Relationships Between Owner/User Satisfaction and the Incorporation of Daylighting into the Retail Building

by

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Benjamin Evans, Chairman

Architecture

(ABSTRACT)

Contained within this report are a series of case study field observations of selected retail design projects utilizing natural daylighting. Followed by the investigation and laboratory testing of three alternate roof fenestration patterns applicable to the least effective design. A description of the investigation procedure, a tabulation of all research findings and a section of concluding observations serve to round out this study.

All of this done in an effort to prove that there exists a positive relationship between the effective incorporation of daylighting and owner/user satisfaction with the retail building type.
ACKNOWLEDGEMENTS

My thanks go to the faculty and staff of the College of Architecture and Urban Studies at the Virginia Polytechnic Institute for allowing me the freedom to conduct this investigation and the support to make it possible. I would like to especially acknowledge the guidance and advice offered by Ben Evans, Tom Koontz and Bob Schubert throughout the previous year.
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INTRODUCTION

The exchange of goods and services is as old as mankind itself. The location and conditions under which this buying and selling takes place and the goods involved have changed greatly over the years. It is the purpose of this work to examine a highly specialized building form, the latest in an evolutionary process, devoted to this exchange. In particular the typology now commonly referred to as the "festival market"1 is studied from the point of view of effective daylighting and its contribution to or distraction from the whole. A thorough review of available literature shows a lack of work published in this specific area. Considerable information however is available on daylighting applications and the subsequent successes or failures of commercial offices. Broad guidelines supposedly applicable to all building types are also common but neither of these is sufficiently specific to shed much light on the problems peculiar to retail market design. With this focus in mind it will be helpful to have a general understanding of the evolutionary process that has brought us to this current retail form.

Throughout this process daylighting has played a significant role in shaping the retail building type. The earliest retail activities took place under the open sky or beneath the cover of a temporary tent-like structure designed to modify the light from the sun and thus create more

desirable conditions. With early urbanization shops began to line the streets with large openings to admit light and air to the interiors. It was not long until the profit enhancing aspect of window display made common the show window we recognize today. The introduction of float and plate glass made this display possible even in poor climates. With the advance of electric lighting it became common to consider the display window as a separate entity to the store interior often separated by an opaque wall construction. This was the condition present in many of the early commercial strip developments and also in the first enclosed shopping centers. The shortage of fossil fuels in the early 1970's caused many people to reconsider the reliance they had placed on electric lighting for a mix with daylight to reduce their overall energy demands. In the most recent developments daylighting has come to be recognized as an integral aspect in the creation of the desired shopping atmosphere. Many factors are involved; cost savings through reduced electric lighting load, better color perception, and most importantly allowing a connection with the outdoors as was the case with most early retail design.

PHYSICAL CHARACTERISTICS

Throughout history the retail building type has responded to social and economic forces and has taken many different forms. Perhaps not as immediate as economic demands, societal needs have proven just as influential. One of the most important factors in the development of the retail building was the rise of the merchant class. It was this introduction of the so-called "middleman" that created the type of com-
merce we recognize today. The early role of the merchant was to gather goods produced in one location and to transport them to another thus establishing routes of passage and outposts for trading. In time these routes often developed into roads and the outposts into country stores which ultimately formed the nucleus of many new towns. 

Some of the earliest areas developed primarily to support trade were the ancient Greek stoas located at the agora, the center of the town life and activity. Also present at or near the agora were the structures to house public meetings, congresses for government, and the religious temples. These centers were important primarily due to their integration of varied human activity. The city market in medieval times remained the heart of all urban activity. All important civic structures were located on the open market area which in turn was used as marketplace, fair ground, and theater.

The great community coherence generated by the focusing of all activity within this restricted area was a pattern brought to North America by the early settlers and town planners. This is witnessed in the common town square or village green found in the New England and Spanish colonial towns. To some extent many of these early plans survive and still serve to function at least spiritually as the heart of a modern city. Automobiles have changed the very nature of the American town. The industrial revolution sparked a trend in which the city dweller moved away

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Introduction
from the newly chaotic and disturbing factory complexes which emerged. Those people with the means to escape to the surrounding countryside did so in masses aided greatly by the advent of public and private transportation networks. The automobile which allowed each individual the ability to travel any distance in any direction at any time proved to be the demise of much American community cohesiveness and a dispersal of the general population over an expansive and often under-planned area.

The birth and growth of the modern American suburb took place quickly as more city dwellers took to the country in search of clean air and open spaces. Ironically as the masses arrived the housing and services they demanded served to destroy just that which they came to find. The unfortunate yield was an environment devoid of rural character as well as urban appeal.

The modern merchant found it much more difficult to establish a market and a sense of belonging to and being a vital part of the community. Storefronts sprung up along the major arteries which moved vehicular traffic into and out of the city proper. The shopper in this situation necessarily came with a string attached; that being an automobile. Car storage areas first developed behind the retailer's building and then later were brought around to the front as is the current practice."

The growth of the nation brought great leaps in retail activity as well as automobile traffic. In many instances the highways became so congested and thus difficult to travel upon that potential customers began

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to take alternate routes of travel. In a natural economic response new stores were located on these shortcuts that became congested themselves in time. The introduction of superhighways was deemed necessary to ensure ease of transportation. Unfortunately, these new superhighways took away the customers necessary to make the retail activity viable.

A new type of shopping facility was called for to not only alleviate some of the present conditions but to bring a center of focus on a very large scale to the suburb as a whole. This sort of sub center of urban activity is common today around the periphery of most of our major cities. These retail centers fulfill (at least pragmatically) the needs of the suburban shopper with adequate free parking, easy accessibility and a wide range of goods and services. However, the modern shopping center often does not have enough strength to meet all the needs that historically have been sought in the urban centers.

The human condition requires many things of its built environment in addition to ease of parking and convenience of acquiring goods and services. Social interaction, recreation, civic and cultural presentations and activities as well as educational opportunities are but a few of the necessary components to a healthy human social existence. Most if not all of these needs were accommodated in the market places of antiquity just as many are absent from the familiar market form of today.

CULTURAL CHARACTERISTICS

Retailing as an activity or a vocation has long been held in low es-
teem. Even in our own relatively young country retailing has been denounced by none less than Benjamin Franklin.

"There seem to be but three ways for a nation to acquire wealth. The first is by war, as the Romans did in plundering their conquered neighbors. This is robbery. The second, by commerce, which is generally cheating. The third by agriculture, the only honest way"....

Despite all misgivings and throughout history retailing as a productive human activity has survived. This fact has been attributed to six broad socio-economic foundations by Ronald Gist in his book *Retailing: Concepts and Decisions*. They are as follows:

- a. Specialization and division of labor.
- b. Transactional efficiency.
- c. Place convenience.
- d. The resolution of economic "discrepancies".
- e. "informational" activities.
- f. The provision of other "services".

The two points most germane to the topic at hand are noted with asterisks above. The convenience afforded through the establishment of a set marketplace seem simple yet are very important. The efficient distribution of surplus goods is essential to the health of both developing and established economic systems. That there be a recognized and regular lo-

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cation for exchange is every bit as important as transportation routes and water supply to the inhabitants that make up a society. In addition to this are the many informational functions provided by the marketplace. Information concerning the goods available is perhaps second in importance to the social intercourse that takes place between the users of the marketplace. This point of meeting which facilitates the exchange of ideas and opinions is fundamental to democratic social development.

Retail facilities have historically tended to form as clusters of smaller groups or individuals who benefit from the competing and/or complementing goods. In the western world these clusters take on many forms directly related to the population density of an area. There are four main types of clusters recognized today. 7

1. The central business district
2. The regional shopping center
3. The community shopping center
4. The neighborhood shopping center

The central business district existed in the past due to the convenience afforded the consumer from retail clustering and the economic incentives of greater sales for the merchant. Virtually every American city has, or at least had at one time, a recognizable center of retail activity. This often coexisted with the transportation system and cultural

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7 Brian Berry, Central Place Studies (Philadelphia: Regional Science Research Institute) p. 9.
center of the city. In the post WW II era many cities witnessed the decline and economic death of their once thriving urban core. It is into this void that a new cluster type has been introduced. The urban marketplace development is a relatively new entry into the cluster typology and in some instances is replacing the now defunct central business district.

The decline of the central business district (CBD) has been attributed to several factors.¹

1. Inability to accommodate large number of private automobiles both on the streets and parked.
2. Lack of singular management to establish such things as common operating hours, promotional advertising, consistent signage.
3. Lack of updating existing retail centers; individual stores and their fixtures.
4. Decline of adjacent land areas as middle class America fled to suburban sites.

Of all of these it is the mass exodus of potential customers from the vicinity surrounding the CBD which has spelled its doom.

Economic forces brought about the "new" regional shopping center located on the periphery of urban centers where easy accessibility and large concentrations of affluent population were present. The emergence and

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continuing dominance of this type of concentrated retail activity is
thought to be related to:

1. A general growth in population.
2. Inadequate mass transportation to urban centers.
3. Population shift to sub-urban environment.
4. Increase in nation prosperity.
5. Growth of automobile usage.
6. Improved suburban highway network.
7. 5 day work week and increased leisure.
8. Shift of industry and business to suburbs following population
   shifts.
9. Desire for superior outlets than those of competitors.

The regional center or "mall" as it has come to be called has proven to
be too much for the decaying urban core to compete affectively against.
The Urban Land Institute has defined the regional center as possessing a
"group of commercial establishments, planned, developed, owned, and man-
aged as a unit."\(^{10}\)
The strength developed by operating as a single unit simply overwhelms
all competition.

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\(^9\) Samuel Feinburg, *What makes Shopping Centers Tick* (New York:

\(^{10}\) J. Ross McKeever, *Shopping Centers Re-Studied* (Urban Land Institute
The departure of population concentrations and concurrent activity left a vacuum in the middle of cities across America. In most cases the void was filled by the poor and underprivileged minority groups of society. Not so much by their choice but rather by the lack of choice afforded them. The city center has been written off as hopeless by some as exemplified by Eugene Raskin's article in the New York Times of May 2, 1971,

"The (city centers) are physically obsolete, financially unworkable, crime-ridden, garbage-strewn, polluted, torn by racial conflicts, wallowing in welfare unemployment, despair and official corruption. As they exist at present they are unsalvageable, destined to join the dinosaur in deserved extinction. Urban planners and other who come up with temporary patchwork schemes and gimmicks to keep the cities going another year or two or three are as pathetic as the officers of the Titanic charting tomorrow's course while the water rises above their ears."

Mr. Raskin was then and is still not alone in extolling the death of urban America. There have been however some individuals who while recognizing the inherent urban problems are not content to sit and watch the further decline and eventual destruction of our cities.

One of the most influential of these believers in future life of the urban center has proven to be a Cambridge architect by the name of Benjamin Thompson. Mr. Thompson had it in his mind to revitalize the historic Quincy Market buildings in Boston. His plan was to create a festival market place not unlike a carnival in atmosphere but more permanent and economically stable in nature. The inclusion of entertainment, natural light, art and activity have drawn people; spectators, performers, shoppers, and diners back to the city center. The success of the Fanueil Hall/Quincy Market redevelopment is due to the collaborative effort put forth by the architect and the developer he located to turn the idea into a reality. This individual, James Rouse and the people of the
organization which bears his name were able to bring together the necessary forces to make the project possible. In a large part this was due to the confidence investors and local government officials had developed in the Rouse name. Once proven, the "new" urban market place concept set forth at Quincy Market has served as a pattern for many other cities in their efforts to maintain their urban core identity and fabric.

The Rouse Company has collaborated with Thompson and other architects since the opening of Quincy Market on several projects of a similar nature in different cities. In virtually each case a dramatic turn around has been instigated in the vicinity of the "festival market place" as they have come to be called. Soon after opening Quincy Market in 1976 the effort was duplicated in the equally successful Gallery at Market East in Philadelphia and at Harborplace in Baltimore, Md.\textsuperscript{11}

Several similar projects to those mentioned above but on a smaller scale have been completed by Rouses' new concern, The Enterprise Development Company. The overall purpose of this new corporation, founded after Mr. Rouses' retirement from the Rouse Company, is to provide adequate housing for underprivileged urban dwellers. These endeavors are financed through the profits of a commercial development arm which concerns itself with small scale market places of which several have been completed. The Waterside development at Norfolk, Virginia, Portside in Toledo, Ohio, and the 6th Street Marketplace in downtown Richmond,

Virginia are three notable examples. Among these projects are three of the four cases to be focused upon in this study. Harborplace at Baltimore, Waterside at Norfolk, 6th Street Market at Richmond, and the Conservatory at Owings Mills in Reisterstown, Md. all in some way connected to the Rouse Co. are the subject of the following investigation.

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The Bridge Over Broad Street at the 6th Street Market

Figure 1. Bridge at 6th Street Marketplace
OBJECTIVES AND PURPOSE

The purpose of this investigation is to provide support to the supposition that there exist positive relationships between the incorporation of daylighting on the level of owner/user satisfaction in the retail building. In each of the projects, daylighting has been approached as an integral aspect of the whole package presented to the customer. Upon completing the review of the developmental history of retail buildings and arriving at the "Festival Market" concept of today, it seemed of value to delve further into the issue of daylighting as it applies to this building type. Specifically several avenues seemed worthy of investigation; how is daylight manipulated, what are the illumination levels achieved, and what is the best means of incorporating this light into the building envelope? These questions were asked of each of the four separate projects included in the following chapter.

The objective of this investigation is to determine if past daylighting experience in the retail building type is applied in an effective manner to the later designs of the same development team.

SCOPE

The scope of this investigation is limited to the following:

Building type - Those recently developed buildings commonly referred to as "Festival Markets".
**Developer** - The projects developed by the Rouse Company of Columbia, Md., or one of its subsidiaries.

**Location** - Only those projects within reasonable distance to Blacksburg, Va. (to allow repeated on-site inspection visits) were included.

**Daylighting** - The case studies each rely on effective daylighting in a contribution to overall interior illumination.
CHAPTER I. PROCESS

The process used in the project which led to the eventual completion of this report was upon reflection rather arduous, sometimes circuitous, but always stimulating. In explaining methodology, many false starts and dead-ends will be overlooked with an emphasis only on the useful work.

A review of available literature confirmed an assumption that indeed the "Festival Markets" springing up in many urban areas were a new and influential force in retail design. A concise history of the development of the retail building typology was prepared. It appears here in both the introductory remarks and in a more complete form in the appendix.

The team most closely associated with the development of this new retail building type is that of architect Benjamin Thompson and developer James Rouse. Several of their collaborative efforts exist in the mid-Atlantic region within reasonable driving distance of the V.P.I. campus in Blacksburg, Virginia.

The projects selected for this investigation are:

1. "Harborplace" at Baltimore's Inner Harbor district. In particular the Pratt St. pavilion housing the non-food soft goods retailers, developed by the Rouse Company.


4. "Conservatory at Owings Mills" in Reisterstown, Maryland, a food sale and dining pavilion adjacent to a new Rouse suburban center.

In each case natural daylighting plays a significant role in defining the space and creating the atmosphere considered desirable for this type of retail activity.

Site visits were made to these as well as other Rouse and non-Rouse retail developments. The selection of these four projects was based upon several criteria: sequential development dates, common architectural goals, and design influence by a single group of owner/developers. The four projects were each visited at least three times in an effort to obtain both a working familiarity with the project and the cooperation of on site management personnel. Preliminary observation included photo documentation, sketching, and illumination level reading to allow comparisons between the projects to be made. Upon subsequent visits to each project the illumination levels were measured more carefully and notes were taken on a standard data collection form (see Figure 2). An attempt was made to take all readings under similar sky conditions and time of day to facilitate ease of comparison. In some cases, the 6th Street Market in particular, several visits were necessary to approximately match the sky and light conditions of the other site readings. The field notes were later deciphered and transferred onto data collection forms in a more systematic fashion (see Figure 3).
Figure 2. Blank Data Collection Sheet
The 6th Street Market in Richmond, Virginia was selected for further model study, primarily due to the impressions formed upon preliminary investigation that this project was the least successful in incorporating daylighting into the design. These impressions were of a rather dark, almost gloomy space punctuated by pools of intense direct sunlight. In all, a stressful and apparently counter productive luminous environment for this retail application. This project also seems in many ways to run contrary to earlier and more effective designs utilized by the same development group.

A worst case scenario was chosen to best illustrate the difficulties inherent in this project. A mid-block segment (see Figure 4) 150 feet in length fit without question into a worst case category. This short segment of the project was reproduced in model form to facilitate further laboratory study at the Environmental Systems Lab in Blacksburg, Virginia. The model accurately represents the original building in surface reflectances, proportions, and roof fenestration pattern at a reduced scale.

In addition three alternate roof fenestration patterns were developed to be tested against the performance of the original. The results of these tests and the conclusions generated are found in the next two chapters of this report.
DATA COLLECTION SHEET

April 11, 1987

LOCATION: Sixth Street Marketplace
Richmond, Virginia
Block B

DEVELOPER: Enterprise Development Co.
Columbia, Maryland

ARCHITECT/ENGINEER:
Wallace, Roberts, Todd
Marcellus, Wright, Cox & Smith
Dickerson Group

ILLUMINATION LEVELS:

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<th>3:15 PM</th>
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<td>START</td>
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<td>7100fc</td>
<td>6700fc</td>
</tr>
<tr>
<td>EXTERIOR VERT</td>
<td>2400fc</td>
<td>2200fc</td>
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</tbody>
</table>

INTERIOR

COMMENTS:
Sky Conditions: Bright, clear sun. No clouds or haze.
Temperature: 68°F
Large lunch time crowd

Figure 3. Completed Data Collection Sheet

Chapter I. Process
Chapter I. Process

6th Street Market at Richmond, Virginia

Figure 4. Plan of 6th Street Market
CHAPTER II. FINDINGS

In this chapter the findings of the four field investigations and the test results of the model studies are presented. Each of the four field investigations are represented separately and consist of the following information: line drawing of the site, data collection form(s) and a lighting profile. There is a written analysis of the particular strengths and weaknesses of the incorporation of natural daylighting and its effectiveness for each field site investigated.

Upon completion of these four field investigations, further study was done on the 6th Street Market development. A scale model replica with similar characteristics of the existing skylight configuration and three alternate roof fenestration patterns was built and tested under the sky simulation dome of the Environmental Systems Laboratory at V.P.I. The results of these tests can be found in Tables 1 and 2 at the end of this chapter.

The review of available literature dealing with the retail developments of the Rouse Company provide the most compelling evidence as to the success of the new "Festival Markets". This monetary success is but the tangible result of the high level of owner/user satisfaction achieved by this building type. Typical of the press reports in this account from Builder magazine's November, 1984 issue:

"Fanevil Hall opened in 1976, a smashing success, and since then the market's mix of restaurants, shops and boutiques has managed to pull in about 10 million visitors a year.... Rouse duplicated this success later at Galary at Market East in Philadelphia and Harborplace on the Baltimore waterfront."
The Harborplace development at the Inner Harbor in downtown Baltimore, Md. consists of two pavilion-like glass and metal structures oriented at a right angle to each other and aligning with the urban grid. The northern most building known as the Pratt Street pavilion which houses various sit down restaurants along its southern exposure and clothing boutiques along the interior passage was investigated. Figure 5 is a line drawing representation of that southern exposure. Reference to the human figures in the foreground gives an indication of the scale of this structure. The completely glazed curtainwalls and protruding greenhouses do much to visually enhance the spaces within but at the same time cause some problems with glare and overheating during the warmer months.
Figure 5. Harborplace Exterior
There are fixed canvas awnings over sections of the greenhouse roof extensions but, for the most part, the daylight is unobstructed before entering the building. The illumination levels within this southern edge are quite high (approximately 1500 f.c. in the direct sun) and are heavily populated on clear days. The interior passages are quite different in character being lit from comparatively small glass skylights at regular intervals along the central building axis. The illumination levels of this interior space are much lower (range of 5 to 70 f.c. ground level and 26 to 180 f.c. upper level) than those around the periphery (see Figures 6 and 7). Drastic differences can be seen in adjacent readings on the second level. The extreme case is a reading of 26 f.c. a scant thirty feet away from one of 308 f.c. in the direct path of the sun.
DATA COLLECTION SHEET March 29, 1987
Sheet 1 of 2

LOCATION: Harborplace
Pratt Street Pavilion
Baltimore, Maryland

DEVELOPER: The Rouse Company
Columbia, Maryland

ARCHITECT/ENGINEER:
Benjamin Thompson Associates
Cambridge, Mass
Joseph P. Loring & Assoc.

ILLUMINATION LEVELS:
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<th>Interior Ground Level</th>
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<td>4300fc</td>
<td></td>
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</table>

COMMENTS:
Sky Conditions: Bright, clear sun. Some reflection off harbor.
Temperature: 62°F
Light morning haze disappating

Figure 6. Data Collection Sheet: Harborplace Ground Level

Chapter II. Findings
Figure 7. Data Collection Sheet: Harborplace Second Level
Figure 8 graphically depicts the illumination levels recorded on the data collection sheets. Two sectional drawings along the principal building axes illustrate the incongruence between the shape of the building envelope and the lighting contour. Also of interest here are the drastic differences in illumination levels between the two floors along the length of the principal axis.
Figure 8. Lighting Profile: Harborplace
The Waterside project along the James river adjacent to downtown Norfolk is at present a single pavilion-like structure very similar to that at Harborplace (see Figure 9). Designed by a different architectural firm and built some ten years later by The Enterprise Development Company, this project is planned to include two adjacent buildings upon completion. The common thread between these first two efforts is James Rouse whose tenure at the Rouse Company included the development of Harborplace, who later left to establish The Enterprise Development Company. The differing architects is apparent in many ways upon visiting the site. The finesse in detailing, the integration into the existing urban fabric, and the awareness of social implications of architectural form do not seem as well addressed here as in Baltimore. Present in this project is a large projecting overhang on the upper level protecting the overhead rolling glass doors from excessive exposure to the sun.
Second Level Waterside Exterior

Figure 9. Waterside Exterior
Figures 10 and 11 contain the information recorded upon the second site visit, a day remarkably similar to that experienced in Baltimore. Here the glass openings in the roof are larger and the building depth greater than in the Harborplace example. Note the generally lower interior illumination levels as well as the drastic jumps in areas receiving direct sun.

The diagrams of Figure 12 again point up the discrepancies between building form and lighting contours. Note in particular the patterns established on the ground level of the longitudinal section.
DATA COLLECTION SHEET  March 18, 1987

LOCATION: Waterside
Norfolk, Virginia

DEVELOPER: Enterprise Development Co.
Columbia, Maryland

ARCHITECT/ENGINEER: Wallace, Roberts, Todd
Philadelphia, Pennsylvania

ILLUMINATION LEVELS:

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<tr>
<td>VERT</td>
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INTERIOR Second Level

COMMENTS:
Sky Conditions: Strong, bright sun. No clouds or haze. Some reflection off river surface.
Temperature: 55°F
Light breeze: 10-15 mph

Figure 10. Data Collection Sheet: Waterside Second Level
LOCATION: Waterside
Norfolk, Virginia

DEVELOPER: (see sheet 1 of 2)

ARCHITECT/ENGINEER:

ILLUMINATION LEVELS:

EXTERIOR  MORIZ  START:  FINISH:

(see sheet 1 of 2)

VERT

INTERIOR  Ground Level

Figure 11. Data Collection Sheet: Waterside Ground Level

Chapter II. Findings
Figure 12. Lighting Profile: Waterside
CONSERVATORY

The Conservatory space at Owings Mills Town Center in suburban Baltimore differs from the previous two jobs in several respects. Here is a single, large open space opening off a regional center located in an isolated area. There are two entrances to this space, one from the mall proper and at the opposite end from the car parking area. The character of this space is aptly described by its name, The Conservatory, and indeed it is large, bright (in the range of 250 f.c. on a winter day) and plant filled.

The people present in the line drawing (Figure 13) are representational of the large crowds drawn to this area to sit, watch, and eat from the offerings of the numerous food stalls located around the lower periphery.
Figure 13. Conservatory at Owings Mills
Figure 14 contains the information collected upon an early site visit to this new regional center. Of interest here are the relatively high illumination levels maintained throughout the space. More importantly is the fact that the illumination levels drop in unison with the building envelope (Figure 15) around the edges of the space. A correlation of this sort does much to enhance the space and is the obvious result of careful planning and the effective placement of openings to admit daylight.
LOCATION: The Conservatory at Owings Mills Town Center
Reisterstown, Maryland

DEVELOPER: The Rouse Company
Columbia, Maryland

ARCHITECT/ENGINEER:
RTKL Architects
Baltimore, Maryland

ILLUMINATION LEVELS:

<table>
<thead>
<tr>
<th>Location</th>
<th>Time</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTERIOR</td>
<td>2:15 PM</td>
<td>4500 fc</td>
<td>4250 fc</td>
</tr>
<tr>
<td></td>
<td>VERT</td>
<td>3700 fc</td>
<td>3600 fc</td>
</tr>
<tr>
<td>INTERIOR</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS:
Sky Conditions: Bright, clear sun.
Temperature: 45°F
Large Pre-Holiday shopping crowd

Figure 14. Data Collection Sheet: Conservatory
Figure 15. Lighting Profile: Conservatory
The 6th Street Market complex built on the site of the previous road bed is the result of the work of the Enterprise Development Company and the architectural firm of Wallace, Roberts, Todd in association with two other architects. This series of three block-long retail spaces is unusual in its integration into the very network of the transportation system of the city. No longer may one drive an automobile on this stretch of road. That this sort of work was allowed by city planners and zoning administrators is a testament to the faith invested in the ability of developer to turn around a decaying urban core.

This site was selected for in-depth model study the results of which follow at the end of this chapter. Figure 16 is a line drawing of a portion of the central single level block which was investigated. This space differs from the others in that it is "hemmed in" between rows of existing structures along both long sides. This allows no peripheral glass to be present except at the rather narrow entrances at either end. A long linear space is the result, much like the original street but with a roof covering and climate control system. Daylight is admitted through small skylights intermittently spaced along the ridge line.
Figure 16. 6th Street Market

Interior at 6th Street Market
Figure 17 contains the information collected upon the best of several (in terms of sky conditions) site visits. The interior illumination levels range from 6 f.c. to 155 f.c. in direct sun beneath a skylight.
LOCATION: Sixth Street Marketplace
Richmond, Virginia
Block B

DEVELOPER: Enterprise Development Co.
Columbia, Maryland

ARCHITECT/ENGINEER:
Wallace, Roberts, Todd
Marcellus, Wright, Cox & Smith
Dickerson Group

ILLUMINATION LEVELS:

<table>
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<th></th>
<th>1:00 PM</th>
<th>3:15 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTERIOR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HORIZ</td>
<td>START: 7100fc</td>
<td>FINISH: 6700fc</td>
</tr>
<tr>
<td>VERT</td>
<td>2400fc</td>
<td>2200fc</td>
</tr>
</tbody>
</table>

INTERIOR

COMMENTS:
Sky Conditions: Bright, clear sun. No clouds or haze.
Temperature: 68°F
Large lunch time crowd

Figure 17. Data Collection Sheet: 6th Street Market
Reference to Figure 18 make obvious the lack of congruency between building envelop and lighting contours along the longitudinal axis. These pools of bright sunlight punctuate the space at regular intervals and of course move through the course of each day. The transverse section shows a much more sympathetic relationship between building and daylight as the levels rise with the roof peak and fall back along both sides.
Figure 18. Lighting Profile: 6th Street Market
MODEL STUDY

It became apparent upon completing the field observations that the daylighting techniques employed in the central block of the 6th Street Market complex were the least effective of all the sites visited. The intermittent punch through of the metal roofing with small flat skylights proved to be inadequate in creating the character attributable to the presence of natural light present in the other projects. A central segment of this space was constructed in model form (see Figure 19, note photosensor locations 1 through 14) 4 bays in length, for a total of 120 feet by approximately 40 feet in width. Also constructed for this model were three alternate roof fenestration patterns (see Figure 20) in addition to the existing roof condition.
Chapter II. Findings
Figure 20. Roof Fenestration Patterns
Each roof pattern was tested for the interior illumination levels they projected both within the sky simulation dome and for comparison to actual conditions outdoors under the direct sun (see Figure 21). Subjective evaluations were made concerning light/dark shadow patterns, general illumination effectiveness, conformance to building envelope, and aesthetic appropriateness for the four patterns. Also considered were the tabulated results (Tables 1 and 2) of the testing. By reference to these tables it is possible to pick out excessively bright or dim areas within the plan, to understand the overall illumination patterns and most importantly to compare one roof plan to the others. It is interesting to note here the difference in illumination levels between the tested model (see Table 2, Column A) and the existing building (Figure 17). It would seem that in this case at least that the model does not closely replicate the existing lighting conditions at the site. This can be most readily attributed to the different solar orientation caused by the 45 day lapse between the field investigation and model testing dates and also the inaccuracies in exact duplication of the surface reflectances within the model.
Figure 21. 6th Street Market Model
<table>
<thead>
<tr>
<th>Roof Fenestration Pattern</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<tbody>
<tr>
<td>1</td>
<td>8.8 f.c.</td>
<td>12.0 f.c.</td>
<td>7.2 f.c.</td>
<td>22.1 f.c.</td>
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<td>2</td>
<td>17.2</td>
<td>18.0</td>
<td>10.2</td>
<td>45.5</td>
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<td>3</td>
<td>8.5</td>
<td>9.3</td>
<td>5.4</td>
<td>26.0</td>
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<td>4</td>
<td>2.4</td>
<td>9.6</td>
<td>4.8</td>
<td>28.7</td>
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<tr>
<td>5</td>
<td>3.9</td>
<td>19.0</td>
<td>9.6</td>
<td>49.4</td>
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<td>Sensor Location</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2.4</td>
<td>10.2</td>
<td>5.5</td>
<td>33.1</td>
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<tr>
<td>7</td>
<td>1.9</td>
<td>16.8</td>
<td>8.8</td>
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<td>21.0</td>
<td>10.</td>
<td>56.3</td>
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<tr>
<td>9</td>
<td>2.4</td>
<td>14.1</td>
<td>7.8</td>
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<td>12</td>
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<td>5.2</td>
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<td>9.4</td>
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<td>6.4</td>
<td>17.9</td>
<td>8.8</td>
<td>39.2</td>
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<td>120 f.c.</td>
<td>120 f.c.</td>
<td>120 f.c.</td>
<td>120 f.c.</td>
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Table 2. Daylighting Model Test Results: Outdoor

<table>
<thead>
<tr>
<th>Roof Fenestration Pattern</th>
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<th>B</th>
<th>C</th>
<th>D</th>
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<tbody>
<tr>
<td>1</td>
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<td>173.8 f.c.</td>
<td>107.6 f.c.</td>
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<td>2</td>
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<td>191.5 f.c.</td>
<td>7977.5 f.c.</td>
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<td>3</td>
<td>3681.1 f.c.</td>
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<td>171.1 f.c.</td>
<td>4787.2 f.c.</td>
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<tr>
<td>4</td>
<td>59.8 f.c.</td>
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<td>128.6 f.c.</td>
<td>518.3 f.c.</td>
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<tr>
<td>5</td>
<td>86.6 f.c.</td>
<td>391.4 f.c.</td>
<td>196.1 f.c.</td>
<td>7020.2 f.c.</td>
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<td>6</td>
<td>68.5</td>
<td>5314.5 f.c.</td>
<td>140.9 f.c.</td>
<td>6566.8 f.c.</td>
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<td>7</td>
<td>71.5</td>
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<td>172.2 f.c.</td>
<td>643.0 f.c.</td>
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<tr>
<td>8</td>
<td>89.6</td>
<td>489.6 f.c.</td>
<td>232.8 f.c.</td>
<td>2897.0 f.c.</td>
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<td>9</td>
<td>74.5</td>
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<tr>
<td>10</td>
<td>247.4 f.c.</td>
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<td>11</td>
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<td>4098.9 f.c.</td>
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<td>6447.1 f.c.</td>
<td>224.8 f.c.</td>
<td>6797.4 f.c.</td>
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<tr>
<td>13</td>
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<td>276.2 f.c.</td>
<td>157.4 f.c.</td>
<td>525.8 f.c.</td>
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<tr>
<td>14</td>
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<td>1014.1 f.c.</td>
<td>329.6 f.c.</td>
<td>7841.7 f.c.</td>
</tr>
</tbody>
</table>

Exterior Horizontal       | 9670 f.c. | 9653 f.c. | 9661 f.c. | 9669 f.c. |
CHAPTER III. CONCLUDING REMARKS

Through review of the process, findings, and appendix of this investigation several observations may be made. The first listed below responds directly to the stated objective, while the remainder grew evident during the investigative process.

A. The techniques and daylighting expertise developed in past projects are not always brought to bear on later work. Using Harborplace as the base for comparison, as it predates by several years the other three projects, certain things were learned and other potential lessons ignored. Several merchants leasing space at Harborplace have found it necessary to modify their spaces with some type of internal shading device (Figure 22) to protect their merchandise. This is unfortunately also the case at Waterside (Figure 23) in nearly an identical situation, that of greenhouse extensions from the southern face of the building proper resulting in excessive heat buildup within sales areas.

Fortunately this is not always the case as is beautifully exemplified in the "Conservatory" space at Owings Mills (Figure 13). Here a harmonious balance is achieved between glass area and solid enclosure to provide a pleasing luminous environment. Relatively high levels of illumination are maintained in this space (even in winter conditions as when measured) which support abundant plant life. Here is
an example in which the lighting contour follows the building form (Figure 15).

B. Through field investigation it was possible to determine the daylight illumination levels of the four projects selected. The results of these measurements are presented on the data collection forms (Figures 6, 7, 10, 11, 14, 17).

C. A concise written history of the retail building type is incorporated within the introduction of this work as well as in more complete form in the appendix. Throughout history daylight has been a part of retail activity and its reincorporation into the "Festival Market" of today is testimony to its importance to this building type.

D. Through model study of a segment of the 6th Street Market it was possible to examine alternate roof fenestration patterns and to compare the resulting interior illumination levels. Subjective evaluation also came into play in determining the best of these alternates. Roof fenestration pattern B exhibited the most effective interior illumination with a pleasing balance between actual levels of illumination and an aesthetic fit with the existing structure. Figure 25 contains a photograph of this condition of a continuous band of glass along both sides of the ridge line. While this may tend to exaggerate the linearity of the arrangement of spaces it does seem the best overall.
Other observations that may be made are less obvious and belong to the realm of subjective evaluation and thoughtful comparison. While less scientific in nature these conclusions are of value to the designer of daylit spaces and serve to build up an intuitive feel for the subject that can be called upon in the absence of quantifiable data. In this group of quasi-conclusions are:

A. The most desirable lighting profiles in retail applications, similar to those studied here, are the ones in which the lighting profile roughly approximates the shape of the building envelope. This is witnessed best at the Conservatory (Figure 15) at Owings Mills. This space is made by the volume of space and the quality of light admitted into the center from both fenestory and skylight leaving the periphery to relative dimness. The way that this matches the building envelope is highly admirable. On the opposite extreme among those projects presented is the upper level at Harborplace (Figure 7) in which a narrow, nave-like space is subjected to wide fluctuations in illumination levels that do little to complement the building form and in fact actually detract from the retail purpose of the space. Certain store fronts seem to be more important than others by being washed in direct sunlight but upon closer inspection these same spaces appear dim and gloomy within and exhibit a mirror effect to reduce the effectiveness of display windows.

B. Drastic (i.e. greater than a factor of 2) illumination level differences in single or directly adjacent spaces creates an undesirable
luminous environment. This condition distracts from and possibly distorts the perception of a given space so completely so as to create an effect both unintentional and undesirable from the viewpoint of the designer. Again this problem is evident at Harborplace but also to a lesser extent at both Waterside and the 6th Street Market. Pools of direct light entering through unbaffled transparent skylights seem to be the greatest source of difficulty here. While useful in enlivening the space with moving shafts of intense light a fatiguing luminous environment is presented to the eye. Potential customers have been seen shielding their view from the intense glare of certain all-glass store fronts. The shady side of the interior passage appears upon casual observation to attract more traffic thus favoring the shops along that side. Each of these factors supports the conclusion that drastic illumination changes are detrimental in this building type.

C. Daylighting is appropriate in the common areas of this type of retail development. It is an essential component in the creation of the "Festival" atmosphere. An association with nature, awareness of the passage of time, and the animation of moving shafts of light each add much to this building type. People are often seen sitting in the sun resting or eating while an adjacent "shady" table remains empty. This apparent discrepancy with that above is a peculiar difficulty found in these "Festival" marketplaces in which several activities are meant to be accommodated within a single space.
In support of the second group of observations there is no data to point to, nor industry standards to meet, nothing but the experiential impressions of this author to support the claims presented. Each of these three points has become apparent time and time again through review of the photographic site records and repeated visits to these and other comparable retail and non-retail developments. Through reference to Figures 24, 25, 26 and 27 the reader may visually compare the resulting lighting characteristics of the four tested roof fenestration patterns. If nothing else these final observations are worth some thought and critical observation in relation to other recognized effective daylighting application.
Figure 22. Tenant Shading Retrofit: Harborplace
Figure 23. Tenant Shading Retrofit: Waterside
Figure 24. Model Interior: Fenestration Pattern A (Existing)
Figure 25. Model Interior: Fenestration Pattern B
Figure 26. Model Interior: Fenestration Pattern C
Figure 27. Model Interior: Fenestration Pattern D
APPENDIX A

THE HISTORY OF MODERN SHOPPING CENTERS

Evolution of the Product

Shopping centers are the great community gathering places of our time. People yearn for community. A trip to the shopping center is more than just an opportunity to buy goods—it's an opportunity to interact with other people.\footnote{Suzanne Lennard and Henry Lennard, \textit{Public Life in Urban Places} (New York: Gondolier Press, 1984) pp. 21-34.} Department stores and modern, enclosed shopping malls usually lack the personalized service and opportunities for social interaction between customers and store personnel that are offered by smaller separate stores. However, large stores and malls do offer other advantages. Shoppers and browsers alike welcome the greater variety of merchandise and the reduced feeling of obligation to buy. Many feel free to visit such shopping facilities just for a respite from inclement weather, loneliness, or boredom. Older people frequently choose to walk, sit, and observe passersby; read their newspapers; or eat their lunches in shopping center courts because protection from harassment or robbery tends to be better than on city streets or in public parks. Young adults often spend their lunch hours and many of their after-work hours in shopping malls, using the courts as substitutes for the town squares and...
plazas that are absent in many suburban communities. In some areas, the courts function as community centers, particularly for teenagers who gather there to talk and make new acquaintances.

Michael Olesker of the Baltimore Sun comments on the awareness of this important social aspect by shopping center developers: "The people who design shopping centers know what they're doing. They study color schemes, and traffic flow charts, and they know as much about sociological subtleties as they do zoning ordinances. There is a philosophy they bring to us that says, make this your home. Make this a place to go when you get out of the house."

The pattern of present shopping centers started evolving in 1907 when Roland Park Shop Center was established in a Baltimore neighborhood about 5 miles north of the downtown area. Its most significant feature was off-street parking. The original tenant was a drug store, and subsequently the center comprised six stores with 12,000 square feet of space.

Until 1923, there was no such thing as an integrated suburban shopping center—one under a single landlord having a variety of large and small tenants and affording common, off-street parking space. In that year, J. C. Nichols Company built Country Club Plaza on 40 acres straddling a main highway 5 miles south of downtown Kansas City, Missouri. Based on small, locally owned stores, the center was the first of its kind to be situated away from a mass-transportation transfer or terminal point and cater to automobile traffic. The Nichols Real Estate organization also developed a 5,000 acre residential district in the vicinity, thereby providing a built-in, walk-in trade of 40,000 persons.
In 1931, Highland Park Village, Dallas, pioneered the development of a planned center with stores turned away from the street and grouped around a court.

Northwood, in suburban Baltimore, was another early center, built in 1938 with 12 stores on a planned street, six stores on each side with parking between.¹⁺

But for the most part, shopping centers are a postwar phenomenon following World War II. Center development arose out of the surging population of this period with more young-marrieds, more children, and more older people. There was a failure of mass transportation to meet the needs of the times, a marked rise in national income, tremendous growth in the use of the automobile and in the number of 2-car families, improved highways, the 5-day work week and increased leisure, and a widespread shift of homes, industries and business facilities from the city to the suburbs.

The shopping center grew out of early, free-standing Sears and Ward's stores and innovative grocery outlets that were the first to locate outside of downtown business areas. Sites were chosen to accommodate both the store and customer parking space. Original centers were typically a unified row of stores with display windows fronting on traffic streets with off-street parking lots to the rear or side of the strip.

With the introduction of a pedestrian street between two facing strips, the original strip center gave way to the pedestrian mall. In 1950, Allied Stores Corporation of New York opened Northgate in Seattle, Washington, as the first suburban regional shopping center built with a major full-line branch department store as the leading tenant. Northgate was the first to feature an open, central pedestrian mall.

When the open garden space between the facing strips was closed to the weather and provided with heat and air-conditioning for shopper appeal and comfort, the predominant pattern in today's regional shopping center building design was born—the enclosed mall, an air-conditioned pedestrian concourse to which tenant stores have direct access. The first enclosed mall Regional Shopping Center, Southdale, near Minneapolis opened in 1956.

James Rouse and the Rouse Company were among the pioneers of regional shopping center development and one of the first to enclose suburban malls. After the opening of Southdale, three of the next four enclosed suburban malls in the nation were Rouse malls.

The 60's produced a great increase in shopping center development activity. The enclosed, heated, and air-conditioned mall became the dominant building form for regional centers. By the late 60's open mall centers began converting to covered mall operations.

In 1950, according to the Urban Land Institute there were only 100 centers, mostly of the neighborhood or community categories. By 1953 the

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15 Ibid., p. 22.
16 Ibid., p. 23.

Appendix A
number had tripled. By 1973, there were an estimated 16,000. Major
growth took place in the late sixties and early seventies. During the
mid-70's, overbuilding took place. By the late 70's the end of the
shopping center boom became obvious. A number of factors slowed growth.
Restrictions and regulations for the protection of environment, ecology,
and energy sources limited the pace of land development in all forms.
Inflation and high levels of unemployment slowed consumer spending and
consequently retail expansion.

With more than 22,000 centers in existence by the early 80's, the
shopping center industry is in transition. It is seen as a mature in-
dustry facing the need to make significant adjustments. Virtually every
significant metropolitan area has its complement of shopping centers.
Opportunities for new center development are limited by market and fi-
nancing considerations and the resulting effect is that owners and de-
velopers are focusing attention on management and operations of existing
properties by upgrading the tenant mix, improving center appearance, and
expanding and intensifying the use of land.\textsuperscript{17}

New center construction has slowed considerably, but studies show that
there will be a great need for new shopping centers in the years ahead
as consumer demand continues to grow at a slow but steady pace. But de-
velopment differs somewhat from before. Expansion and renovation of ex-
isting centers, new trends in the marketing mix of tenants, and the
development of urban shopping centers are receiving greater attention.

\textsuperscript{17} "The Rouse Touch," \textit{Builder}, Nov. 1984, pp. 74-81.
According to a recent statement by Albert Sussman, Executive Vice President of the International Council of Shopping Centers, more than 35% of all new shopping center retail space in the next three years will constitute expansions of existing centers and approximately 25% of all new centers on the drawing board are slated for urban locations.

Shopping centers are still the dominant force in retailing, and that trend will continue. The proportion of shopping center sales to total sales has been increasing at the rate of 2% a year for the last five years. It is expected that in 1985 half of all retail dollars spent will be spent in shopping centers. As the population grows and shifts to new residential areas, nearly one billion square feet of retail space, or the equivalent of 9,000 shopping centers, is anticipated. This clearly shows that there is still growth in the industry.

In a recent survey conducted by the trade journal, Shopping Center World, 337 chain store executives representing 72,000 stores of various types, responded to questions about plans for new stores. Of the 72,000 stores represented in the response, 10% were opened during 1984, and the chains plan to open over 38,000 stores within a four-year period ending in 1988. Projections for new store openings increased 18.5% over four-year projection responses received in the same type of survey conducted by Shopping Center World one year earlier.

The chain stores responding to the survey are primarily interested in space within shopping centers, rather than free-standing space or other alternatives. 49.2% indicated that all of their space through 1988 will be located within shopping centers. [multiple answers possible]
85.3% plan locations in regional centers
41% plan locations in community centers
35.6% plan for neighborhood strip centers, and
20.7% indicated locating in outlet centers

Chains with under 50 stores made up the largest group of those looking for space in the regionals. Those chains with 50-150 stores lead the way into the outlet malls, and chains with over 150 stores are trying to get most the space in strip and community centers.

The retailers also had definite ideas about growth areas. Naturally, the southeast and southwest are considered prime expansion territories, but centers in the northeast still demand plenty of attention. In fact, these three regions were within a few percentage points of each other:

[multi-answer question]

The southeast captured 23.7%
The southwest 21.65%
The northeast 21.2%
[remaining 25% scattered in other areas]

The retailers' plans clearly indicate there are opportunities for both new growth and improving the performance of existing centers. Both point to a stronger more dynamic industry.

Retail consultants and analysts have taken note of the threat of computer shopping services which are slowly beginning to change the way people shop. Shopping by computer, or teleshopping services as they are...
called, are becoming available around the country, enabling customers to browse through electronic catalogues and order everything from toys to crystal to theater tickets from their personal computer. Teleshopping services are also appearing in retail stores, airports, hotels, credit unions and even athletic clubs.

Analysts believe that teleshopping will catch on, but not until the late 1980's or early 90's. Shoppers who do not have access to large department or specialty stores, such as people in rural areas, will find them most convenient. Marketing experts do not expect any major threat to stores from the teleshopping services since people will always want to shop in person. The strong social attraction of the shopping center is a very important motivating force not to be under-estimated in calculating the appeal of shopping in person.
SHOPPING CENTER DEVELOPMENT

Definition of the Product and its Production

What the Rouse Company does best, and is well-known in the industry for being one of those who does it best, is shopping center development. The Rouse Company's principal product is the value of the development of Rouse centers. The most complete and accurate description of just what it is that they do in producing this product is contained within the definition and characteristics of a shopping center as provided by the Urban Land Institute.

The Community Builders' Council of the Urban Land Institute defines a shopping center as:

A group of architecturally unified commercial establishments built on a site which is planned, developed, owned, and managed as an operating unit related in its location, size, and type of shops to the trade area that the unit serves. The unit provides on-site parking in definite relationship to the types and total size of the stores.18

The definition given for shopping center distinguishes this land use and building type from miscellaneous collections of individual stores which stand on separate lot parcels along streets and highways or which are clustered as a concentrated business district, with or without incidental off-street parking. These are retail shopping areas or shopping districts.

The Urban Land Institute further characterizes a shopping center by certain elements which set it apart as a building type and planned commercial use: ¹⁹

1. There is a unified architectural treatment for the building or buildings that provide space for commercial establishments which are selected and then managed as a unit for the benefit of all tenants.

2. A unified site, suited to the type of center called for by the market. The site may permit building and parking expansion if trade area and other growth factors demand. In addition, the site is located for easy access from the trade area and is arranged to distribute customer pedestrian traffic so as to maximize retail merchandising.

3. On-site parking is provided and is arranged to provide adequate entrance and exit and acceptable walking distances from the parked car to the stores.

4. Service facilities are provided for goods delivery, separated from customer awareness.

¹⁹ Ibid., p. 5.
5. Tenants are grouped to provide merchandising interplay among stores and the widest possible range and depth of merchandise appropriate for the trade area.

6. Last, but not least, agreeable surroundings for shopping in comfort (including weather protection), convenience, safety, and quality of design—including signs and their placement.

These characteristics are not associated with the usual commercial district. An important point about shopping centers is that they create an image for the unit through single ownership and management and through joint promotional efforts by tenants and owners.

Each element in a shopping center must be adapted to fit the circumstances peculiar to the site and its environs. Innovations and various interpretations of the basic features must be considered in planning, developing, and operating a successful shopping center. To be successful, the center must be not only profitable but also an asset to the community within which it is located.

Within the commercial land uses which are properly called shopping centers, there are several major, identifiable types—1) regional; 2) community or district; and 3) neighborhood or local convenience. Each is different in its function. In all cases, the major tenant classification, not site area or building size, determines the type of shopping center.

The neighborhood center provides for the sale of convenience goods (such as food, drugs, and sundries) and personal services, those which

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meet the daily needs of an immediate neighborhood trade area. A supermarket is the principal tenant in a neighborhood center. The neighborhood center has a typical gross leasable area of about 50,000 square feet but may range from 30,000 to 100,000 square feet. For its site area, the neighborhood center needs from 3 to 10 acres. It normally serves a trade area population of 2,500 to 40,000 people within a 6-minute drive. The neighborhood center, sometimes called a convenience center, is the smallest type of shopping center.

The Community Center is built around a junior department store or variety store as the major tenant, in addition to the supermarket. Such a center does not have a full-line department store, although it may have a strong specialty or discount store as an anchor tenant. The community center offers shoppers greater depth and range of merchandise than does a neighborhood or convenience center. Typically, it was a gross leasable area of about 150,000 square feet but may range from 100,000 to 300,000 square feet. For its site area, the community center needs from 10 to 30 acres. It normally serves a trade area population of 40,000 to 150,000 people. The community center is the in-between or intermediate type of shopping center.

The Regional Center provides shopping goods, general merchandise, apparel, furniture, and home furnishings in full depth and variety. It is built around the full-line department store of at least 100,000 square feet, as the major drawing power. For even greater comparative shopping, two department stores—even three or more—are included as tenants in the center. The normal design uses the pedestrian mall, either open or enclosed, as a connector between the major anchor stores. The mall also
establishes a basic pattern for directing customer flow past supplementary tenant stores which are placed between the purposely separated majors.

Regional centers range between 300,000 and 1,000,000 square feet of gross leasable area. The typical center has an area of 400,000 square feet. When the regional center exceeds 750,000 square feet in gross leasable area and includes three or more department stores, it becomes a super-regional center.²⁰

Regional and super-regional centers establish their customer drawing power from their ability to offer full ranges of shopping facilities and goods. This attraction extends their trade areas by 10 to 15 miles or more, modified by such factors as competitive facilities and travel time over access highways. The trade area population served is normally 150,000 or more people.

The regional and super-regional are the largest types of shopping center. They are also the glamour center and come closest to reproducing shopping facilities and customer attraction once available only in central business districts.

The basic elements of any center may change because of the need to adapt to the characteristics of the trade area, including the nature of the competition, population density, and income levels. The number of people needed to support a shopping center of any type, for example, cannot be fixed, because income level, disposable income, dilution by competition, and changing methods of merchandising and changing store

²⁰ Ibid., p. 7.
sizes all enter into the calculations. Local conditions within a trade area (number of households, income levels, existing retail outlets) are more important than any standard population figure in estimating purchasing power needed to support a center.

It should be emphasized once more at this point that tenant composition and the characteristics of the leading tenant define a shopping center type—building area, site size, and population do not.
TRENDS OF THE 80'S

New Industry Direction and Opportunities

The booming period of the 1960's and early 1970's with its tremendous gains in shopping center development, particularly of the regional scope, led many developers to diversify both vertically and horizontally into other areas of construction and real estate speculation.

The economics of the urban development industry is based heavily on borrowed capital and there are significant waiting times before the capital earns a cash return. These twin forces of heavy capital outlays and cash flow shortages combine to put the development industry in the position of heavy borrowers, usually secured through placing mortgages on land and buildings. Because of their entrepreneurial spirit, a spirit that resents the loss of control invariably associated with equity participation, debt is preferred to equity financing by developers, except for the larger public real estate companies.

When economic conditions deteriorated toward the mid-1970's there had already been overbuilding, and the supply of shopping centers exceeded the need for them in certain markets. The softening economy of high interest rates and inflation of the second half of the 70's forced a retrenchment to more conservative positions, away from diversification. Permanent financing is the keystone of the business and the high cost of money continuing into the 80's, coupled with its resultant lack of expansion of residential development, reduced new construction of retail and shopping center properties. Even so, shopping center development is

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more resistant to the effects of such economic doldrums than other forms of real estate development, because shopping centers not only meet the needs of the consumer but also provide an outlet for social, recreational and cultural activities. This is one reason why shopping center development, particularly by the more successful developers, has been a favorite for institutional investors such as pension funds and insurance companies.

Nevertheless, with the practically non-stop proliferation of shopping centers across the country for the past 20 years, desirable sites for new development are in increasingly limited supply.

The shift away from an emphasis on new development has led developers to direct their attention to opportunities which include:

1. The offering of management and related services to other shopping center owners;

2. Remodeling and remerchandising of other existing properties, or those acquired for that purpose;

3. Entry into off-price center development;

4. Participation in the development of mixed-use and multi-use projects, both downtown and in the suburbs;

5. Diversification into other areas of real estate development including office buildings and residential complexes.
With their capital needs no longer adequately supplied by permanent financing, developers are reluctant to shift heavily to equity participation. Many are becoming "manufacturers" of shopping centers, owning very little or a lot less than they've owned before. They make money by producing more and taking fees for managing the centers. Some developers have curtailed construction to concentrate on management.

Renovation and expansion of existing centers has also become a focal point of developer activity. The potential for the rehabilitation, redevelopment and expansion of existing properties is tremendous, with an estimated half of the country's 22,000 regional shopping centers 15 years old, or older. With the cost of money still high, existing regional malls are unlikely to face much, if any, new competition, and promise to be a growing source of income for years to come. Redevelopment opens up whole new possibilities, providing an opportunity to expand, upgrade and readjust the tenant mix to match market needs. Recycling allows a developer to maximize the value of the existing center. Many older shopping centers are being restored or rejuvenated to adjust to "mature" or "youthful" demographics. Center owners are changing their tenant mix to meet the needs of a changing population in order to enhance revenues. Older regionals ready for retrofitting are being acquired by combinations of shopping center developers and either institutional or public capital sources. These older centers can be bought at good prices and money is available at acceptable rates to finance renovations.

Recognizing the change in market pace, many developers are focusing on staged or small center developments. High costs have also led to a return toward smaller centers in densely populated areas that had been
passed over before and smaller neighborhood strip centers. More of these centers are targeted at narrow, discrete segments of the market. They are being built around "themes" such as factory outlets or off-price and discount stores instead of full-line department store anchor. Conventional retailers are increasingly involved in off-price with spin-off cut-rate operations. Off-price retailing is being combined with conventional retailing often under the same roof, combining the appeal of regional shopping malls with the expanded market penetration of an outlet mall. Factors of location and tenant mix are fundamental points. Experts note that off-price centers seem to thrive better in more affluent areas where people have more time to shop. Working people shopping on the run do not take the time to look for value. Off-price centers are also responding to overriding shopping center industry trends toward urban locations, redevelopment of existing properties, and conversion of buildings from other uses.

Mixed-use or multi-use projects have begun to proliferate around the country. The Urban Land Institute has three criteria that are necessary for "mixed use": three or more significant, revenue-producing uses; functional and physical integration; and development in conformation with a coherent plan. In general, mixed or multi-use projects fall into three major categories: office dominant in which as much as 75 to 90 percent of the leasable area is devoted to offices, although one or more other uses are also present; non-residential mixed use which typically blends office, retail and hotel space on a single site; and classic mixed-use which usually contains residential apartments or condominiums in addition to offices, retail and hotels. When extended to its conceivable maximum
potential, the concept could produce mini-cities where people can live, dine, shop, work, study, play and pray without ever leaving the premises. Developers are enthusiastic about the opportunities offered in working in mixed-use. One often cited factor is the synergy achieved through its make-up. It allows for flexibility and continuity despite changing market trends. Projects once completed provide a more diversified risk. Because of the mix of components, any one of which may be out of favor with the market, financing of mixed-use has become established as a development form and not merely a fad.21

The growth of the Urban mall as a significant retail opportunity of the 80's is part of a larger trend: the rebirth of the city. After America's migration to the suburbs nearly 30 years ago, this return to the city and the new retail focus on the city signal a time of social reform and business growth as evidenced by the building of new highways, residential and office buildings, convention centers, and various medical, educational, cultural, and recreational facilities. The city has once more become a desirable place to shop. A study conducted in 1978 for the department of housing and urban development surveyed American citizens on their attitude toward cities. The survey showed that Americans rated the city at the top of the list of places to find the best shopping, health care, colleges and universities, public transportation, restaurants, theater and other cultural activities. People are rediscovering downtown and the urban renaissance taking place is very much apparent in the rebirth of downtown shopping. In fact, retailing is a

21 Ibid., p. 7.
critical element to any downtown revitalization projects, many of which are supported by federal and local government programs, provide significant opportunities for developers. City cooperation in the form of condemnation, demolition, parking provision, and financing make attractive projects which would otherwise be infeasible because of their expense and complexity. The development concept and design of successful projects reflect whatever is distinctive about its urban setting. Failures of urban malls which have occurred have been mostly those which have attempted to transplant suburban centers to urban settings. However, urban malls are not regarded by industry members as replacements for suburban shopping centers. It's frequently the unusual architecture of such malls coupled with their diverse tenant mix that provide them with a drawing power far greater than that of traditional suburban shopping centers. Typically, a suburban mall draws people who live 20 minutes away year-in, year-out; whereas an urban mall draws from a tremendously broader range--50 to 100 miles. Some downtown retail projects are part of larger mixed-use complexes, others are single-use retail only. In the mixed-use complexes, the other uses such as hotel, office, or recreation facilities function as anchors. However, a well-conceived urban project generates enough excitement by its very presence that, in effect, it anchors itself. This excitement of the city mall has spread to virtually every major metropolis, including New York, Chicago, Boston, Baltimore, Washington, St. Louis, Milwaukee and others. More are in the planning stages.

New strategies by developers, owners, and retailers reflect significant changes in the market place. There is renewed optimism and growth in the shopping center industry and it appears to be successfully adapting from a high-growth childhood to a creative maturity.  

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