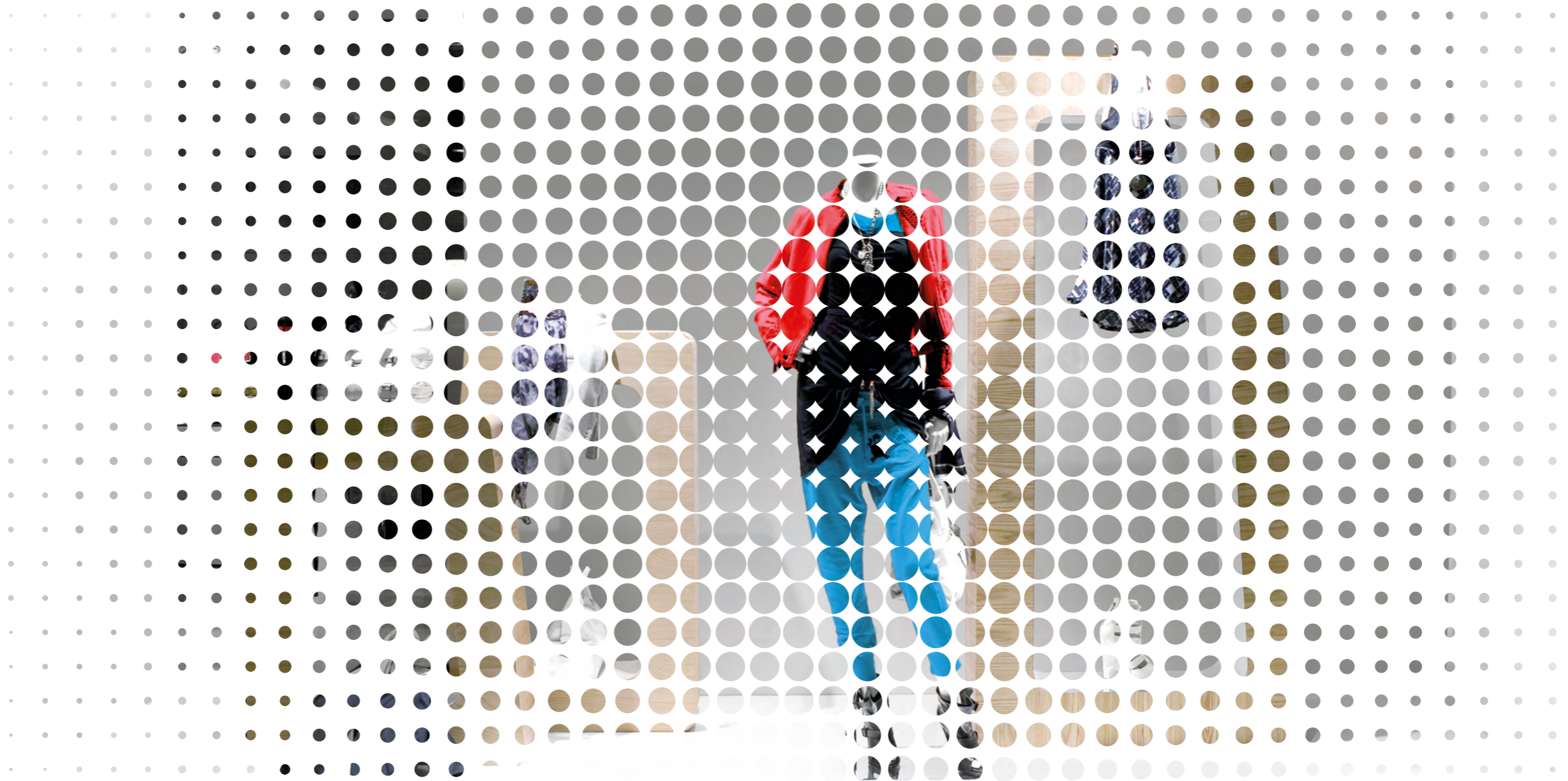


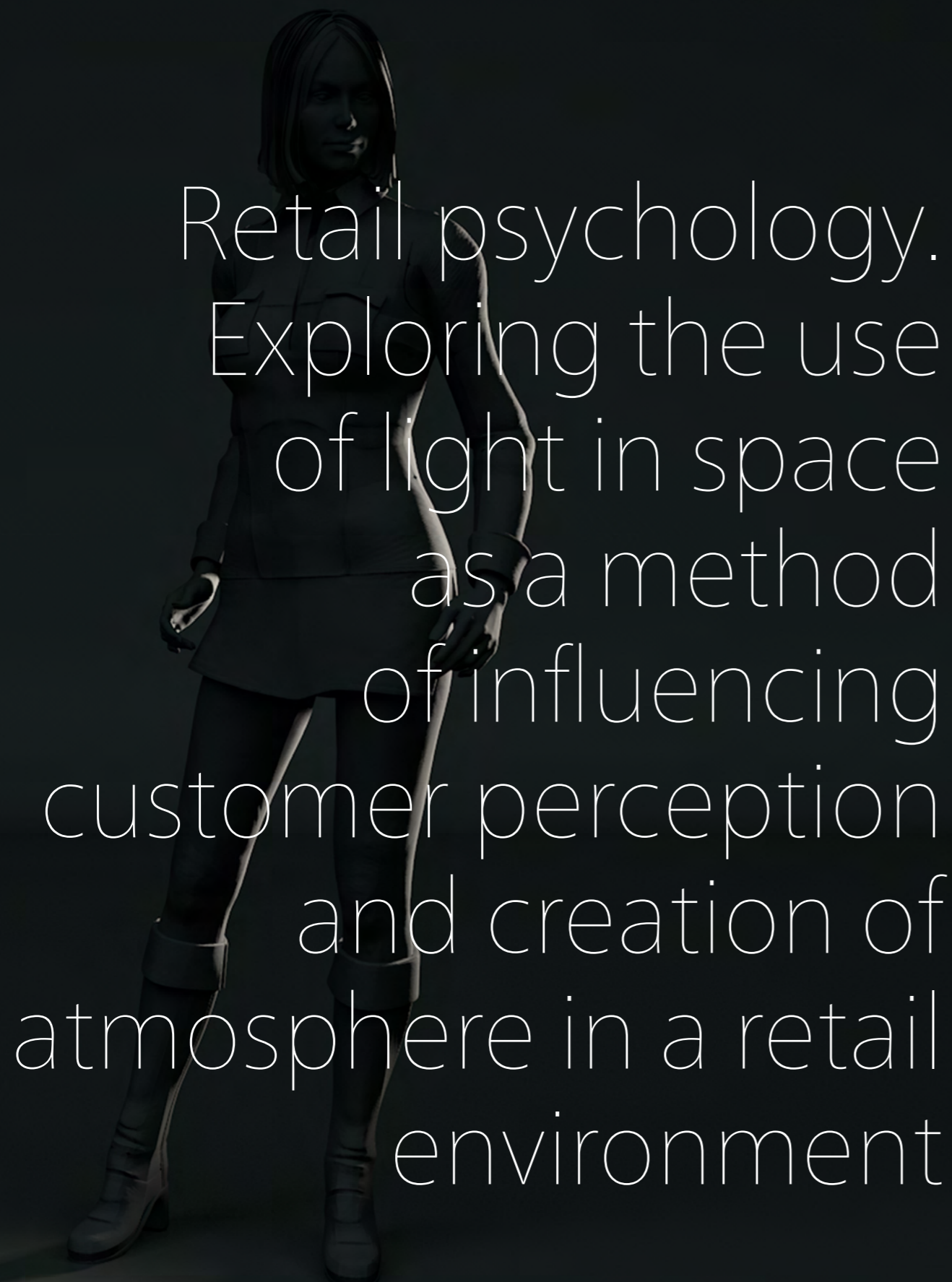


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SMART LIGHTING ENGINEERING



RETAIL PSYCHOLOGY



Retail psychology.  
Exploring the use  
of light in space  
as a method  
of influencing  
customer perception  
and creation of  
atmosphere in a retail  
environment

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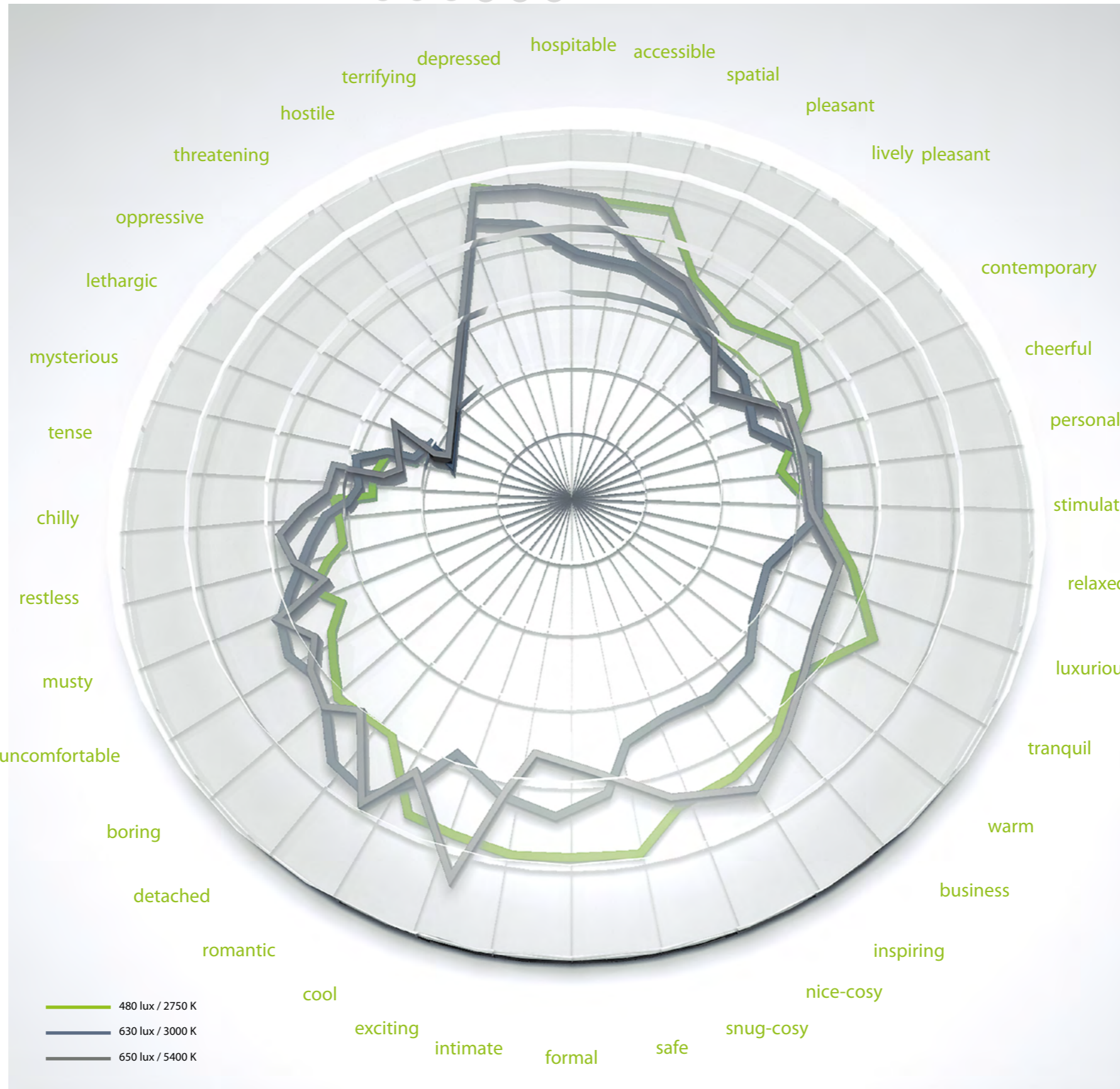
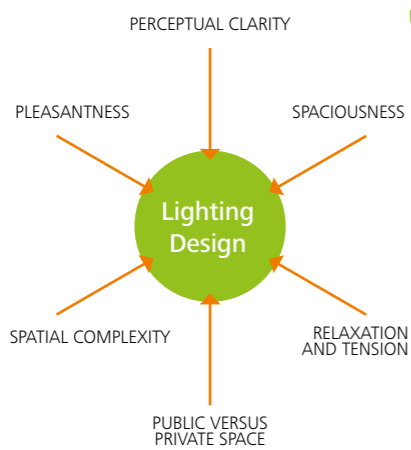
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## 1. INTRODUCTION

Light can influence our emotions, cognition and spatial perception, as well as having a strong influence on our mood. However, when combining the findings from research into each field it can be difficult to come to any conclusions. In this brochure we hope to provide some clarity.

Lighting plays a crucial role in how the atmosphere of a retail space is perceived and experienced. What is more, lighting can be used as a tool to communicate a message. And it is argued that there exists a correlation between the effect of lighting, the perception of atmosphere and the resultant behaviours. A combination of high illuminances and a relatively large indirect lighting component result in higher feelings of dominance.

Cool white light has also been shown to be arousing. Generally people think of lighting in three ways, in terms of brightness, visual attraction and complexity, but as it plays such a significant role in our perceptions and reactions the subject is in fact more complex and is better categorised into six groups.



Pleasant and relaxing impressions are the result of peripheral and non-uniform lighting. Lastly, to establish a 'private' impression, the designer can select non-uniform and dimmed lighting. Varied the direct/indirect lighting ratio and concluded that walls and ceiling contribute to the perception of overall brightness when work plane illuminance is held constant.

Rooms appear more spacious with higher ratios of indirect lighting, and rooms with relatively high levels of indirect lighting are favoured over rooms with less than 60% indirect lighting.

Figure 1:  
Impact of lighting design upon human impression

## 2. RETAIL DESIGN

Retail design of course has many similarities with several other design disciplines, two in particular have a very strong connection:

- retail architecture, which tends to focus on the architecture of large scale developments such as shopping malls. Architects might focus on the architectural shell, while retail designers emphasise the individual shop interiors. It is important that both cooperate and design such developments in an integrated way.

- hospitality concerns hotels, cafes, restaurants, although in general both disciplines require their own design approach – retail interiors have more self-service visitors in a shorter time span, while in the hospitality business, visitors usually stay longer and require more service they both deal with large numbers of customers who need to be satisfied. Moreover, cross overs between retail design and hospitality are inevitable, since many stores include cafes and restaurants. Vice versa, many restaurants or coffee houses sell books, mugs and other related products. Also it is increasingly common to find a large number of shops, even entire shopping areas, and food and drink outlets in airports, train stations and bus stations, which only further blurs the division.

The design of a store becomes more important when the merchandise itself is increasingly perceived as similar.

The creation of a unique environment has become a necessity for creating relationships with customers and gaining their loyalty. A second element concerns another shift in our economy, which makes the consumer the focus of attention. He is no longer seen as solely a buyer of products, he is also seen as a consumer with a personality, feelings and longings. This perspective requires different (marketing) approaches and

new retail concepts with more attention to the designed environment. Secondly, the consumer has changed his shopping behaviour. Shopping has become a leisure activity as part of our daily routine.

Further to these factors, society in becoming increasingly interested in the pursuit of new experiences. This development has affected the retail scene since shopping and looking for new experiences are essential aspects of society today. This also embodies increasing competition from the leisure industry.

A store needs to be inclusive to different people with different social, personal and even different cultural backgrounds, each experiencing a store differently. On the other hand, designing commercially is about designing spaces that eventually generate or increase turnover. In that case, building to budget is part of commercial design. In order to design a commercially effective store, an understanding of the retailer and/or brand is necessary. So, a retail designer designs for the retailer and the consumer.



The role of contemporary retail design is to link instinct, art and commerce to come to efficient (in terms of space, flexibility and cost) and effective (to communicate the retailer's brand values and encourage consumer activity) retail environments that meet the ever-tougher consumer demands. It incorporates the management of people and space to meet up to the most essential characteristic of retail: change. Therefore a designers task is to combine his expertise with the retailers knowledge of the market with psychology, technology and ergonomics.

The interior of the space can be looked at as three elements, the functional, the aesthetic and the atmospheric. The division between them is not strict. Just like visual merchandising can function within all three aspects, lighting for example, can too. Moreover, these elements do not function in isolation, but generate the holistic experience of a retail space. This holistic aspect has become increasingly important and includes integrating every aspect consistently.

## 2.1 THE RELATION OF THE CUSTOMER TO RETAIL DESIGN

Customer value, which is directly related to customer loyalty and therefore sales, is measured through price perceptions. Why do people shop?

Peoples' motives for shopping are much more numerous and only some are related to obtaining a product. To simplify, all motives can be divided to two distinct segments: **hedonic** and **utilitarian**.

Consumers' motives to purchase goods or services have changed significantly over time. In times, when money was limited, shopping was more of an utilitarian activity, which means that people shopped to obtain goods. Recently, however, some consumers have mentioned that shopping to them is rather a fun way to spend their time than a task one has to do. Hence, the term hedonic consumption was invented to describe the people who are seeking experiences while shopping. Functional consumption, in turn, describes the utilitarian nature of consumption situations.

Store image is composed of many different factors, such as store design, location, merchandise, and the knowledge and congeniality of the sales staff. All of these factors have an effect on customer behaviour and the corporate image.

Retail design is the function of developing the store image, or more exactly, store environment. Retail design has five main objectives:

- 1) TO IMPLEMENT THE RETAILER'S STRATEGY
- 2) TO BUILD LOYALTY BY PROVIDING A REWARDING SHOPPING EXPERIENCE
- 3) TO INCREASE SALES ON A VISIT
- 4) TO CONTROL COSTS
- 5) TO MEET LEGAL REQUIREMENTS



When consumers are satisfied with the environment where they shop, they have been examined, for example, to be more likely to enter the store, buy more and be more satisfied with both the store and the products bought.

Currently, demonstrated environmental and social responsibility are two of the key qualities for a retailer that are likely to lead to greater trust and brand loyalty from consumers. Not too long ago, value was seen as product-centric and something that companies can control. Today, however, value is seen to be co-created by the firm and the customer and therefore customers expect retailers to create experiences that consumers can engage into.

## 2.2 THE RETAIL ENVIRONMENT

Communicate the stores' image and purpose to customers, they can evoke emotional reactions, impact the customers' ultimate satisfaction with the service and even the amount of money and time spent in the store.

Creating the right setting is of prime importance to retailers. Since the type of lighting often differs with the type of product, yet product class may also influence atmosphere perception, this could result in structural relations between lighting and ambiance.

Showing a consistent contribution, for instance, of brightness to the cosy dimension (the brighter the impression of the shop, the less confined, intimate, romantic, relaxing was the atmosphere).

Glare and sparkle added most to liveliness (the more glare and/or sparkle, the more energising, lively, stimulating was the atmosphere). Brightness contributed positively to the tenseness dimension (the more brightness, the more threatening, tense, uneasy and unfriendly the atmosphere).

Besides the interests of the retailer, how lighting effects customer behaviour is of considerable concern to the designers of the space. Lighting designers must think of how the light will affect the consumer experience and customer reactions. Here are a few interesting examples:



A light fixture without a reflector causes the undesired illumination of the ceiling and draws attention to its unattractive elements.



A

B

The visibility of vertical and horizontal junctions aids orientation. When equal levels of illumination are used on the left and right sides of a junction, 69 % of people automatically go to the right (case A). However, if higher levels of illumination are used on the left, 75 % people automatically go to the left (case B). This suggests that people are basically attracted to brightness.

Figure 2:  
Lighting levels even effect orientation



A

B

Brightness can focus attention. When creating a focal point it is possible to increase the impact by increasing the brightness contrast between the object and surroundings (case B).

Figure 3:  
Brightness focus attention



A

B

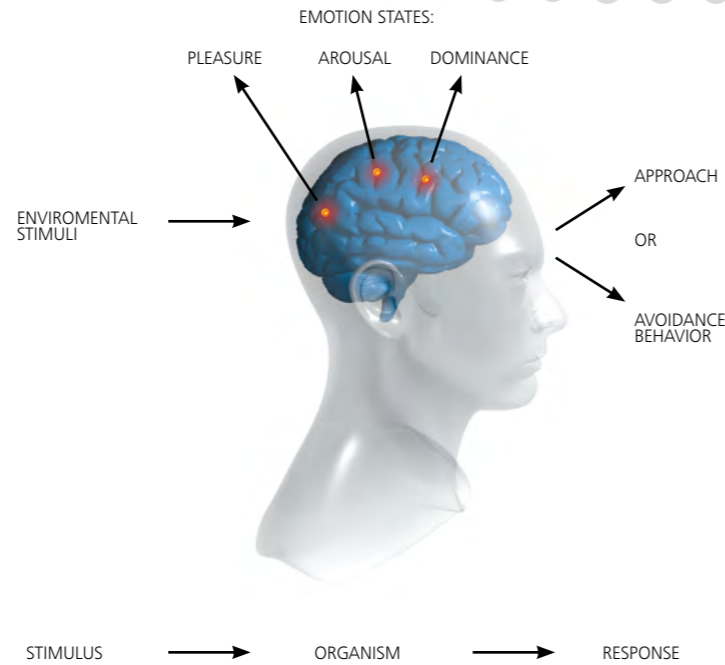
In case A and case B, customers with the first choice tended to select seats so that they faced illuminated walls. Studies show that people do not like to sit in brightness but like to see it, which leads to the conclusion that people prefer spaces with wall luminance.

Figure 4:  
People are attracted by brightness

### 3. STIMULUS-ORGANISM-RESPONSE-MODEL

Figure 5: The S-O-R model

The dominant method of studying consumer behavior in a store environment has been the Stimulus-Organism-Response – model developed by Mehrabian and Russell. This model describes how people react to stimuli in the environment by using three steps: Stimulus, Organism and Response (S-O-R). The model was originally designed for general environmental psychology, but has been adapted and verified to work in a retail setting by several later studies. In this model, environmental stimuli (S) are said to cause two contrasting forms of responses (R) in the consumer: approach or avoidance. These behaviors are generated by the people’s internal evaluations (O) of the different cues in the environment (Figure 5).



Furthermore, the model suggests that any environment will produce an emotional state in an individual that can be characterized in terms of three different dimensions, known by the acronym PAD:

- Pleasure – Displeasure
- Arousal – Avoidance
- Dominance – Submissiveness

Pleasure refers to whether a person feels good, joyful, happy and satisfied or not in the situation. Arousal refers to whether the person feels excited, stimulated, alert and active or not. Dominance refers to whether the person feels in control of and free to act in the situation or not. In conclusion, the S-O-R –model represents the relationship between the stimuli in the environment, people’s emotional states and the approach or avoidance behavior that results from the interaction of stimuli and emotion. For retailers the most important aspect of the model is that it helps in the understanding of how different stimuli affect consumer response.

Most retailers naturally want to increase the number of approach behaviors in their customers. Thus, it’s important to understand what factors in the environment generate pleasure and arousal in the targeted consumers, since stores that elicit feelings of pleasure are likely to be the ones where people want to spend their time and money.

As it becomes increasingly difficult for store-based businesses to compete on price, range, convenience, time saving and transactional efficiency, it’s imperative to create a new and integrated point of competitive advantage and trading philosophy, one which capitalises upon the estimated 100 billion neurons in the human brain across the consumer’s five key senses.

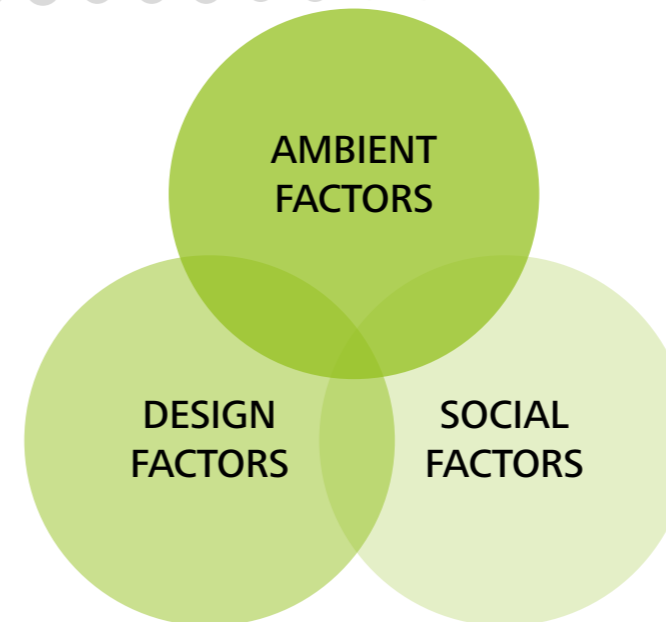
The impact of engaging the senses in store is often referred to as ‘shopping arousal’, a powerful trigger in the purchase decision process. The challenge is to understand and apply the appropriate strategies which enable the senses to complement, rather than compete with each other.



Figure 6: The sensory engagement process

### 4. CLASSIFICATION OF THE ELEMENTS OF STORE ENVIRONMENT

Figure 7: Factors effecting the store environment



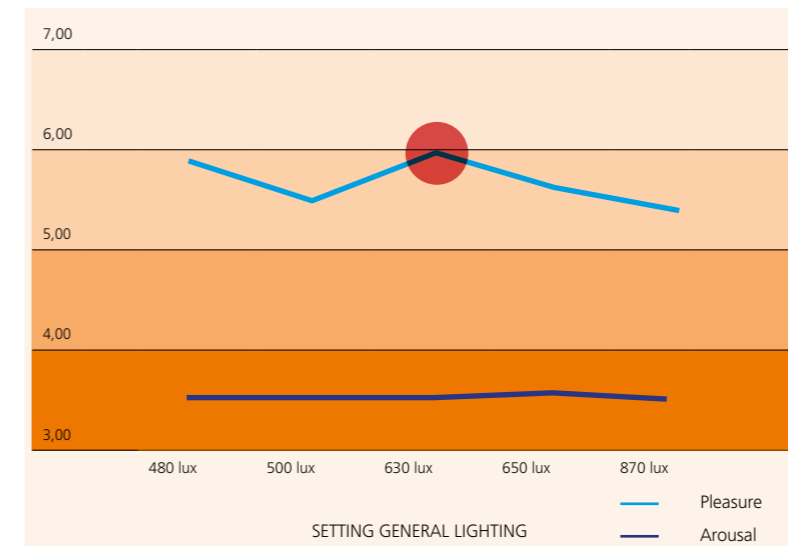
To identify the factors that generate approach behaviors in customers, it is necessary to classify the various elements of a store environment. Recent classification suggests that the atmospheric variables are divided into four groups:

1. External variables (e.g. exterior display windows, colour of building, and location)
2. General interior variables (e.g. color schemes, lighting, music, scents, and temperature)
3. Layout and design variables (e.g. space design and allocation, placement of merchandise, placement of cash registers, waiting queues, and furniture)
4. Point-of-purchase and decoration variables (e.g. artwork, point-of-purchase displays, and price displays)

#### Ambient factors

Ambient factors are typically described as background conditions in the environment. These include ambient music, scent, temperature, noise and lighting.

Figure 8: The level of illumination and colour temperatures which are most pleasurable and arousing to customers



Light in retail spaces is getting increasingly flexible – considering the rapid changes in fashion trends, customers’ expectations are also constantly changing. The light cannot remain static in such a situation.

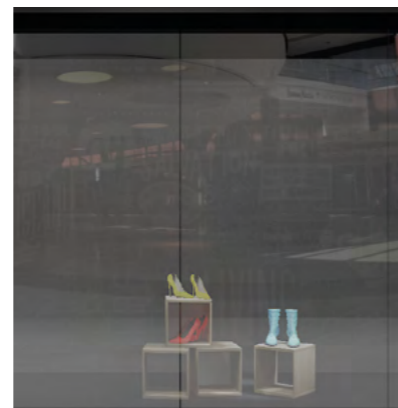
The effect of lighting on consumer behavior, suggested that lighting is a major factor in the environment’s impact on individuals because “brightly lit rooms are more arousing than dimly lit ones”. The people like to remain in environments that are both pleasant and arousing.



Under bright lighting consumers touched and picked-up more items than under soft lighting. Balancing the considerations of CRI and glare allows the light to achieve the preferred level of vividness without appearing unnatural. By using sources with colour below the black body locus increases the colour of saturation, which can help enhance the retail experience



Approach



Avoidance

The wide range of new possibilities to control lighting in a dynamic and active way are associated with a big challenge.

Colours look more vibrant compared to traditional light sources. However, it should be noted, that once again lighting is a part of the total atmosphere, which the consumer feels as a whole, as suggested by Gestalt psychology.



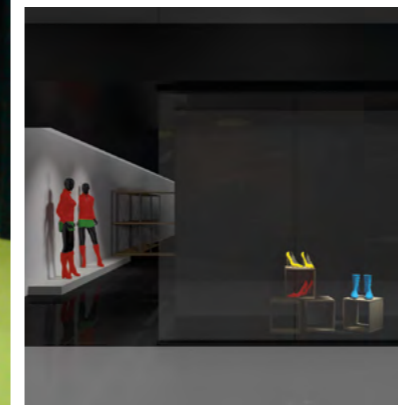


Approach

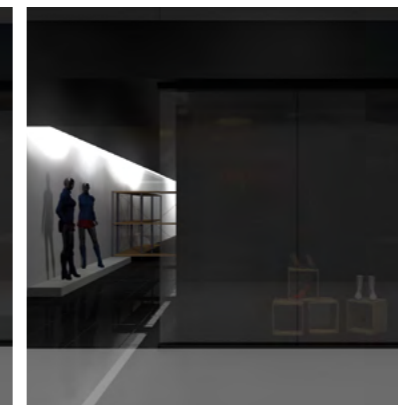


Avoidance

a) The interaction between shop window design and dynamic lighting requires a more detailed consideration of colour temperature varying between 2700 K and 6500 K, colour intensity and brightness contrasts. Typically, a 5:1 ratio is the minimum to create a significant visual effect, varying over time in relation to the subjective buying behaviour of passers-by. The intensity of light must be increased by 8 % for any change to be perceived at all. Dynamic lighting offers the advantage of being able to alter the space according to the products displayed, the season or the particular promotion.

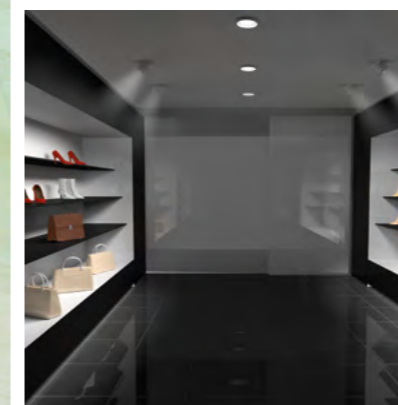


Approach



Avoidance

b) Another way how to light the shop windows is by using accent lighting on merchandise in addition to daylight. This also involves using pinpoint accenting to promote perceived contrasts. In the evening and when there is little daylight, even low illuminance levels are sufficient to attract the curiosity of passers-by with wide-area, subtly changing ambient lighting.



Approach



Avoidance

c) Instead of increasing brightness and subsequently energy consumption, it is advisable to design lighting that always provides high contrast. This makes perception easier and heightens the level of attention. Pinpoint accent lighting that stands out positively from the surrounding homogeneous ambient lighting is a suitable way of creating contrasts.

d) Diffused general lighting ensures a subjective sense of wellbeing, and vertical illumination aids orientation. The easier it is for customers to find their way around, the more likely they are to walk around a shop. Efforts must therefore be made to use vertical lighting to delimit the periphery of a space. At the same time, detailed accent lighting improves the perception and attractiveness of the goods displayed.



*Approach*

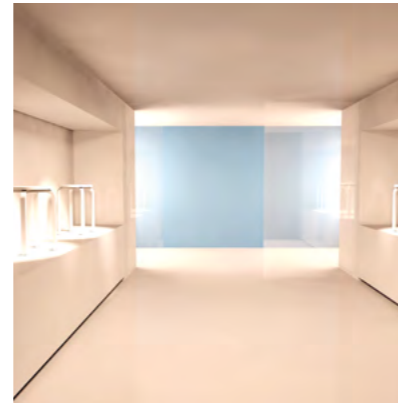


*Avoidance*

e) Colours convey emotions and influence the acceptability of a space. The results showed that cool colour temperatures (5000 K), make areas appear more spacious whereas warm colour temperatures (2700 K) create an impression of smallness and familiarity. Intermediate white light extends the amount of time customers spend in a shop and improves their sense of wellbeing, and should therefore be used for general lighting. For a store atmosphere that makes customers feel safe and secure we can opt for warm white light colours.



*Cool colour temperature*

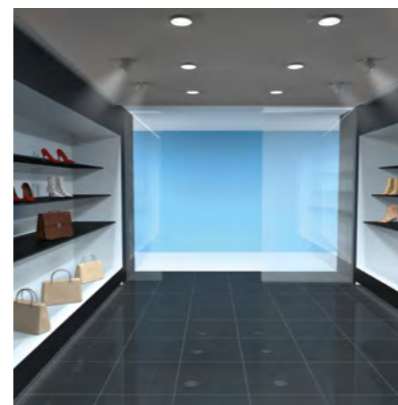


*Warm colour temperature*

f) There is a preference for various light colours within a single lighting concept. Different colour temperatures between 2700 K and 6500 K, should therefore be consciously deployed across general lighting and vertical lighting. Cutting-edge TunableWhite LED technology makes it possible to adapt colour temperatures using control systems, and deserves special consideration in this regard.



*Approach*



*Avoidance*





Approach

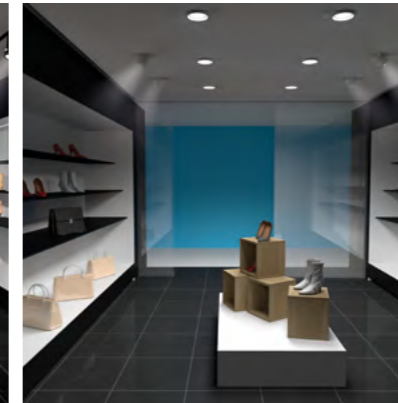


Avoidance

g) Perceptions differ according to age, gender and buyer groups. Men tend to take in a broad overview of a space whereas women tend to look at details. It is therefore important to adapt the light direction, colour and intensity dynamically through the course of the day to make sure it is appropriate for the target group.



Approach



Avoidance

h) Studies into the eye-catching effect have proved that the lower level shelves go relatively unnoticed. So accent or dynamic lighting should be targeted at the lower third of the shelving area which will encourage customers to linger longer and boost sales. Integrated shelf lighting is recommended for all levels.



Approach



Avoidance

i) The way that light is directed onto shelves is also crucial: wide-area back-lighting of shelves produces a more attractive effect than accent lighting only. A combination of backlighting and accent lighting makes identification of merchandise easier and makes the presented goods look more attractive. Accent lighting can emphasise the details of the goods being sold. Its role can be managed by fully-adjustable light fixtures with a narrow emission beam angles of 8°, 12°, 24° or 40°.

## 5. DESIGN FACTOR

Display and layout of the store are the main factors of functional elements. Display includes everything from display windows and point-of-sale displays to signage and other fixtures of the store, but also the display of products. Horizontal display (Figure 9) triggers more impulsive purchases but may leave products in the lower levels without notice.

Layout of the store influences both the customer experience and the speed of shopping. There are three main types of layouts: grid, racetrack and freeform. Retailers, whose clientele is mainly functional in their needs, such as grocery stores, should favor simple layouts, such as the grid.

The racetrack layout is typically used in department stores with several product categories. The racetrack, which is wider than other aisles, guides customers to walk through the whole store, and therefore it works best in stores whose customers seek more hedonic benefits. Finally, the free-form layout is typically used in

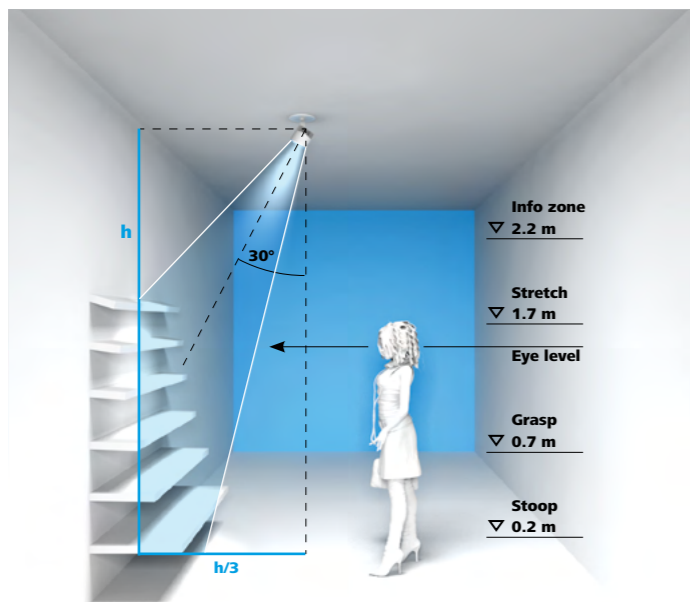
boutique stores or for very hedonic product categories, such as clothes. The free-form is the most costly layout, but if done right, it can trigger customers to explore more merchandise and spend long periods of time in the store.

### 5.1 SOCIAL FACTORS

Social factors include all the people who are within a store's environment. This area deals with the number, type and behavior of other customers and sales personnel in the environment. This area has focused on crowding and staffing issues, crowded conditions in a retail store affect negatively to customers' perception. The number of sales people is also a critical cue in evaluating service quality. More sales people are typically present in a high-image social environment than in a discountimage environment.

All of these elements are important when customers are evaluating the store and merchandise price and quality.

Figure 9:  
Levels of importance in  
horizontal display



## 6. COLOURS IN RETAIL

### The effects of colours

Colours have a far greater impact on our psychological and emotional perception of a retail environment, and impact that far exceeds that of any aesthetic elements. Since colours stimulate the nervous system they are able to influence mood and provoke reaction.

As a consequence, the use of colour can be exploited to make an environment seem less intimidating and, certain situations or procedures become less anxiety-provoking. Less anxiety and a more positive mood may translate into a better physical state, fostering the body's own healing process.

Each colour stimulates us in a different way. Depending on their intensity and their colour temperature, colours can induce specific feelings.



**Red: colour meanings in business**

Red is a warm and positive colour, a very physical colour which draws attention to itself and calls for action to be taken. In colour psychology red means energy, passion, action, strength and excitement. Physiologically, red stimulates and energises the physical body, including the nerves and the circulation of blood, raising blood pressure and heart rate. It is stimulating to the appetite and therefore a great colour to use for any product associated with food and its service, including restaurants and take-away businesses. Red excites and motivates but in excess it can cause anxiety and tiredness.

Often used as a warning sign, red is best used as an accent colour as too much red can overwhelm. Red will always elicit a passionate response but the response may be either positive or negative and you may have no control over this response as it will be in the hands of your potential customer. Red encourages buyers to take action and make a purchase. For example, it could be used to tempt an impulse buy at the purchase counter in your store, as footprints or arrows directing people around your store or to your cash register, or for a

'buy now' button on a website. In larger amounts it is effective in the promotion of products or services related to food and appetite, energy, passion or speed.



**Orange: colour meanings in business**

Orange is a warm, vibrant and flamboyant colour. It is energy combined with fun, the colour of the risk-taker, the extrovert and the uninhibited. In colour psychology it means adventure, optimism, self-confidence and sociability.

Physiologically, orange vitalises, inspires and creates enthusiasm. It is stimulating to the appetite and social conversation and therefore works well in restaurants and other food outlets. This can be achieved by using some form of orange in the decor, such as in the furnishings or the lighting. It does not need to be

bright orange – salmon, coral, terracotta and other versions of orange will work as well. An up market restaurant will look more elegant with subdued versions of orange. Combine with aubergine, purple, or blue for a unique, contemporary and classy look. Psychologically, orange gives the impression of affordability, depending on the shade chosen and its combination with other colours. Too much orange can suggest cheapness. More gentle than red, orange represents a more feminine energy and the energy of creation.

Orange is an invaluable colour in encouraging sales in restaurants, café's, bistros and diners as it stimulates appetite and conversation, contributing to patrons eating and talking longer and spending more money.

Orange is an appealing colour for the youth market as children and teens tend to like its sense of fun and adventure and its suggestion of affordability. It is also a great colour to use on toys for young children, along with other bright primary and secondary colours.



**Yellow: colour meaning in buisness**

Use yellow where you want to keep people moving. Most people cannot stay for long where there is a lot of yellow.

It is a good to incorporate yellow in the promotion of point of sale purchases – the eyes see yellow first and with so many other distractions in retail stores, you need to capture your customer’s attention quickly. Don’t use yellow to sell expensive items to men who see it as cheap and unsophisticated.



**Green: colour meanings in business**

Psychologically green relates to balance and harmony of the mind, the body and the emotions. It assists in decision making by helping us to see all sides clearly.

It is also beneficial in the promotion of environmentally friendly products.

Green suggests something ‘new’ and fresh. Lime green creates an anticipation of the potential of what is on offer. Use green where you need people to see both sides of a situation as it aids in clear thinking and decision making.

## 7. CONCLUSIONS

It is important to note that value is not static, but rather a dynamic concept that builds over time and can radically change due to alterations in market dynamics or consumer needs. For this reason, it is vital for retailers to identify trends that can change consumer behavior and adjust their offering accordingly.

Retail concept should be at the core of every retailer's strategy and therefore understanding where the customer value stems from has an enormous impact on how a retailer will succeed. Consumer value is constructed from the difference between benefits and sacrifices. In a retail setting, the objective price and the effort needed to acquire a product is the sacrifice where as value of the product and the shopping experience is the benefit received.

Whenever benefits outweigh sacrifices the consumer will engage in purchasing behaviour, given that they recognise the need or desire for a product or service.

