CONSIDERATIONS IN THE DESIGN
OF A SHOPPING CENTER

by
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The subject of the thesis is the traditional parameters of shopping center design and suggestion for alternatives to the current building form which are based on existing shopping areas. The working assumption is that shopping centers are here to stay, but their built form can be greatly improved by informed and interested architects. Therefore, a number of alternative patterns to change the general ambience of shopping centers from sterile to stimulating are proposed.
The thesis is organized in the following manner: a handbook of rules delineating the traditional ground rules of shopping center design; a test case using the handbook to generate a design based on a developer's site and program, and a discussion of possible new patterns to be incorporated into future design efforts, supplemented with examples of existing situations to illustrate the written materials.

Thesis Supervisor: Edward Allen
Title: Professor of Architecture.
I would like to take this opportunity to thank Professor Edward Allen, without whose support, direction, and advice, this thesis never would have been possible.
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INTRODUCTION

Shopping centers share with each other negative as well as positive characteristics. Although convenient, they lack vitality and variety. Not only generally boring, they are often sterile, much like the pre-packaged foods sold in the supermarkets they house. Traditionally, shopping is the act of exchanging money for goods, but the shopping experience is much more than that. Shopping is being seduced into parting with money for goods—whether for necessities or luxuries—being tempted by a combination of sights, sounds, and smells appealing to all the senses. Shopping is adventure and excitement, manifested in the search for the appropriate goods. Shopping is gambling, hoping your delight with the merchandise will be equal or greater than the money paid for it. Shopping is also conflict through actual bargaining, or in today's context, bargain hunting.

Good shopping areas are those which allow for the fullest shopping experience to occur. They are characterized by narrow streets or pedestrian paths, variations in the form and texture along those pedestrian paths, thereby allowing for the intangibles of shopping to exist: competition for the consumer's business, and an atmosphere where all the senses are involved and excited.

The trend in new shopping centers, by contrast, has been to opt for another kind of shopping experience...an experience which lulls the senses rather than stimulates, an experience which excludes the possibility of competition between stores in one shopping center, an experience which values a static, placid atmosphere devoid of change.
For my thesis, I will propose a number of alternative patterns which I believe could change the general ambience of shopping centers from sterile to stimulating.

This project began as an exploration of the traditional rules of building a shopping center. After consulting reference materials, I spoke with a developer who wanted to build a small shopping center on a site in Woburn, Massachusetts. I then wrote the traditional rules into a handbook a student would find helpful, using this site, developer, and proposed program for a shopping center as a test case. The design which was generated by these inputs was adequate but boring. Shopping itself can be an exciting and stimulating activity, yet my shopping center was mundane and shared the same negative characteristics with many other shopping centers I had surveyed. I felt that there must be an alternative.

To find an alternative, I studied local shopping areas. As a shopper, I much preferred other shopping places to traditional shopping centers and began to document what made an exciting shopping area. In generating alternative patterns for how shopping centers could operate, physically as well as functionally, I chose three Boston in-town shopping areas—Harvard Square, Newbury Street, and the North End—two suburban shopping centers—Burlington Mall and Chestnut Hill Mall, as examples, and extracted from them what I found exciting which could pertain to the design of a shopping center.

My thesis is organized in the following manner: The handbook of rules delineates the traditional ground rules of shopping center design. The design generated serves as a test case for the material presented in the handbook. Next there is a discussion of possible new patterns to be incorporated into
future design efforts, supplemented with examples of existing situations to illustrate the written material.
Shopping centers are currently designed according to a well-understood and conventionalized set of rules. These rules are explained in this chapter by means of principles and examples. There are five major categories of rules:

1) **Site Selection**, which deals with the factors relevant to the site which may determine the success or failure of the center.

2) **Financing**— The architect must have knowledge of how the building will be paid for, and therefore what he must provide to obtain financing and maintain the terms of the financing.

3) **Marketing**— The architect should also understand how his space will be sold and therefore what determines a salable space.

4) **Program**— Every program will depend upon the specific situation to be met.

5) **Building**— This heading deals with the problems of the building itself.
HANDBOOK OF CONSIDERATIONS IN THE DESIGN OF A SHOPPING CENTER

I. Site Selection
   A. Location
      1. Accessibility
      2. Feasibility of Market--Competition
      3. Visibility
   B. Land Acquisition and Cost
   C. Zoning
   D. Building Codes
   E. Soil Conditions
   F. Utilities

II. Financing
   A. Kinds of Financing
   B. Types of Leases

III. Marketing
   A. Competition--Trade Area
   B. Tenant Selection

IV. Program

V. Building
   A. Foundation Conditions
   B. Structural System
   C. Store Sizes
   D. Other Sizes and Distances
I. Site Selection
   A. Location
      1. Accessibility.

   The site should be accessible to the main roads in the area. A traffic study should be consulted for existing patterns, travel times to establish a radius which will delineate a feasible trade area, and to estimate the future effect the shopping center will have.

   It should be possible to turn off the highways or main road directly onto the site. "Easy access means free-flowing traffic to reach the site."¹ Left turns require specially constructed lanes for easy entrance and exit. Cars should move in and out of the center without creating a bottleneck. "Congestion at entrances or back-ups on a major traffic route can be fatal to a center."²

   After existing patterns are analyzed, it may be necessary to improve the critical roads. The question then becomes who will bear the cost—the local authorities or the developer?

   The entrance to and exit from a shopping center must be at least 100'-150' from the corner of a street intersection. A site which is accessible only from a ramp at a cloverleaf grade separation for two intersecting highways is not good because it is complicated.

¹Urban Land Institute, Community Builders Handbook, p. 254.
²Ibid., p. 255.
and confusing. This means that persons unfamiliar with the access to a center will take a wrong turn. "If there is a choice available, the site for a regional center should be selected where it has access from a radial highway leading to the city and from a circumferential highway that taps the urbanized residential periphery of the metropolitan area."  

**Example**

The proposed site fronts on Route 128 in Woburn, Massachusetts. The site is bounded by:
1) Route 128 on the north
2) an existing development of a Ramada Inn and a four-movie Showcase Theater on the east
3) Ellen Road and Lowell Street, two residential streets, on the west
4) another lot unsuitable for future development because it is zoned as a conservation area.

The access road to the site is about 1000' past the Ramada Inn and the Theater, opening onto Route 38. Route 38 is the main street of the towns of Woburn, Winchester, and Wilmington, and it is a cross street at a Route 128 exit. Unlike many major streets (local roads) it is mainly zoned residential which means traffic flows easily. Access to Lowell Street was denied because Lowell Street is zoned residential. The on-site traffic situation must take the form of a cul-de-sac arrangement because there is only one access.

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3Ibid., p. 256.
During a conversation on 4 March 1974 I asked the developer his attitude toward access. He responded he is not happy with the present situation because he feels the project needs a more direct route. He has been before the Woburn Town Council to apply for access from Lowell Street and the Council has refused. He feels they will go ahead once they see how it will benefit them after the shopping center is built. He is also asking for a permit for overflow parking.
I. Site Selection
   A. Location

       **PRINCIPLE**

       An economist or marketing firm should be retained to investigate the potential of the area. The market analysis is used to discover economic facts about the sales volume potential of the location. It is used to show how a project will fit a market and in negotiations for financing and for tenants. The analysis should include:4

       1) a study of the trade area for the shopping center. A study of the area's population changes, especially with regard to growth. An analysis of the area's basic employment and economy.

       2) the disposable income in amounts or percentages after standard deductions have been taken.

       3) the purchasing power for primary, secondary, and remote trade areas, considering the disposable income potential after taxes, housing costs, insurance, savings, and transportation costs have been estimated.

       4) competition- discount for composite pull of other competing installations.

       5) accessibility- an analysis of access of present and future highway patterns, traffic counts, and street capacities, as well as travel times. Parking index.

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4Applebaum, William, Shopping Center Strategy, p. 27.
6) analysis for the center by type of store and volume of business, recommended size and quality of store, as well as rental income through minimum guarantees and percentage leases, estimated per annum volume of business, taxes, insurance, depreciation, and operational expenses.\(^5\)

From the market analysis, the defined area from which people will drive to commercial facilities should be determined. Within that area, a number of other factors may affect the project, such as other trade facilities, man-made or natural barriers, poor road maintenance, etc. Studies have shown that for a community or local shopping center (not a regional) people are unwilling to travel more than seven to ten minutes, with a maximum of fifteen.\(^6\) According to Gruen, "... simultaneous studies by the developer, economist, and architect are essential from the outset of any project. It is not possible to arrive at a reliable economic analysis (which must be based on the considerations of the trade area) unless the economist has at his disposal certain information concerning planning and design concepts and the projected tenancy of a center."\(^7\)

**Example**

The question for this site is as Route 128 becomes the main street of Boston, can it support another shopping center?

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\(^5\)Urban Land Institute, p. 251.


\(^7\)Ibid., p. 32-33.
There are different types of shopping centers with different services and different needs.

1) a regional shopping center has a range and depth of goods comparable to a central business district including general merchandise, apparel, home furnishings, a variety of services, and perhaps even recreational facilities. One or more department stores are the principal tenants of the regional center. Each full-time department store has a gross leasable area of about 500,000 square feet. A middle range of regional shopping centers has a gross leasable area of 361,000 to 776,000 square feet.

2) a community shopping center provides convenience goods like apparel and furniture. The center may also include banking, professional services, and recreational facilities. A junior department store or variety store is the principal tenant. The middle range of gross leasable area is 122,000 to 200,000 square feet.

3) the neighborhood center meets the daily needs of the community. These are convenience goods like food, drugs, hardware, and personal services. A supermarket is the main tenant. The middle range of gross leasable area is 36,000 to 70,000.

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9 Ibid., p. 59/3.

10 Ibid., p. 59/3.
20 March 1974. I asked the developer why he felt a shopping center could exist here. The Burlington Mall, a regional shopping center (developed by Joseph Meyerhoff, 1968, consisting of a tract size of 3,615,480 square feet, and gross floor area of 922,300 square feet with 6,000 parking spaces) was in the next town, on Route 3A, they are building 400,000 square feet of commercial space, and a Zayre's is across 128. The developer said he had spoken with his friend, Frank Crowley, of Stop and Shop, a retailer with a good reputation, to see if he felt the site was feasible. Mr. Crowley said that Woburn Town Center was dying and turning outwards; there was no supermarket between Woburn Center and this site, an area that services 12,000 people. Crowley thought it made sense to put in a localized community shopping center for the people of Woburn.

Then the developer spoke with discount houses and K-Mart was interested. K-Mart and a supermarket would occupy the whole site, and the town of Woburn wouldn't allow zoning for that, so the developer decided to go with a supermarket and several small shops. He wanted it localized, so the people would feel it was "their" shopping center. He made the decision to put office space on the second story and has offered the Town of Woburn space there in return for Lowell Street access. No decision has as yet been made.

He also feels strongly about project feasibility with regard to the surroundings. He is making an effort to build up enterprises that support each other. Ten years ago, the developer visited Chicago and saw the Merchandise Mart there, decided to build a trade center for northern New England (Southern New England is serviced by New York). The banks refused him, and
he dropped the project but not the idea. Eight years later, the Sylvania plant on Route 123 was for sale, he bought it, renovated it, and made the Northeastern Trade Center. He had gone ahead with his idea because:

1) convenient, safe, easy to reach, and within easy travel distance of northern New England.

2) it has a 2000 car parking lot. At Hynes Auditorium in Boston, parking is expensive when available, and the lack of parking is bringing business from the city to the Northeastern Trade Center.

3) the family from out of town could stay in the hotel, attend the exhibits, and see a movie.

The Northeastern Trade Center is doing so well that a 100,000 square foot addition is planned for this summer.
I. Site Selection
   A. Location
      3. **Visibility.**

**Principle**

It is important for a shopping center to be visible from the main road. The best positions are:

a) tangent to a curve in the road  
b) on a hill  
c) on the major traffic side of a straight road.

**Example**

The Woburn site is below Route 128 because the highway is built on a causeway. Also, it has no direct access to Route 38 and is set back from the road about 1000 feet.
I. Site Selection

B. Cost

**Principle**

The site should be possible to obtain with reasonable negotiation. Sites owned by one owner in large parcels are not often found. A higher cost for a good location is often preferable to low land cost in an unfavorable spot. Land cost will vary depending on the circumstances. Generally, the higher the risk, the lower the price the developer is willing to pay for the land. The developer is usually reluctant to pay more than one third of the value of the land once it has been developed without a definite key tenant already committed.\textsuperscript{11}

\textsuperscript{11}Gruen, p. 40.
I. Site Selection
   C. Zoning

   **PRINCIPLE**

   The general principle concerning zoning is the selection of land with the broadest possible range of uses in order that if one use fails, conversion to another presents no major problem. A multi-use building properly zoned is more favorable for obtaining financing. The broadest categories are light manufacturing, office-warehouse, and factory. When considering a shopping center, ground coverage zoning is not important because the land is used for parking. Low-rise is generally acceptable, but on Route 123, it is not unreasonable to anticipate rapidly advancing land values, so two-story or more zoning is preferable. Parking, the number of required spaces, is usually not a problem because zoning is less stringent than economic constraints.

   Adjacent land use is also an important consideration for future growth plans. A site that is too large for the immediate development can hold land in reserve or if the zoning is appropriate, compatible uses such as single tenant office buildings, medical clinics, apartments, motels, movie theaters, and other non-competitive commercial facilities can be introduced. Apartment buildings next to a shopping center can make good buffers between a center and residential areas.  

   12Urban Land Institute, p. 265.
In Woburn, the proper zoning for a shopping center is Business-3. This site is Industrial-2 with a special permit for a shopping center. The I-2 zoning allows for offices, but not for dental or out-patient medical offices.

From the Woburn Zoning Ordinance, Section 7.01—"For retail, service, finance, insurance or real estate establishments, one space per each 75 square feet of floor is required. For business, industrial, community facility, one per 15,000square feet or fraction thereof is required."13 Parking must be screened from the residential districts and no motor vehicle shall be parked within five feet of any side or rear lot line. 200 square feet is the minimum space size and the minimum loading dock size is 600 square feet.

The developer was granted a variance for parking. The number of required spaces is to be based on 300 square feet per space. He also hopes to obtain a variance for the adjacent parcel of land now zoned residential.

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13Revised Zoning Ordinance of Woburn, Massachusetts. Section 7.01, p. 16-17.
I. Site Selection

D. Building Code

**Principle**

For a suburban shopping center, the general rule is to make a cheap light building. In the city, land is expensive and so it is financially reasonable to build artificial land (just slab and columns) at about $5.00/square foot. In the suburbs, where land can be anywhere from $300 to $2.00/square foot, it is logical not to build artificial land, but to spread the building out over natural land rather than building up.

**Example**

In a comparison between the BOCA Code and the Woburn Code, the Woburn Code was often the more restrictive. Section 5.23 required:

1. Class I or Class II construction throughout.
2. All exit doors shall open in the direction of egress travel.
3. A sprinkler system is required.
4. All corridors shall be provided with properly placed effective smoke screen doors.
5. No combustible materials shall be used in corridors (rugs, furniture, etc.).
6. Emergency lights where required.
7. Interior finish must be fire retardant.
8. General stockrooms, supply rooms, janitor's rooms, etc. must be of fire resistant materials.
9. Maintenance shops such as are used by painters, carpenters, plumbers, machinists, etc., will be detached buildings or cut off or sprinklered.
10. A plan of evacuation together with a planned procedure in the event of fire shall be drawn and posted at selected and proper locations.
11. Incinerators shall be in a separate room.
12. All buildings shall be accessible for fire apparatus in the event of emergency and shall be maintained. Fire exits for Type II construction must be no more than 100 feet for mercantile and industrial buildings and 150 feet for business establishments.

Fire walls shall be solid or hollow masonry units or of mass or reinforced concrete or any other approved noncombustible material with, for Type II construction, no less than a two hour fire rating.

The Massachusetts codes also require there to be facilities for paraplegics.
I. Site Selection
   E. Soil Conditions.

   **PRINCIPLE**

   For a one-story building, soil conditions do not have to be adequate to stand a great deal of load, but should withstand concentrated loads. Shopping centers are generally built on grade. If there are serious site foundation problems, it would make a shopping center impractical. For example, much of this site in Woburn is swamp. To remove the peat and fill it with gravel or sink piles will cost about $5.00/square foot—the same price as artificial land and that makes it too expensive to use for parking.
I. Site Selection

F. Utilities

**PRINCIPLE**

Availability of utilities at or close to the site is a positive factor in site selection. Long runs to reach available utility connections are an unnecessary development cost. Off-site development costs can usually be adjusted with the town and the utility company.

The utilities to be provided are hookups for water, sewerage, telephone and electrical. In a net lease, often raw space is sold where the tenant provides his own mechanical system, hot water, etc. The owner provides merely the available hookup to the main.

**EXAMPLE**

Alonzo B. Reid has prepared a set of drawings for this site showing the hookups onto the site.
II. Financing

A. Kinds of Financing.

An application for financing (usually a mortgage) must be submitted. The developer provides a market study and architectural plans—a site plan showing location, dimensions, distance from boundary lines, service system, parking, traffic circulation. The developer also supplies a schedule of rents for proposed tenants, the guaranteed rents and percentage of rent terms, an abstract leasing program of commitments, a profit and loss estimate, budget, and proposed net income. Some usual sources for financing are directly from banks, through brokers, from insurance companies, pension funds, educational institutions, financial syndicates, and real estate companies.

The bank will appraise the project; its primary concern is prior liens on the property, such as:
1) Government—Can the project pay its taxes?
2) Acts of God—Is the project relatively safe from high risk situations?

Then the decision to finance will be based on the amount of risk inherent in a project versus the interest rates. To determine risk and financial strength of the mortgage the major considerations are
1) the location
2) the generality of the building
3) the economic value of the proposed development—derived from an analysis of costs, revenues, rents, and operational expenses and promotion.

14Gruen, p. 59.
4) the economic strength of the developer, or the amount of investment for the developer. The construction experience of the builder is also a factor. The type of mortgage is dictated by the type of collateral and the payback method.

Mortgage Financing:
   a) simple mortgage
   b) split mortgage—a loan on certain portions of a project.
   c) participation by more than one mortgagee in a single blanket mortgage.

Equity Financing:
   a) simple equity position
   b) sale and lease back—the property is sold to the investor usually to raise capital and leased back to the developer who guarantees a certain return.
   c) a ground lease by the owner so that ownership of the land is subordinated to the mortgage.
   d) sale or ground lease of land to a key tenant and the tenant provides his own building.

There is also construction financing. With a regular mortgage the bank assumes responsibility for land and building. In a construction mortgage, the bank only assumes responsibility for the building, so if the builder goes bankrupt, the bank is left with nothing. The element of risk is much greater. Usually a bank will want to see regular financing before it will grant a construction mortgage.

There is yet another organization which will assume even more risk than a construction mortgage and that is a Real Estate Investment Trust. They operate on the premise that a building will get built and once the bank sees it is built, will grant it a mortgage then to pay the interest on the amount of money the
Real Estate Trust invested. This is most risky of all and consequently Real Estate Investment Trusts charge the highest rate of interest of all.
II. Financing  
B. Leases.  

**PRINCIPLE**  

According to the Real Estate Review,¹⁵ net leases are those usually used for shopping centers and there are five basic types of net leases:  

1) to build to suit leases. The owner agrees to build the buildings on his land to suit the specific needs of the tenant.  

2) net lease of an existing building. The owner purely leases the building to the tenant as is for a fixed sum.  

3) sale and lease back. The owner is interested in retaining his property and raising capital, so he sells his property with the agreement to lease it back for a fixed rate.  

4) "Bond type" net lease. A promissory note is disguised to be a lease so that a company doesn't show the liability for mortgage indebtedness on its balance sheets.  

5) ground lease. The owner leases only the ground and the tenant puts up the building.  

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II. Financing

Possible lease for the Woburn Site Development

**Example**

The tenant agrees:
1. to pay on a square foot basis at $X/year plus Y% of gross sales.
2. to pay utilities, telephone, heat/AC, electricity, water, taxes, insurance.
3. to pay for all interior partitions, finishes, plumbing, HVAC, lights, etc.
4. to maintain everything except that for which the landlord is specifically responsible.

The landlord agrees:
1. to provide malls, walks, and parking lot and maintain them and keep in order sewerage, electric, gas, water, and telephone trunk lines and sprinkler main.
2. to provide a floor slab, exterior walls, roof, access road.
3. to maintain outer shell of building.
III. Marketing
   A. Competition--Trade Area

   A "trade area" is usually defined as "that area from which is obtained the major portion of the continuing patronage necessary for steady support of the shopping center."\(^\text{16}\) Shopping centers don't create buying power, they depend on it. Different types of merchandise draws clientele from varying distances. The strongest shopping influence is exerted closest to the site and diminishes as the distance from the site increases. A trade area is usually divided by the travel time to get to the site for a certain type of product. There are three types of trade areas:

1) primary trade area--close-by area with daily convenience stores, drawing business from a radius of five minutes driving time.

2) secondary trade area--may have convenience stores but no important soft-line or hard-line stores drawing from a radius of fifteen to twenty minutes driving times or three to five miles.

3) tertiary trade area--customers drawn because of easier access, greater convenience and better merchandise are offered from a radius of up to twenty-five minutes away.

Trade area studies are based on two criteria, and within those two types, there is the primary trade area and the secondary trade area. One type considers

1) shoppers for all types of retail merchandise

2) comparison shopper traffic (for apparel, accessories, furniture, appliances, and other department store

\(^{16}\)Urban Land Institute, p. 243.
merchandise.
The other type of trade area\textsuperscript{17} considers:
1) immediate vicinity and its character
2) the geographical factors, competitive facilities, distance and consumer research.

A trade area is usually determined by travel time. Trips are made of five, ten, and fifteen minutes in five radial arms from the proposed site to determine the layers of the trade area. Then the areas are analyzed according to size, growth, and quality of trade area:\textsuperscript{18}
1) where the people now shop and their evaluation of the existing facilities
2) ease of travel to existing shopping areas
3) specific need for a large, one-stop shopping center within the trade area
4) road network within the area.

\textsuperscript{17}Applebaum, p. 57.
\textsuperscript{18}Ibid., p. 34.
III. Marketing
B. Tenant Selection

PRINCIPLE

To rent a shopping center, the size, location, and type of each store must be determined to assure there will be a maximum number of people passing through the space. There are four categories of stores:

1) The key tenant—usually a department store, supermarket, junior department store, to draw people to the shopping center itself. The concerns of the key tenant are the location of the site, the general market conditions, and the rent he will be required to pay.

2) Gruen's "Traffic Attractors"\textsuperscript{19}, stores that generate pedestrian traffic, such as a restaurant, post office, beauty salon, cleaners, bank. The concerns of the traffic attractor are the general market area, the strength of the key tenant, and the amenities which will be provided to encourage inter-center circulation.

3) Gruen's "Traffic Users"\textsuperscript{20}—stores which don't in themselves attract people but feed off the pedestrian flow created by the key tenant and the traffic attractors. This tenant is interested to know the projected hourly pedestrian count and the amenities to be provided.

4) The last group is impulse stores—the glamor stores like flower shops, candy stores, notions. These stores rely upon pedestrian flow, good visibility and easy access.

\textsuperscript{19}Gruen, p. 133.
\textsuperscript{20}Ibid., p. 133.
"The important thing is to locate the key tenants to distribute their pull and to lead customers past the smaller tenants as they are drawn to the pullers." Each store should have an equal chance at the pedestrian flow. The income success of a shopping center comes from the rents plus a percentage of the gross sales, so it behooves everyone for each store to do well.

21 Urban Land Institute, p. 271.
IV. Program

Intention: to house a number of small and medium sized stores.

Site: Building is to face south.

On-site traffic flow should be one-way where possible with major regard for safety.

Utilities:  
   a) to be brought from the hookups to the building allowing for easy access.
   b) water, electric, phone, sewer

Service:  
   a) service docks should be covered
   b) service should not interfere with automobile traffic
   c) minimum loading dock size is 600 sq. ft.

Parking:  
   a) number of spaces to be 500-600
   b) minimum parking space is 200 sq. ft.
   c) parking lot must be screened from adjacent residential districts

Key tenant: Stop and Shop/ Edimart  
   a) prime position near entrance
   b) requires separate buildings
   c) parking must be clearly visible

Building: To be Class II construction.

Hall: The developer wants some "cathedral ceilings". He also got his zoning variance on the basis of providing an interior shopping mall.
Second level:
   a) 40,000 sq. ft. of office and demand shops
   b) requires two means of egress

Service: Circulation must not interfere with pedestrian circulation.
Arcades must face south.
Entrance from the Showcase Theater lot.
Design must be flexible to allow for shop rentals according to the individual shop's needs.
There must be a sprinkler system.
The interior finish must be fire retardant.
Fire exits must be less than a 100 foot walk.
Fire walls and doors must be provided in accordance with the codes.
All doors must open in the direction of egress.
Provisions must be made for paraplegics.
V. Building
A. Foundation Conditions

This project is in jeopardy because of unfavorable aspects of:

a) peat
b) the water table
c) broken rock

To correct the peat, it would cost approximately $5.00 per square foot to remove the peat and fill in with gravel, or to sink piles and use a structural slab. It is unlikely that permits for dredging the peat and filling the land could be obtained because of the restrictions of truck traffic and the Hatch Act (Inland Wetlands Act which forbids tampering with the natural water table).

My design is based on the assumption that it is possible to build on this soil. I am assuming the soil can support a simple footing and that I can build a 4 foot deep basement.
V. Building

B. Structural System

PRINCIPLE

According to the Urban Land Institute, "Whatever width is used for span dimensions, the design should allow for flexibility in store partitioning. Never build a multi-tenant building without using steel supported construction. Try to have no bearing walls." With steel construction, the size of the bay is determined in one direction by the economical span of steel beams. The pros of a long span are less connections, fewer columns, fewer footings. The con of a long span is more material. In the other direction, the bay size is determined by the span of roofing material. For one-story buildings, steel beam and column construction with steel trusses or bar joist roof members carrying light precast concrete slab roof deck permits quick erection, provides an incombustible building, and saves labor costs. The floor is usually concrete covered with terracotta or asphalt tile.

22Urban Land Institute, p. 321.
There is an old saying, "Any store is all right if it is not too big." Flexibility of design allows for present satisfaction as well as future needs. Standard widths are ten, fifteen, or twenty feet. Column spacing is important because it determines the manner in which the total leasable area may be divided into individual stores. Twenty or thirty foot column spacing is usually standard, but thirty-four foot spacing may be even more practical.

Store depths usually vary from 40 to 150 feet. It is wise to use curtain walls at the rear or the store where possible to permit future deepening at minimum cost.

\[23\] Urban Land Institute, p. 322.
V. Building

D. Other Sizes and Miscellaneous Information

1) Stud Height--Ceiling Height

Lower ceiling heights cut maintenance costs. Hung ceilings should be dry built. Sixteen to eighteen feet allow for mezzanines. Large store areas require relatively high ceilings for the sake of appearance. Ten feet to clear ceiling height has been found satisfactory in shops ranging in width to twenty feet and from forty to sixty feet in depth.

2) Walking distances

a) from the car to the stores should be about 400 feet maximum.

b) from one end of the mall to the other should be no more than 400 feet maximum.

3) Basements are desireable for storage, heating and cooling equipment, for store expansion, even as bowling alleys. The additional cost of providing basement space is relatively low.
From the rules and examples previously explained, I produced a set of schematic design drawings for the developer in Woburn. These drawings follow.
As I developed the schematic drawings, I began to be more and more dissatisfied with my emerging design. The traditional rules and conventional situations were not convincing to me as "places" in which people would choose to shop. My design lacked life because there was very little variety allowable. I had made a design effort that was only moderately successful.

I then undertook to question the traditional shopping center design process. Exploring additional inputs to generate new patterns, I first determined who the actors were and then rewrote the scenario according to a new plot.
CHAPTER II

The old scenario embodies a great deal of wisdom, but in itself is insufficient to insure alternative places to shop. Although some types of shopping centers can be commercially successful regardless of the amenities offered, the larger regional shopping center is a permanent venture greatly influencing the surrounding communities. The discussion that follows is directed toward the architects and developers who have a long term commitment to the community in making a contribution that will better those communities.

The objective of the developer is to create a project which will make a profit. In order to do that, the project must move along according to schedule for financial reasons. The more uncomplicated the project, the less chance of mishap and delay. The developer also wants and easily maintainable space since he usually pays for maintenance costs. He also wants a space that is easy to rent. If he can't find tenants his project will fail. There are five major components of an easily rentable space:

1) favorable location of the shopping center itself
2) an affordable price per square foot
3) a flexible design which allows a store to rent as much or as little square footage as the store needs.
4) an attractive tenant mix to assure a good
The consumer wants to shop conveniently in a pleasant place. The shopping center should be accessible, with parking close to shopping. There should be variety in the choice of stores. Depending upon the size and nature of the shopping center, amenities should be provided which not only make life more convenient, but which also enrich the center's atmosphere. The architect looks to satisfy both the developer and the shopper and to create a "place". The question then becomes, what makes a good shopping place?

To help define what makes a good shopping place, I analyzed and documented those shopping areas I felt exciting by alternating among photographing, sketching, and verbally organizing my findings. Those I found to be exciting were so because they throbbed with life—people, visual stimulation, spatial differences—which caused me to reconsider my shopping center problem.

My hypothesis states that there is an alternative attitude to shopping centers, taken from shopping streets, which could enrich the existing conditions by turning an enclosed street where stores compete for business, where signs seek to attract your attention, where sounds and smells are as important as the merchandise being sold.

In examining some existing shopping areas which I find attractive, I catalogued several recurring patterns which could be integrated into the design of new shopping centers. These architectural patterns are as follows:
1) private walkways
2) multi-level shopping
3) variable storefronts
4) properly integrated transitions between inside and outside

Many of the following illustrations are of older areas—charming places that have acquired their charm over time not by design but by indigenous accidents of addition and subtraction. This is not to say that old is desirable, or even that it is possible to recreate those places, but rather that there are formal and attitudinal lessons to be learned here.
ALTERNATIVE
ARCHITECTURAL PATTERNS

Shopping centers began when a large store settled on a suburban site and smaller stores clustered nearby. However, if we think of a mall as an enclosed shopping street, different premises are put forth and different conclusions are possible. Shopping streets teem with life on several levels—stores vary, the relationship of store to street edge varies, smells and sounds are present, streets weave through the main fabric. Part of the charm and success of places like Harvard Square, Greenwich Village, the North End, and Georgetown, lies in a fabric of streets...narrow streets connecting small blocks of stores. The width of a street is crucial—too wide and you can no longer experience both sides of the street. The pedestrian's ground is defined by the shops on one side and cars on the other. For maximum shopping, the street should be narrow enough to experience shops on the other side of the street. The length of a street is also crucial. Too long a block which is without permeation makes it difficult to negotiate. As in a plumbing pipe, no variation keeps the materials flowing, but good shopping depends on people being seduced into a store. A store can easily attract slow-moving objects much as a magnet. But as in physics, the faster the object is moving, the stronger the force of the magnet must be to overcome the object's inertia. Therefore, variations in the interior shopping street should not only make a more interesting place for the shopper, but should help the stores as well.
Streets should be narrow enough to experience both sides.

The North End of Boston.
PRIVATE WALKWAYS

One variation is to have offshoots from the main streets. These offshoots, or shopping alleys, would be a relief from the tension of the main mall. The alley would need to either reconnect with the main mall (as an alternative route to allow more stores more frontage) or have a magnet at the end to attract people, like a restaurant or a special demand service. There are two types of alleys: public and private. A public alley is an offshoot of the main mall, an additional shopping area. It allows for closely grouped small stores to remain small and still afford frontage. A private alley occurs when a tenant rents a block of square footage and fills his block with a number of smaller stores and stalls. Also, some rentable spaces may be less desirable than other spaces. The architect now looks to make all rentable spaces excellent. However, if excellent, the rents are high. It might be better to allow for less favorable spaces and rent them to marginal businesses, like shoemakers. The shopping mix of stores, and the shopping center itself would grow more full and whole as a place to be as well as a convenient way to shop.
A private walkway can be a viable commercial extension of a shopping street if it has an attractive entrance. (Georgetown)
Once inside the entrance, signs, lights, artwork, and an intriguingly meandering path can maintain shopper interest through stretches barren of commercial display.
Change of level along a private walkway is not necessarily bad. If done well, it can become a positive factor which heightens the shopper’s interest and enjoyment.

(See also pages 103 to 118.)
Brattle Walk, in Harvard Square, is a private walkway be design. The walkway is entered perpendicularly from the main street and continues in a straight line much as a sidestreet might.
On the right after the entrance is a small plaza leading to an office building, thereby bringing together multi-use facilities.
Although the entrance has a roof, once inside the walkway, there are open areas where trees and plantings soften the harshness of concrete and separate the plaza from the major pedestrian path.
Once back on the path, stores are on the left as the right side varies between built walls and open natural plantings.
At the end of the pedestrian walkway, there is another level change as the stores jump from the left into the building on the right.
Once back on the pedestrian path, it is possible to exit to the main street, or...
to exit onto a plaza which leads to another street making Brattle Walk an important connector through a large block.
The Kieff Gallery is a short walkway built around a level change that takes the pedestrian from bustling Newbury Street into a private world of bricks, shrubs, a fountain, and fine artwork.
The wooden bannister leads you into this special place...
depositing you at the entrance to the gallery with the fountain to the right and exit stairs to the left.
These stairs lead to yet a different level below the street level where another store will soon move in. Light and air circulate through this passage suggesting a different exit route from the route used to enter the space.
Once at the other level, another set of stairs on the left leads to the street.
The Garage in Harvard Square is a shopping area converted from a parking garage. The somewhat confusing array of stores on the street level is clarified by the use of signs arranged perpendicular to the pedestrian flow.
Once inside the complex, the former auto ramp now serves as the pedestrian path with stores and stalls on the levels coming off the ramp.
At the end of the ramp is a series of stalls on one level.
the performance center
It is possible to look down the ramp at the entrance, across the level to another group of stores, also at the entrance to the Performance Center, a public auditorium housed on the upper level.
INSIDE-OUTSIDE TRANSITION

In the improved shopping center, the transition between outside and inside spaces should be gradual. The object is to get people inside of the center. Therefore, the easier the entrance conditions make piercing the skin of the shopping center, the greater the chance of success of the project.

There is no reason why the mall and/or offshoots of the mall, can't project into the outside—perhaps a roof restaurant or playground above the ground level, to keep children away from cars, or just a change of pace to add variety and enrich the shopper's choices of "place".
Truc, the Brattle Theater Complex, in Harvard Square, is an agglomeration of stores to make a shopping area.
The "mall" runs from one building to another, encompassing level changes, turning corners, even going outside.
After descending the entrance stairs and passing the guide map, a major stretch of pathway runs past stores of various natures.
As one walks down this path, a series of electric lights in the shape of arrows tells the shopper that the pathway hasn't ended, merely changed direction...
up some stairs...
where signs direct the shopper to the right into another area.
This new area differs from the previous pathway because the ceiling is quite high and a skylight is the main lighting source. Mobiles and hanging objects d'arte serve to add movement and life to an otherwise dead space.
At the end of this space is a small stair leading to another walkway—this time an exterior walkway.
Once outside, the pedestrian finds a jewel of a gift store at the end of the walkway.
MULTI-LEVEL SHOPPING

Shopping centers traditionally were one story because land was cheap and building up required more expenditure. However, land prices are rising and belief is that the more concentrated a large shopping center, the better. I feel a two or more level shopping center is preferable because another dimension is added, thereby enriching the center's atmosphere. Multi-level shopping can be successful if there is frequent visual contact to make people aware of the activity on other levels, and if the access between levels is frequent and easy to negotiate as well as visually prominent.
Multi-level shopping at the Chestnut Hill Mall has visible access from across the mall, but because the second level functions as a balcony, it is impossible to know what stores are beneath you. One solution could be perpendicular signs.
At the Chestnut Hill Mall, the balconies along the sides of the mall are connected by bridges across the mall, alerting shoppers below to the activity on the second floor.
Travelling from one level to the next...
is facilitated when the access is clearly visible.
Access should not only be clearly visible, but well marked also to reduce disorientation.
Bonwit's on Newbury Street has created an entrance that wisely uses signs, has a level change, and once committed to Bonwit's, allows the shopper a choice of the upstairs store or the downstairs store.
On Newbury Street, store entrances not only change levels, but involve the shopper by interacting with the sidewalk.
A two-level entrance at a Harvard Square shopping complex affords easy access...
good visibility into shops...
and makes an interesting place to shop.
In an alley in Harvard Square there is a restaurant with a most unusual lower level entrance.
Every inch counts as possible revenue-earning space so the entrance must have enough force to seduce the shopper while using a very small area.
Just as different levels enrich the environment, so does varying the store line—creating nooks and crannies. This is feasible economically because it allows for more frontage. It is necessary architecturally to break the monotony created by a static store line. By changing this line, creating pockets, nooks, and crannies, the pedestrian is drawn to the edges of the main mall, or main plumbing line, thus slowing pedestrian flow. The trade-off is in drawing more people from the pedestrian flow into the stores themselves—a trade-off which may even be a more lucrative way of arranging shops. Break throughs are being made in a most minimal sense in some shopping centers, yet if we look at street conditions, variety of store arrangements makes some shopping spots the special places they are.
These stores on Boylston Street have grown in such a way as to vary the distance from the sidewalk thereby creating nooks and crannies.
The stores on Newbury Street vary not only their storefront lines, but their levels as well, and using signs to create an exciting and stimulating shopping area.
Other stores on Newbury Street also add large window display areas to aid the other factors in attracting shoppers.
Some Newbury Street stores which operate on demand shopping can afford to understate their entrance—recessed, lower level, no big signs, softened by plants.
Another store, also on Newbury Street, also uses a recessed entrance, plants, a level change, and a large display window to relieve shoppers of the humdrum pace.
An elegant two-level entrance on Newbury Street, complete with elaborate chain and red carpet, tells people the quality of store and range of merchandise available.
Without varying the storefront line there can be no corners. This store at the Chestnut Hill Mall utilizes a corner location to the fullest.
This restaurant uses its interior corner position as a protected spot from which to watch the world go by.
THE IMPORTANCE OF REST

Shopping, especially good shopping, is exhausting. The senses are being bombarded, the body is moving, the mind is sorting and deciding—and this all uses energy. After a time, depending on the shopper's stamina, a rest is in order. The mall should provide these resting areas to serve not only shoppers, but their family and friends who are not as strong or as actively involved. These resting areas should be well marked and easily accessible, sheltered, protected, yet not segregated from the action and life of the mall. There can be quiet rest areas, indoor and/or outdoor areas, bustling places—sometimes just a bench strategically located. If possible, it is preferable to weave the rest area into the fabric of the mall, both linearly and spatially by three dimensional elements bridging the gaps. A tree, a post holding up a balcony, a staircase, are all such elements. The rest area then becomes a part of shopping experience while offering relief from it. Often an exhibit, or a small play area for toddlers can be juxtaposed with the shopper sitting area. The rest area can then become a family meeting place thereby freeing the shopper and accommodating the family's other interests. If a mall provides something for everyone, everyone will be drawn to the mall, and that is an important alternative for family activity in the suburbs.
Sitting areas, like these at the Chestnut Hill Mall, should not only offer rest to a weary shopper, but should be easy to find by being clearly marked, as this one is with an arch...
or flowing water...
or a tree bridging the spatial gap between two levels...
or a combination of these.
Tired shoppers enjoy a rest at the Chestnut Hill Mall.
FUNCTIONAL PATTERNS

Other patterns which the architect can provide for, if not instigate, are functional patterns, patterns which concern what happens in the shopping center. Although an architect can't always design activity into the space, his design approach can allow for these activities.

By designing so that a building can grow and change, an architect can help to ensure activity in the shopping center. Shopping thrives on activity, and activity is easiest to generate in a space that is not so defined and finished. For example, instead of designing a highly polished laminated wooden ceiling, the architect could hang a lighting system on a grid and paint the unfinished ceiling a dark color. The lighting prevents people from seeing the unfinished part of the building. Then this grid could be used for hanging exhibits, temporary partitions, hanging plants, etc. Most of what is now flexible in a shopping center is on the ground. If a shopping center allows for exhibits, only the exhibits change, never the signs or ceiling height, or balconies. For example, an architect could provide that different sections of that grid could move vertically to allow for different conditions—much as a stage is flexible and adaptable.

In keeping with a "static" vein, much of the life and vivacity of a good shopping street is due to a glimpse of the "other side"—a look at the guts of the operation... touches which say this is a real environment, a real experience, rather than a neat row of shops where you are the customer and the store is separate from you. I am not suggesting that the shopper should walk past unsightly boxes or smelly garbage. However, people flock to open air markets, flea markets, and tent sales in droves, knowing full well that there are no bargains to be found, but always retaining that glimmer of hope!
Getting into the guts of the operation in Boston's North End open air market can often add excitement to the shopping experience.
Most distressing of all is the lack of active competition for the consumer's business. Stores on the street often push out onto the sidewalk to attract attention and sell the merchandise. That reaching out into public space never happens in a shopping mall, nor do you ever smell any mouthwatering odors from a restaurant or donut shop in a shopping mall. They are taboo. Yet, walking on a shopping street, the smell of a pastry may remind you to stop for a while to rest, then continue with your errands. Nor are there any stray sounds. Yet a newspaper "hawker", music from a kiosk or record store, are all changes in mood which could stimulate activity and reinforce architectural changes. Signs need not only hang from a certain height, using selected colors, being a certain size, but could be moveable, grounded, pushing out into the mall, perhaps making a sitting area to provide a quick rest. Hanging signs must at the least be perpendicular to pedestrian circulation. Signs can move into the main mall area and so can small stores--kiosks--selling newspapers, keys, any small store that doesn't have large space requirements.
This Newbury Street flower store confronts the shopper with sights and smells in a delightful fashion.
This Harvard Square flower store has pushed its goods into the sidewalk...
thereby surrounding pedestrians.
This magazine stand/flower stall has planted itself under an arch on a busy Boylston Street corner near a subway entrance—an ideal location allowing this operation to be portable yet permanent.
CHAPTER III

SUMMARY

Shopping centers are here to stay, yet that in no way implies that the present form of the shopping center has fully evolved. In fact, the building form has remained relatively unchanged since its inception. Although relatively static, lacking vivacity, vitality, and vigor, today's centers service suburbia fairly adequately. But adequate is not the best solution. There is room for improvement, and with the new obstacles shopping center must face (gas crises and rising land prices), new patterns for suburban shopping must be found.

There are shopping streets from which patterns can be extracted which may alleviate some of the static and sterile nature of the present day traditional shopping center. Some patterns suggested are:

1) level changes with good visibility and good access
2) nodes and alloys as offshoots of the main mall and as private walkways
3) a gradual transition between inside and outside, with more interrelation between the two
4) variation in store front lines.

Some functional patterns which we might like to see are:

1) attempts to dissolve the static, unchanging nature of a finished shopping center
2) attempts to make more contact between the customer and the shopping product and some intermittent steps to further
involve the customer in store goings-on.
3) attempt to compete for the consumer business—sounds, smells, signs, stalls, stands...

These are some different ways to approach the traditional design of a shopping center, as well as the activity of shopping itself, with the hope that in the future, shopping centers will move from sterile to stimulating.
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