Chapter 1
Introduction

The growth of Americans’ use of the Internet since its inception is staggering. For example, the percentage of automobile dealers with their own web site in the United States leaped from merely one percent in 1994 to 83 percent in 2000 (Braatz, 2002). Braatz (2002) quotes:

“It took cable television twenty-five years and the personal computer seven years to reach ten million customers. The Internet reached ten million customers in six months” (pg. 1).

Nearly one-third of all Americans were accessing and using the Internet in 1998. In 2000, the numbers jumped to nearly 50 percent of the population. By 2005, it is projected that three-fourths of the population will be linked to the Internet (Braatz, 2002).

With the prevalence and integration of the Internet in our lives, online shopping has become a popular and convenient method of obtaining goods. Since its implementation in the late 1990s, online shopping has skyrocketed. In 2000, a survey was conducted in which almost one-third of Internet users indicated that they shopped for retail goods online (Braatz, 2002). In contrast to traditional retail, which has an annual growth of about 4 to 5 percent, e-tail, or online retail, is growing at 35 percent a year (Braatz, 2002). Despite tough
economic times from 2001 to 2002, each holiday season within that time period had a growth of online sales by an average of 20 percent (Olsen & Gilbert, 2003). In 2003, the e-tail sector reported industry-wide revenue reaching ninety-three billion dollars, a 27 percent increase over the year 2002 (Hines, 2004). Through the continual stabilization of e-tailers, more people are making use of the convenience and potential savings of virtual storefronts (Olsen & Gilbert, 2003).

The digital realm of the Internet is very real and quite amazing, but also has its drawbacks and limitations. E-tailers certainly succeed in bringing convenience to the customer. However, e-tailers do not currently communicate a quality or richness of product information from a flat, two-dimensional image. Daft (1992) defines information richness as, “the information carrying capacity of data… Information richness is related to the medium or channel through which the information is communicated” (pg. 310).

When a customer physically visits a clothing retailer and spots an interesting piece of clothing, he or she has the opportunity to pick up the item, touch it, see it from many angles and even try it on for size. The customer moves through an actual space with architectural elements, lighting, décor, and sometimes music or certain aromas (Wakefield & Baker, 1998). Any consumption experience involves the stimulation of the consumers’ thoughts and/or senses (Kim, 2001). Therefore, retail is a sensory experience. The occurrence is similar at other types of existing retailers. A retail experience may be viewed as a process that provides cognitive and sensory benefits for the consumer (Kim, 2001).
Despite the evident benefits of retail shopping in an actual space, many consumers do not partake of those benefits. Whether it is some type of mental inhibition or physical disability, there are many issues which prevent consumers from making a visit to a retail store (Kaufman-Scarborough, 1999; Tremblay, 1995). It is possible for existing retailers to renovate and eliminate physical barriers from their stores in order to make them suitable for consumers with physical disabilities. However, how does a retailer address the challenge of making a space more user-friendly for consumers with social phobias or other types of mental issues? For these types of consumers, the approachability and user-friendliness of a space is critical because of the role it can play in improving their well-being (Tremblay, 1995). The Internet, complete with convenience, comfort and anonymity for the user, would be a great tool for penetrating the socially-challenged consumer market. It would also help retailers to cater to consumers with physical disabilities in an economical way. Thus, e-tail would be very useful for reaching those excluded markets. However, the lack of communication richness of existing e-tailers hardly exemplifies the sensory retail experience of visiting the actual space. The consumer groups that currently are not able to or choose not to visit retail stores are missing a quality, beneficial experience.

There is an important experience that occurs between the customer and the product as well as the customer and the space in the actual, physical store which does not yet occur in the virtual store (Raijas, 2002). This experience that occurs, or relationship that is developed between the customer and the physical
space and the products within that space in the real world, is an important factor in the customer’s decision-making process for purchasing and, more importantly, for overall satisfaction of the retail experience (Pegler, 1998). There is an abundance or richness of product information for the consumer to absorb from a “face-to-face” experience with a product or physical space. It is necessary for e-tail businesses to improve the quality and increase the richness of communication of their websites in order to provide more information and, in turn, a better service to the customer. This improvement will not only aid in the decision-making process for consumer purchasing, but also heighten the quality of the shopping experience and, in turn, establish a greater business-to-consumer relationship (Mogelonsky, 1995). In order to provide an experience for online shoppers that is comparable to visiting an actual store, there exists a need for e-tailers to boost the richness of their product’s information.

Businesses with online products or services seem to be catching on to this need for greater quality of online communication whether it is person-to-person or person-to-product. America Online’s (AOL) Instant Messenger’s (IM) person-to-person communication service, for example, allows the digital transportation of instantly typed messages back and forth between two or more parties. This method of communication is convenient yet it lacks the richness of speaking to someone face-to-face. When speaking directly to someone, the tone of voice, facial expressions and body language are all present to increase the richness or quality of communication (Daft & Lengel, 1986). On IM, it is easy to misinterpret or not fully understand what someone is trying to communicate because several
important channels of communication are missing. This lack of communication richness would suggest that IM is not a very rich media. On the website marketingterms.com (2003), rich media is referred to as, “new media that offers an enhanced experience relative to older, mainstream formats” (rich media definition page). IM, like the e-tail sites, can still serve as a method of communication, but it simply lacks communication richness.

AOL has tried to increase the richness of its customers’ communication abilities on IM by including “emoticons” or face-like graphics that can be typed into the body of the text. These emoticons include several different “faces” illustrating different types of emotions. This simple and somewhat effective method of enriching the world of digital person-to-person communication is a decent start.

Customers' increased use of new technology and the Internet illustrates that an incredible growth potential exists in the electronic grocery store industry. Currently, electronic grocery stores have not taken advantage of key components of traditional grocery retailing practices or information technology (Raijas, 2002). Consequently, electronic grocery stores have not yet provided customers with significant benefits for choosing online grocery shopping as opposed to traditional grocery shopping in the actual store. Low growth of electronic grocery store use is the result of this deficiency (Raijas, 2002). This finding suggests that a better quality shopping experience could be provided for online grocery store customers through the marriage of the benefits of online grocery shopping with the benefits of traditional grocery shopping.
Purpose

It is evident that there exists a great opportunity to improve the quality of the e-tail experience for all types of consumers. This study presents a proposal of how to combine the benefits of shopping in an actual retail store with the benefits of shopping online. A grocery store is chosen as the prototype for this new type of e-tailer because of the need for improvement in the field of electronic grocery stores. More importantly, a grocery store's cultural characteristics, historic role as a community social center and necessary function for all who eat makes this space the ideal prototype for incorporating a rich experience (Mayo, 1993; Pegler, 1998; Stumpf, 1990). The former two of these three aspects are what make a grocery store a place full of rich “data”: a community space and products to experience. The third of these aspects illustrates the significant role the grocery store plays in all of our lives as a necessary place to visit or otherwise obtain our food.

The proposed electronic grocery store is different than the present day, two-dimensional web sites that allow people to purchase groceries online. It recreates the quality of the shopping experience found at an actual store in a virtual format. The all too frequent two-dimensionality of most e-tail websites cannot successfully communicate the character and other information about the products and the space in which they are exhibited (Raijas, 2002). A three dimensional virtual space with three dimensional virtual products can provide more enriching information and a community/ cultural experience. It can also
transform a necessary function of purchasing groceries into a more enjoyable and convenient experience improving the quality of life for consumers (Kim, 2001). This new type of space would be a universally designed place of culture and exploration for all despite mental or physical inhibitions. It would also provide another “dimension” for more qualitative spatial and product information communication.

**Justification**

The ultimate goal of a company is to bring the business and the customer closer together (Armstrong & Kotler, 2003). Therefore, a company should constantly be attempting to improve the relationship with the customer. Consumers seek after, appreciate and often remain loyal to companies that offer services which are creative, novel and beyond what is expected (Armstrong & Kotler, 2003). Thus, a qualitative, interactive site that provides a virtual space to visit with life-like products to pick up and look at will be more appealing to customers than the e-tail services that currently exist. Service providers are no longer, for the most part, looking to “get online”… they already are (Braatz, 2002). They are now questioning, “How can we provide better service to our customers” (Armstrong & Kotler, 2003)? Providing a friendly website interface and a creative, more qualitative method of exhibiting products and communicating product information will provide greater customer satisfaction. More importantly, the customer will feel comfortable and free in a “space” which
promotes autonomy (Deci & Ryan, 1989). Ultimately the quality of the lives of consumers can be improved.

Objectives

The objectives of this study are:

1) To explore ways of blending the quality of the person-to-product/person-to-space experience of actual retail with the convenience, comfort and safety of e-tail;

2) To translate the richness of communication, culture and social aspects of the shopping experience of actual retail into digital format; and

3) To design a virtual space which will promote a higher quality of life to those who visit.
Chapter 2  
Literature Review  

Community Role  

From the Greek forums of ancient times to the twenty-first century mini-mart on the busy street corner, the role of the grocery store has, historically, been that of the social center of the community; a place of unity and interaction of folks from all walks of life. Mayo (1993) suggests that, “The grocery store is a common ground for American Society. By necessity, everyone shops for food [in order] to sustain themselves” (pg.71). According to Stumpf (1990), 

“Markets, historically, have been centers of socialization… One only has to look at the odd, but delightful collection of personalities having coffee… Though they are there to buy a loaf of bread, they are also there to greet neighbors, to read a newspaper, to meet a friend” (pg.41).

In regards to a *Pathmark* brand supermarket in Brooklyn, New York, Wilson (1998), observed that “Many of the customers seem to know each other; their conversation and lively interaction fill the store, the plaza, and the streets around it” (pg.17). Mitchell (1998) speaks of the same *Pathmark* supermarket when commenting this:
“When this *Pathmark* opened there were vacant storefronts to the north, east, and west of this building. Within years, there was a reflux of greengrocers in the area, as well as other businesses” (pg.17).

The grocery store, a place of trade and social interaction, creates undeniable community energy.

**Cultural Experience**

The experience a customer engages in at a grocery store is comparable to that of a museum (Pegler, 1998). Not only is the grocery store a unique, physical space to visit, but, also, a rich collection of fascinating items. The layout of the interior space is meticulously planned for the efficiency of customer circulation and the success of product exhibition. There is much care and thought put into each and every product exhibited on the aisles of the grocery store. Customers should have a certain appreciation for the aesthetics of the space and for its appealing products. Rinpoche (1975), stated:

“Proper shopping does not entail a lot of information… but involves fully appreciating each individual object” (pg.ii).
Experiencing the beauty of a grocery store’s physical space, as well as each of the products on its shelves, is a wonderful occasion. Schneekloth (1996) recalls her childhood trips to the grocery store:

“We arrived at the grocery store…. and entered into a wonderland of food; colorful boxes and cans and vegetables and meat and candy, all laid out in such neat rows” (pg.71).

Schneekloth’s cultural experience with the grocery store is not uniquely hers. The awesome feeling that she describes occurs among many grocery shoppers. Interacting with the space and products in the grocery store environment is truly an experience which all should enjoy (Stumpf, 1990).

Physical Disabilities, Mental Inhibitions and Universal Design

Some people do not see the grocery store in such a positive light. There are certain types of consumers who dislike making a trip to the grocery store because they do not like being around other people, are embarrassed about what it is that they have to purchase, are prone to panic attacks in public places or any other such mental inhibition. Richards (2003) provides an example:

“A woman hates to stand in line in the grocery store because she's afraid that everyone is watching her. She knows that it's not really true, but she can't
shake the feeling. While she is shopping, she is conscious of the fact that people might be staring at her from the big mirrors on the inside front of the ceiling. Now, she has to talk to the person who's checking out her groceries. She tries to smile, but her voice comes out weakly. She's sure [that] she's making a fool of herself” (social phobia description page).

Social phobia is one of the most common phobias. Being in any social situation, including the grocery store, is a serious fear and difficulty for someone who lives with feelings of social anxiety (Douglass, 2003). This phobia is just one of many causes preventing people from engaging in the community and cultural experience that is the grocery store.

Other consumers may have some physical disability that prevents them from making an effort to take a trip to the grocery store. In a study conducted by de Klerk and Ampousah (2002), the difficulties that physically disabled women experience while shopping for clothes were identified. The results suggest that the test subjects had serious problems accessing shops and navigating through them due to physical barriers that existed. The findings of the study illustrate that it is necessary for retailers to, “adopt a more sympathetic viewpoint towards the needs and problems of a valuable group of clothing consumers” (pg. 103). Many other studies exploring situations involving shoppers with disabilities have concluded similarly.

People who have disabilities want to be treated as normal individuals and desire to be able to do tasks on their own. These types of shoppers prefer retail
environments that are predictable because predictability allows for independence. Due to this desire for predictability, shoppers who are disabled tend to form shopping habits when they visit retail stores in order to become comfortable with being autonomous in the environment. These shopping habits encourage a shopper with a disability to return to the same retailer again and again creating retail brand loyalty, which is well sought after by retailers (Kaufman-Scarborough, 1999).

Retail spaces should accommodate all shoppers, including those with disabilities, when determining the layout of the space and selection of fixtures. The elimination of physical barriers creates a retail shopping environment that normalizes the shopping experience and can, in turn, support the physical and psychological needs of shoppers with disabilities (de Klerk & Ampousah, 2002; Null & Cherry, 1998). The need for improvements in retail environments in accommodating shoppers with physical disabilities should be a significant issue for retailers not only because of the moral integrity involved, but also because the demographics suggest a significant increase in the size of the disabled population and a tendency for continued brand loyalty (Null & Cherry, 1998; Kaufman-Scarborough, 1999).

Each of these accounts illustrates the current problems with both the degree of comfort for people with mental inhibitions as well as the accessibility for people with disabilities in physical retail environments. A need for “universal design” in these retail environments is essential. According to universal design experts, Null and Cherry (1998), universal design is broadly defined as “design
for all people” (pg.25). This vague definition is further enhanced by the description of universal design as an approach to creating environments and products that are usable by all people to the greatest extent possible despite age or level of ability (Null & Cherry, 1998). Products and environments which are universally designed accommodate a wide range of individual preferences and abilities, are easy to understand, communicate necessary information effectively, require a low amount of physical effort, have a low tolerance for error, do not disadvantage any user group and allow the appropriate size and space for use (Imrie & Hall, 2001). Environments that threaten autonomy, with physical, emotional or communicative barriers, for instance, are perceived as controlling and increase pressure and tension. Environments that support autonomy reduce pressure, and increase self-esteem and trust (Deci & Ryan, 1985). In order for people of all types and abilities to enjoy and partake in a quality, retail experience the design of the space must be based upon the principles of universal design.

The Evolution of Retail and Consumer Retail Preferences

In the past 50 years, the nature of retail has greatly evolved. In the 1950s, people would travel downtown to the community retail center of the time for a variety of services. In the 1960s, the idea of saving time and money by providing many different types of products altogether in one space was implemented with the advent of large department stores. The idea of “one stop shopping” grew considerably and caused new retailers to open stores offering this type of service.
These types of retailers grew in size and popularity during the 1970s and 1980s, causing a decline in sales in the old, original, downtown retail stores.
New methods of retail sales grew in popularity in the 1990s. Warehouse clubs that offered products in bulk quantities at reduced prices arose. Home shopping
Figure 1.5: Image of “Sam’s Wholesale Club”, circa 1989, example advent of wholesale clubs; http://www.walmartstores.com

Figure 1.6: Image of “Shop NBC” home shopping channel, 2004, example of home shopping networks
networks introduced the convenience of shopping without ever leaving your own home (Braatz, 2002). Convenience seemed to be the driving force of the retail preference evolution.

It is evident that retail preferences of consumers change with the times. In a survey, created to find the preferences of today's consumer, conducted by European Logistics Consultants (ELC), the findings show that today's consumers desire shopping convenience manifested through twenty-four hour accessibility to a variety of products and services (ELC, 2003). Consumers, specifically those of grocery stores, want the ability to get what they want whenever it is that they want it. This desire suggests that grocery stores should remain open all night and day. In 1995, it was found that though the average supermarket in America was open for business seven days of the week, only about one-third of those stores remained open twenty-four hours a day; the twenty-four hour service is only offered by a few companies in specific geographic locations (Mogelonsky, 1995). It is a great and somewhat inefficient task for grocers to pay more money toward labor, electricity, heating, cooling and water costs, in order to keep their stores fully open twenty-four hours a day. Since two-thirds of America's grocery stores do not remain open all night and day, today's consumer mantra of "whatever I want whenever I want it" is not yet being met in the grocery store segment of retail.

Perhaps, keeping stores fully open twenty-four hours is one solution, but consider the possibilities of the Internet. It is available twenty-four hours a day
and offers an unbelievable variety of products to choose from. ELC (2003) suggests:

“The Internet is being seen as the convenience habit facilitator – the view being that Internet service providers will use grocery shopping as the mass market that will gain them more regular customer usage and increase their advertising revenue potential” (pg. 3).

Findings of two surveys conducted at the University of Georgia illustrate that the amount of experienced online shoppers, those who have purchased groceries online for six months or longer, had jumped from 14 percent to 43 percent during an eighteen month time period from 2000 to 2001. The findings also showed that the number of all shoppers who are willing to buy all of their groceries online jumped from 48 to 79 percent during that same eighteen month time period (Enos, 2001).

Over the next five years, of all the categories of products available online, the food and beverage category is expected to outpace more traditional categories like travel or books. By 2008, it is projected that dramatic growth will be seen in the food and beverage category of online products, including online grocers, with sales increasing by almost 500 percent (Rush, 2003). Online grocery shopping is the wave of the future for satisfying customer desires.
Traditional Grocery Store Shopping Trends of Young Adults

Although the desire for convenience seems to be a universal trend among all of those who shop, the grocery shopping preferences of different age demographics is not so consistent. Young adults, for instance, look for features in supermarkets that reflect their lifestyles. They are the demographic that demands twenty-four hour service and an abundance of product selection more than any other (Mogelonsky, 1995). This trend is due to fact that this age group grew up with these conveniences and have come to expect them as the norm. This age demographic is also turned on by new technologies incorporated into their shopping experience (Mogelonsky, 1995). These shopping preferences illustrate that if a grocery store offered the conveniences of twenty-four hour availability along with a variety of products and presented it in a new, technologically innovative way, then it would certainly attract and retain the young adult market of grocery shoppers. A 3-dimensional, virtual grocery shopping experience would satisfy all of these demands.

The young adult demographic is important to investigate simply because they are the mold for shoppers of the future (Mogelonsky, 1995). Electronic grocery stores should focus on the preferences of today’s young adults for that reason. Mogelonsky (1995) states:
“[Young adults] have been brought up in the age of scanners… they will continue to look for food outlets that make use of the latest technology. Stores with scanners, those that accept credit or debit cards, and those that provide such technological innovations as checkout coupons and “clipless coupons” will attract young adults and keep them coming back as they grow up (pg. 94)”.

The role of technology in society, which has been ever-present throughout the lives of today’s young adults, will continue to progress as an integral tool in the lives of consumers in order to meet the demand for it. This point is particularly evident in the realm of grocery shopping. Already we are seeing new technologies being implemented such as self-checkout machines (Philipkoski, 1998) and hand-held scanners (Davidson, 2004). Manufacturers are working to print radio frequency identity tags (RFIDs) on the packaging of their products enabling consumers to scan a product by simply placing it in the shopping cart (Davidson, 2004; Finkenzeller, 1999). The advent of electronic grocery stores also illustrates the further implementation of technological advances in the grocery shopping sector. The shoppers of tomorrow will continue to depend upon the conveniences offered through the use of technology (Mogelonsky, 1995). In order to compete, companies must address this demand.
Trends in Online Grocery Store Shopper Demographics

In a study conducted by Raijas, the general characteristics of customers currently making use of online grocery stores were identified. It was found that most users of online grocery stores are women, younger, hold higher social status, more often have children and are wealthier than those shopping in traditional stores (Raijas, 2002). Though these are not the only demographics making use of online grocery stores and will not be the only ones in the future, this fact is significant.

Today, daily use of the Internet is more prevalent among women (Braatz, 2002). In 2003, analysts had pointed out new online shopping trends, one of which being that for the first time, there are more women shopping online than men. Since the majority of online consumers are now women then there is a strong growth potential for retail categories that are attractive to women (Olsen & Gilbert, 2003). This fact illustrates a great potential for online grocery stores because, despite changes in household dynamics and growth in the commonplace of male grocery shoppers over the past several years, studies indicate that women are still the primary food shoppers in households containing women (Lovinger, 1999).

Raijas’s (2002) socioeconomic demographical findings of most online grocery shoppers is also significant because approximately 83 percent of the highest socioeconomic bracket is connected to the Internet compared to only 35 percent of the lowest. The growth of Internet usage within the middle and lower
Brick-and-Click

Analysts say that more mainstream customers, ones that shop at such retail chains as Walmart or Target, for instance, are starting to shop online. In addition to that, more traditional retail stores, such as Sears, Circuit City or Best Buy, are offering customers the option of looking, choosing, and purchasing product(s) online and then picking the product(s) up at the store when it is convenient. Forty percent of Sears customers currently take advantage of this option and the idea is catching on (Olsen & Gilbert, 2003). Findings show that the act of purchasing products online and picking them up at the store has
become and will continue to be a much more popular method of obtaining goods among today’s consumer (Fox News, 2003).

Nowadays, consumers enjoy taking a look at what is available and doing some research and shopping around a bit before actually going to the store. This fact illustrates the influence that online activity has as a catalyst for sales in the actual stores (Hines, 2004). In regards to grocery shopping, this fact illustrates a need for consumers to better understand more about the available products at the grocery store (Raijas, 2002). They must be able to experience products though richer methods of communication online.

In the realm of electronic grocery stores, one model that is most likely to be successful is a “brick-and-click” (also known as “click-and-mortar”). This term refers to a partnership between a traditional “brick-and-mortar” company, one which inhabits an actual, physical space, and an e-tailer (Armstrong & Kotler, 2003). In the case of a “brick-and-click” grocery service, the customer is able to make all the choices and purchases online and then go to the local grocer to pick up the order. Many analysts believe that local grocers have an advantage because people feel more comfortable ordering from a familiar name (Enos, 2001).

Problems with Existing Online Grocery Stores

Four existing online grocery stores were evaluated to determine the successes and deficiencies of each of their systems. CoopGrocer.com,
Alberstons.com, Vons.com and Peapod.com were the group of existing electronic grocery stores evaluated. These grocers were chosen because together they represent a variety of online grocery store business models. CoopGrocer.com is a “click-only” website or one without any connection to a brick-and-mortar establishment (Armstrong & Kotler, 2003). Albertsons.com and Vons.com (also Safeway.com) are two brick-and-click websites which are brand extensions of their existing brick-and-mortar counterpart grocers, Albertsons and Safeway (Armstrong & Kotler, 2003). Peapod.com is a new type of brick-and-click website which is partnered with different brick-and-mortar establishments according to geographical location (Armstrong & Kotler, 2003).

The criteria considered during each site evaluation included the following: user-friendliness and visual quality of interface design, quality of product description, product variety and convenience. Each of these criteria, as previously revealed, is a critical component of a successful and informative e-tail experience.

Ease and Visual Quality of Interface Design:

The user-friendliness of the Coopgrocer.com site is successful, but the interface design lacks visual interest and professionalism.
The ease of navigating through the site is achieved by offering one complete list of every grocery category available at the site. This full list does, in fact, make it easy to select a certain product category by quickly eyeing the list. However, the lack of subcategories or a sophisticated organizational system appears somewhat juvenile in nature. This full list of product categories also seems easy to navigate through because there aren’t very many categories; there is only a slim variety of products being offered.
Figure 2.2: CoopGrocer.com full listing of products; http://www.coopgrocer.com/catalog.cfm
*Albertsons.com* has a separate and welcoming home page. This entry helps to introduce the user to the space.

Figure 2.3: *Albertsons.com* home page; http://www.albertsons.com/brand_default.asp

Upon clicking the “Shop” option and entering the “Shop” section, it is initially confusing as to where to begin shopping. Once the search tabs are discovered, though, it is fairly easy to navigate. *Albertsons.com* allows the customer to choose to shop by aisle, alphabetically, or do an individual search for a specific product. This category system allows for different search options and, in turn, greater user-friendliness.
Figure 2.4: Albertsons.com entrance to “Shop” section; http://www.albertsons.com/shared/shop/default.asp
At Vons.com, there is a separate home page which serves as a welcoming tool, but actually ends up hiding the entrance to the online store. It took several minutes to figure out how to move on to the “Shop” section.

Figure 2.5: Vons.com home page; http://www.vons.com
Once the customer reaches the online shopping page, they are greeted by animated graphics illustrating specials and meal ideas. The design is a bit cluttered by images and options making way-finding into a challenge, but the visual quality and graphics are sophisticated.

Figure 2.6: Vons.com entrance to “Shop” section; http://shop.safeway.com/superstore/homepage.asp
The way-finding and overall interface at Peapod.com is easy to understand and navigate through. The first page that opens is welcoming and only takes you step-by-step through the process.

Figure 2.7: Peapod.com home page; http://www.peapod.com/gateway.jhtml?NUM1=1085422369591
The entrance to the “Shop” section also provides easily understood directions without a lot of clutter.

Figure 2.8: Peapod.com entrance to “Shop” section; http://www.peapod.com/site_frameset.jhtml

Peapod.com offers a good product selection and has decent visual graphics; a nice compromise or blend of the visual dynamic of Vons.com and the usability of Albertsons.com.

Quality of Product Description:

In the case of many shoppers, the labels and graphics contained on products are often more memorable than the name of the product itself (Swan,
It is often easier for shoppers to recognize a product label as an image than a name on a list. If an image of the product is not available, the customer is significantly less likely to purchase that product (Swan, 2004).

*CoopGrocer.com* does not convey product information and image quality very well. When choosing from a list of products at *CoopGrocer.com*, some images are available to illustrate the product, but the images are very small, often out of proportion and difficult to see. In many instances, there aren’t any images available to see what the product looks like at all.

Figure 3.1: *CoopGrocer.com* product images;
http://www.coopgrocer.com/items.cfm?Category=CEREAL&showImages=true
The product images on *Albertsons.com* are just as small and as difficult to see as those on *CoopGrocer.com*.

Figure 3.2: *Albertsons.com* product images; http://www.albertsons.com/store/?market=10000
Peapod.com has slightly larger images than those of CoopGrocer.com and Albertsons.com, but the images are still quite small.

Figure 3.3: Peapod.com product images; http://www.peapod.com/site_frameset.jhtml
The product images of Vons.com are large, clear and easy to identify.

Figure 3.4: Vons.com product images; http://shop.safeway.com/superstore/default.asp?page=a

Service Availability, Minimum Purchase Prices and Method of Distribution:

The availability and convenience of electronic grocery stores is still quite limited. Albertsons.com is only available in various cities down the west coast, Idaho and Texas. Peapod.com is only available in Washington, DC, Chicago, Illinois and various New England locations. Vons.com (also Safeway.com depending upon geographical location) is only available in a few cities along the west coast.
Although CoopGrocer.com delivers to customers nationwide, the convenience of groceries delivered by a parcel service is questionable.

In the cases of Vons.com and Peapod.com, not only is the actual service restricted geographically, but browsing rights are, too. Consumers are restricted from browsing through the site without first specifying their zip code. These websites deny entry to anyone without a zip code within the grocery delivery boundaries. Albertsons.com also restricts users outside of the delivery area from
browsing, but makes it easier to enter by offering a list of cities to select from rather than requiring a specific zip code. This restrictive feature excludes many curious consumers by denying them the opportunity to explore the sites.

Figure 4.2: Vons.com zip code restriction barrier for browsing;
Figure 4.3: Peapod.com zip code restriction barrier for browsing;

http://www.peapod.com/consumerIndex.jhtml;jsessionid=SD0EG3KKSLUCACQBD0WCFEQ?NUM1=1085422907622&opcoId=
Another common limitation found in most of the evaluated grocers is the concept of a mandatory, minimum purchase price. This is a limitation of the brick-and-clicks, not the independent grocers. In those cases, the customer must spend a minimum of fifty dollars on goods in order to shop online. This policy may not be an inconvenience for larger families accustomed to a traditional, weekly, shopping trip, but for many households it is. Households that consist of single adults, couples who do not have children, middle-aged couples who no longer have children living with them or older couples in retirement are all examples of smaller households who may not need to spend fifty dollars in one shopping trip. Plus, studies illustrate a new trend among many American
shoppers: customers are increasingly making many small trips to the grocery store throughout the week rather than a single, weekly shopping trip (Mogelonsky, 1995; Raijas, 2002). This trend suggests that those households who engage in multiple weekly trips spend less money at each visit than they would if only going once a week. Thus, a fifty dollar minimum purchase policy is a serious, potential inconvenience for many shoppers.

The grocery distribution system of a brick-and-click is quite different than that of an independent grocer. The method of grocery distribution used at CoopGrocer.com is a normal parcel delivery service. Most of the existing online grocers that are not partnered with a brick-and-mortar establishment use this delivery method. A normal parcel delivery service is not a very logical method of grocery delivery for six main reasons. First, any package being delivered by the parcel service, grocery or not, is treated the same. This does not allow for special treatment of food items and increases the chances for damage to occur. Secondly, separate shipping charges apply in addition to the price of the groceries. Thirdly, normal delivery could take up to eight days. If the customer would like the products delivered faster, a higher shipping charge would occur. Fourth, the customer must be proactive about tracking the shipment online, like any package being sent through parcel service, in order to know the actual day that the shipment will arrive. Fifth, the time of delivery on the delivery day is unknown. Sixth, unlike most packages that can be left on the doorstep, groceries are something which should be brought indoors immediately in order to be stored properly. Some other type of distribution method would be more logical.
Despite all of the flaws in the parcel service grocery distribution method, the convenience of the delivery methods of brick-and-clicks are comparably questionable. At Peapod.com, for instance, delivery is the only option for obtaining groceries. It is necessary for the shopper to schedule a delivery time several days in advance and, even then, there are many restrictions on delivery times. On some days, there are no delivery times in the morning; on others, no delivery is available in the evening. Perhaps the most inconvenient feature of this “delivery-only” policy is that the “delivery times” that the customer must choose from are listed as a time range, not a specific time. The customer is forced to stay and wait around the house for a significant period of time unsure of when the deliverer will actually come. In many cases, the time range can be up to four hours long.

The process of distributing ordered goods into the hands of the shopper is a significant issue which suppresses the convenience of the use of online grocery stores. Almost all online grocery stores which currently exist only offer delivery as a method of getting the products to the customer. Albertsons.com is the only one of electronic grocery stores evaluated which offers an option of “picking up” rather than “delivery only”. However, Albertsons.com charges an additional fee to its online customers despite whether the customer is having the products delivered or is picking up the order themselves.

The delivery and minimum purchase price restrictions that currently exist in many electronic grocery stores are a hindrance for those who want to make a small or quick purchase. Grocery delivery can be helpful and convenient for
consumers who do not want to or cannot leave their home or are otherwise going to be in the home for long periods of time. For this reason, delivery should still be an option for electronic grocery store customers. However, choosing and paying for one’s groceries online, then being able to run to the store to pick up the bag(s) of pre-compiled items without any extra fee or minimum purchase price restriction should be an option for today’s convenience-hungry consumers.

Need for a Market Niche

The retail market has low barrier to entry, or a high potential for many businesses to jump on board. The case is even more applicable with e-tail (Enos, 2001). Although many successful retailers exist, what drives a consumer to shop at one particular retailer, or e-tailer, than another? Competition in the food retailing market is fierce (Enos, 2001), so having an edge, niche or some type of advantage is essential. Implementing an innovative, unique concept that does not yet exist in the realm of e-tail is a great way to generate activity, customer delight and an overall symbiotic relationship between customer and supplier.

The idea of online grocery shopping is already out there and in use. Yet, the online grocery store movement has hit an innovative plateau (Raijas, 2002). All online grocery stores offer a similarity of services and more importantly, a similarity in lack of good product description and ease of way finding through the
interface of the site (Raijas, 2002). Electronic grocery stores need to develop new approaches in order to continue to grow and capture the interest of consumers looking for new and exciting shopping experiences (Kim, 2001).

**Design of the Virtual Space:**

**Promoting Quality of Life through Entertainment**

In retail design, trends exist in which a certain “concept of the moment” appears to be the basis of success, but slowly fades over time. However, for the past several years and on into the present, one “trend” in retail has become more important rather than slowly losing its luster: Entertainment (Pegler, 1998). The longevity of this concept of entertaining retail suggests that it isn’t, in fact, a trend at all, but a universal desire among retail shoppers. According to Kim (2001), “Consumers are increasingly demanding enjoyable experiences in their consumption activities” (pg. 288).

Studies have shown that many consumers often find retail shopping to be a recreational or entertaining activity (Kowinski, 1985, Pegler, 1998). Entertaining shopping experiences are comparable to recreation or leisure because both types of experiences are similarly characterized by a sense of freedom, satisfaction and involvement (Jones, 1999). This suggests that an entertaining shopping experience, whether it is for clothing, toys, groceries, etcetera, certainly can help promote a better quality of life for the consumer.
Jones (1999) explains that, “turning shopping into an entertaining experience has become a frequent strategy of many retailers” (pg. 129). An entertaining environment has the ability to energize the normally reserved consumer and bring about a desire to be immersed in the excitement (Pegler, 1998). Generating excitement within the customer will help the development of a better customer/retailer relationship, encourage customer loyalty and create a greater quality consumption experience for the customer (Kim, 2001).

Considering an “entertaining” design, certain characteristics have been identified. Some design elements that have proven to provide an entertaining experience include any visual impact through color, lighting effects, and/or overscaled and sometimes overwhelming size of props and décor. Interactivity is also important (Pegler, 1998). According to Pegler (1998), an entertaining space would be, “… an assault on the senses… part theatre, part museum, [and] part retail” (pg. 7).

Another take on the design of a retail space, regarding grocery stores specifically, is given by Stumpf (1990) as he describes his ideal grocery shopping experience:

“All people who eat deserve: a culinary celebration in quantity and variety, housed in significant architecture; a design theatre for food and its essential connection to everyday folks and the fecundity of nature; the produce and material presence of the farm in the city; the bounty of rivers, streams, lakes and
seas… My dream supermarket would simply blend the best of old-world markets with new world convenience” (pg. 4).

The statements of Pegler and Stumpf suggest that the grocery shopping experience should be an exciting retail fantasy in which the environment plays an essential role. Stumpf describes the consumer desire for a space with the physique of retail’s earlier age, but with a new, innovative twist.

Design of the Interface:

Implementing Universal Design

Products and environments which are universally designed accommodate a wide range of individual preferences and abilities, are easy to understand, communicate necessary information effectively, require a low amount of physical effort, have a low tolerance for error, do not disadvantage any user group and allow the appropriate size and space for use (Imrie & Hall, 2001). This checklist will be that which guides the design of the interface.
Chapter 3
Design Process and Explanation

Design of the Virtual Space

Attempting to bring in the aspect of “community” to the virtual space is done so by communicating a feeling of “the old downtown”. An “old downtown” physique, according to Stumpf, is an ideal, grocery shopping environment (Stumpf, 1990). Two aspects of “downtown” were examined in order to develop a concept for the space planning and the design of the volume of the virtual model. First, the “space planning” or road system of a town was explored in relation to the space planning. Second, the three-dimensional elements of an “old downtown” were explored in relation to the design of the volume of the space.

The nature of a small town and its slow growth process is the inspiration for the space planning. A town is normally started within a small boundary and, with time, the boundary expands from that initial area. The town limits slowly grow in a seemingly organic manner most often slowly radiating off of that initial town center. There is usually a downtown or city center in which much of the town activity takes place.
Figure 5.1: Map of Blacksburg, Virginia original town limits (highlighted in red) circa 1798;
http://imagebase.lib.vt.edu/
Figure 5.2: Map of Blacksburg, Virginia town limits circa 1850 (original town limits highlighted in red); http://imagebase.lib.vt.edu/
Figure 5.3: Map of Blacksburg, Virginia town limits 1927 (original town limits highlighted in red); http://imagebase.lib.vt.edu/
Figure 5.4: Map of Blacksburg, Virginia town limits 1959 (original town limits highlighted in red); http://imagebase.lib.vt.edu/
Figure 5.5: Map of Blacksburg, Virginia town limits 2004 (original town limits highlighted in red);
http://imagebase.lib.vt.edu/
Figure 5.6: The town limits grow in a seemingly organic manner slowly radiating off of the initial town center.

Figure 5.7: Diagram of radiating quality.
Figure 5.8: Diagram of organic quality.

Figure 5.9: Development of floor plan.
The downtown is a place of interaction, excitement and energy. Therefore, the produce section of the virtual space, the heart of the grocery store, is likened unto the town center. The concept is conveyed in the space planning through an array of concentric circles radiating out and slowly growing and developing into other organic forms. Though other forms develop around it, that initial circle was the original town boundary.

In order to fully illustrate the concept of “town” within the virtual space, other physical aspects of a town were considered. For the volume of the virtual space/architectural elements, the 3-dimensional features of “town” were explored.
Figure 5.11: Image of downtown Blacksburg, Virginia, circa 1940; http://imagebase.lib.vt.edu/

Figure 5.12: Image of downtown Blacksburg, Virginia, circa 1960; http://imagebase.lib.vt.edu/
An old downtown street generally has several features which maintain a repetition along the path. Lampposts, carefully placed trees, trash receptacles, decorative elements of building facades, awnings and even the seams of the concrete or pattern of the brick sidewalks are all repetitive elements which reinforce the movement down the street.

Figure 5.13: Elements of the "old downtown".
Figure 5.14: Repetitive elements from plan view.

Figure 5.15: Repetitive elements from perspective view.
This repetition is captured in the virtual space through the use of similarly reoccurring architectural elements.

Figure 5.16: Translation of repetitive qualities into virtual space by use of reoccurring architectural elements.

Figure 5.17: The repetition and curvilinear flow of the space enables an intuitive circulation pattern.
Figure 5.18: Elements of the physique of the old downtown are used to further enhance the feel of the space.

Figure 5.19: Another view of potential virtual interior space.
Figure 5.20: Final image of virtual space (1).
Figure 5.21: Final image of virtual space (2).
Figure 5.22: Final image of virtual space (3).
Design of the Interface

In order to fulfill the goals of universal design for the design of the interface of the web site, the characteristics of universal design were considered. The goal to make the interface easy to understand is achieved by having an ever-present menu, a list of items in the customers’ “shopping cart”, an information box, a view port of the virtual space and a floor plan illustrating the customers’ location within the virtual store. The continual presence of these features on the web site interface would facilitate intuitive and easy navigation through the web site and virtual space. The ease of use and quality of product information and illustration were key components addressed in the interface design. These aspects, as found in the electronic grocery store critique, were lacking in the existing examples.

Figure 6.1: Process sketch illustrating the menu, shopping cart, information box, virtual model viewport and floor plan
The goal to accommodate a wide range of individual preferences and abilities is reached by providing multiple ways and options for accessing each section of the virtual grocery store. Also, ultimately, the web site would require the customer to sign in and, therefore, remember you each time you return to shop. A database of a customer’s past purchases could be collected at each visit and brought up the next time that same customer signs in to shop at the site.

In order to communicate necessary information effectively, a feature was included to illustrate the name, price and nutritional information of the available products. A 3-dimensional virtual model of the selected product is also part of the design to fully communicate the physical qualities of the product. The interface would ultimately have a low tolerance for error because it would be easy to remove items from your cart, move to a different space within the store, select different products or check-out.
Figure 6.3: Development of the interface.

Figure 6.4: Development of the interface.
The goal of requiring a low amount of physical effort is achieved simply by the fact that the “space” is virtual, available on the Internet, accessible from home and only requires the movement of a mouse on a computer.

Figure 6.5: Final interface design including ever-present menu, a list of items in the customers’ “shopping cart”, an information box, a view port of the virtual space and a floor plan illustrating the customers’ location within the “space”.

![Figure 6.5: Final interface design](image-url)
Chapter 4  
Final Website

The final product is composed of the virtual model of the grocery store space and a 3-dimensional system allowing the virtual model and the web interface to be interactive. The compilation of these elements and creation of the 3-dimensional system allowing interactivity was developed and completed for this thesis by Tom Corbett. The virtual model itself is built with Autodesk’s “3D Studio Viz”. The 3-dimensional system is built on Macromedia’s “Shockwave 3D” architecture.

In the 3-dimensional system, presentations are created dynamically according to a pre-programmed instruction set. Media objects such as images are able to be loaded and positioned in a layout, and objects within the 3-dimensional model are manipulated according to this instruction set. This system is designed to receive and interpret specific events such as mouse “roll-overs”, mouse clicks, and proximity detection. The engine is also designed to receive mouse and keypad input to allow the user to navigate throughout the virtual space within the allotted view port. Customers may navigate through the space by using the menu bar buttons to be “flown” to any section of the store or can actually “walk” through the store within the view port of the virtual space by using the arrow keys. This new kind of electronic grocery store allows customers to experience a 3-dimensional space, much like an actual retail environment with all
of the benefits that accompany it, while enjoying the comfort and convenience to access the web site from anywhere that the Internet is available.

Figure 7.1: Explanation of interface layout; “Shopping Cart” lists items which you have selected to buy, “Check-out Button” and the buttons on the “Menu Bar” are quick links to each of the different sections of the store, “Information Box” lists product information upon selection, “Virtual Space” is a view of where you are looking in the virtual space and “Floor Plan” illustrates where you are in the virtual space.
Figure 7.2: Explanation of what happens upon selecting a product; “Model of Product” is a rotating 3-D model of the selected product for ultimate understanding of the product’s physical qualities, “Name of Product” pops up upon selecting a product in the virtual space, “Nutritional Information” is the nutritional content of the selected product, “Mouse Location” is the arrow annotating the location of your mouse, “Location in Space” is the highlighted area on the floor plan illustrating which section you are located in.
Chapter 5

Conclusion

Limitations

The process of turning the virtual, 3-dimensional model into an interactive space required certain limitations on many aspects of the model. In order for the model to be successfully programmed, the file size of the model needed to be very small. In order to keep the file size small, there had to be a low number of polygons making up the model. The lighting effects in the model appear very flat due to the programming limitation in selection of light types and inability to produce shadows. Although these current technological limitations kept the model from being as sophisticated as it could have been, it is evident that future innovations in technology will allow for a larger file size, higher polygon content and more sophisticated lighting techniques in a virtual 3-dimensional model to be used as an interactive space.

Future Ideas and Directions

There are many features which would ultimately be included on the site which with time and ability constraints would not allow. As a real web site, one would be welcomed to, in this case, “Kajo Grocery Store” in a separate, clutter-free home page in which there are only a few basic options, one being to go to
“shop”. One would then sign-in or, if a new customer, would create a new account. From there a database would maintain your personal information as well as a list of the products which you frequently buy always giving the option of buying those specific products again upon return. Other personalization features such as music options, an ability to change the décor or an ability to see and visit with other shoppers in the space would be included.

This new type of e-tail “space” would not need to be limited to just grocery stores. This new idea could fit with any type of retail such as clothing, toy or department stores. A virtual strip mall could be created in which a customer could easily do the grocery shopping then browse around for a pair of shoes or look at a new car. The interactivity of a virtual environment in a web site could be used to recreate some of the worlds’ tourist destinations allowing people to visit a virtual space that gives them a taste of the real thing.

Ultimately, this idea could bring significant growth and change to other disciplines. Consider the field of Interior Design. The 3-dimensional model for this particular project was designed to look like a traditional grocery store with traditional construction, structural and physical limitations. With the onset of this new e-tail innovation in society, a demand for designers to create the virtual interiors of virtual storefronts will grow. This demand would spawn a new branch of design in which the barriers between Interior Design, Graphic Design and Computer Science are blurred. No longer will the limitations of gravity, material technology or physics apply during the design of the space. In a virtual reality no such limitations exist. The rules of designing a space will change dramatically.
Consider the field of Packaging Design. Who is to say that a product in a grocery store must have a stagnant label? Who is to say that a product must sit still on a shelf? A new breed of packaging concepts can be applied in creating animated package “labels”, floating commercial clips or other techniques to grab the attention of the customers. There are other potential possibilities to expand in other disciplines, as well. The possibilities seem endless. This new idea has the capacity to inspire innovative leaps in other fields.

The new, virtual marketplace is the future of e-commerce. The marriage of the sensory benefits of visiting a real space with the convenience and availability of the Internet will open doors to seemingly endless results. This idea has the potential to affect multiple disciplines and improve the quality of life for all.


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