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Consumers' perceptions of micro-retail location: wayfinding and cognitive mapping in planned and organic shopping environments

Gordon R. Foxall and Paul M. W. Hackett

Abstract

In order to increase understanding of consumers' awareness of the relative positions of attractor versus specialist stores, studies are reported of their abilities to locate selected stores in two distinctive retail environments: a traditional, 'organic' high street shopping district and a modern, 'planned' out-of-town shopping centre. Three methods of assessing consumers' micro-retail locational perceptions and behaviour were employed: a wayfinding walk, a wayfinding commentary and a cognitive mapping exercise. Consumers' perceptions of microretail location corresponded only partially to the principles of shopping centre design. Respondents were differentially aware of primary and secondary attractor stores, as compared with specialists, in the planned shopping centre environment, but they were more aware of stores located at nodal and other prominent positions, regardless of their function, in the traditional high street environment.

Keywords

Micro-retail location, retail complexity, consumer behaviour, shopping centre design, cognitive maps, high street

Introduction

The essence of the out-of-town shopping centre is its having been deliberately designed, in contrast to the city centre shopping district which, by comparison, usually shows signs of having evolved organically. Describing

the first as planned, the second as unplanned, overstates this difference but it is useful to call attention to the overall approach to design generally accorded new, suburban shopping centres as opposed to the necessarily more piecemeal design of urban shopping districts (Davies 1978; Jones 1989). One aspect of such planning involves comprehension of consumers' shopping behaviour at the micro-retail level, i.e. within the shopping area. Not only is this under-researched (Brown 1987), but the assumed patterns of consumer mobility and motivation on which micro-retail design depends rely more on hearsay and casual observation than systematic investigation. This paper outlines the principles on which micro-retail design is accomplished and the presumptions it makes with respect to consumer behaviour. It then reports the findings of studies of consumers' perceptions of and wayfinding abilities in two complex retail environments – a new outof-town shopping centre and a high street shopping district in a traditional city – which raise questions for the understanding of how consumers mentally construe and achieve mobility within such contexts.

Micro-retail design and consumer behaviour

The fundamental principle of micro-retail design is evident from the structure of the earliest post-war shopping centre developments in the United States to the most sophisticated recent examples found on every continent. It is the juxtapositioning of 'anchor' stores, which attract buyers routinely and frequently, with specialist shops whose customers are believed to buy often on impulse, so that people are encouraged to notice and use the latter en route to or from the former (Beddington 1982; Darlow 1972; Johnson 1987; Sim and Way 1989). At its simplest, this takes the form of a single mall, along which smaller tenants are positioned, at each end of which is a variety or department store (Gardner and Sheppard 1989). These larger, magnet or attractor stores need not be placed in the most accessible spots, for large numbers of consumers can be expected to seek them out in order to make indispensable purchases (e.g. of foodstuffs) or to compare merchandise with that on offer in similar stores elsewhere (Michell 1986; Scott 1989). The attraction of suitable anchor tenants to shopping centres at their inauguration and their subsequent retention have therefore become central concerns of retail centre management. The so-called 'low impulse' trades they represent include not only department stores but, of increasing significance, large, high-quality food supermarkets (Davies 1976; Davies and Rogers 1984; Dawson 1980, 1983; Dawson and Lord 1985).

At the other end of the spectrum, so-called 'high impulse' trades, which depend heavily on a continuous throughput of potential consumers, and which thus benefit from being located in prominent positions such as a long malls and near the entrances to shopping centres, include jewellers, craft shops, clothes stores, photographic equipment specialists and florists. An intermediate group, 'secondary attractors', bring large numbers of potential customers into contact with the specialist stores: they provide services that facilitate customer behaviour in one-stop retail developments, and they also employ large numbers of staff who make local purchases during breaks and on their way home. Banks and fast-food outlets obviously come into this category because of the essential consumer services they make available; other stores, such as pharmacies, that offer important non-impulse purchases also belong here, as do office buildings; and, perhaps less evidently, so do large bookshops and travel agencies which offer a change of pace and increase the overall variety of goods considered on a lengthy shopping trip.

This basic principle of design carries the implication that consumers' behaviour is susceptible to the 'cumulative attractiveness' of a variety of stores, and that the tenant mix of shopping centres should be actively managed to promote an optimum level of compatibility among the retailers (Nelson 1958). However, while the widespread advocacy of a planned arrangement of anchor and specialist stores is consistent with commonsense logic, evidence for it relies for the most part on casual observation and anecdote rather than a volume of dependable, systematic knowledge. Although groupings of potentially compatible retailers are frequently encountered, their propinguity may derive from the strictures of local planning regulations rather than their functional interdependence (e.g. Davies 1984). Evidence that consumers actually proceed from one type of store to another does not, of itself, establish that they thereby engage actively in comparative evaluations of merchandise, make more rational or more impulsive purchases, buy more or spend more. Moreover, even painstaking tracking of customer mobility has relied on observational methods which lack convincing monitoring and recording techniques or on the retrospective self-reports of consumers (Brown 1987).

Although the patterns of consumers' mobility and motivation assumed by the principles of micro-retail design and tenant mix management are supported by common-sense logic and limited observation, systematic evidence for the underlying proposition that consumers perceive complex retail environments in ways compatible with the theory has not been produced. What evidence there is comes mainly from consultants' reports and retailers' informal accounts of their locational experience and aspirations rather than in the form of the reliable, theoretically derived results of replicated research. An informative exception is the survey evidence presented by Brown (1987) for retailers' perceptions of micro-retail location and their beliefs about its implications for customer behaviour and trade. This confirms a tripartite classification of stores: the anchors that generate trade by providing opportunities for comparison of merchandise and perceptible value-for-money (variety and department stores and, increasingly, large-scale grocery retailers); secondary generators, notably service organizations that act as catalysts to general purchasing (banks, restaurants,

fast-food cafés, estate agents, travel firms, etc.); and the specialists that provide personal products and services (opticians, clothiers, gift shops, etc.).

The respondents to Brown's survey confirmed the pre-eminent position of the first category, the magnet stores on which the attraction of business in general crucially depends. They drew special attention to the generative effect on trade of the secondary attractors whose impact was deemed to be strong and growing. In addition, the respondents claimed there was a tendency towards intra-trade consumer behaviour – going from one clothier to another, one food store to another, and so on. Inter-trade linkages were also believed to be important: despite the belief that shopping for convenience goods occurs independently of that for comparison goods, the implication of the survey is that these modes of consumer behaviour coexist as routine purchasing gives an opportunity to gather information on a continuous basis about infrequently purchased durable products (cf. Wilkie and Dickson 1991). Finally, the culmination of their beliefs and aspirations, the surveyed retailers expressed consistent preferences for being located close to food stores, department stores, variety stores, restaurants, banks and their own direct competitors.

Although these results are derived from a city-centre shopping location, Belfast, which presents atypical circumstances for consumers, they have been described in some detail on account of their consistency with several assumptions underlying the revealed principles of micro-retail design. Their significance lies in their annunciation of belief in inter-store compatibility, tenant mix optimization and the resulting cumulative attraction by individuals directly involved in the outcomes of micro-retail design. However, this study, like others, is necessarily limited by its dependence upon self-reports, perceptions and impressions that may not be accurate and reliable and which cannot be consistently linked to objective measures of inter-store sales synergy. To expect this would be to go beyond the scope and purpose of the investigation; nevertheless, the assumptions about consumer behaviour on which these beliefs stand are no more surely established than before.

A research perspective

There is a need for a broader, systematic examination of the nature of consumer mobility and buying patterns in complex retail settings. As many authors concede, the principles of micro-retail design rest more on anecdote, casual observation and the beliefs of retailers than on scientific research. Reliable evidence is especially lacking that would substantiate the widespread belief in a synergistic interaction resulting from consumers' opportunities to visit a variety of stores located in close proximity, in terms of either higher sales for the retailers or a more satisfying range of purchases for the consumer. This is not to overlook the obvious convenience for consumers of one-stop shopping or to assert in the absence of evidence that

the patterns of behaviour assumed by micro-retail locational designers, retailers and retailing academics are necessarily inaccurate. But it is necessary to point out the relatively flimsy evidence upon which many prevalent beliefs rest and to question whether there exists an achievable optimal tenant mix that will generate higher spending than would otherwise occur.

Micro-retail theory appears to rest on simplistic notions of consumer behaviour and its cognitive and perceptual determinants and a failure to consider alternative, equally plausible patterns of movement and store choice. The designation 'impulse trades', for instance, is misleading since it invites neglect of the fact that many, if not all, of the corresponding purchases would have been made, perhaps at some other time and place: at most it is the 'here and now' of such purchases that can be influenced by the proximity of the shops in question. There is no evidence that consumers who currently need the services of opticians, clothiers and gift shops will not assiduously seek them out (though, admittedly, there will usually be far fewer such customers than those who can be expected to find supermarkets and department/variety stores) or that organic purchases made at these and other specialist shops while the customer is en route to or from anchor stores are additional to their spending on the items the latter retail.

One of the reasons for the lack of evidence for this theory is the methodological difficulty of conducting sound empirical research in so complicated an area of human behaviour. It is possible, however, to take straightforward measures of the relative ease with which consumers are able to find their way around planned vs. organic shopping areas and of the elements of micro-retail design most frequently and accurately perceived by consumers. The results of such comparatively simple investigations, while not answering all the difficulties mentioned above, should establish whether the hierarchy of primary and secondary attractors and specialist stores assumed by the locational literature is reflected in consumers' cognitive perspective of shopping centres and other retail developments. Such measures would include the practical accuracy of consumers' wayfinding in traditional and modern complex retail environments, and of their attempts to pinpoint the location of specified stores, primary and secondary attractors and specialist stores and specialist stores, on an outline map of the retail area.

Cognitive mapping

The traditional high street and the modern shopping centre pose different problems of complexity. The shopping centre, containing pathways of similar design and colouring, may provide consumers with fewer definitive cues as to their current location; yet the organically developed shopping district can be rambling and illogical. The multi-level layout of many shopping centres may make wayfinding through three dimensions problematic,

but organic shopping districts contain multi-storey shops arranged along pathways of differing gradients. Cognitive mapping, by monitoring the ways in which people process and apply information about the physical environment, presents a method by which the effects of these complex retail environments on consumer wayfinding might be compared (Canter 1977; Chase and Chi 1981; Downs and Stea 1977; Evans 1980; Golledge 1987; Kaplan and Kaplan 1982; Lynch 1960; Moore 1979; Saarinen 1976; Stea 1974). Cognitive mapping by consumers has been the subject of several studies in which cognitive distance, among other variables, has been identified as determinative of consumers' store selection (Cadwallader 1975, 1981; Golledge and Rushton 1976; Mackay, Olshavsky and Sentell 1975; Sommer and Aitkens 1982).

Cognitive mapping can contribute specifically to the present debate by establishing the extent to which a planned shopping centre is legible to consumers, i.e. to which it is easily cognitively organized. Five separate components of legibility have been distinguished (Lynch 1960): *paths* (routes along which people travel), *edges* (non-travelled lines such as cliffs and the boundaries of rivers or oceans), *districts* (medium-sized city areas identified by residents as having a specific character), *nodes* (well-known points travelled to and from, often important junctions of paths at crossroads or squares) and *landmarks* (features which are easily seen and memorable due to their large size or, if small, their uniqueness).

Research questions and design

The research was intended to answer two particular questions. First, is consumer wayfinding more successful in the modern, suburban planned shopping centre or the organic, traditional high street shopping district? And, second, what features of the retail environment comprise the cognitive maps used by consumers as they navigate these shopping areas: the functionally defined attractor and specialist stores or stores which, regardless of their function, are prominent for their being positioned at nodes or because they constitute or are near landmarks or boundaries?

Three empirical investigations are described below. First, a 'wayfinding walk' was undertaken in which consumers in both a planned and an organic shopping environment demonstrated their ability to walk without deviation to a randomly selected, named store. Second, consumers were asked, again in each retail context, to give a 'wayfinding commentary' by verbally describing the most economical route from their current position to a named store. Finally, consumers in each location were asked to pinpoint the map location of several designated stores including those which would, according to the literature reviewed above, be classified as primary attractors, secondary attractors and specialists.

The last exercise was based on three lines of reasoning derived from

micro-retail location theory. First, if department and variety stores and supermarkets indeed act as anchors, magnets or attractors, their positions within shopping environments should be accurately identified by consumers with the highest frequency of all the three types of store. Their indispensability to the consumer, arising from the opportunities for comparative evaluation they offer, the value-for-money they provide and their having been purposefully sought out despite their non-prime locations should make them the most memorable stores. Second, the specialist stores, which are multiply represented by competing outlets in most complex shopping environments and which, according to revealed micro-retail design principles, rely on consumers' visits to other stores rather than their own individuality and uniqueness of identity, should be the least memorable in terms of location and, therefore, the least accurately pinpointed. Third, between these extremes, the secondary attractors should stand out as memorable and capable of being positioned on a map with greater accuracy than specialist stores but less accuracy than variety and department stores and supermarkets.

Method

Locations

The design principles discussed above have been most frequently applied in planned out-of-town/suburban shopping centres. Consumers' perceptions of the micro-location of retail outlets might, however, differ in organic, traditional high street shopping districts from their perceptions of retail micro-location in these planned environments. The research therefore provides a comparison of both types of shopping environment. Of the locations investigated, the retail shopping centre represents a relatively new building development in Britain, often involving an extended built environment on more than one level, while the high street shop setting represents a traditional retail location in which the entrances to stores at least are found universally at ground level. While the selected examples are both of rather small dimension (approximately 1 sq. km.), they are geographically complex physical areas in terms both of the changes in direction which routes around them make necessary and the relative spacing between places and features.

The urban shopping district location chosen was at Worcester, a traditional city in the English Midlands. The city is over a thousand years old and contains several features within and adjacent to the centre which were constructed several hundred years ago – a cathedral, parish churches, shops, public houses, etc. The shopping area comprises an asymmetrical network of pedestrian streets. A number of alleys and smaller streets run between the major thoroughfares. Several newer shop units and shopping squares complement the historical development. Parts of the suburban shopping

centre chosen for this study, Merry Hill in the Black Country, which was constructed in the 1980s, have been open for over five years while adjacent areas are still under development (Brown 1990). The building consission of a series of asymmetrically linking corridors, none of which constitutes the 'main' corridor; nor does any of the intersections provide the centre's focal point. Stores are of varying sizes and are sited on both storeys; some of the larger stores occupy positions on both levels, one above the other. Within this layout, containing interchanges and corridors which appear very similar to each other, it is comparatively easy to become disorientated.

Procedure

The research was conducted during the months of March and April when neither venue would attract a disproportionate number of tourists. Two researchers/interviewers, one male and one female, undertook the empirical investigations, for twelve days in a period of two weeks (including Saturdays but not Sundays). All periods of the day, during shop opening hours, were covered by the survey, which employed starting points selected randomly throughout the shopping areas. Higher response rates were apparent at the shopping centre where it was easier to approach customers and to find convenient locations in which to conduct the interviews. Separate samples were recruited for each of the three studies so that experience of the shopping area engendered by one study did not contaminate another. Respondents in the wayfinding walk and the following commentary studies were asked to locate only one store, compared with up to twenty-four, potentially, in the mapping study, because the very nature of the exercise would encourage them to place mentally the additional stores used as cues, which would have contaminated further attempts at locating units.

Wayfinding walk This study was undertaken in order to investigate further wayfinding abilities of consumers within retail settings. Potential respondents were approached at points peripheral to the mapping area and asked to walk with the interviewer to specified shops. The shops, all chosen by the researchers, were selected in pseudo-random fashion from the official maps of the shopping areas. The selection involved shops which were not visible to the respondents at the starting point and which required subjects to make a change in direction. In addition, within the shopping centre, target stores were nominated which required subjects to make changes between floor levels.

Members of the resulting opportunity samples of twenty-four respondents in the high street and forty in the shopping centre were asked to take the shortest route of which they were aware to the specified target shop. If a respondent stated that they were unable to walk to the named store, this was noted and a second (third or fourth as necessary) was nominated. Subjects were accompanied on their task by an interviewer who walked slightly behind the subject in order not to cue the direction taken. The route taken was recorded by the interviewer on a map of the shopping district.

Wayfinding commentary This study investigated respondents' ability to describe verbally the location of specified high street/shopping centre stores and their preferred route to each. The methodology was similar to that used for the wayfinding walk with the exception that, instead of being asked to walk with the interviewer to the nominated target, respondents were required to describe the shortest route to the target. Thirty-five consumers participated in the high street study, fifty-two in the shopping centre. Target shops were chosen as in the preceding study; once again, none was visible from the starting point and the location of each required changes in both direction and level. Additional stores were nominated when the subject reported being unable to describe the route to the first named. The route described by the respondent was recorded by the interviewer on a map visible only to him/herself.

Objective mapping Maps were prepared showing, respectively, the city centre shopping district with all its retail units and pathways, each store individually numbered, and the upper and lower malls of the shopping centre, again detailing each of the retail units, each of which was identified only by a number; neither of the maps, shown in Figures 1 and 2 omitting non-target stores, contained other information which would be useful in locating stores.

The approach chosen to assess cognitive mapping abilities within the high street shopping district required consumers to identify a series of specified shops on the prepared map of the location (Figure 1). Twenty-four shops were then chosen from the 264 recorded on an official map of the city to include attractor, secondary attractor and specialist stores. The identities and locations of these organizations listed on an official map of the city as trading out of each of the chosen units were confirmed. A similar procedure was followed in the case of the shopping centre: twenty-four shop units were selected from the 177 shown on the official map of the centre; the identity of the selected stores was again checked (Figure 2).

The target stores were dispersed over the area of the city's central shopping district and throughout the two-storey shopping centre. In both cases, the selected retail units included stores classified broadly on the basis of the research reviewed above as anchor stores, secondary attractors and specialists. Although some prior research has identified food supermarkets as secondary attractors, their importance as anchor locations is evident from the work of Brown (1987) and these retail outlets were, therefore, included in the anchor category. As far as possible, similar assortments of stores were selected for the two locations to facilitate comparisons; however, where the



Figure 1 Worcester: the high street shopping district

retail mix of one or other centre contained a unique tenant (such as the tourist information centre at Worcester), this was included.

Three anchor stores were chosen in Worcester city centre: a supermarket (Sainsbury's) and two rather different department/variety stores (Littlewoods and W. H. Smith). The retail mix at the Merry Hill shopping centre

necessitated a rather different selection of anchor stores: two supermarkets (Asda and Sainsbury's) and a variety store (W. H. Smith). The W. H. Smith stores were chosen to reflect the role of the upper and lower malls at Merry Hill and the twin outlets, one door apart, at Worcester. Five secondary attractors were chosen in the high street shopping district: the tourist information centre, a public utility (the Midland Electricity Board showroom), a travel agent (Lunn Poly), a café-bar and the National Westminster Bank. Only three secondary attractors were included at Merry Hill: the Midland Bank, the Post Office and a public utility (the British Gas showroom). No café was included in the latter selection of target stores since at Merry Hill most cafés and restaurants are located in a single wing of the upper mall;





respondent confusion might have contaminated the results of selecting one of these at random. Finally, a range of specialist stores was included at each location (detailed in Tables 2 and 3), selected as far as possible to be comparable.

Respondents were shoppers approached by one of the two researchers within the city and asked to participate. Each respondent was shown the map and the list of shops and asked to supply a unit number from the map for each of twenty-four selected stores. In the high street, fifty-seven consumers so recruited into an opportunity sample completed the procedure. At no time were members of the sample provided with the names of roads, churches or other physical features present on the map; nor were verbal assistance, criticism or reinforcement provided. The interviews were conducted in locations from which none of the target stores was visible. The research design adopted in the shopping centre was identical to that used in the high street location in order to facilitate comparison of the results: each of 123 respondents participated in the location of the twenty-four target shops on a prepared map.

Results

Wayfinding walk

Of the twenty-four high street subjects, sixteen (67 per cent) were able to walk to the nominated shop, seven could not walk towards a nominated store, and one could not complete the exercise. Three of the successful high street subjects made mistakes of direction, minor deviations in each case. In performing this task in the shopping centre, thirty-two (80 per cent) of the forty respondents were able to walk directly to a nominated shop, although this was sometimes not the first named. The routes required changes in horizontal and vertical direction. Moreover, all of these respondents took what was the most direct route to the store in question.

Wayfinding commentary

Of the thirty-five subjects who participated in the high street study, twenty (57 per cent) produced a perfect performance. Fifteen shops were unknown to subjects, these being their first, second or third nominated shop. Five errors were made by three subjects all of whom went on to fail to complete their commentary; all of these errors were misjudgements about the appropriate junction at which to make turns. In the shopping centre, forty (77 per cent) of the fifty-two subjects completed the direction commentary to their specified target shop without mistake. Of the ten errors committed six were in the horizontal plane and four involved a choice of the incorrect floor.

Objective mapping

In the high street location, the number of shops correctly identified and perfectly positioned on the map was 6.61 (standard deviation = 4.25). For the shopping centre, the mean number of correctly identified stores was 4.45 (sd = 3.79). The difference betwen the mean numbers of stores identified with total accuracy in the two studies is significant: t = 3.55 (p < .002, two-tailed test).

Table 1 summarizes the results of the three studies. The frequencies with which the target stores were correctly identified are shown in Tables 2 and 3. The patterns of consumers' perceptions apparent from these tables support the revealed principles of micro-retail location in only a general way; although a broad hierarchy can be identified, there are several important anomalies. In the high street shopping district at Worcester, the outlet which was most often correctly identified was an anchor store, the Sainsbury supermarket, but the other anchor stores are ranked sixth (W. H. Smith, which has two almost adjacent shopfronts) and eighth (Littlewoods department store). The tourist information office, a secondary attractor, holds the third position. Several specialist shops intervene among these: HMV (records), Paplows (jewellers) and Wallis (women's fashions), Elts (shoes) and Sharpes (bedrooms). A significant anomaly from the micro-retail design perspective is the appearance of two secondary attractors at the sixteenth and seventeenth positions in Table 2: the Conservatory café-bar and the National Westminster Bank. Finally, the last seven places in the list are occupied by specialist stores, most of which have rather small frequencies of correct location indicating their need of strong attractor stores to draw consumers to them.

The eleven high street stores most frequently correctly identified have in common that they occupy nodal positions: they include three secondary attractors and five specialist shops, all shops prominently placed at

	High street shopping district	Out-of-town shopping centre
Wayfinding walk	·····	
Number of respondents making accurate location ¹	16 (67%)	32 (80%)
Wayfinding commentary		
accurate location ¹	20 (57%)	40 (77%)
Mean number of accurate locations ²	6.61 (4.25)	4.45 (3.79)

Table 1 Summary of results

¹ Percentage shown in brackets

² Standard deviations shown in brackets

Store	Map identification number	percentage correct
Sainsbury (supermarket)	2	77
HMV (records)	20	58
Tourist Information	25	54
Paplows (jewellers)	14	53
Wallis (clothes)	8	49
W.H. Smith (variety)	3, 4	42
Elts (shoes)	11	37
Littlewoods (departmental)	1	36
MEB (electricity board showroom)	24	33
Sharpes (bedrooms)	18	33
Lunn Poly (travel agent)	23	28
SPCK (bookshop)	15	23
Country Casuals (clothes)	6	21
Sportsco	22	17
Gemmas Craft Shop	13	16
Conservatory Café-Bar	17	16
National Westminster Bank	21	12
Curtess (shoes)	12	9
Eveland Express (optician)	16	9
Zebra Fashions	5	5
Foxy Lady (clothes)	7	5
Foster (menswear)	9	5
Austin Reed (menswear)	10	5
Our Price (records)	18	0

 Table 2 Proportion of respondents accurately locating each store in high street mapping exercise

intersections of streets, one large supermarket positioned at the end of a long walkway, a large department store and a two-fronted variety store. The single most frequently identified building, the largest supermarket within the city centre, was also a landmark. The store ranked at number twelve in Table 2, the specialist SPCK Bookshop, is positioned near a prominent landmark, a statue of Sir Edward Elgar. Those target units which were least often correctly identified were positioned midway along the pathways; since they did not constitute important points of reference, their locations were presumably less firmly fixed within consumers' perceptual frames and they were thus most often misplaced.

In the shopping centre at Merry Hill, anchor stores occupy three of the top four rankings in terms of frequency of accurate identification (Table 3): these are the Asda and Sainsbury supermarkets and the W. H. Smith variety store which is located on two levels of the centre. Intervening among them in second place is the Laura Ashley (clothes, fabrics and furnishings) store which occupies a particularly prominent nodal position. The three secondary attractors occupy the seventh, eighth and eleventh placings: Midland Bank, British Gas and the Post Office. However, several specialist shops intervene among the anchors and secondary attractors: in addition to Laura Ashley,

these are Barratt's (shoes), Burton (menswear), Wallis (women's fashions) and Sharpes (bedrooms). In this instance, these 'anomalous' stores, with the exception of Laura Ashley, do not appear to be placed so obviously at nodes or close to landmarks. The last thirteen positions in Table 3 are all occupied by specialist stores.

While Barratt's (shoes) and the Post Office, which appear relatively high in the ranking shown in Table 3, are located at nodes, several other shops which appear at nodal locations were only infrequently located: these are Special Eyes (opticians), Watchbox (jewellery) and Woolworths Music and Video.

Discussion

Performances in both the wayfinding walks and commentaries were considerably better within the shopping centre location than the high street. Moreover, judged by the proportion of respondents providing correct answers, location-finding performance was more accurate in the wayfinding

Store	Map identification number	Percentage correct
Asda (supermarket)	1	66
Laura Ashley (clothes, fabrics, furnishings)	17	57
Sainsbury (supermarket)	2	47
W.H. Smith (variety)	3, 4	29
Barratt (shoes)	11	24
Burton (menswear)	9	19
Midland Bank	21	18
British Gas	24	15
Wallis (clothes)	8	13
Sharpes (bedrooms)	18	13
Post Office	25	13
Woolworths Music and Video	20	13
Watchbox (jewellers)	14	12
Torq (jewellers)	13	11
Our Price (records)	19	11
Country Casuals (clothes)	6	7
First Sight (opticians)	15	7
Astral Sport	22	7
Olympus Sport	23	7
Bodyline/Flirtz (clothes)	5	6
Cecil Gee (clothes)	10	6
Olivers (shoes)	12	4
Special Eves (opticians)	16	2
Ondine (clothes)	7	0

 Table 3 Proportion of respondents accurately locating each store in shopping centre mapping exercise

walk condition, regardless of location, than in the commentary condition. In both of these exercises, consumers' ability to locate stores selected by the interviewer puts the relatively poor performances of consumers in the mapping study into context. It appears that respondents were employing different cognitive skills or processes in the more abstract mapping exercise from the more active procedures used in the later studies. The sequencing of landmarks is an important ability in the wayfinding task (Cousins et al. 1983; Waller 1986) and subjects were apparently well able to accomplish this task. The results indicate that walking through the location, and even just imagining doing so, more readily accessed the sequential nature of environmental features than did the more basic shop location recall attempts requiring recall of the spatial positioning of stores which are experienced in a three-dimensional space and their representation on a two-dimensional map. Moreover, while in the mapping study high street respondents produced better results than those in the shopping centre this was reversed in the two later studies.

In the organic context of the high street shopping district, consumers' accuracy in locating target stores appears to rest on their occupying nodal or landmark positions or being found adjacent to landmarks. However, the relatively low levels of accurate identification recorded for the National Westminster bank and Conservatory café-bar, both of which were located close to the Sainsbury's supermarket, suggests that primary attractors may have little drawing power for secondary attractors which exercise this role, if at all, in their own right. This is not entirely overridden in the case of the shopping centre location, as witness the importance of the Laura Ashley and Barratt positions, but there is rather more emphasis on the functional import of the stores accurately identified with greater frequency. They are in less need of being sited at nodes; being so sited appears to have no consistent influence over consumers' locational accuracy. Nor were the best identified stores in the shopping centre those centrally positioned or on the lower mall which has more entrances than the upper and to which the bus terminus is directly linked.

Consumers appear to be employing different approaches to cognitive mapping in the two environments and, we would presume on the basis of the wayfinding exercises, to be influenced in their movements around the respective shopping areas by different factors. In the high street shopping district, respondents identified shops positioned around nodes, and close to landmarks, some of which were large attractor stores such as a supermarket. In the out-of-town shopping centre, while again using supermarkets as landmarks, they did not identify shops around nodal positions more frequently than other shops; their perceptual behaviour, as manifested in their cognitive mapping and wayfinding abilities, suggests that their consumer behaviour was more in line with that predictable from the principles of shopping centre design. Moreover, the recognition of secondary attractors, service organizations such as banks and travel agencies, was consistent with shopping centre design principles in the out-of-town shopping centre but not in the shopping district of the traditional city.

It is, perhaps, understandable that, in the context of the planned shopping centre, consumer behaviour appears more sensitive to the physical features that would result from the implementation of micro-retail design principles and would remember the positions of attractor and secondary attractor stores on the whole better than those of specialist stores. It is also understandable that in the relatively organic context of the high street shopping district, they would be guided to a greater extent by both retail and non-retail physical features of the environment and that prominence of positioning at these places may be of greater importance to retailers than the propinquity of anchor stores. The results, therefore, lead us to question the assumption that consumer behaviour is necessarily influenced by the attractor/specialist store relationship attempted in modern shopping centres. The evidence that we have presented indicates that traditional, relatively organic shopping district layouts also permit consumers to perceive clearly the stores they require and to navigate among them effectively, though apparently using alternative landmarks to those on which contemporary retail planning is founded.

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