ISSN: 2710-0170

Research on the Design of Pedestrian Route in the Reading Space of Juveniles in the Library

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Abstract

In the library space system, taking " Pedestrian route as the research object, this paper constructs the thinking model of library space moving line design, and discusses the "best path" of library space moving line design. In order to better respond to the juvenile reading promotion of the national reading promotion, the dynamic line design thinking of its space design has become an important link. Although a good dynamic line design is for the majority of the audience, it can well evacuate the crowd and ensure the safety and meditation of teenagers' reading.

Keywords

Library; Pedestrian Flow Line; Design.

1. Introduction

Pedestrian flow line design is the traffic and evacuation planning of the overall layout of library interior design. The design of the flow of people in the library has distinct characteristics compared with the space lines of other categories in environmental design, which is different from the living room space streamline, the appreciative exhibition space streamline and the popular science experience exhibition streamline. Commercial exhibition space is defined under a certain classification system. Specifically, under different classifications, library space is commercial exhibition space, public space and cultural and educational space that undertakes the function of cultural inheritance. Different definitions are the result of thinking in different systems. Under the thinking of classification system based on nature, the same library space is both commercial exhibition space and appreciation exhibition space, which is determined by the intersection of the system.[1] At the same time, different libraries have different dynamic design requirements for minors' reading space. Based on the theoretical system of "comprehensive evaluation", we can screen out the dynamic line design needs of minors' reading space with real and complete data, so as to better realize the design in combination with the thinking model[1].

2. Thinking Model of Library Space Pedestrian Movement Line Design

Find the root of the "unreasonable" design of library space moving line and build a system model. Build a dynamic line system from two dimensions, form a system with logical thinking through systematic thinking, comparative thinking, and analyze the needs and potential problems that the thinking model can adapt to. The potential problems of the thinking model itself reflect the problems in the designer's design practice (design problems caused by single line thinking) to a certain extent.

ISSN: 2710-0170

3. Pedestrian Flow Line in Library Space Layout System

3.1. Classification Basis of Library Pedestrian Movement Line

The classification of library space design is based on demand. Different classification models can be defined according to different needs. According to people's residence time, the moving line channel is divided into three types. Fast moving line channel (evacuation, detention, emergency), medium speed channel (space ordinary Series), slow speed channel (at the same time, the moving line channel has the ability to undertake the function of channel exhibition).

3.2. The Library is Divided into Functional Zones According to the Pedestrian Movement Line

Functional zoning and pedestrian flow line are the same links in spatial layout. According to the classification of the pedestrian flow line, the functional zones are divided into three main functional zones: the urgently needed product zone, the high-quality product zone (medium residence time, or the residence time cannot be defined), and the slow sales zone: the sales experience zone (performance, culture, education and popular science experience). The auxiliary functional zones include four business integration zones (auxiliary business forms, such as the leisure and light food area in the library), warehouses, facility system rooms and administrative areas. Typical pedestrian flow zones are urgently needed product areas and slow sales areas.

4. Systematic Thinking Model of Pedestrian Movement Line Construction in Library

Building vertical, courtyard and hybrid dynamic line system thinking is three kinds of system thinking models, which constitute the system thinking model as a subsystem at the same time.

The pedestrian flow mode of exhibition space in the building is basically composed of horizontal and vertical traffic organization. Horizontal traffic organization refers to the traffic organization mode of exhibition function modules (Systems) in different horizontal directions of exhibition space in series, such as Exhibition Street, employee channel and fire corridor. Vertical traffic organization refers to the traffic organization mode of solving different display function modules in vertical direction through stairs, escalators, elevators, etc.

4.1. Longitudinal Type (Vertical Moving Line)

The vertical moving line is a combined model that vertically superimposes the urgently needed product area (fast reading, recommended borrowing area), high-quality book area and slow reading area in the same exhibition space.

Adapt to demand

one Rapid transportation of exhibits: it is suitable for the exhibition space with tight land and less complex exhibits.

two Centralized transportations of people flow: adapt to simple people flow and reduce the complexity of horizontal streamline.

Potential problems

one Poor reliability: depending on the vertical moving line, the exhibition will be greatly affected in case of power failure or elevator failure.

two Streamline congestion: people and logistics are often crowded at the entrances and exits of vertical traffic, especially in peak hours, with poor transportation and poor experience.

three High cost: the early investment and later operation cost of elevator (physical environment) are high.

ISSN: 2710-0170

four Complex traffic: the traffic organization model seems simple, but it is the most complex. Relying on vertical traffic, the utilization rate of horizontal traffic is low.

4.2. Courtyard Type (Plane Moving Line)

Courtyard type moving line is a combination mode that solves the traffic organization of the three main functional areas through horizontal traffic as far as possible. The forms of plane moving lines should be diverse. In form, it can be summarized as linear form, zigzag form, mesh form and radial form.

Adaptation needs:

one Easy access: convenient for people, especially the elderly and children, convenient logistics, suitable for exhibition and difficult to carry large objects.

two Strong reliability: compared with the vertical type.

three Lower cost: compared with vertical type.

four Streamline access: network distribution, rapid dispersion of people and clear traffic.

five Better environment: the horizontal combination mode can make the environmental lighting and physical environment design superior.

Potential problems:

one Lengthening the moving line: reduced efficiency and increased operating costs. The logistics circulation cycle is long, and the moving distance of people is large.

two Low building utilization rates: large shared area increases the cost.

4.3. Hybrid System Construction based on Comparative Thinking (Longitude Latitude Moving Line)

Comprehensive utilization of horizontal and vertical traffic organization modes. We can give full play to and make use of their advantages. Because of the intersection of personnel streamline design caused by single vertical thinking, while single courtyard thinking (plane thinking) is easy to cause the idleness of streamline. So, we need to use hybrid thinking. At the same time, it is necessary to combine multiple systems such as land use conditions (design limitations), architectural functions and regional characteristics (Culture) to realize the development of strengths and avoid weaknesses. Four typical methods are summarized:

one the fast-reading area has the largest flow of people, mainly horizontal traffic, and scattered flow of people. (Primary and secondary of the system)

two the boutique area is multifunctional, and multiple sets of streamline schemes are prefabricated. Undertake the function of daily balancing the relationship between fast sales area and slow sales area. (balance of system)

three the average flow of people in the slow reading area is small, but it has obvious time peak characteristics (light food, catering and festival performances). It is better to adopt the vertical traffic mode, and the streamline is more efficient and convenient. (system independence)

four Streamline reflects the dynamic and static, open and private spatial logic. The warehouse is close to the fast sales area (moving area) and the administrative area is close to the quiet area. (multi system)

5. The Essence of Hybrid Thinking System

In essence, the hybrid thinking system is to treat the system (concept) with systematic thinking. As far as the system is concerned, through the comparison of the two systems, induction, generalization, and combined with a variety of thinking to build a new system method (ability) in a specific context, it is to achieve self-sufficiency and perfection in the system with the help

ISSN: 2710-0170

of the system "systematic thinking logical thinking comparative thinking" which is larger than systematic thinking, reflecting the system (thinking).

Specifically, the essence of application hybrid optimization is the balance between system and system. To a certain extent, the primary and secondary, balance, independence and multi system.

5.1. Thoughts on the Construction of Dynamic Line Combination Thinking Model

Firstly, according to the effective classification, spatial characteristics and relationship, the spatial system divides the moving line into vertical type, horizontal type and mixed type. Second, by summing up the advantages and disadvantages of the horizontal and vertical style itself, it defines the needs (advantages) and potential problems (disadvantages) that the single system can meet in the design of commercial exhibition space. Third, the construction of hybrid system is based on the comparison of vertical and horizontal systems. To balance one's own thinking system. The specific methods of hybrid problem-solving are listed.

5.2. Moving Line Classification (Model Validity Analysis)

Moving line classification is also a kind of classification in essence, which is compared with the first classification. They are longitude and latitude to solve the defects of single system. Specifically, under the bird's-eye view space (essentially building a thinking system with the help of spatial layout), the aerodynamic line is classified based on the "point line surface" system. Classify the moving line as "vertical moving line (point) - plane moving line (line) - functional partition (surface)". Under this vision, the functional zoning plays the role of shunting people with the flow line, which is a systematic aspect.

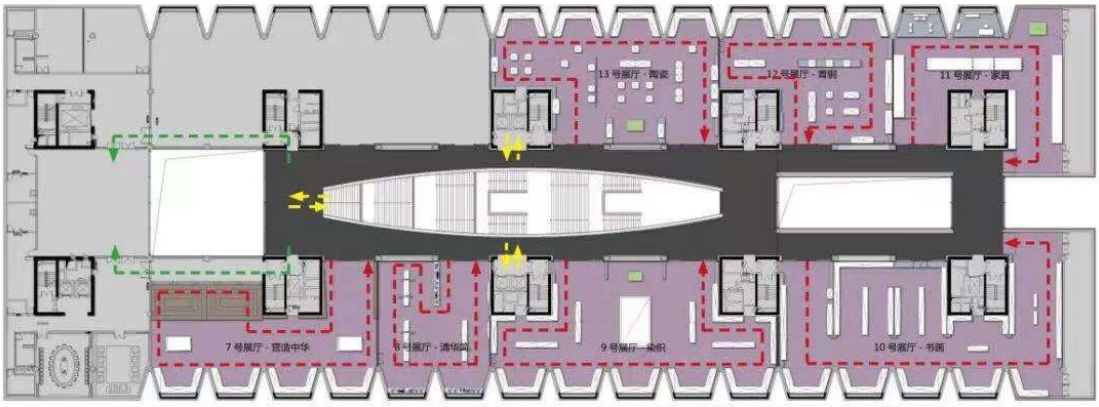

Fig 1. Art Museum of Tsinghua University (Mario bota, Switzerland)

With the help of two thinking systems, the plane moving line (courtyard moving line) is subdivided into "point type pedestrian moving line - line type pedestrian moving line - surface type pedestrian moving line". Compared with the former, the "classification" is an effective classification of the classification link of moving line design. In the interior design system, the spatial layout link is divided into "pedestrian flow line and functional partition", and the functional partition has the "area type pedestrian flow line" as the pedestrian flow partition under the comparison of the two systems. In order to balance the spatial layout link with the help of the two system dimensions, under the plane system, a single functional partition (system) is subdivided into "point functional partition - line functional partition - area functional partition" because of system overlap the functional zoning of "stay flow dual stay" line is the "pedestrian flow line" of the spatial layout system. The two are relatively independent (easy to define the design division of labor) and coincide (easy to compare and cooperate).

ISSN: 2710-0170

With the help of secondary classification, the research on the moving line of people flow focuses on the optimization and Balance Comparison of the moving line. The logic in the single line, that is, the design method of "courtyard type", is concretized.[3]

6. Summary

This paper studies the dynamic line design of library space by using analytical thinking and classified thinking, systematic thinking and analytical thinking and logical thinking, establishes the thinking model, puts forward a comprehensive and detailed pedestrian line design method for the reading space with the access of vulnerable groups such as teenagers, and verifies the effectiveness of the model.

Acknowledgments

Scientific research project of Nanjing Library Society (Research on the mode and strategy of minors' Reading Promotion in Nanjing).

Contribution Description: Zhao Ruijie: responsible for analyzing cases, building models and drafting theories.

Text: The final version of the thesis is proposed by Mr. Zhu Aiyang and revised by Mr. Zhang Aiyang.

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