Lost in the Shopping Centre?

A Study of Wayfinding Design in a Large Shopping Centre from the 2010's

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Universal Architecture in the Designer's eye, HT 2016

Abstract

This paper studied the design of visual cues for wayfinding design in a large contemporary shopping centre. Kevin Lynch's theory of how people perceive cities in terms of their reoccurring elements: paths, edges, districts, nodes and landmarks was the primary theoretical tool. The research aim was to find out how visual wayfinding design was realised in a shopping centre from the 2010's and to what extent this design proved to be successful. The research study consisted of visual observation, identification and analysis of wayfinding devices at a selected route in a recently opened shopping centre in the Stockholm area. Photographs, field notes, sketches and drawings from the building permit were used to document the study. The study concluded that the implemented cues for wayfinding must be considered to be insufficient because the shopping centre design lacked distinct viusual elements, clear directions and subdivisions into defined districts.

Key words

Wayfinding Design, shopping centres, visual perception, cognitive map, decision making process, psychological barriers.

Introduction

It is a Saturday afternoon in a shopping centre: illuminated displays, glowing signs, commercial events and seemingly endless rows of shops and establishments are all competing to attract the visitors' attention. Our random visitor wants to visit the bookshop and needs to use the restroom. He or she might be stressed, have trouble concentrating, or perhaps a visual, hearing or cognitive impairment or maybe a physical disability. How does this visitor find his/her way in such a complex environment as a shopping centre?

Wayfinding difficulties are psychological barriers in the built environment. They have an averse effect on our emotional state, causing stress, anger and humiliation (Lawton & Nahemow, 1973). To some people, complex buildings may become completely inaccessible as these visitors cannot find their way within acceptable level of risk-taking and energy investment (Arthur and Passini, 1992, p.10). Wayfinding design is spatial, interior and graphical design that helps people interact with the surroundings: to find where they are and where they are going in built environment. If successful it allows people with various abilities to determine their location and destination within a setting so that they can device a plan of action that will take them there. (Arthur and Passini, 1992, p.25)

The shopping centre is a type of complex public building. It is often a large, commercialised and visually intense space with many agents under one roof. Potentially a recipe for getting lost – or is it? A holistic wayfinding approach can help to design shopping centres that are safe, accessible and usable alternatives to outdoor shopping. The question is, how wayfinding design is actually implemented in a contemporary shopping centre and if it is successful in making a complicated building more accessible and usable?

Theory

The theoretical framework for the investigation was Kevin Lynch's concept for explaining how people perceive cities in terms of their reoccurring elements: paths, edges, districts, nodes and landmarks. A shopping centre is of course not a city as such but it shares many of the city's elements: streets, junctions and smaller buildings within (e.g. stores and establishments). This made the theory relevant even to a large indoor environment like a shopping centre.

In his book *The Image of the City*, Lynch (1960) related wayfinding in a city to its legibility. That is, how easy it is to recognise and organise the different parts of our surrounding in order to create a mental map, an image. Designer Paul Arthur and architect and environmental psychologist Romedi Passini (1992) described the wayfinding process in terms of *decision making* - the development of an action plan, *decision execution* - the transformation of a plan into a correct behaviour and *information processing* - the environmental perception and cognition that supplies the information needed to make the decisions. The cognitive map, the image, is a part of the information processing and in this situation it is considered to be the main source of environmental information. When analysing how people find their way in a shopping centre it is in terms of the ability to create cognitive maps and to formulate and execute decision processes.

Path:

Channels that the observer moves along.

Edge

Linear elements that break continuity or create barriers.

District

Medium to large sections of the building that the visitor can enter.

Node

Strategic spots, focal point to go to and from, junctions, concentrations.

Landmark

Physical object that is distinct from its setting. An external object.

Fig 1.1 Kevin Lynch's City Elements

Research Question

This paper studied the design of visual cues for wayfinding design in a contemporary shopping centre through a case study of new shopping centre in the Stockholm Area. The shopping centre was referred to as *Mall of Shopping* or the *Shopping Centre* in the study. Mall of Shopping opened in 2015 and has 100'000 m^2 of retail floor area, divided between 224 establishments. The main circulatory system has a simple shape, a triangular loop with a node in each corner. This loop is repeated on every main floor. The circulatory shapes were explained and enhanced by maps found throughout the building but customer reviews and random conversations with customers suggested that people still found it hard to find their way in the building.

This leads to the main research question: how is wayfinding design realised in a contemporary shopping centre of the 2010's and to what extent is it successful in helping people to understand and organise the environment? That is, what are the wayfinding devices or cues, how are they structured and designed, taking colours, material, placement and the relationship with competing commercial stimuli into account? Finally, the paper will slightly touch upon the consequences of the identified design in terms of accessibility and usability and suggestions for improvement.

Method & Limitations

The main method for this study was visual observations and the identification and analysis of concepts that resembled Lynch's paths, edges, districts, nodes and landmarks in a selected route at Mall of Shopping (fig. 1.2). The analysed route was selected because it is connected to two of the shopping centre's main entrances. It is located on the middle floor and serves and a primary route through Mall of Shopping. It should be mentioned that this study focused on physical wayfinding and has not studied electronic wayfinding measures like digital wayfinding applications or map services.

The data was collected using snapshots and video from a hidden camera. The identified elements were marked on a building permit plan drawing of the shopping centre and the photographs were translated into line-traced images. The floor plan (fig. 1.3) was the foundation for a discussion on the frequency of elements, direction, spatial location and intermediate relationships whereas the images and videos were used to evaluate how the elements convey visual and/or graphical information, specially how visually distinct they are. The line traced images provided an additional layer of visual analysis and could illustrate examples from the text more clearly than a photograph.

The research was based on visual observations which was subject to selective perception, i.e. previous experiences and expectations affect what we notice and how we perceive it. What is determined to be distinct by one viewer could be neutral to another.

The field research was combined with a literature study of Kevin Lynch's The Image of the City (1960) and Paul Arthur and Romedi Passini's Wayfinding: People, Signs and Architecture (1992).

Mall of Shopping Floor Plan
Scale 1:1600

Selected route for analysis

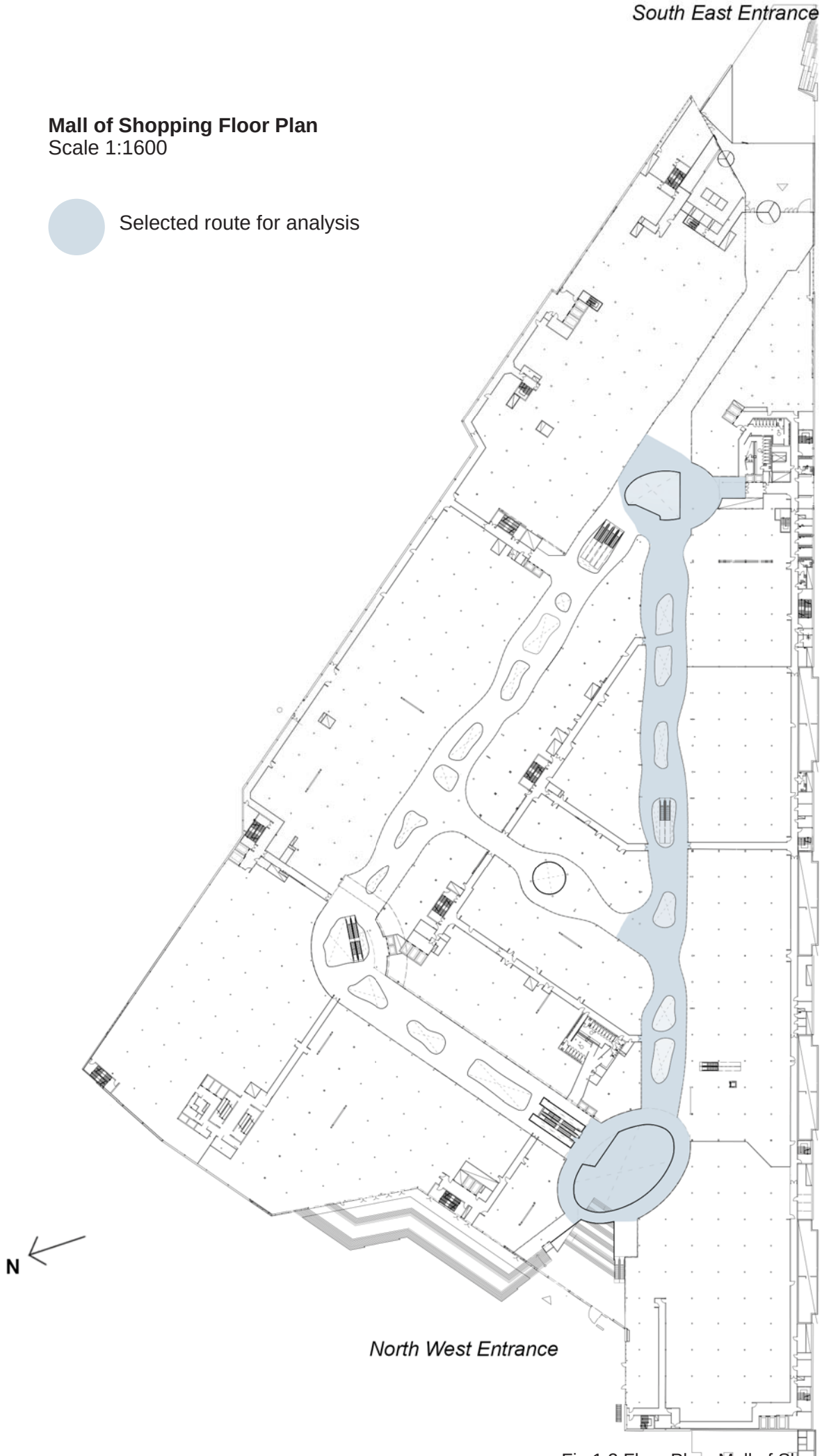

Fig 1.2 Floor Plan Mall of Shopping

Mall of Shopping Floor Plan.
Floor plan with cues
Scale 1:1200

Start/Endpoint

Path

Edge

District

Node

Landmark

Info *Info Desk*

S *Orientational Signs*

M *Maps (interactive)*

C *Commercial signs*

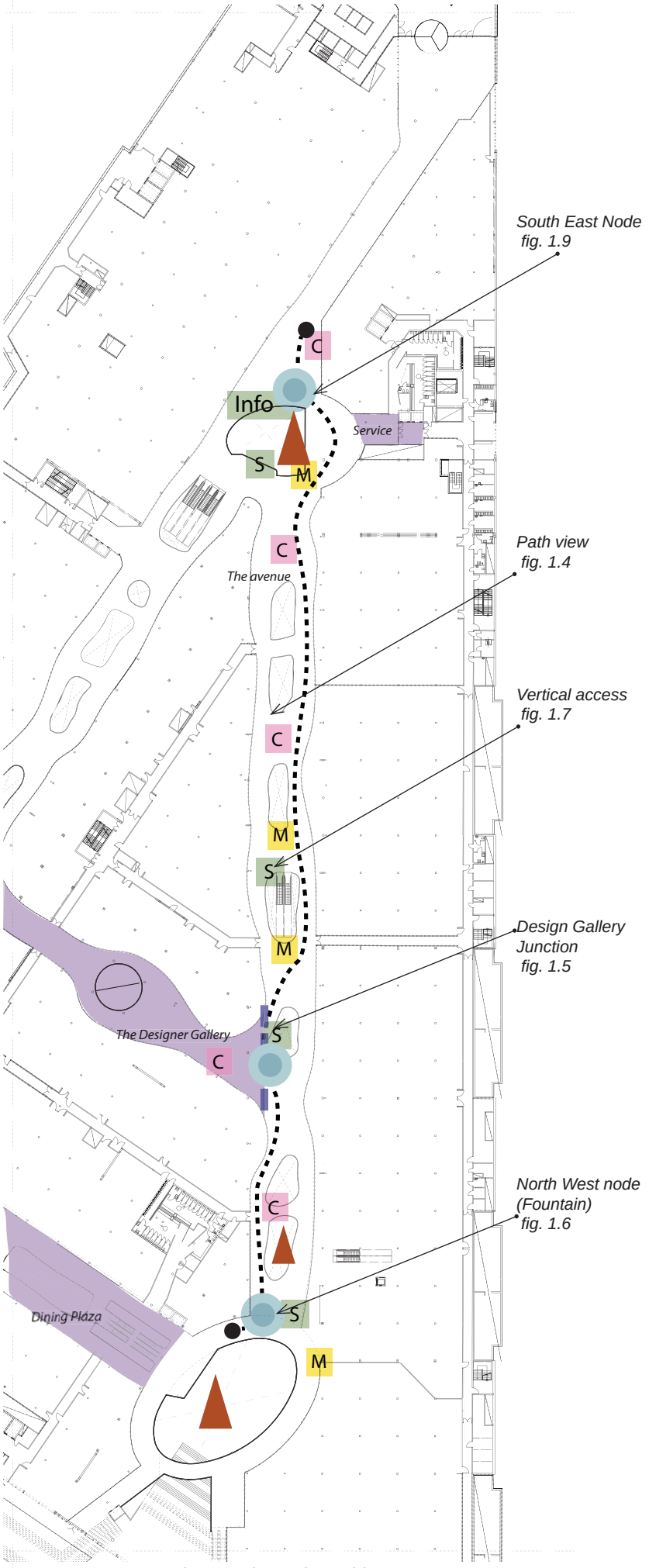

Fig 1.3 Floor plan with cues

Results

1. Paths

The primary path in the analysed route was the shopping centre Avenue. It was a main artery, the hypotenuse of the triangular loop , that connected the shopping centre's entrances to each other and to the circulatory loop (fig. 1.3). The avenue was continuous lined by sinus curves store fronts, all two stories high. The centre of the path was interrupted by lined atriums with similar organic shapes as the store fronts. (fig 1.4) Glossy white tiles covered the floor, with identical black tiles lining store fronts and atriums. The facades (walls) consisted of glass: transparent or coloured with auxiliary structures of coloured plaster, metal or plastic. The glossy floor tiles and the reflective facades caused reflections and glare from the signs and bright lights inside the shops.

The path had clear endpoints by the circular nodes at the corners of triangular loop. The width of the space increased and there was a distinct change in direction. However, the visual contact with the endpoints was limited as these spaces were blocked by signs and shops from a distance. The lack of visual contact with termini and the continuous intensity of the surrounding made it hard to determine direction. From a far the sinus curved store fronts also increased the difficulty in determining distance to nearest termini, as they appeared to be completely continuous. There were no directional signs along the pathways, these were only at nodes.

The most distinct feature at the Avenue was its high ceiling. The materials, shapes and facilities along the path reoccurred at most paths in Mall of Shopping.

2. Edges

Mall of Shopping had few distinct edges that were separated from the paths. The store fronts and floor material linings created edges but always along the path, which made the path the stronger element. The most prominent edge at the analysed route was the change in floor material between the Avenue and the Design Gallery District**.**

Fig 1.4 Typical Mall of Shopping path

3. Districts

There were three identified districts at the route: the Design Gallery, the Dining Plaza and a Service District. The districts were functional grouping: collections of high fashion brands, restaurants and service functions. The Design Gallery was most distinct as it was spatially and materially separate from the main triangular loop and had its own specific name that was emphasised by large signs at the entrance (fig 1.5). The district entrance was an example of a transition point where the sign and material change (the edge) marked the transition from one scale and circulation pattern to another. (Arthur and Passini, 1992, p.131). The Dining plaza was part of the circulatory loop but was distinguished by open restaurant facades with seating outside and a ceiling with hanging plastic rods that changed colour over time.

Service districts were present where there were groupings of service functions like public toilets, lactation rooms or lifts. The small pathways that lead to the service function were all covered in tactile wood panel – a quite clever contrast to the shiny inorganic materials that were common in the shops.

Fig 1.5 Entrance to Designer Gallery
transition point and node

4. Nodes

The ends of the triangular loop, the corners, acted as nodes for the avenue. They were extrovert and physically strong junctions, with two main paths that connected to a larger circular plaza with a central light well. Escalators were within visual range of the nodes but not directly connected. There were often decorations displayed above or inside the light wells.

The first node, near South East entrance, was a corner node. It had a staffed information desk facing the entrance with a graphic “reception” sign at the actual desk. The sign was glowing white at a beige background but was often covered by people that walked in front of it. There was a section of wooden floor in front of the desk. With some inconsistency wood was a reoccurring material for service at Mall of Shopping. A landmark: a giant M, hung over the light well and the scene was framed by a light wooden ceiling with circular patterns (fig 1.9).

The second node was the junction between the Design Gallery and the triangular loop. It was less physically strong than its corner counterparts as it was not spatially defined by a wider shape. It was, however, distinguished by its proximity to the distinct designer gallery entrance. (fig. 1.5).

The final node was the North West node. It had a large atrium with a fountain below – one of the most prominent landmarks in the centre. The floor tiles were organised in a black and white circular pattern to emphasise the round shape. The space below was vast and open but when approached from the avenue, the view was obstructed by the 2nd level floor that attached here. The plaza opened up but the new, lower ceiling reduced the spatial experience and made it difficult to perceive at a distance (1.6).

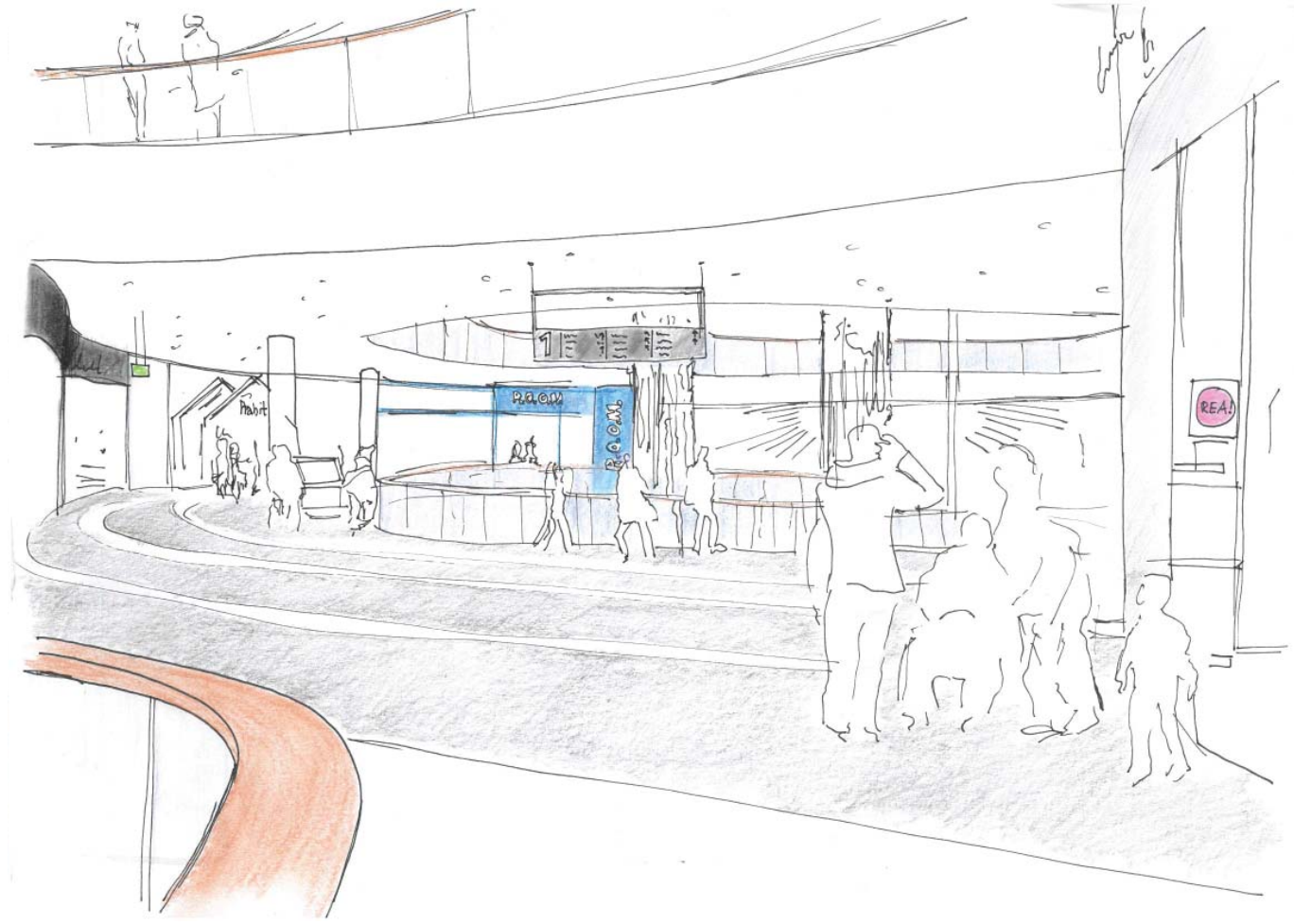

Fig 1.6 The North West node light well with a fountain below

The vertical connections, escalators and lifts: were not considered to be nodes in this study as they were very unarticulated. The escalators were spatially disconnected from the primary nodes (se fig 1.7) and had no vertical or spatial markers which made them easy to pass. The lifts were placed in the service district and were not visible from the main paths. This made the transition between floors confusing and disorienting.

The signs were concentrated near nodes at the studied route. At each of the identified nodes there was one sign post, about three metres high, placed in the centre of the junction (see fig. 1.8). Each sign pointed to two types destinations: either to shops or general directions. There were often more than one sign in each direction. At the north east node there was also a hanging sign with floor number and three columns containing directions to services, stores and general destinations. The signs were illuminated with white glowing letters on a shiny black surface. At the day of the study one of the signs were broken and displayed dark grey letters on black. This was illegible. The black shiny surface was subject to refection and glare (fig. 1.8).

There were touch screens with interactive maps available in the vicinity near the nodes. The touchscreens were not labelled and were easily confused with non-interactive commercial screens that came about with higher frequency (see fig. 1.3). The touch screen user-interface were not a part of this study.

Fig 1.7 Vertical connection at the avenue

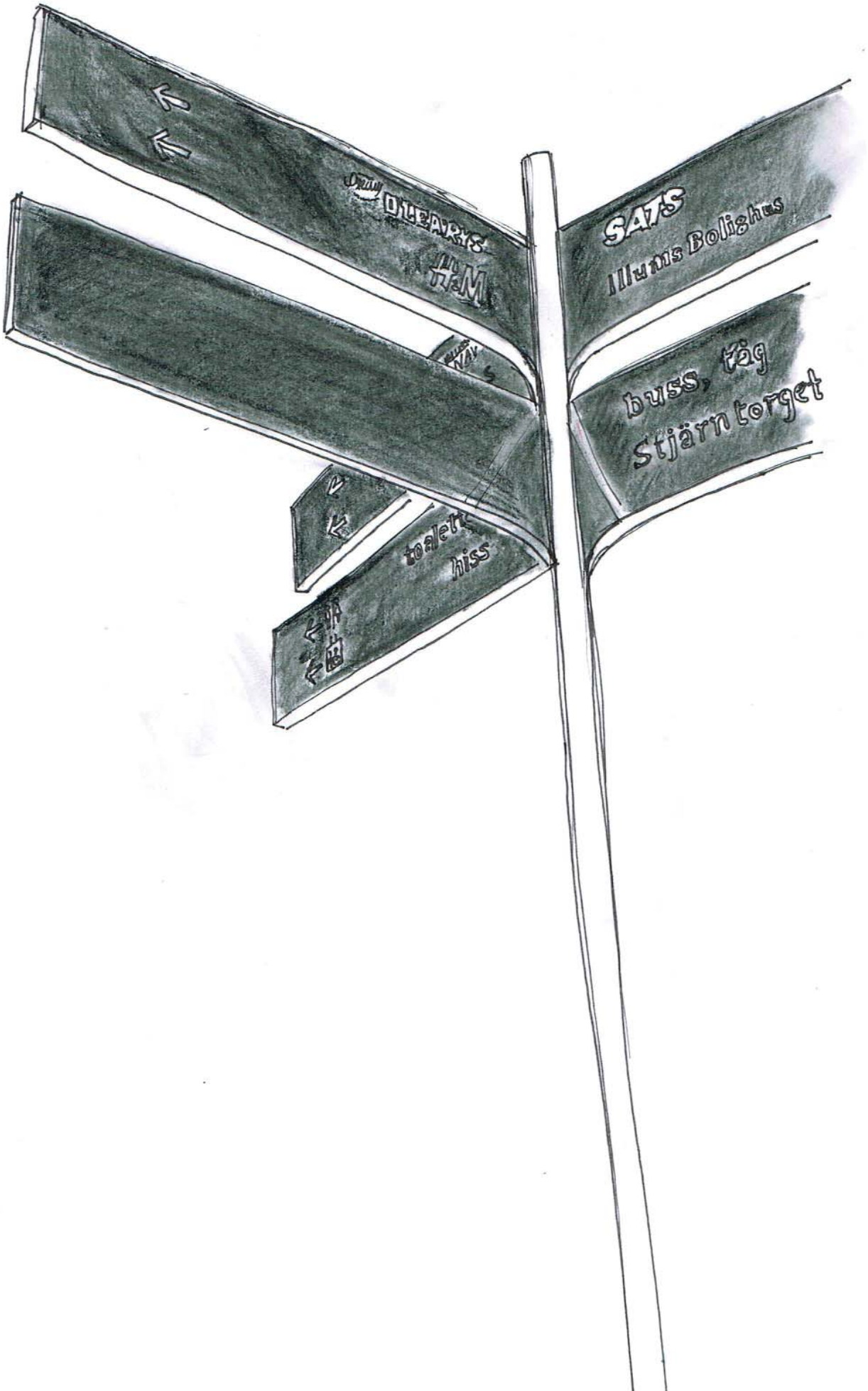

Fig 1.8 Sign post as seen from ground level

5. Landmarks

There were three landmarks at the route: a hanging M in feathers over the light well at the South East node, a set of designer lamps near the North West end of the avenue and the fountain at the bottom of the North West node. Two out of these three were placed at nodes which helped in identifying a particular node.

Out of the three landmarks, the fountain was by far the most distinct: its was spatially and visually prominent and a contrast to its setting. However, the fountain was an unreliable landmark is that was not permanent. Several times a year it was replaced by shopping events or seasonal installations. The hanging M and the designers lamps lacked differentiation from their visual environment. The lamps were easily overlooked as they could be confused with interior decoration displays and the feathery M often blended with the expressive facades in the background.

Fig 1.9 The South East node with its landmark

Preliminary Conclusion:

The wayfinding design in Mall of Shopping was insufficient. The interior was uniform without enough subdivisions (districts) and there was a lack of direction and distinction in the spatial elements: paths and landmarks in particular.

The circulatory system, the triangular loop, was a clear shape but its primary paths were almost all alike in terms of function and spatial layout as well as in material and colour. The only distinct feature at the Avenue was the higher ceilings. The increased ceiling height did create a more spacious atmosphere but was not enough as only characteristic element. The Avenue was also the only main path that contains such a characteristic. The paths at Mall of Shopping lack identity and were easily confused one for the other. According to Lynch this could cause difficulties in the entire city-, or in this case, building- image (Lynch, p .52). If people are unable to cognitively map the setting there is no basis for decision making or execution.

The lack of identity was apparent between floors as well. The unarticulated escalators provided no transition point between the floors (fig. 1.7) and there was no distinction between the upper or lower circulatory system.

As stated in the results, the paths lacked direction as there was limited visual contact with the termini nodes or landmarks. The circulatory loop contributed to this loss of direction as it was possible to wander aimlessly in circles without arriving at an end or edge. More prominent landmark could be a possible solution. Landmarks are often used as wayfinding devices as they can help visitors get their bearing and act as anchor point when providing directions.

Mall of Shopping had few identifiable districts. A large scale complex needs to be subdivided into districts that can act as destination zones in order to simplify its organisation. Each of the over 200 facilities in Mall of Shopping is a potential destination. Destination zones combine these destinations into a more manageable number of spatial entities with similar qualities. This makes it easier to cognitively map the surrounding and supports the decision making process by allowing the visitor to make a more generalised decision to reach an easy identifiable zone before moving to a specific shop or facility (Arthur and Passini, 1992, p.85-87).

The service districts, the Design Gallery and the Dining Plaza were examples of quite successful destination zones but most of the space in the centre was still unallocated. Visitors had to identify their specific destination out of 200 others. This problem was evident in graphics. The signs were successful at pointing to geographical locations and services but could only direct towards one or two commercial destinations. If a visitor is going to a particular clothes store it does not help to have a sign that points to a grocery store or a book shop unless this visitor knows by heart which stores that are close by. A visitor with such detailed knowledge would probably not need the signs in the first place. If the space was subdivided the signs could point to the districts, for example “Grocery Plaza” or “Retail Clothing”. It would be more likely that the visitor could identify the particular clothes store as being in the “Retail Clothing zone”.

Distinctness is important in wayfinding as it allows us to recognise destinations and sub-destinations and distinguish one place from another. Mall of Shopping struggled with distinct elements: many of the spatial components, in particular the paths, were uniform in organisation and material. The landmarks that could have acted as other anchor points blended in to the surroundings. Important organisational features like escalators lacked spatial markers and were easily overlooked. Distinctness is a condition for cognitive mapping which in turn enables decision making. Hence it follow, that an environment that lack distinct elements will develop wayfinding difficulties.

Discussion

Mall of Shopping displayed wayfinding difficulties, but to what extent did those difficulties relate to the commercial and visual environment? In their book Wayfinding: People, Signs, and Architecture,
Arthur and Passini (1992) argued that informational overloads happened when a wayfinder was exposed to intense stimuli that interfered with purposeful information. Intense stimulation alone did not have lead to an overload as the environment always contain more information than we can process. In Mall of Shopping I found it possible to disregard and sort out the store front with their signs, lights and commercials but I was continuously confused and led astray by the shopping centre's own commercial screens as they were very similar to the information screens. This was one of the most prominent ways that commercial stimuli interfered with useful information.

Considering the store fronts again. So far they have been regarded as potential distraction but is not possible to use store fronts with for example intense colours or light for wayfinding purposes? It probably is, and in practice many people are likely to use specific establishments as landmarks. However, the stores are not designed wayfinding devices and whether a store acts as a landmark or not is often related to brand recognition. If a visitor shops at a specific store, this store has significance and is more likely to become a distinct feature. For another visitor the same store might just be a store among other stores. The architect can not rely on a seemingly random composition of store fronts, that change over time, to act as landmarks. Permanence is also an important feature in a landmark, specially for people with a cognitive disability. For instance, one of the major wayfinding problems for people with dementia was when their landmarks changed (Brorsson, 2013). Mall of Shopping must have designed, distinct and permanent landmarks to become accessible and usable.

There are many psychological barriers related to wayfinding difficulties in in Mall of Shopping, specially for people with visual and cognitive impairments. However, I would not argue that the commercial stimuli is inherently discouraging accessible and usable wayfinding devices. The visual environment is difficult for people with sight impairments because there are many visual disturbances from glare and reflections in shiny materials, most prominent on the glossy floor. This is attributed to the choice of floor rather than to commercial stimuli. The reflections and glare in glossy floor can cause visual discomfort´and person with cognitive impairment may actually perceive the floor as being wet and the darker parts as holes (Wijks, 2001). The glossy floor resembles luxurious polished marble and make the space seem brighter and larger but it terms of accessibility and usability it becomes a psychological barrier. The shopping centre's own materials, i.e. the materials in the public part of the shopping centre, should aim to create a comfortable and comprehensible visual environment where reflections and glare are kept to a minimum.

So what can be done to increase wayfinding ability in Mall of Shopping? The shopping centre need to be subdivided into defined districts. New centres often try to organise their zones by function but over time establishments relocate and the functional system is slowly resolved. Another approach is to introduce artificial destination zones by giving each zone a character that is not related to the function. Arthur and Passini (2013) uses Metro Centre in Newcastle England as a successful example of this approach. The space is divided into areas as “Roman Forum” and “Mediterranean Village”, zones that are meant to be used as attractions also fulfil a wayfinding criteria. It would be possible to device a similar system for Mall of Shopping.

To increase direction there must be permanent and distinct landmarks to act as anchor points. Another way to create direction is to use colour codes or coloured lines. For example, coloured lines in the ceiling could give identity to certain paths while connecting important spatial units. One colour could connect entrances, while another brings together service areas. Vertical markers and signs could be used to distinguish escalators, informations disks and touchscreens from a distance. To avoid visual overload it would be wise to remove Mall of Shopping’s own commercial screens as they specifically interfere with wayfinding information.

To conclude, Mall of Shopping displayed wayfinding difficulties. The paths lacked distinct spatial and material qualities which made them easy to confuse. There was little visual contact with nodes or landmarks from the paths and it became difficult to determine direction and distance – this was enhanced by the looping circulatory system. Furthermore large parts of the shopping centre were not subdivided into districts which made it harder to organise this space in a cognitive map. These difficulties were not unique in a commercial setting and has more to do with lack of distinctness in the design than competing commercial stimuli. To make the building more accessible is is possible to develop destination zones, more prominent and permanent landmarks, coloured lines to connect important elements and hanging signs to make vertical connections and information desks and screens visible from a distance.

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