theory suggests that pioneering advantage arises in part because of the impact of early, successful entry on the preferences of buyers. The pioneer frames perceptions of the category and profoundly influences the formation of preferences when attribute weights and the ideal attribute combination are ambiguous. The pioneer shifts the preference distribution toward its own position and becomes prototypical of the category. The result is a superior position for the pioneer and a degree of insulation from similarly positioned brands. Our two experiments provide some insight into the operation of that mechanism.

Implications

One important implication of our analysis is that pioneering advantage depends in part on perceptual prominence. Achieving perceptual prominence may provide two advantages to the pioneer. First, it may insulate the pioneer from brands that attempt to copy its position; closer to the pioneer, rivals lose sales. Second, prominence may reduce the impact of competitors' prices on the pioneer's market share. Pioneers appear *least* sensitive to prices of competitors that are *most* similar to them, which suggests an inverse relationship between cross-price elasticities and distance between brands.

This finding implies that me-too strategies are unlikely to succeed if attribute weights and the ideal attribute combination are ambiguous. Positioned close to the pioneer, me-too brands are overshadowed by the pioneer and the pioneer is least price sensitive. Therefore, me-too strategies are ineffective because they position a brand in the least advantageous location and rely on the least powerful competitive weapon—price. However, segmenting the market, copying a differentiated entrant rather than the pioneer, appears to be an effective late entry strategy. It enables both late entrants to develop a degree of prominence, reduce their own price sensitivity, and increase the price sensitivity of the pioneer.[5]

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[5]See Carpenter (1987) for a more detailed discussion of the managerial implications of this and other mechanisms for producing pioneering advantage.

More generally, our theory suggests that evolution of competition in a market and the fortunes of any one brand depend critically on the timing of entry and the actions taken once entered. The structure of preferences that prevails in mature markets may depend on the order of brand entry and the success of the brands. Many preference structures are possible, depending on the order of brand entry. As a result, the success of a brand may depend critically on the sequence of entries—who enters prior and subsequent to its introduction. This view is a substantial departure from the traditional view in which successful brands cater closely to buyer wants and in which brand entry leaves preferences unaffected.

Limitations, Speculations, and Future Work

The primary goal of the studies reported here was to test the plausibility of our theory. The limitations of our laboratory setting are obvious and our conclusions must be, to a certain extent, speculative. Nevertheless, they argue strongly for the importance of consumer-based mechanisms in explaining pioneering advantage.

In addition, our conclusions suggest areas for future investigation. First, pioneering advantages appear to be persistent, lasting in the case of Wrigley's for more than six decades. One possible explanation is that buyer preferences, once developed, can be viewed as a product schema (Bettman 1986), which can be difficult to alter and persistent over time, even when evidence supporting it is shown to be inaccurate or false (Fiske and Taylor 1984). Such a phenomenon is exemplified by the continued success of Coke Classic, even though a majority of consumers prefer "new" Coke in blind taste tests. Exploring the persistence of these schemas as one explanation for the persistence of pioneering advantages would be fruitful.

Second, in many categories dominant brands like Crest in the toothpaste market appear to have many of the advantages of pioneers, chiefly perceptual prominence. Examining how these advantages arise and showing similarities to the pioneering case would be interesting and important work.

Third, developing a theory of pioneering advantage suggests another important extension—a theory of overtaking pioneering brands. How, and under what conditions, can pioneers be overtaken? The conventional thinking seems to be that later entrants must differentiate, offer "something extra." Exactly how one does so is unclear. Future research should focus on the requirements for successful differentiation strategies.

Fourth, our analysis suggests an important new dimension to marketing strategy—achieving a competitive advantage by *influencing* consumer tastes rather than *responding* to them. It implies a process of competition that differs markedly from the traditional one in which a better mousetrap displaces the poorer one. Instead, competition may center on a battle over poorly formed preferences and perceptions, with the winner receiving a potentially valuable asset—a favorable preference structure. The implications of such a process are far-

reaching and await much closer investigation of the role of the mechanism described here in the more complex process driving market behavior.

CONCLUSION

We propose an explanation for pioneering advantage by examining the role of learning in the formation of preferences. We suggest that pioneering advantage, under certain conditions, depends importantly on biases in buyers' preferences arising from the preference-formation process. When the contribution of attributes and the ideal combinations are ambiguous and penetration is sufficient, trial of the pioneer has an important role in the formation of preferences for *all* brands. All are compared with the pioneer, the ideal brand is perceived as close to it, and the pioneer is perceived as prototypical—representative yet competitively distinct. In this situation the pioneer occupies a favorable perceptual position that is difficult to imitate and costly to compete against, yielding a powerful competitive advantage.

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