The Welcoming Experience of the Arrival Space in Museums

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To the memory of my supervisor and friend Dr Wang Qi

纪念我的导师和朋友，王琦博士

Abstract

Since the world first public museum opened in the late seventeenth century in Oxford, many efforts have been made on welcoming visitors. Nowadays, the museum should not only focus on the increasing number of visitors, but also should consider how to provide a more comfortable and popular visiting experience to various people from every angle, such as the people with different cultures, religions, ethnicities and educational backgrounds, and attracts more repeat visitors. Therefore, the arrival space is particularly important as the first stop for people to understand the museum.

The arrival space is like a boundary between the outside world and the inside museum. Two stages need to be considered here: how to engage diverse visitors to enter the museum, and another is how to keep the museum attraction after people come in there. In other words, weakening the boundary or making it more transparent and open， and offering a welcoming experience should be the final goal in this research.

To explore the above issues, the first part of the thesis needs to overview and analysis the significant literature on the field of museum studies, public space design, visitor's behaviours and visiting experience. Thus, theoretical research will introduce the review of the public museum's historical development to discover the publicness of the museum and different kinds of public space in the museum. The great architectural appearance and the attractive theme of museums determine their appeals directly. However, the impressive visiting experience is the key to retaining visitors. Many cases of contemporary museums will be mentioned here to identify the concept of arrival space. Its research significance and the visiting experience will be discussed. Based on these, a hypothesis of welcoming experience in arrival space will be proposed, following the Assessment System of Visiting Experience (ASVE). Due to the different personalities and preferences, it isn't easy to establish a clear standard to measure visitors' experiences in museums. The ASVE can be a survey method to help to

understand the visiting experience in real cases.

In the second part, the leading case study needs to collect an immense amount of data to verify the factors that affect the visitor experience by the previous assessment system. Natural History Museum in London is a famous museum with a long history, attracting many people every year. Its three arrival spaces serve different exhibition themes and architecture styles, suitable for the research. The questionnaire, observations and interviews will be used to analyse the influence factor of the various visitors' experiences in the museum. The outcome will be design guidelines to enable the museum and visitors to meet an understanding consensus.

This research's main objective is to help improve the visitors' experience in the contemporary museum by the design of a welcoming experience. Moreover, the creation of a welcoming experience can be applied to a broader range of architectural fields, no matter in museums or other public institutions. Especially in the special period of the pandemic, the welcoming experience needs to be created in the public space to stimulate people's positive attitudes toward life.

Keywords

New Museology; Arrival Space; Visiting Experience; Welcoming Experience; Assessment System of Visiting Experience (ASVE)

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Chapter 1. Introduction

1.1 Research Background

Cities and buildings together form a settlement environment for human beings. The gathering of buildings and the physical space, generally an indoor or outdoor area, affects and reflects people's daily lives in the city. These places are so-called public places, whether privately or publicly owned. The public has access by right or by invitation, expressed or implied, whether by payment of money or not, to create spaces for the public to meet, communicate, and stay (USLegal, 2020). The publics have various behaviours and activities in these areas, making the space full of vitality. From a macro perspective, these areas are called the public realm. The public realm exists in multiple forms in cities and is used in various ways (Warner, 2002). According to Sennett (2020), traditionally, the public realm could be identified by the squares, major streets, theatres, restaurants, lecture halls, government assemblies, or stock exchanges where strangers would be likely to meet. These public realms can stimulate urban vitality, reflect the urban character and make the city popular. The museum is such a public realm.

Today's museums deliver knowledge and inspiration to their visitors through display presentation and visual narrative as carriers of culture or historical artefacts, which have become one of the most popular public realms of the city. At the beginning of its birth, the museum was founded by the private or royal family. It has gone through hundreds of years of development, from private to public opening. What changed all of this stemmed from the New Museology Movement in the late 20th century. It was related to the turbulent social background around the world at that time. The autocratic rule was overthrown, and the public began to take the initiative for their own rights. At the same time, the museum began to think about how to better open to the public.

As a public realm, the museum provides much more for the public. It is a constantly evolving place and will offer even more possibilities to the public in the future. Every

attempt must be made to expand the scope of the museum's providing activities (Coleman, 1939). The traditional temple form and the museum's majestic image began to be broken and replaced by the weakened boundary and rich function of the museum space (Davis, 1999). Experienced more than one century, how to make museums more popular is still an enduring topic. The International Council of Museums (ICOM) asks museums to shift their objective from transmitting expert knowledge to fostering dialogue and connection, which emphasises museums' democratisation and inclusiveness (ICOM, 2019). As a result, in the wake of the New Museology Movement, the publicness of the museum opened to visitors, and exhibition applications have become a hot topic of discussion. What followed was the promotion of visitor status, and the reform of architectural form and display method have become hot topics of discussion.

When discussing issues such as the inclusiveness and publicity of museums, it is worth learning from the public realm experience in urban design. The public realm emphasises the right of public access, in which the popular public space can attract people to enter and even participate in and stay active. Back in the museum, if it wants to become popular, it first needs an experience that makes visitors feel welcome. Up to the present, large works of literature have been made on the museum's inclusion, public exhibition space, visitor behaviour, visiting experience, etc. Based on different fields, scholars are actively discussing how museums can better serve the public. Based on previous research, this study explores how the museum can create a welcoming experience for visitors from the perspective of architectural design.

Although many scholars' achievements have a profound influence on the development of the relevant fields, the premise of these issues is to ensure that THERE ARE visitors; that is, the most fundamental is to bring people from outside into the museum. There are two key points here: the external attraction and the continuing internal attraction, which are the ability to retain visitors and keep them in the museum (Figure 1-1). This space connects the inside and outside world of the museum and is the only way to enter museums. Therefore, the entrance of the museum and its surrounding area have become the focus of this study. The ARRIVAL SPACE is proposed for the museum's entrance and its

surroundings with the outdoor and indoor environment. The essence of the arrival space is to show visitors' the primary impression of both the exterior and interior of the museum. Thus, the research question focuses on creating a welcoming experience in the arrival space for visitors to come to museums.



Figure 1-1 Two critical attractions of the museum (Author, 2018)

Giving visitors a welcoming experience requires respecting their preferences and behaviours. Every visitor has different expectations and motivations of the museum before they visit. If ordinary visitors have a boring trip to a museum, they might later refuse to re-enter the museum. They even may share their awful experience with their friends and relatives around them, which is a big challenge for the museums. At the same time, it could negatively affect the community. Therefore, it requires understanding the public's motivation to go to museums and their perception of museums. In the late 20th century, most people's impression of museums was sacred, educated, and inspiring. The main reasons for attracting people to visit were learning, discovering new information, and social activities (Hood, 1983; Graburn, 1977; McManus, 1996). After entering the 21st century, museums start to take on more social roles, such as family interaction, entertainment, and social activities (Falk & Dierking, 2016; Dodd et al., 2012). It has even become a place for modern people to escape from a stressful life (Slater, 2007; Lin, 2009). In particular, the literature review on visitors' motivation in the past two decades shows that visitors' motivation for learning is becoming weak. It seems that nowadays, social activities

outnumber learning activities in many museums and galleries. The key reasons people go to museums are social activities, such as relaxing themselves, meeting friends, or enjoying family days in the museum. With the increase in museums' social activities for people, it has increasingly become a significant public realm in which the public is invited to participate.

This research hypothesised a Welcoming Experience. Such a concept is a public museum's arrival space with a welcoming atmosphere that meets visitors' expectations and stimulates curiosity and inspiration. Based on the areas that can cause the public to come in and keep staying in the museum, the research object is finally determined to be in the external and internal areas connecting the museum's entrance space, which is defined as the Arrival Space. The arrival space is classified from the perspective of architectural elements. Returning to the essence of research here is mainly to explore the relationship between people and space. Different architectural forms bring people different experiences and senses. People use their bodies to perceive whether the environment has met their expectations and make judgments and react to emotions. The body plays a vital role as a medium for the environment and people's feelings, which is also the central discussion part in perceptual phenomenology.

Although people's visiting experience is a perceptual understanding, the behaviour manifested by their bodies' perception of the environment is objective and has a certain pattern. Therefore, the study of visitor behaviour can explore how to make people more active in the arrival space and realise the arrival space become more welcome. The final purpose of the research is to rationalise the perceptual welcoming atmosphere in the arrival space, define the welcoming experience, analyse its judging criteria, and finally provide an evaluation strategy applied to future exhibition buildings. Figure 1-2 shows the conceptual process of the whole research. Based on the theoretical analysis of arrival space and the experience, an assessment system of visiting experience (ASVE) is built to apply to the main case study and reveal the design strategy of creating a welcoming experience.

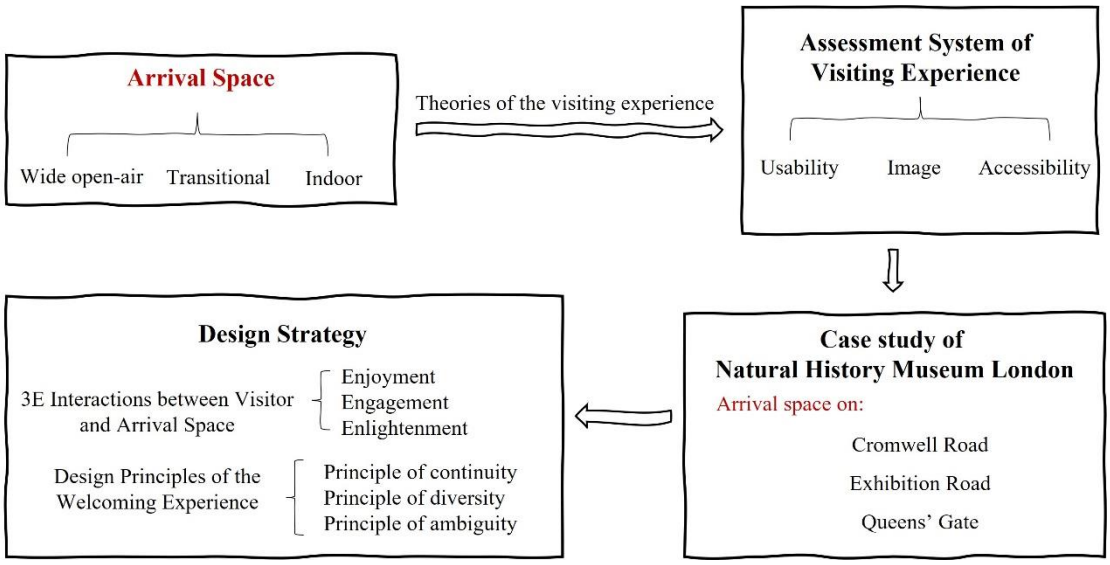


Figure 1-2 Conceptual process (Author, 2020)

The arrival space specifically refers to the transitional area connecting the city and the museum in this study. The arrival space can exist in any public realm. When the public enters a specific space from the city, it is a process that triggers the cognition of the various sense organs of the body. The various stimuli from the space environment affect people's motivation to enter the space. From a broader perspective, the research on the welcoming experience in the arrival space is of great significance for stimulating the urban public realm's vitality and continuing the urban context. In various public realms of the city, architects should be encouraged to create more idealised arrival spaces and offer a welcoming experience for users to promote social harmony and sustainable development.

1.2 Research Structure

The research question of this study is: **How to create a welcoming experience in the arrival space for visitors to come to museums?** To solve this ultimate problem, there are five research objects to interpret the issues step by step:

1) What is the arrival space?
2) How do people experience the arrival space?
3) How to describe the experience of the arrival space from the designers in theory?

4) How to evaluate the visiting experience of the arrival space by visitors?
5) What's the design strategy for architects when designing arrival spaces and other public spaces?

The first 2 questions are about the background theory. Question 3 and 4 show here used a mixed methodology in theory and practice. The last question shows the solution of this research. These five questions are analysed in turn by each chapter.

This thesis will be structured to explore the evaluation criterion of the welcoming experience for visitors in the museum's arrival space from two parts. Part I is the arrival space's theoretical research related to the visitor's role changes based on the museum's development (Chapters 2 to 5). Since museums become a public place, the relationship between visitors and the building leads to further research. In part II, the influences of welcoming experience in arrival space will be examined by the main cases on the strength of the case study. According to the case study analysis, the following chapter will propose the guidelines regarding creating a welcoming experience to enhance the accessibility of the publicness of a museum (Chapters 6 and 7). Finally, Part III is the conclusion of the whole research (Chapter 8). The following will introduce the logical relationship between each chapter in detail.

Chapter 2 reviews the historical background of the publicness of contemporary museums and introduces the different functions of the public spaces in the museum. This chapter analyses the certainty of the gradual opening of museums to the public in light of the social causes of the New Museological Movement. The various types of public spaces in museums offer different services to people and are constantly being improved and developed to attract visitors better. It has been found through research that the first public space people enter a museum is often one of the most important factors in deciding whether they continue their visit or not. Therefore on the basis of the museum public space, this paper proposes a new concept of Arrival Space and makes it the main object of subsequent research.

Chapter 3 clarifies the definition and research meaning of the arrival space in this study. Moreover, the arrival spaces are classified by their degree of openness to visitors on the architectural boundary. Various arrival spaces create different visiting experiences. Whatever the open form of the arrival space, they all work together with the interior space. Thus, the indoor arrival space will be paying attention more. Chapter 4 discussed the occurrence and influencing factors of the visitors' experience in the museum's indoor arrival space. To enhance the accessibility of the museum, the environment for a good meeting and staying in the arrival space should be a priority considered together. Based on the discussion about the visiting experience in the arrival space, The conditions required to create the atmosphere of the space are clarified. Chapter 5 clearly defines the concept of a welcoming atmosphere. Through the research on visitors' needs and expectations of the welcoming atmosphere, an Assessment System of Visiting Experience (ASVE) in arrival spaces is established from the three aspects: usability, image, and accessibility. These aspects will be analysed and verified in the following case study of the Natural History Museum in London in Part II.

Part II is based on the case studies of the visitors' behaviours and emotions in three arrival spaces (entrances and the surroundings on Cromwell Road, Exhibition Road, and Queen's Gate) of the Natural History Museum (NHM) in London. Chapter 6 firstly introduces the historical evolution of the NHM's building and the three arrival spaces. Then, focus on the data of the questionnaires, interviews, and observations in these arrival spaces. Chapter 7 further discusses the data collection based on the ASVE and puts forward the corresponding design strategy and suggestion. Later, the positive interactions between visitors and the arrival space are explored, resulting in three interactions reflecting a visitor's welcoming experience: enjoyment, engagement, and enlightenment (3E Interactions). Finally, the design principles of the welcoming experience are revealed on this basis.

Part III is the conclusion of the whole research. Chapter 8 summarises the main points of the research, highlighting the concepts associated with welcoming experiences and looking at the future application of these ideas in the wider public realm of the city. Figure 1-3 shows the whole structure of the thesis.

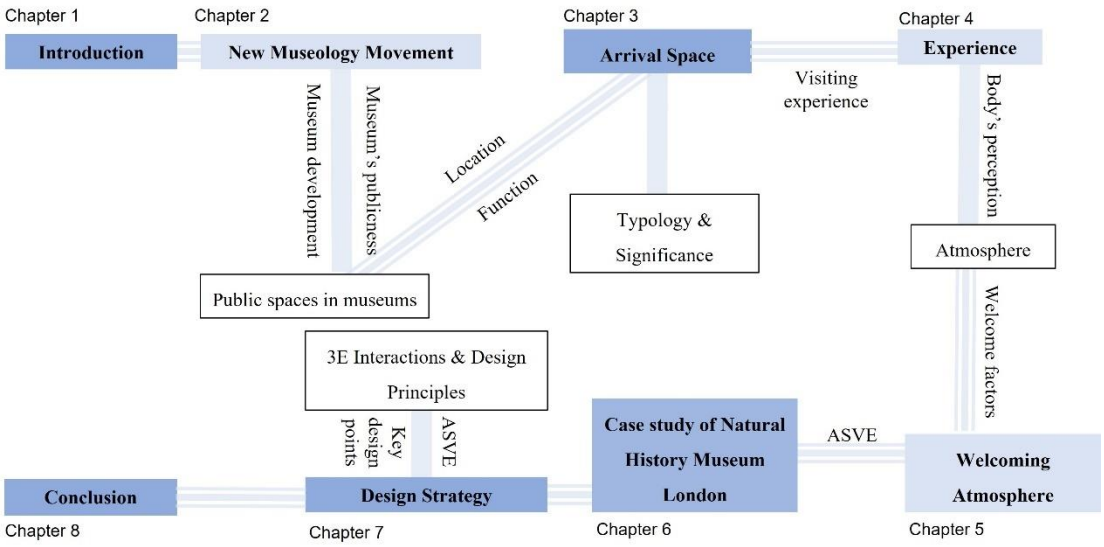


Figure 1-3 Research Structure (Author, 2020)

1.3 Research Methodology

The research methodology is the process to help the researcher to explore and solve the research questions. This research used a mixed methodology that includes two main research methods. One is theoretical research; another is experimental research. The theoretical research is based on the literature review of museology, phenomenology, ethnography, etc. It can clarify the research questions and pave the way for the following case studies. The experimental research mainly includes the case study, which will verify the conditions that need to be met to realise the welcoming experience through the analysis method obtained from previous theoretical research. Figure 1-4 shows all the research methods used in this study.

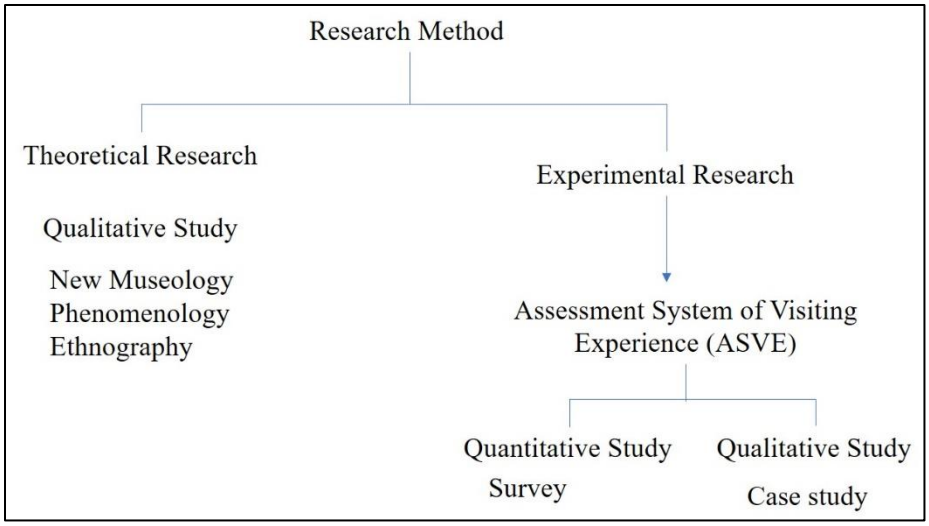


Figure 1-4 Research Methods (Author, 2020)

1.3.1 Theoretical research

This study sets out a series of tasks to address the research question of how to create a welcoming experience in a museum's arrival space. Firstly, the process of the historical development of the public museum needs to be combed, which can better understand the public spaces in the museum. Secondly, after narrowing down the public spaces in the museum, the concept of the Arrival Space can be clarified. Thirdly, the literature sources of the experience in different fields (psychology, philosophy and architecture) focus on how people experience the arrival space and describe the experience. These theoretical analyses laid the foundation for establishing the assessment system of visiting experience (ASVE).

Literature review related to the public space and visiting experience, etc., in Chapters 2 to 4, is a theoretical discussion on visitors' behaviours in the arrival space. When the subject of the study is concerned with behavioural issues, qualitative research is a more appropriate methodology (Chacko & Nebel, 1990: 383). The use of a qualitative approach can generate a deeper understanding of complicated behaviour rather than quantifying, generalising, or predicting it (Hudson & Ozanne, 1988; Walsh, 2002). Thus, a qualitative approach is deemed relevant to the museum experience context. (Roederer & Filser, 2018). By interpreting the relevant literature and then summing up

the assessment system, this interpretative analysis is especially appropriate for visitor experiences in the museum context to explore visitors' thought processes and their beneficial experiences.

1.3.2 Experimental research

The theoretical research must be combined with practice in order to have a more in-depth understanding of the visiting experience of arrival space in the museum. The experimental research is mainly used ASVE to analyse specific cases to find key indicators that affect the visitor experience. Thus, a case study in the field is quite necessary. Due to the particularity of each individual, this study needs to collect a large amount of data from summarising the general behaviour rules of visitors. The Natural History Museum (NHM) in London has three distinct arrival spaces built at different times, creating a very different feeling of arrival. Besides, its exhibition theme based on natural history attracts visitors of different ages and backgrounds. The huge annual visitor flow provides convenience for data collection during the survey. Therefore, this research uses the NHM as an experimental point for the survey. It is a study that works with people and explores their psychological feelings. The most traditional research methods that can rely on are the questionnaire, interview, and observation. They are designed based on the ASVE.

Questionnaires can gather information directly from respondents through a series of questions about visitors' feelings and experiences. Typically, a questionnaire includes closed and open questions. Closed questions structure the answer by only allowing responses that fit into pre-decided categories. In comparison, open questions are often used for complex questions that cannot be answered in a few simple categories but require more detail and discussion. Considering the respondents' patience and acceptance, the number and time of the questionnaires to be collected, and other issues, the questionnaires in this study only set up no more than ten closed questions, and each questionnaire can be completed within 3 minutes. All questionnaires are issued in the form of electronic questionnaires, which can avoid paper waste and save time for manual counting. In this way, visitors' visiting experience will not be affected by the long-term survey, and the

respondent provides information that can be easily converted into quantitative data. Before conducting the formal study, a pilot study is required. It is a small-scale study just to try out the study with a few participants to make adjustments before the formal investigation. However, open questions enable the respondent to answer in as much detail as they like in their own words, which tends to get more information than closed questions. Interviews are therefore not to be ignored.

Questionnaires can be thought of as a kind of written interview. Thus, some important open questions can be added to the interview. An interview in qualitative research is a conversation where questions are asked to elicit information. Although visitors are the main subjects of this study, the opinions of other groups of people, such as museum staff and experts, are equally important. They can put forward their own views on the creation of a welcoming experience from different angles. The interview gives no pre-set answer options and instead allows the interviewee to talk about exactly what they thought. It helps to get more in-depth answers from experts and visitors. In this survey, each interview was controlled within 30 minutes to an hour and was recorded. Then, it is further analysed by Nvivo after the audio file is converted into text.

Sometimes, the face-to-face survey may make people defensive and could invalidate their answers. In this case, observation is significant. Observation is a research instrument to examine people in natural settings or naturally occurring situations. In this research, the observation can clearly show the visitor's trajectory. Tracking various groups of people can help to analyse the attractiveness of different areas to visitors. At the same time, it can find out which areas are not welcome. These provide a basis for studying the welcoming experience in the arrival space. In addition, the observation requires detailed records of dates, time periods, weather, and other data, which will affect the experimental data. To ensure comprehensive data, this study randomly selected non-consecutive days under different conditions for observation and recording.

No matter what research method is used, its final aim is to collect data on visitors' behaviour and feeling in the arrival space. Then, reflect intangible factors, such as emotions, actions,

and other tangible architectural design needs. The whole research process lasted nine months from communication to completion, during which nearly 350 valid questionnaire data were collected, 84 groups of path following records and five detailed interviews were conducted. Finally, the 3E (Enjoyment, Engagement, and Enlightenment) positive interactions determine whether the arrival space can provide visitors with a welcoming experience and provide design strategies for the architect to create a welcoming experience.

1.4 Terminology

Arrival Space

The first public space that people enter the boundary of the museum and can receive information about the museum at the same time, which can cover services, commerce, entertainment and even temporary exhibitions.

New Museology Movement

As opposed to traditional museology, the New Museology refers to a new approach to museum practise that emerged in the late 1970s. The New Museology Movement's social function and characters were first publicly expressed and discussed at an international level at the Round table of Santiago (Chile) organized by ICOM in 1972. The International Movement for New Museology (MINOM) was founded in Lisboa, Portugal, in 1985 based on the First International Ecomuseums and New Museology Workshop in Quebec (Canada) (ICOM, 2021) in 1984. This movement advocates that museums should avoid being out of touch with society, elitist and outdated, reflects a greater awareness of museums' social and political role and embrace meaningful community participation in curatorial practice from the exhibition, methods to focus on the museum's future aim.

Positive Visiting Experience

The term refers to the multiple perceptual stimuli that visitors can receive through the

space, attracting people to stay in the space for a period of time and generating some interaction with the environment, thus creating a deeper impression of the space. It's an experience that is comprehensive, interactive and processive.

Welcoming Atmosphere

Visitors perceive the space they are in through the atmosphere. The welcoming atmosphere is an atmosphere in an ideal arrival space of the museums that visitors can feel connected and engaged inside. Through access to space and participation in activities (unconscious or conscious), people can experience value, be respected and supported.

Welcoming Experience

The positive experience visitors have through being in an arrival space with a welcoming atmosphere. The experience process of the visitor's body's sense from enjoyment, engagement to enlightenment.

Assessment System of Visiting Experience (ASVE)

The item evaluates the people's visiting experience in the museum's arrival space from usability, image and accessibility, which contains various design questions like a questions bank. The usability, image, and accessibility of these three aspects are mutually independent and have overlapping parts. For example, richly functions can create an impressive image; a comfortable environment is one of the necessary conditions to ensure that various groups access the museum. It helps designers to judge a museum's arrival space good or bad.

3E Interactions

The three positive ways in which visitors' behaviours interact with the environment include enjoyment, engagement, and enlightenment. People get joyful feelings through the cognition of space, which is the result of an information's interaction.

Enjoying the environment, then actively participating in it, and even being inspired by it results from multiple, deeper information interactions. From the enjoyment to the enlightenment expresses the progressive relationship between visitors and space interaction.

Chapter 2. Historical Development of Public Museums

Introduction

Over its long history, the museum has been given various meanings. From the originally spiritual worship of the "Enshrined the Muses" to today's public place for education and entertainment, the museum's social significance has been steadily improving. Especially in the face of injustice, polarisation and discrimination, increasingly, people believe that museums can help human beings understand, discuss, and analyse these social problems in a peaceful state of mind (ICOM, 2019). Since the New Museology Movement in the 20th century, attracting more people into the museum to visit has been one of the most critical research points of the relevant field.

Firstly, before understanding the publicness of museums, the background in which the New Museology Movement arose should be reviewed. Sorting out the museum's development status helps understand how the museum's attitude towards visitors has changed during that period. Secondly, as the New Museology Movement drives a change in the status of the visitor in the museum, the architectural layout, exhibition design, etc., of the museum needs to become more accessible to the public. Thus, it relates to the discussion of museums' publicness. Finally, as a public realm, the museum contains public spaces with different functions, which serve visitors with different experiences. By interpreting these public spaces, the first stop for visitors plays a vital role in shaping the image and enhancing the museum's attractiveness. The concept of arrival space will be proposed accordingly, establishing the research object for the subsequent research.

2.1 Impacts of the New Museology Movement

The MUSEUM has had a variety of meanings throughout the centuries. This word comes

from the Greek "Mouseion", which means 'enshrined the Muses'[1]. In 15th-century Europe, the word museum was to describe Lorenzo de' Medici's[2] collection in Florence, but the term conveyed the concept of comprehensiveness rather than denoting a building (Lewis, 2014). By the 17th century, the museum was being used in Europe to describe curiosities collections, such as the Ole Worm's collection in Copenhagen (ibid). Museums were created and maintained by the high for the low inculcation place before the early 20th century (Weil, 1997). During the 19th and 20th centuries, the museum's idea can be seen as a building type whose primary aim is to "communicate and exhibit" (ICOM, 2007; Lewis, 2014). With the improvement of the museum's social function, the item emphasis on the building gradually weakened. Museums are increasingly seen as a public realm that provides a variety of social behaviours for the public.

The role and status of museums in society have undergone tremendous changes in the past century. Along with identifying an exact role for museums in society, there gradually developed a theory known as Museology. The museology or museum study was used first by Philipp Martin in his Die Praxis der Naturgeschichte (ICOM, 2009). Following the continuous expansion of museology research and social development, New Museology was born in the late 20th century. Since then, the visitors' feelings and preferences have attracted more and more attention. Museums have also begun to assume more and more social responsibilities. The publicness of museums' development cannot be separated from the support of the New Museology Movement. This section will review the museum's development from the perspective of its history and the changes in the visitor's status.

2.1.1 Origins of the New Museology Movement

The positioning of the museum has been influenced by social development and

[1] Muses were the goddesses of the inspiration of literature, science, and the arts in Greek and Roman mythology.

[2] Lorenzo de' Medici was Florentine statesman, ruler and patron of arts and letters of the Italian Renaissance.

architectural trends. The world has been in turmoil before the 20th century. From the Enlightenment period to the revolutionary movement and world war II, every social unrest caused people's life needs to change. Figure 2-1 shows three development timelines from the perspective of social background, architectural style and museum from the 17th century to the present. Correspondingly, architectural styles at different times can also reflect people's preferences in different social contexts. From the pursuit of formalism before the 19th century to more and more functions nowadays, architectural style development is also closely related to the social background. Revolutionary thinkers and activists led several liberation movements, which have erupted simultaneously, and has seriously affected museums' view. It isn't easy to maintain the museum's operation simply by preserving and protecting the cultural heritage, and the traditional management and marketing of the museum must be changed (Gilmore & Rentschler, 2002; Maher et al., 2011). Some world-renowned public museums were also born under these specific historical backgrounds and social needs, such as the British Museum opened in the enlightenment period, and the Louvre opened in the revolutionary movement. In 1917, American museum director John Cotton Dana criticised that a museum looks like a department of storage is not a good museum, meanwhile encouraging the traditional museum should move away from the storage and come into the wider public (Dana, 1917). The new museum expands the old-style museum's function, which is not just the collection but also the exhibition and communication as well. This particular period of the cultural struggle broke the museum's balance and stability, and some scholars began to search for the new meaning of the museum (De Varine, 1996:1; De Varine, 2005). Based on the traditional museology, new museology emerges.

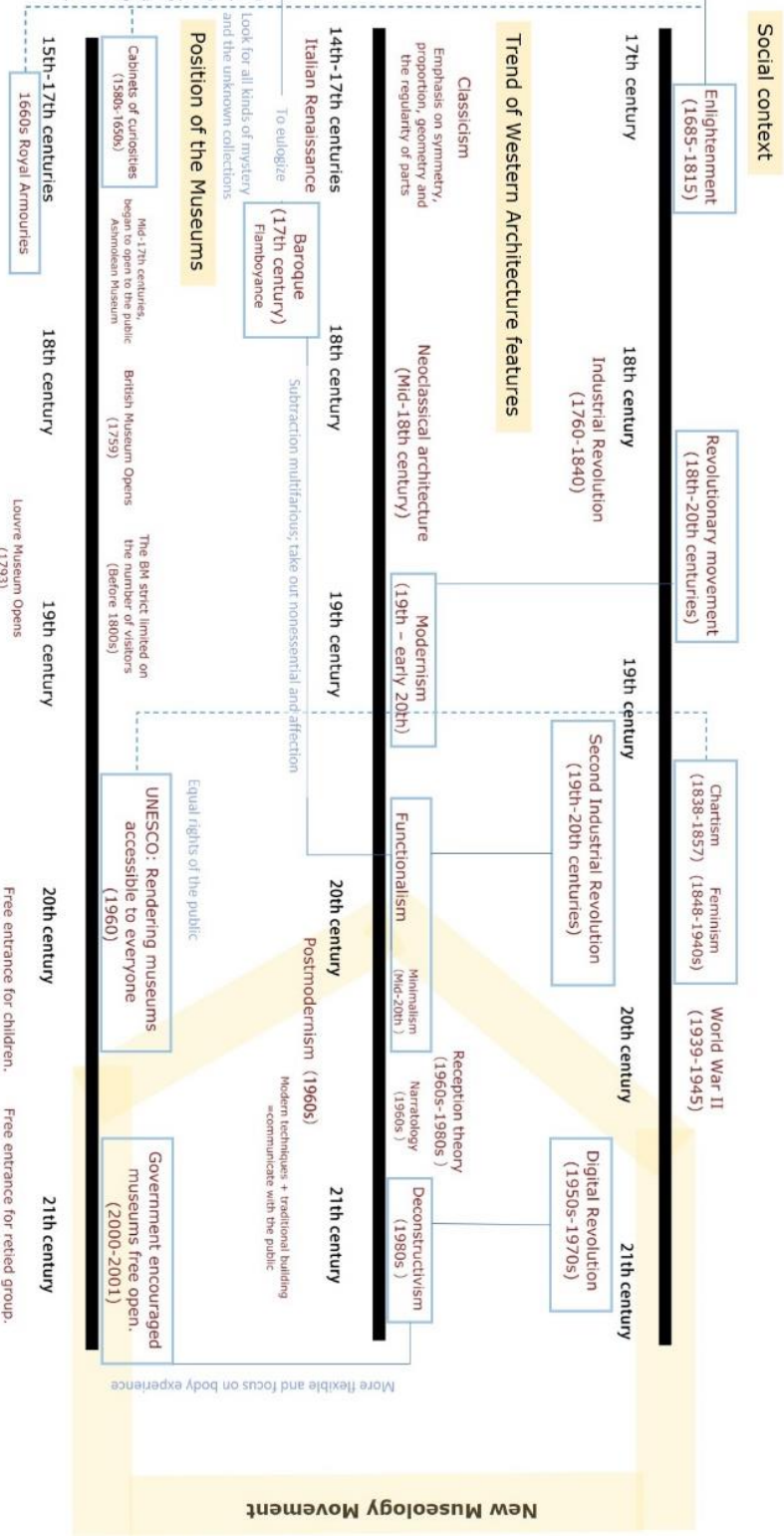


Figure 2-1 Three timelines that led to the New Museology Movement (Edited by author, 2018)

In 1971, The theme of “The Museums in the Service of Man, Today and Tomorrow–Educative and Cultural Role of Museums” was discussed at the 9th ICOM General Conference in Paris and Grenoble. More than 600 participants from 56 countries participated in this conference, and first proposed publicly the concept of the ecomuseum (ICOM, 2021). Rivière initially defines the "ecomuseum" as a tool of the shared vision, co-construction, co-operation and management by the public authority agencies and local people (Rivière, 1980: 182). It likes a mirror that could reflect local people's lives and allows visitors to explore the local industry, customs, and characteristics, which could be an effective way to improve the residents' confidence and increase understanding. In some senses, that closes the distance between the public and the museum and replaces the early museum's authority. The ecomuseum is the new practice in which the term and idea of a museum were put in symbiosis with the term and the idea of ecology led to the establishment of the new, rather applicable museology (Krstović, 2020). The next year, the New Museology Movement’s social function and characters were first publicly expressed and discussed at an international level at the Round table of Santiago (Chile) organized by ICOM. Later in 1985, the International Movement for New Museology (MINOM) was founded in Lisboa, Portugal based on the First International Ecomuseums and New Museology Workshop in Quebec (Canada)in 1984 (ICOM, 2021). MINOM's objectives are to make museums aware of today's major social problems, organise activities relating to cultural property, and participate as a mediator in museological debates within their communities (ibid). Engaging with contemporary social issues keeps museums from isolating themselves from their communities.

New museums are described as a carrier of the cultural process, which could promote communities and people development together in sharing the context of heritage (De Varine, 1996: 5). Currently, the term of New Museology has been used in many ways increasingly, which would try to find some radical alternatives to the traditional museum culture and management by museological practices. The new museology believes that the museum should be popular entertainment, education, and cultural centre (Karayilanoğlu & Arabacioğlu 2016). The new museum management theory and various new types of

museums were born from the New Museology Movement, which shared the root of human self-care. In addition to the concept of ecomuseum, other ideas of the neighbourhood museum and community museum came into being (De la Rocha Mille, 2011: 18-21). The New Museology encourages communication within the same class and promotes understanding across the barrier between social classes as cultural diversity. It points out that new museums should maintain a close tie with the social community's unity and development. At the same time, the concept of the museum is no longer confined to architectural individuals; it has gradually evolved into a social place and public atmosphere.

2.1.2 Changes in visitor's status

Until the later 19th century, museums were only allowed the upper class to enter, and the restricting access and imposing building style of museums made the general population fall back (McLean, 1997). The influential personnel usually run the museum, such as the most prestigious scholars, governors, or royal families, who might not ask for suggestions about how the collections should be presented or organised. Visitors entered the museum with gratitude and admiration, which was considered a granted privilege, not a right, so there is no criticism (Hudson, 1975: 7). Like the oldest museum in the UK, the Royal Armouries in the year 1660, it grew out of the department of the King's Privy Wardrobe and only allowed privileged people to visit (Royal Armouries, 2018). Even in other parts of Europe, only distinguished travellers and foreign scholars, as a rule, were allowed to see the collections that belong to the European royal (Bourdieu et al., 1991). Museums are seen as isolated from the modern world, elitist, outdated, and a waste of public funds (Hudson, 1975: 15).

Traditional museology was seen to privilege both its collections-based function and its social links to the cultural tastes of particular social groups (McCall & Gary, 2015). Numerous museums had very strict requirements like the limitation opening times, admittance regulations, expensive entry costs etc., to access (Tröndle et al., 2012). In 1759, the British Museum was allowed to open to the public. However, it was not easy to get inside. Due to a significant amount of studious and curious people are desirous to see the

museum, they had to apply in writing to the museum and came back one or two days later to collect a ticket and returned on the day appointed for their visit (Thackray & Press, 2013: 27). This series of requests is probably for judging fit and proper visitors.

The New Museology Movement encourages museums to work towards publicness, which means that museums should actively welcome visitors. The social contexts pushed the museums' mission to change from the storage of treasures for the upper class to the popularisation of education to the public. In contemporary museums, their visitors refer to the public, who is the museum's main participant. Modern Museums turn to think about visitors' new status. Many museums define their respective target visitors by their exhibition themes. The different museum has their target visitors. For example, some nature and science museums normally appeal to families with children, and some Arts museums may engage the young and mid-aged demographic with the relevant knowledge background. In this way, most museums will focus on their target groups' needs during an exhibition design to attract more visitors.

However, in the late 20th century, the museum was no longer a place of inculcation (Weil, 1997). Influenced by the new museology movement, the museum's relative positions and the public would have to be entirely reversed with higher and more interactions demanded by visitors. People want to be no longer only passive knowledge recipients of so-called supreme elites but participants and questioners. During the high-quality requirements demanded by visitors, they prefer to participate, overcome challenges, question, and be treated equally (Graham, 2005:2). Therefore, museums should consider sustainability and actively face diverse and open groups rather than pure audiences and specific target groups (Gilmore & Rentschler, 2002; Pop & Borza, 2014). Therefore, the museum needs to actively attract a wider audience not only limited to the target visitors.

The rising consciousness of public status broke the original relationship between the museum and people and created a prerequisite for encouraging more people to be involved in museums for a successful contemporary museum. Thus, new museums turn to be more humanity concerned to fit the public. As Vergo said, the New Museology Movement's

change was to turn the museum management issue from the technical level to the theoretical and humanistic level (Vergo, 1997). It is necessary to consider the visitors' feelings and create a welcome dialogue with visitors (Falk et al., 2007; Graham, 2005). In the twenty-first century, the future success of museums depends on identifying and meeting visitors' needs, which could put the visitors in a very central position to consider (Ambrose & Paine, 2012: 27; Falk, 2016: 20).

To welcome more visitors and let them enjoy a better experience, the museum needs to think about opening the gate and creating a positive public area. It is necessary to create an atmosphere in which the public will feel energised and confident about participating with the museum and each other by welcoming people personally and responding to their specific interests. This is about the relationship between the public and the museum, so the museum's publicness needs to be studied further.

2.2 Publicness of Museums

In April 1970, Joseph Veach Noble briefly described what he took to be the five basic responsibilities of every museum: to collect, to conserve, to study, to interpret, and to exhibit. Later, Peter van Mensch combined Joseph's last two essential functions and reduced them to three: to preserve, study and communicate (Weil, 2004: 74). The definition of museums as follows is published by the International Council of Museums (ICOM) in 2007:

> "A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, research, communicates and exhibits the tangible and intangible heritage of humanity and its environment for education, study and enjoyment."

With the enrichment of museum functions, their space is no longer simply for collection and exhibition purposes. The space form that a variety of functions coexist begins to be popularised. Moreover, the service function of the museum is gradually emphasised. The

study and communication to the enjoyment reflect the museum's gradual emotional care for its users. The museum's definition pointed out that the museum as a publicly accessible area should provide people with services such as learning and enjoyment. At the 25th ICOM Conference in 2019, there was a heated debate about the addition of "social justice, global equality and planetary well-being" in the new definition of museums (Small, 2019; Adams, 2019). Although some opponents think that the new definition is too politicised and exaggerated, it is undeniable that the museum is working towards democratisation and publicness.

Actively welcoming visitors is one aspect of the museum's democracy and is the embodiment of its public nature. The museum has been widely regarded as a public space. However, public space is a relative concept, which can include pseudo-public space (Langstraat & Van Melik, 2013). Often public space and pseudo-public space coexist that make up the full public realm (ibid). For example, the same museum space may appear more public for museum lovers and less public for those who have barriers to accessing museums, such as those who lack interest in visiting, those who have barriers to understanding due to cultural backgrounds and language differences, etc. Therefore, in the development of museums, the publicness of museums should be recognised by more people.

Since the New Museology Movement, museums are becoming more and more open step by step. The most obvious evidence of the openness is that museums begin to actively meet the various needs of people to welcome more visitors, which means that they want to widely active participation of the public. The museum should establish positive contact with more residents and visitors from outside to fully play to its active social role of spreading culture and knowledge. Thus, one manifestation of the museum's publicness is the participation of the masses.

From a social point of view, museums should respect everyone who comes in and visits. Its essence is still a public institution that emphasises social equality and maintains social stability. So while the museum is trying to attract more visitors in greater numbers, it is also trying to accommodate more diverse groups. Therefore, from the visitors' perspective,

the publicness of the museum here also emphasises the inclusion aspect. It is necessary to explore how museums include visitors and why some people feel they are excluded from museums as a public realm.

This section explores the museum's publicness in terms of both participation and inclusion and provokes a discussion on the concepts of participatory and inclusive museums. Participation and inclusion are both about wanting more people and groups to enter museums on their initiative, leading to an analysis of the barriers associated with people entering museums.

2.2.1 Participation of the masses

New museums recognise that people need to feel connected and engaged (Museum Association, 2020). Society is a group of people engaged in persistent social interaction or living in the same geographical or social territory (Oxford English Dictionary, 2018). Participation is the embodiment of humanity in the process of social development. People are involved in various activities in society through enhancing mutual understanding among each other, thereby promoting society's positive and harmonious development. The museum is increasingly seen as reflecting the carrier social culture and democracy. For example, local museums help people learn more about themselves and their surroundings and thus motivate and enhance themselves (Mason, 2004: 50). When people have safe, welcoming places to meet new people, engage with complex ideas, and be creative in their local communities, they can significantly impact citizens and culture (Simon, 2010). New museums have been identified as having the potential to develop such a place.

Concepts such as the "Participatory Museum" and "Engaging Museum" have been mentioned frequently in recent years (Simon, 2010; Black, 2005). Participatory emphasises giving visitors a voice, developing more valuable experiences, and engaging for everyone (Simon, 2010). Through interactions between visitors and museums, more people be attracted to participate in the discussion and visit of the museum. The essence of the participation in the hope that museums can better connect with the community and integrate

into more people's daily lives.

The essence of public participation in museums is to make the public more aware of themselves and society, to promote mutual understanding and identity, thus promoting cultural integration and maintaining social stability. Twenty years ago, the Metropolitan Museum of Art in New York opened its remodelled Islamic galleries almost the week after 9/11. The former director of the Metropolitan Museum, Thomas P. Campbell, mentioned that most Americans had limited knowledge of the Islamic world before the 9/11 Attacks, and this terrible event could lead the public's perception was through the polarisation (Campbell, 2012). In this particular historical context, the museum showed the development of different Islamic cultures and tried to bring the public face to face with their objects. The museum is trying to create a dialogue to allow more people to understand the culture and lifestyle completely different from their original perceptions. Participating in the museum is more than just visiting; it allows people to gain a deeper experience through the visit.

In addition to the content of the exhibitions, more and more modern museums are becoming more accessible in their use of architectural forms and façade materials, which will be described in detail in Chapter 3. Furthermore, the call for mass participation has led to a gradual increase in the number of visitors to museums. However, the public nature of museums is not only concerned with visitor's numbers but also with the desire to include a more diverse range of social groups.

2.2.2 Inclusion of diverse groups

With the emphasis on multiculturalism and cultural inclusiveness, social inclusion has become a hot topic. The idea of inclusion refers to that everyone should be able o use the same facilities, participate in the same activities, and enjoy the same experiences, including people who have a disability or other disadvantage (Cambridge Dictionary, 2018). Social inclusion's central idea is about enabling individuals or communists to be fully involved in society (Dodd & Sandell, 2001). The importance of equality among multiple groups is

emphasised here. However, apart from political status, money, religion, and other objective conditions, people's personalities and cognitive abilities are also different in the real world. Normally, the government and many social policies pay attention to social mainstream development, the group that excludes the normal social system will be treated differently (Tlili, 2008). Thus, this has created the public's sense of tolerance and exclusion, which has triggered a social debate about inclusion and exclusion.

One definition of the museum states, "Museums are democratising, inclusive and polyphonic spaces for critical dialogue about the pasts and the futures…" and the conception of museum's inclusion is centred around tackling access problems faced by people (Tlili, 2008:134). Museums try to attract more people. In today's multicultural, inclusive social background, the word more may not only refer to the number of changes but it can also be understood as diversity or multi-levels may be more appropriate here. The museum's inclusion and diversity are always discussed together, and it believes that museums originally abandoned need to be included in dialogue, activities, and practice (Garibay & Migus, 2014). O'Neill emphasised the importance of visiting museums' social experience and said that "museums will have to learn to engage with mixed audiences at their core" in the Museums Association Conference (Stephen, 2021).

Correspondingly, some voices suggested that inclusiveness should focus on caring for the disabled and vulnerable groups (Sandell, 2003; Lisney et al., 2013; McMillen & Alter,2017). Inclusion can be defined as a state of being and feeling valued, respected and supported (Museum Association, 2020). Every individual should have an equal opportunity to make the most of their lives and talents. Museums should "guarantee equal rights and equal access to heritage for all people" (Geraldine, 2019). Thus, the museum strives to provide fair access to various groups to reflect the inclusiveness of society. The new museology calls on museums to exist to serve the public (Hudson, 1998).

Inclusive museums are inseparable from the community. A new word, "Incluseum", comes from the inclusive museum, which advances new ways of being a museum through critical dialogue, community building, and collaborative practise related to museums' inclusion

(Incluseum, 2021). An inclusive museum should emphasise collaboration and participation to improve exhibitions and strengthen ties with the community (Crooke, 2006). Social inclusion museums should focus on democracy, actively listen to the opinions of the people, and the content of the exhibition should be closely related to the needs of the public (Maleuvre, 2012).

Both the participatory museum and the inclusive museum represents the development direction and focus of the 21st-century museum. New museums need to pay the same attention to the number of visits and the diversity of the group. Participation and inclusion are responses to people's various behaviours in social space. People are more likely to get close to the space they are familiar with and stay away from the space they feel unfamiliar with or don't think they belong there. Therefore, the prerequisite for attracting more visitors is first to find out why those are excluded from the museum.

2.2.3 Barriers to access

Museums in the 21st century strive to meet the needs of the public and actively engage a wide range of visitors. However, some scholars have raised concerns and doubts about the efforts of museums to provide various services and integrate themselves into society. The social responsibility of the museum is imposed on the museum by external agencies such as the government and social consensus (Appleton, 2000). Since its inception, the museum has been regarded as an academic palace, but the changes brought about by the New Museology Movement have distorted its traditional role (Fleming, 2003; Appleton, 2007). If museums strive to provide every kind of service, the people-centred museums can easily become so homogenous and lose their distinctive character (Appleton, 2007). However, the main question that troubled museums for many years are that most visitors are not intellectuals (Hudson, 1975: 13). One of the situations in museums has always been that expert visitors and scholars are confident about acquiring knowledge, while many casual and infrequent visitors may worry about involvement (Simon, 2010: 34). A prerequisite for museums to disseminate knowledge is that visitors need to be able to understand their exhibitions. Exhibitions that are too academic or specialist may not be easily accessible to

the general public. The role of the museum is gradually changed from the information age. Most of the museums pay more attention to the visiting experience than just knowledge. People are more likely to stay and come up with new ideas when they are relaxed and happy. Therefore, museums that engage a wide range of people need to create enjoyable experiences for them.

Some people can easily experience the pleasures of being in a museum, such as social and family interaction, learning, entertainment, or even an escape from the stresses of work and life (Slater, 2007; Dodd et al., 2012). These visitors are clear about the purpose and needs of their visit to the museum and will visit regularly. In comparison, some people will refuse to participate in museums because of some negative emotional experience. To better understand the follow-up study, visitors can be divided into three groups according to the frequency of their visits to the museum: regular visitors, occasional visitors, and potential visitors (Figure 2-2). To attract more people to the museum, the characteristics and needs of potential and occasional visitor groups need to be carefully considered.

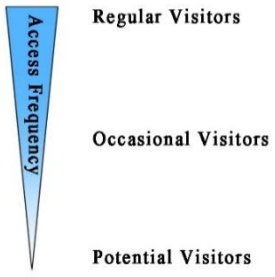


Figure 2-2 Visiting frequency of different visitor groups (Author, 2019)

Theoretically speaking, modern museums tend to welcome all people. However, those who hardly ever go to museums, such as the potential and occasional visitor groups, still believe that the museum is far from their lives. The background, such as history, culture and social environment, could be influence factors to stop them. Many people even wish to remain 'excluded' because they do not wish to be a part of a system that promotes inequality and injustice throughout its structures (Sandell, 2003: 204). As a result, the group of these people becomes excluded from museums. Therefore, the focus of the research is

essentially boiled down to understanding barriers of access issues and getting people in.

As emotion could control people's behaviour, the emotional barrier is always first to be considered (Kirchberg & Tröndle, 2012). Negative emotions often exist among visitors who don't go to the museum often, like the occasional and potential visitors, because they feel out of place (Tlili, 2008: 133). Some visitors are unsure how to express themselves in the museum environment and appear confused, exacerbated by the barriers to understanding information and exhibitions, which will cause them to lack the confidence to stay in the museum. People can usually keep away when they realise a place is not for them after the first visit. Disappointment arises when there is a gap between expectation and reality (Hudson, 1975: 27-28). Lack of self-confidence and a sense of belonging could cause people to never visit museums (Dodd & Sandell, 2001; Siegel, 2008). People's appreciation for art comes from a long period of art, home, and school education, rooted in social class and can hardly be solved (Bourdieu et al., 1997). Psychological diversity exists in every person during visiting museums, which is a major factor that hinders visitors from visiting the museum, such as confidence, curiosity, or acceptance.

Moreover, some traditional museums' imposing and somewhat intimidating building also makes visitors feel that they refuse to participate. For example, some museums evolved from palaces. The image of the original palace buildings is far from the lives of ordinary people, which makes people feel alienated unconsciously. Above all, factors such as visitors' self-perceptions and architectural semiotics can create negative emotions that prevent them from entering the museum.

With the development of the New Museology Movement, the constitution of museum visitors has become increasingly diverse in modern times. Figure 2-3 shows the visitors may have to face the challenges in the museum. The challenges that visitors face when visiting museums affect their frequency of visits. No matter which groups, they may encounter various challenges in the museum. These challenges can affect visitors psychologically and create negative emotions such as lack of confidence and rejection or stimulate positive emotions such as curiosity and wonder. These are related to the visitor's

specific visit experience. The publicness of the museum is reflected in how to make these groups actively face challenges and attract them to participate actively, significantly how to develop potential visitors and occasional visitors into regular visitors.

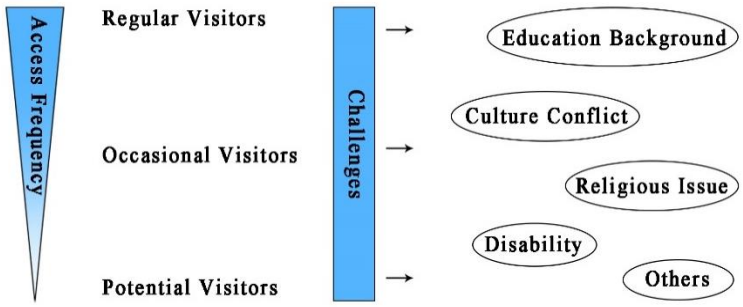


Figure 2-3. The Challenges that need to face for different levels of visitors (Author, 2019)

2.2.4 Summary

The city could be seen as a place where inhabitants encounter each other, realise their differences, and be forced to confront and manage these differences and engage their creative potential in the public realm (Lefebvre & Nicholson-Smith, 1991; Project for Public Space, 2009). Similarly, the new museums are also a place for people to interact, explore differences and inspire potential. Museums, like a small community, as a social concept is all-encompassing (Hooper-Greenhill, 1999:132). People live in a rapidly changing society, in which contemporary communities are more multicultural, multi-ethnic and multi-faith. Both the "museum" and the "public" are big words that cannot be defined as an independent unit without considering their context. The word 'Public' should contain diverse groups that are similar to the museum accommodate exhibits. The idea of harmony and equality should always contact the museum closely.

The public realm can support or facilitate public life and social interaction, which should have "physical" (i.e. space) and "social" (i.e. activity) dimensions (Carmona et al., 2012: 137). Thus, space with social activities constitutes the public realm. Most museums nowadays are places to provide space for movement, a means of communication, and a common ground for enjoyment and relaxation. Visitor-based roles already become the

museum's dominant idea instead of museum-based roles (Weil, 2000). Innovative design theories of museums argued that museums could be a city living room, a hub of knowledge, a research/learning centre, a landmark, a playground, a hands-on workshop, a superstore, a spiritual space or a place of meditation (Simon, 2010; Black, 2005; Dodd & Sandell, 2001). These functions undertaken by the museum exist as physical spaces. Public space is a physical manifestation of the public realm (Thomas, 1991). The goal of the museum is to deal with social publicness and reflect the democracy of the community. Its essence is to explore the coexistence relationship between its physical public space and visitors' activities.

Public space has various definitions according to its ownership, accessibility, function and use, etc., in different disciplines. For example, public space is "accessible to the public", "not controlled by individuals or organisations", "used and shared by different groups of people", etc. (Carr et al., 1992: 50; Madanipour, 1996:144; Carmona et al., 2012: 137). As this research concerns, "public space" focuses on the use and experience of the space rather than its ownership. Therefore, the museum space accessible to the public, whether privately owned or not, belongs to the public space in this study. A museum's publicness has similar principles to evaluating a successful public place. A good public space should be fully used and allow users to have a good experience at the same time (Gehl, 2013). Whether a museum can provide a good experience for visitors determines whether it is popular or not. For museums to be truly open to the public, it is necessary to overcome the access's barriers of potential and occasional visitors and actively create a welcoming experience for all visitors, which will be discussed in detail in Chapters 4 and 5.

Public spaces exist in museums in different forms according to their functions, such as exhibition halls, receptions, shops, rest areas, etc. Public space with different functions has its characteristics, which needs to be dealt with by specific problems and cannot be handled with the same design method in general. Therefore, before judging whether the museum's public space is successful, it requires clarifying how each public space in museums is designed for and works to enhance museums' publicness.

2.3 Public Spaces in Museums

The publicness of the museum calls on all groups to participate in an effort to meet people's diverse needs. The types of public spaces in the museum are becoming more and more diverse as people experience their desire for space. These public spaces within different functions and significances can create a welcome and exclusive experience for visitors through various interactive activities. Under the premise of ensuring the basic functions of the museum, designers should pay more attention to the museum's public design to improve the visitors' experience in the museum.

According to the visitor's route and the basic functions of the museum, this research divides the public space of the museum, that is, the area most visited by visitors, into three parts: exhibition spaces, circulation spaces and other ancillary service spaces. These three parts can exist independently or contain each other. The exhibition space usually becomes the most visible and focused area for the museum's designers and visitors. It is usually the essence of the museum, where various exhibits are displayed in different forms. Even the circulation design is often based on the contexts and narratives of the exhibition.

The circulation space or traffic space includes corridors, passages, staircases, lifts, escalators and so on, containing both circulations in the plane and vertical traffic flows. Circulation space is an important area in the museum for planning visit routes and guiding visitors forward. It brings visitors into the exhibition space, contacts exhibitions, and sometimes connects different exhibition spaces through a certain logic. Many academic discussions about the publicness of museums always focus on the exhibition and circulation of these two areas.

In comparison, ancillary service spaces like the café, rest area, souvenir shop, or entertainment venues as some subsidiary functions may easy be ignored. However, the existence of every type of public space is meaningful in the museum. To explore the publicness of the museum and encourage more visitors to enter the museum, it is necessary to systematically understand and analyse the public space in the museum so as to clarify

the specific research objects in this study.

Firstly, this section will introduce the formation and characteristics of exhibition space, circulation space and ancillary service spaces separately. To allow more visitors to participate in the museum actively, it is necessary to clarify the key public spaces that affect visitors' entry. Then, by analysing the relationship between these spaces and visitors, it is clear what services and experiences different spaces can provide for visitors. Finally, this study proposes a new public space, namely the Arrival Space. This space could be regarded as a synthesis of the three public spaces before it, or it can be an independent existence as the first area for visitors to enter the museum.

2.3.1 Exhibition spaces

The exhibition space has always been a focus of the museum's design. Nowadays, exhibition space design needs to consider many factors such as scale and proportion, space division, indoor circulation, and narrative design of exhibition content. However, the earliest exhibition space is far from so many considerations.

In Europe in the late 16th century, people were full of curiosity and enthusiasm for exploring the New World, and collections became commonplace (Hooper-Greenhill, 1992; Bazin, 1967). Before the museum was open to the public, some private collectors just store their collections in special rooms or spaces. Like Italy's apothecary Ferrante Imperato, arranged his abundant collections randomly to fill the limited space (Schulz, 1994). Later, some scholars have begun to purposefully arrange their 'exhibition spaces' according to their ideas, such as Sir Hans Sloane and Ole Worm's cabinet of curiosities (Figure 2-5; 2-6). Although their arrangement did not have much logic and detailed classification, it still attracted many elites to visit in that period (Thackary & Press, 2013). Since then, the word "cabinet" was used to describe both the collection as well as its containers, including room spaces (Hooper-Greenhill, 1992: 88-89; MacGregor, 2007:11). This form of the cabinet of curiosities leads the traditional encyclopedic exhibition, which placed a variety of exhibits in a small room for people to enjoy (MacGregor, 2007:35-44). This type of exhibition has

dominated galleries since the birth of the concept of the museum and often be found in today's museums. For example, in Oxford, the Pitter River museum, which fills the entire exhibition space with numerous exhibits, visitors can freely choose the focus of the visit according to their needs (Figure 2-7). However, this kind of exhibition only obtains information through visitors watching the exhibits, and it is an indoctrinating communication between visitors and the museum.

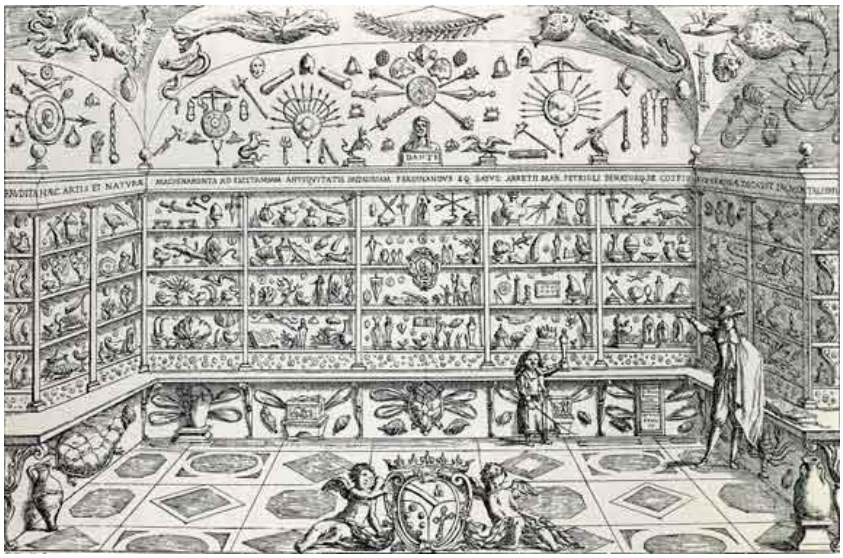


Figure 2-5 Hans Sloane's collection of curiosities (Delbourgo, 2017. Available from: < https://www.derek-turner.com/2017/11/05/hans-sloane-cataloguer-of-curiosities-maker-of-modernity/>, 12th March 2017)



Figure 2-6 Ole Worm's cabinet of curiosities (Museum Wormianum, 1655. Available from: <https://en.wikipedia.org/wiki/File:Musei_Wormiani_Historia.jpg>, 12th March 2017)



Figure 2-7 Encyclopedic exhibition in Pitter River Museum (Author, 2017)

In the 18th century, the design of the museum's buildings was intended to contain and display the collections (Tzortzi, 2016). As the typology system improved and the museum began to accept more visitors, the exhibits' logic and context of the space are gradually attached importance (Thackary & Press 2013). The museum began to consider arranging and designing the exhibition space to allow the public to understand better and acquire knowledge. Exhibition methods have also become diversified, such as immersive exhibitions, interactive exhibitions, and virtual exhibitions using new media technologies. The museum attempts to establish dialogue and interaction with visitors through the design of narrative exhibition space.

Before the beginning of the 19th century, the exhibition's usual form is just a wide variety

of collectables collected in the cupboard or hanging on the wall, according to the art category or the nature of knowledge at that time. Until the 1890s, to attract visitors to come to the museum, some designers began to show some performances around the museum (Alexander, E. & Alexander, M., 2008). As a result, the exhibition's content expanded from a single object to the related environment and the persons or things involved. Ideally, the space design should be coordinated with the exhibition's theme and content to create an exhibition space for visitors to understand and participate in easier.

This research is focused on the relationship between the visitors' behaviours and the architecture design in the museum. So, the exhibition space's atmosphere and the building form and layout will be highlighted here. Architectural space affects people's experience through its form, scale, image and other aspects. As far as the exhibition space is concerned, whether the form of the space is open or closed, the images and experiences created by it are different. Some exhibition halls are not clearly defined or enclosed from the rest of the museum, and visitors can access certain information about the interior from outside the galleries. Other exhibition spaces are surrounded by walls or are separate rooms where people can only find out about the exhibition by entering the gallery. In terms of the architectural spatial form and the degree of information exchange inside and outside the exhibition hall, exhibition spaces can be divided into permeable exhibition spaces and completely enclosed exhibition spaces. It should be noted that this is only an analysis of the indoor exhibition space, and the exhibition space that is entirely open outdoors will be discussed in section 2.3.3 on the square and courtyard.

2.3.1.1 Permeable exhibition space

The external environment can sometimes help the museum emphasise or explain the exhibits, which requires the exhibition spaces to be more open. Permeable exhibition space means that the indoor exhibition and the external environment interact with each other to realise the mutual exchange of indoor and outdoor information so that visitors can get a richer experience. Permeability here emphasises the mutual penetration of indoor and outdoor information and the image.

Architects are good at using transparent materials, railings, short walls or height differences and other design elements to ensure unobstructed sight (Figure 2-8). The advantage of such an open exhibition area strengthens the interplay between the indoor and outdoor environment. However, the outside scenery is easily bound to distract visitors' concertation from indoor exhibits. Moreover, the open exhibition space is also affected by fluctuating natural light. These are the issues that designers need to consider when dealing with similar spaces.

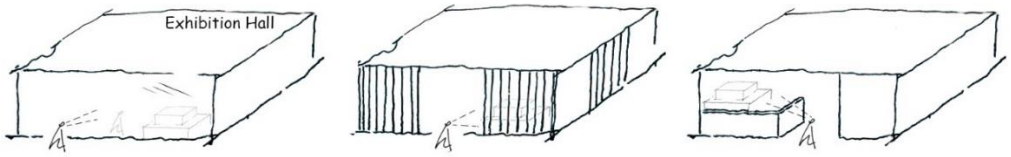


Figure 2-8 Design methods of permeable exhibition space (Author, 2017)

Early in 1851, the Great Exhibition was arranged in a huge glasshouse with a cast-iron structure called the Crystal Palace (Figure 2-9). The transparent glass wall made the interior spaces visually connected with the outside surroundings in London's Hyde Park (Hughes, 2015). The Suzhou Museum in China, designed by I. M. Pei in 2006, is a museum with the theme of ancient Chinese culture and arts. The large glass windows in the exhibition hall bring outdoor views into the interior, and through the window, the outdoor scenery has become an exhibit (Figure 2-10). These can help people to fully feel the atmosphere created by the outside environment while visiting the exhibits. This experience is even more impressive than the real exhibits.



Figure 2-9 The Great Exhibition of 1851 (Plattes, 2020. Available from: < https://nanopixel.artstation.com/projects/YaNQeK>, 8th September 2020)

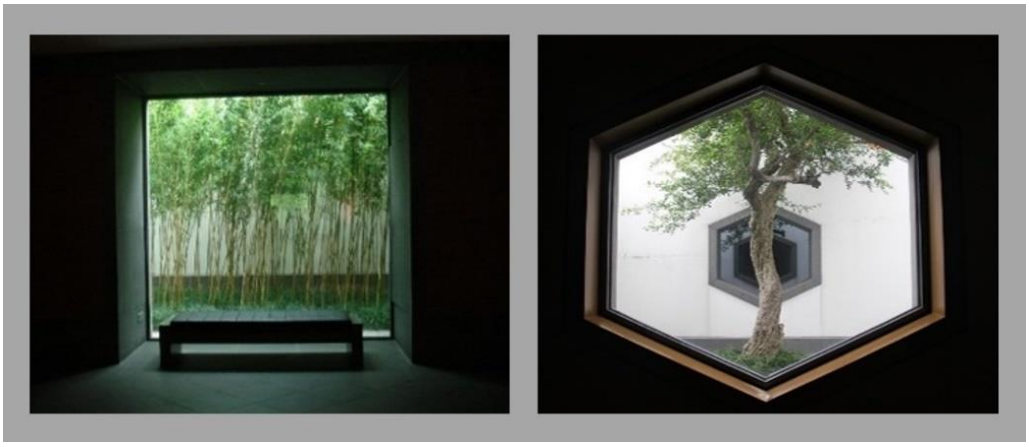


Figure 2-10 Windows in the exhibition space of the Suzhou Museum (Author, 2010)

2.3.1.2 Completely enclosed exhibition space

Closed exhibition spaces are often more common in museums. These spaces rely on artificial lighting and artificial landscape completely, which makes designers more flexible. Without the connection with the outdoor environment, the visitors need to focus on the exhibits and their contexts purely. Designers can deliberately emphasise the core exhibits by controlling changes in the interior lights, colours and layouts to attract visitors' attention. These closed exhibition spaces are easy to create a total engaging environment for their visitors. However, the connection and transition between exhibition halls that reflect different content is still an issue for designers to consider. It may easy to cause visitors

depression when they stay in an environment without windows and natural lighting, especially in spaces with insufficient light or strong contrast between light and dark for a long time. No matter the design method of the outside or the inside exhibition space, it is to allow visitors to better integrate into the exhibition space and experience the content of the exhibits. Thus, the display methods have become the core of designers' attention inside the exhibition space.

Unlike a permeable exhibition space that can be directly introduced into the external environment, an enclosed exhibition space needs to consider how to reproduce the exhibits' background and context. Since the 19th century, the connotation of exhibits never departed from this consideration and strengthened in the display of some situational reduction and simulation shows (Alexander, 1979). From the exhibition genre of "panoramic windows[3]", which were widely applied to the historical exhibition in the early 19th century, virtual reality, a modern form created by multimedia technology, is all trying to create an immersive exhibition environment for visitors (Figure 2-11). Designers aim to profoundly affect the visitor's state of mind by so-called immersive environments (Hughes, 2015).

[3] In the early 19th century, British aristocrats loved hunting and shooting, and every great house had displays of animal specimens, stuffed realistically to restore to the natural modality with the natural landscape panorama and replication of plants. They tried to recreate an impression of the original ecological environment. Since then, this idea was widely applied to the history exhibition, which was known as ‘Panorama’ and derived another similar tactic simulation, named ‘Diorama’ (Huang, 2005; Serrell, 1997).



Figure 2-11 Panoramic windows in American Museum of Natural History (American Museum of Natural History, 2020. Available from: < https://www.amnh.org/exhibitions/permanent >, 16th May 2020)

The immersive exhibition is a physical method that combines different media, which creates the illusion of time and place by representing key characteristics of a reference world and integrating the visitor in this three-dimensionally reconstructed artificial space and allowing them to actively participate in the exhibition (Henning, 2007; Mortensen, 2010). The enclosed exhibition spaces, without outside distraction, allow designers to tell a story using lights, sounds, interactivity, etc. Visitors can walk into the scene by a multi-sensory experience, which pulls visitors out of the passive visiting. They may remember these immersive experiences easily, which aids in the long-term retention of content (Gilbert, 2002).

Currently, the exhibition space design is concerning the exhibition atmosphere, not only the entity exhibits. The traditional display way always creates space as the solidification moment (Tallon & Walker 2008). However, the exhibition introduces a more dynamic presentation by using modern technology and considers more audience experience. For example, the Dutch National Military Museum in Soesterberg was built in 2011, which creates two different exhibition environments (Figure 2-12). The ground floor is a large "daylight museum" for the extensive collection, and the first floor becomes a "black box"

with a darkened thematic space intended primarily for storytelling. In this black box, visitors encounter different kinds of thematic spaces created with a mix of media and communication tools, including scale models, panoramic films, animations, dynamic sounds, and dramatic lighting effects. For example, the exhibition halls of the *Wars and the Future*. In the Wars Room, in addition to the relevant model display and the background screen of the exhibition inductions, there are theme-related games on the touch screen, where visitors of all ages can find their fun. While, in the dark background, the Future Room added the spherical elements to create a sense of the future in the universe (Figure 2-13). The exhibition spaces express different themes through the design of different lighting and object elements.



Figure 2-12 The Dutch National Military Museum (Kossmann. Dejong, 2011. Available from: < https://www.gooood.cn/national-military-museum-by-kossmann-dejong.htm>, 17th June 2018)

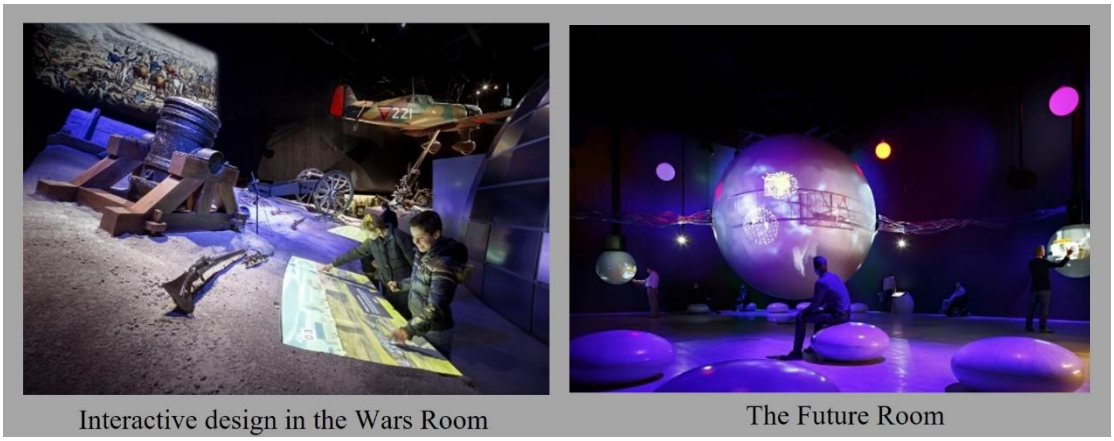


Figure 2-13 Exhibition space with different themes (Kossmann. Dejong, 2011. Available from: < https://www.gooood.cn/national-military-museum-by-kossmann-dejong.htm>, 17th June 2018)

Consequently, based on the exhibition theme and contexts, the exhibition space can show diverse forms to visitors. Both the outside views of the galleries and the interior designed to exhibit, like scale, colour, light, etc., need to be considered. While, An important question for exhibition design is how museum space can be organised to elicit best the kind of responses that exhibition-makers intend (MacDonald, 2007:157). Thus, during the exhibition space design, the circulation design, which connects each gallery and arranges the visitor's journey, always be mentioned together.

2.3.2 Circulation spaces

People experience building space through their body movements within a certain period (Bloomer et al., 1977). Therefore, the architectural design should include appropriate spaces to accommodate, direct and enhance movement between areas, forming a circulation space (Roth, 2018). In a museum, the circulation space can be a series of vertical stairs, winding corridors or the atrium leading to various exhibition halls. It can be narrowed to encourage forward motion or widen to accommodate more flows or create pausing spaces (Hsu, 2004). It is the key to guiding people in and out of the museum and to visit each exhibition hall step by step. The circulation is not limited to the plane. The vertical circulation is also a part of the circulation form of space, affecting movement in a building. The position and width of the stairs and the slope must be in the overall design because they are considered to affect visitors' perception. Sometimes, the special vertical circulation space design is as impressive as a symbol--for example, the Bramante Staircase in the Vatican Museums and Solomon R. Guggenheim Museum (Figure 2-14).

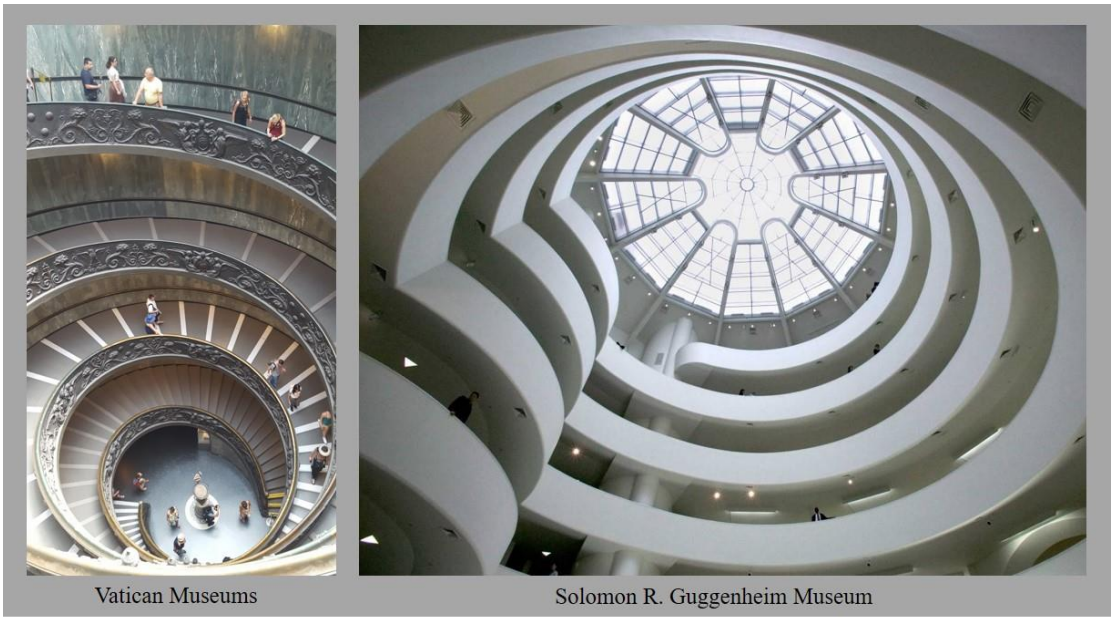


Figure 2-14 Impressive Bramante Staircase in the museum (Author, 2016; Author 2014)

The circulation space forms an integral part of any space organisation and occupies a significant amount of space with the museum's volume. Traffic routes or some transitional spaces organise different exhibition spaces. The circulation space is like a line connecting the various areas of the museum. It helps the museum to control the length and rhythm of visits effectively. For example, some leisure and entertainment facilities can be arranged on the corridors and passages between different exhibition halls, alleviating fatigue during the museum visit. All circulation spaces are essential in museums because they determine how visitors move through the building and experience it.

Practically, the design of circulation spaces is closely related to the museum's narrative and exhibition theme. Reasonable space design helps visitors better understand the content expressed by the exhibition. On the contrary, chaotic circulation design can be confusing and even affect the overall feeling of the museum experience. From the perspective of spatial organisation, it can be mainly divided into two basic structures: linear and radial spaces. A linear space can be subdivided into straight, loops, comb, spiral path, etc., while the radial space includes central radial and endpoint radial.

2.3.2.1 Linear space

Linear space consists of sets of lines, which can be curved or straight (Figure 2-15). Normally, this form of the spatial organisation strongly guides the visitor's viewing flow, which means visitors can just follow the circulation without too much thinking and options. The linear space is easy to show the exhibition unit echoes the beginning and the end of the space. Thus, this spatial composition is often applied to museum buildings with narrative themes, such as history museums, memorial museums, etc. The linear composition of the space has a strong logic and plot, and a gradual process makes it easier to bring tourists into the scene. However, the mechanised following paths may make tourists lose the enjoyment of choosing and exploring. Furthermore, it is difficult to exit in the middle due to the streamline of space and logical coherence.

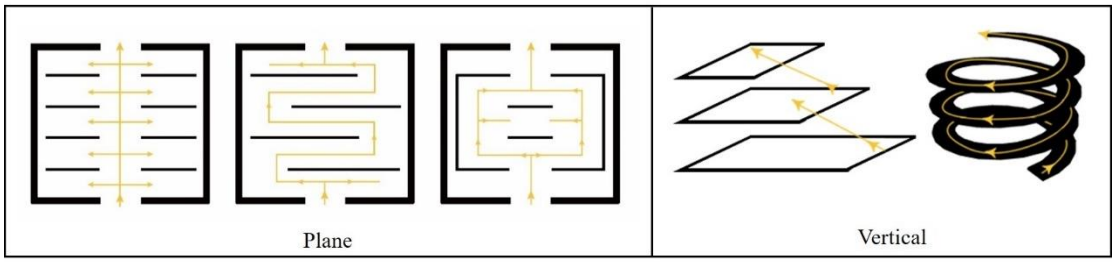


Figure 2-15 Typology of Linear space (Author, 2018)

The Kolumba Museum was built in 2007 by Peter Zumthor, based on the ruins of St. Kolumba Church that was destroyed during World War II in Cologne, Germany. To protect the original Roman architectural ruins and the octagonal chapel that the architect Gottfried Böhm designed in 1957, Zumto linked the exhibition area with the original site area through a veranda (Figure 2-16). He retained all the original foundations of the church and built a long bridge over it for visitors to walk through. The museum includes 16 exhibition rooms connected by linear space. Almost no signs and sound guides could be found of this museum, and the whole space creates a quiet atmosphere. Visitors follow a regular circulation of the tour and experience the mystery of religious art through the mottled light and shadow through the thick walls. This arrangement does not give visitors much choice, they simply follow the route planned by the designers and hardly miss the key exhibitions.

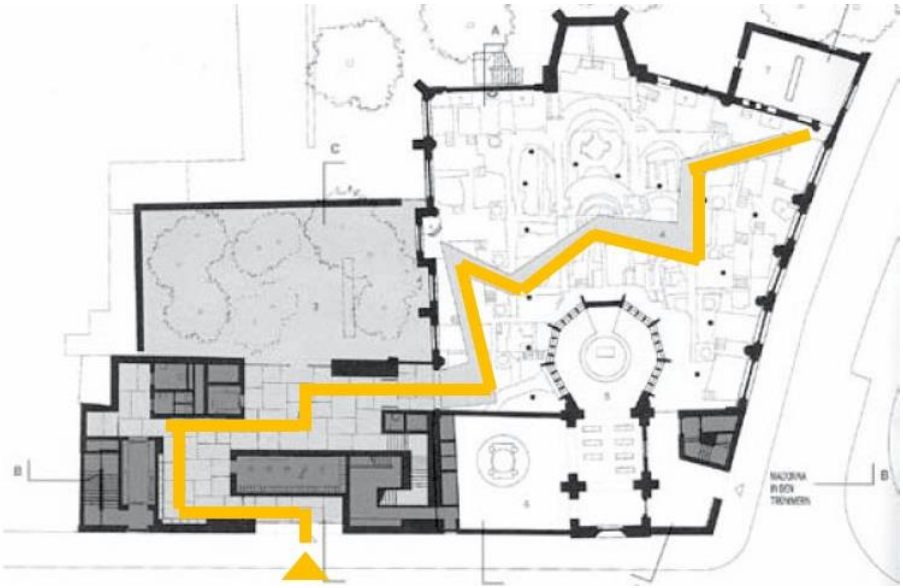


Figure 2-16 The linear circulation of the exhibition space (Archdaily, 2018. Available from:https://www.archdaily.com/72192/kolumba-musuem-peter-zumthor, 17th June 2018)

Sometimes different linear designs in the same space also give people different experiences. A typical case is the Jewish Museum Berlin, designed by Daniel Libeskind. He designed three "axes" that lead visitors to feel different senses of the exhibition (Figure 2-17). Thus, the circulation space connections affect the way people move through space, and in the case of museums, this also means the way they can explore and understand them.



Figure 2-17 The linear circulation in the Jewish Museum (Studio Libeskind, 2018. Available from:< https://libeskind.com/work/jewish-museum-berlin/ >, 17th June 2018)

2.3.2.2 Radial space

The radial space is usually centred on a region and radiates around it. It can be central radial or endpoint radial (Figure 2-18). Both kinds of radial spaces usually exist in large halls, atriums or courtyards, etc. The endpoint radial space always exists as an entrance hall, including reception, shops, cloakrooms and other functions. The central radial space often serves as both a transportation centre and a flexible space of the museum. When it becomes a transportation space, it often plays the role of gathering people. As a flexible space, it can involve various behaviours, such as guiding the visitors to visit the route, allowing the audience to have a rest and a certain discussion on the exhibition, and providing enough space to evacuate the visitors in case of emergency. The exhibition space is divided into various elements, which leads to the lack of guidance of the space. The visitor has a lot of freedom during the visit and can choose a variety of sports routes to conduct exhibition activities.

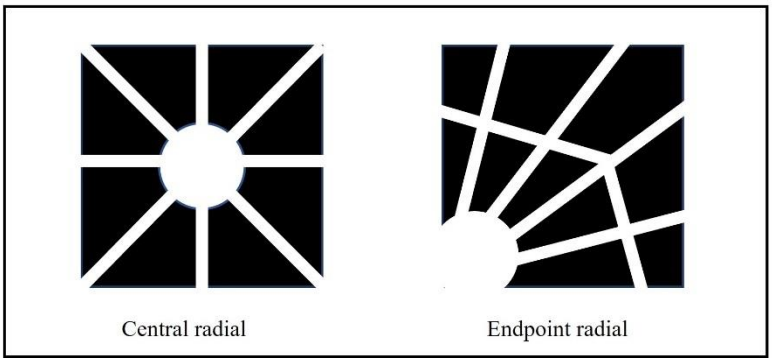


Figure 2-18 Radial space in museums (Author, 2018)

The renovated courtyard called the Great Court of the British Museum's courtyard reinvention has become one of the most popular spaces in this museum. The Great Court is entered from the museum's principal level and connects all the surrounding galleries. Within the space, there are information points, shops, café and restaurants. Two broad staircases encircle the Reading Room in the middle of the hall (Figure 2-19). Most of the functional area is arranged around the Reading Room. It is a good space for visitors to locate their position in such a big museum. Visitors can freely choose the order of visiting the exhibition rooms according to their interests, which can experience more flexibility

than the linear space.



Figure 2-19 The Great Court of the British Museum (Author, 2015)

Currently, in many comprehensive museums, a combination of linear and central radial is often used. A variety of types of circulation systems are used in museums offering different possibilities for crowd control and management. It is hard to say which circulation space is better because the different museum has different themes and target visitors. The radial space makes the visit more flexible. Visitors can arrange different visit routes according to their preferences and will have different experiences from various choices. However, this is based on the premise that the visitor has the necessary cultural capital and prior online education. As mentioned earlier for the Pitt Rivers Museum (2.3.1), visitors can only choose the focus of their visit based on their needs if they have some knowledge of the exhibits and layout of the museum. Otherwise, it is only an aimless tour.

In comparison, people in linear space can follow the perfect route designed by curators. Under the leading of the narratives, they may easily get the knowledge and idea of each node and hard to miss it but at the cost of restricting their freedom to choose other physical, or intellectual, paths. The radial space allows visitors to construct their meaning but it is only available with those who possess the thread or the map to follow it better. On the other hand, if the circulation space is poorly thought out, the visitors' confusion will arise, creating significant stress during their visit. Therefore, both the form and scale of a

circulation space should accommodate the movement of people, provide orientation assistance and allow visitors to arrive at the desired exhibitions as directly as possible.

2.3.3 Ancillary service spaces

As a public place, the basic functions of the museum are to serve its visitors, such as education, entertainment, leisure activities, and so on. Normally, in order to better allow visitors to understand and participate in the museum, designers often focus on the design of the exhibition space and the circulation space. However, ancillary service spaces have also played a huge role, inadvertently. Their presence makes the museum more diverse, humane and even provides important financial support for the museum. In addition, most museums contain facilities that cater to visitors' well-being, including receptions, gift shops, restaurants, and lounges. All of these functions can help to assist in reducing fatigue brought on by physical exertion and visual overload. They can be located at the entrance and exit of the museum, interspersed between the different galleries, or they can exist as a separate space in the heart of the museum.

2.3.3.1 Indoor reception space

At the beginning of the public museum establishment, strict conditions and management were put forward for the visitors it receives (Tröndle et al., 2012). Thus, when visitors arrive at the museum, they need to wait for staff to verify their identity and visitation appointment first. The area where they were waiting can be seen as the prototype of the indoor reception space, which could be an empty room, a foyer, a corridor, or just a front desk. Later, As the museum becomes more and more open to the public, the reception space has changed in size and form to accommodate more visitors. In this area, visitors can buy tickets, get maps or brochures about exhibitions, guides, ask for information, etc. Like the reception space in Victoria and Albert Museum (V&A), the circular front desk is placed in the centre of the reception space, making it easy for visitors to find staff for information (Figure 2-20).

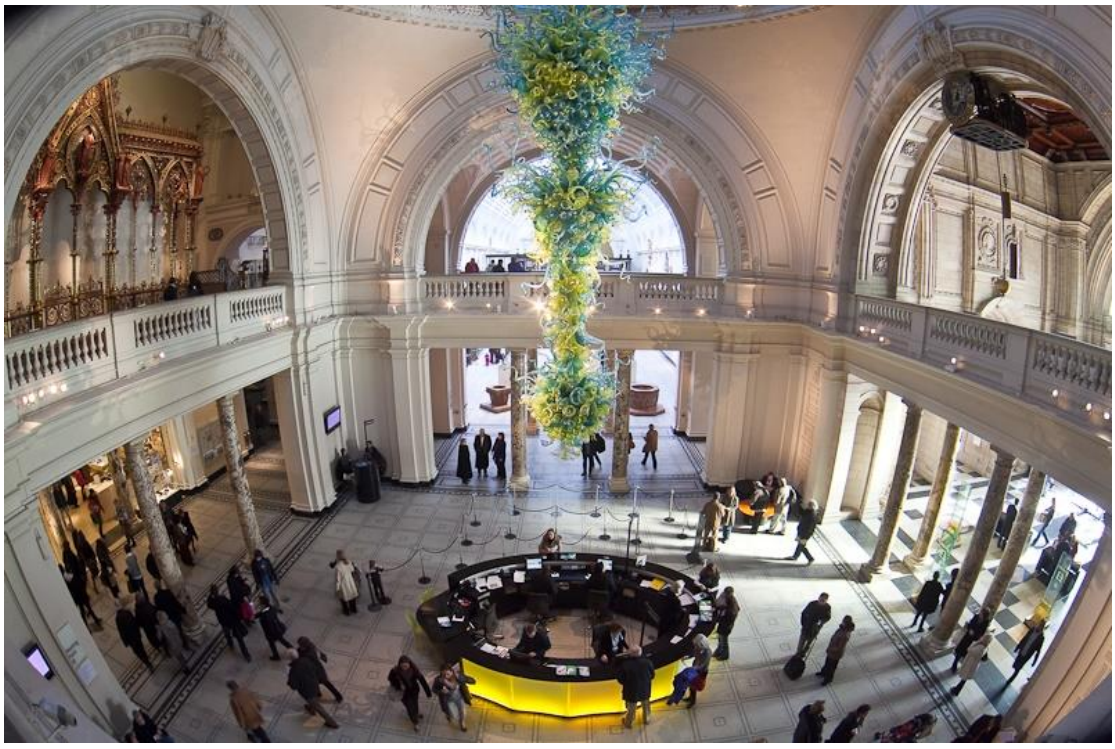


Figure 2-20 The reception space of the V&A (Godber, 2018. Available from: < https://www.architectsjournal.co.uk/competitions/competition-va-cromwell-road-entrance >, 17th June 2018)

However, as most museums are open to the public for free, the information desk's functionality is gradually weakened, in addition to providing some guided tour information. Today, in most large museums, the reception space often becomes a comprehensive hall involving various events. Nowadays, the reception space of V&A is like this; it can host some activities and events, such as dinner parties, temporary exhibitions and conferences (Figure 2-21). It's easy to keep people to stay here and participate in different kinds of activities. However, the limited reception space is sometimes overlooked for some small museums as an entrance passage, and visitors will not stay here too long. This reception space provides visitors with a quick passage into the showroom. No matter which kinds of reception spaces, they are trying to provide visitors with introductions and connections for subsequent exhibitions. In addition to the indoor reception area, squares and courtyards are also more common in museums, which is related to the fact that some museums originally evolved from palaces.



Figure 2-21 Events in the reception area of the V&A (V&A, 2018. Available from: <http://www.vam.ac.uk/content/articles/v/venue-hire-at-the-v-and-a/>, 17th June 2018)

2.3.3.2 Square and courtyard

In Europe, the museum appeared as a part of the royal palaces, which the kings managed. For example, the Mouseion at Alexandria was founded by the ruler of the dynasty of Egypt at about 300 BC (Lee, 1997). The Ennigaldi-Nanna's Museum ran by the curator, Princess Ennigaldi, the last king's daughter of the Neo-Babylonian Empire in 530 BC (Simmons, 2016). Until the middle of the seventeenth century, museums were still a part of royal property, such as the Louvre, Vatican Museum, the State Hermitage Museum, etc. These royally built architectures often show luxurious, grand architectural styles, like an open courtyard, tall entrance, exquisite relief, carving, etc. Today, as a museum open to the public, these architectural elements are also preserved together. Besides the building itself, the grand courtyards or entrance squares, and gardens have also become a must-see place for tourists.

Architects widely use courtyards and squares in organisational space circulations in museums. The British Museum's central courtyard mentioned in 2.3.2.2 was London's long-lost space and filled with a negative atmosphere. An awkward gap has been forgotten between the galleries and the round Reading Room since the nineteenth century. After the

architects covered it with a simple but elegant canopy-roof, the Great Court, which is entered from the museum's principal level and connects all the surrounding galleries, suddenly become a new public focus and the most popular part of the British Museum (Foster et al., 2001).

From an urban design perspective, the design of the entrance square or plaza is a concession to urban roads while providing visitors with a reasonable angle to appreciate the museum's façade, such as the V&A Museum's entrance plaza on the Exhibition Road (Figure 2-22). This new plaza offers an ideal space for passersby, a nice view of the fabulous Victorian building façade and more space for multiple activities, which will be discussed in Chapter 3 in detail.



Figure 2-22 V&A Museum's entrance plaza (V&A, 2018. Available from:< https://www.vam.ac.uk/blog/futureplan/aston-webb-screen-reveal>, 17th June 2018)

From the museum environment's perspective, the courtyard can help enhance the atmosphere and beautify the environment. For example, the Robert and Arlene Kogod Courtyard was shared by the Smithsonian American Art Museum and the National Portrait Gallery (Figure 2-23). It is covered by an elegant glass canopy that includes plants as well as wading pools, which provide an indoor natural environment for visitors. Being visitors into natural surroundings for lounging, such as courtyards, gardens, outside views, etc., helps relieve the fatigue caused by the visit. The tourists can rest their energy and continue

to visit more exhibitions through proper rest. The museum could be more helpful in providing varied areas for relaxation. Besides the courtyard and gardens, the leisure and entertainment space also plays a vital role in refreshing visitors' feelings in the museum.



Figure 2-23, Countrayard of the Smithsonian American Art Museum (Boudreau, 2018. Available from:< https://www.flickr.com/photos/57440551@N03/41169253272>, 17th June 2018)

2.3.3.3 Leisure and entertainment space

Leisure and entertainment space as an essential area in today's museums can be connected or exist in various public spaces. The museum visitors may feel physically or mentally tired during visiting. Some leisure and entertainment spaces should exist to aid the pace of exhibition viewing and appeal to a state of mind suitable for relaxation. This kind of space first appeared in London's South Kensington Museum design in the 1860s by Captain Francis Fowke (Victoria and Albert Museum, 2020) (Figure 2-24). He added a lecture theatre and refreshment rooms in the design, serving hot meals for hungry visitors. It became a special draw for museumgoers during that time.



Figure 2-24 Lecture theatre sketch for the north side of the inner quadrangle by Captain Francis Fowke (V&A, 2020. Available from:< https://www.vam.ac.uk/articles/history-of-the-john-madejski-garden >, 20th January 2020)

Currently, the museum has become a cluster with comprehensive functions. On this occasion, it's necessary to intertwine diverse functions in the museum space, such as cafés, restaurants, souvenir shops, etc. In particular, a single space that includes multifunction has the advantage that a certain area can be used by day and night (Hannigan, 1998). Because of the museum's special atmosphere and spacious architectural space, many museums begin to hire their specific area for holding leisure or formal activities. Figure 2-25 shows the "Making the Modern World" gallery's evening event in the London Science Museum.

Since the New Museology Movement, the entertainment of the museum is gradually emphasised. More and more leisure and entertainment areas are being developed and redeveloped in museums in the city centre, which attract more public to come and join in. For visitors' convenience to reach, these spaces are usually arranged at the beginning and the end of the museum, which is relatively easily accessible. Therefore, the leisure and entertainment space exist always together with other ancillary service spaces, like reception and square or gardens, to create a public space for people to enjoy.



Figure 2-25 The event in the Science Museum (Science Museum, 2020. Available from:< https://hirespace.com/Spaces/London/129817/The-Science-Museum/Making-the-Modern-World/Events >, 20th January 2020)

2.3.4 Summary

Architecture affects people's experience of museums by the way it organises spatial relationships (Tzortzi 2016:104). Based on the discussion of the public spaces in the museum, public spaces with different functions can be independent or mutually inclusive and permeable (Figure 2-26). For example, the exhibition space needs to rely on the circulation space to guide visitors to understand the museum step by step through the content. Other ancillary service spaces, such as cafes or shops, can be set up in the reception area or exhibition hall or independently. Some squares or courtyards can act as temporary exhibition halls or gather crowds. These public spaces interact with each other and work together to create a positive visitor experience.

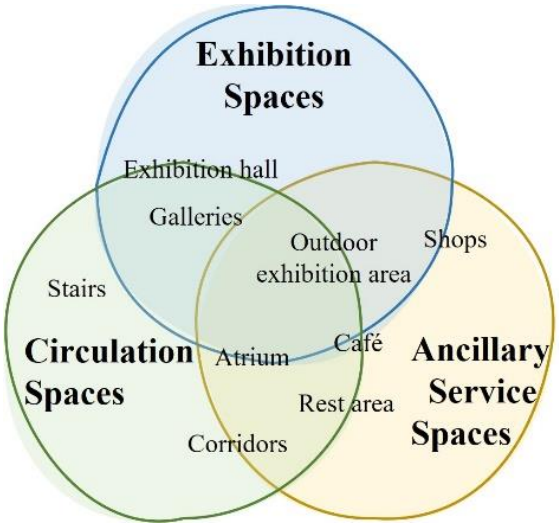


Figure 2-26 Main public spaces in the museum (Author, 2021)

Most museums now have abundant public spaces in response to the new museum design concept that visitors or audiences are first. No matter the exhibition space or the circulation, or ancillary service spaces, these public spaces try to provide various experiences and choices through different design approaches. The audience-centric design should plan out visitors' interests and expectations, emphasising experiences, strategies, and information that can resonate with them as quickly as possible (Simon, 2010:35; Sheng & Chen, 2012). Whether the museum's public space can meet the interests and expectations of visitors will directly affect their experience during the visit. However, some people, like the potential visitors who are not familiar with museums, may not know which content they are most interested in, and they do not expect to visit the museum. The museum should let them know how relevant and valuable the museum is to their own lives and interpret the visiting experience (Simon, 2010). In the face of diversified social groups, showing and interpreting valuable information to let people actively participate in museums is the duty of museums' publicness. All of these require architects' deeper understanding of the extremely diverse behaviours and activities of visitors.

Although the exhibition spaces and traffic flows in museums are particularly easy to attract the attention of architects when designing, visitors can only appreciate the exquisite interior design and exhibitions after entering the museum. Therefore, to make the museum more

popular, it needs to consider attracting people from the very beginning of the museum: the environment or location where people first arrive at the museum. Only by ensuring that the first arrival area is sufficiently attractive will people be able to choose to stay or continue their visit.

From the moment people prepare to enter the museum, the surrounding environment and the museum's approach have begun to affect visitors' experience. The perspective before entering the building will pave the way for visitors to experience the space in the museum later. Visitors enter the indoor reception space from the outside through the entrance space, where they will begin their formal journey to the museum. Some museums will set up the reception space independently outside the main building, and visitors can enter the museum by crossing the entrance square or courtyard. During the journey, before visitors enter the exhibition hall, people may quit at any time because the museum does not meet their expectations or arouse their interest. Therefore, this area needs a personalised space design to reply to visitors' requirements and interests. This is a public area that can include entrances, other ancillary service spaces such as reception spaces, coffee and squares, and even a small exhibition space. This study refers to this area as the **Arrival Space**, and it will be focused on in the following chapters.

Conclusion

The publicness of the museum starts from the New Museology Movement, which first time improved visitors' status and began to enrich the museum's functions. The psychological needs of visitors have received unprecedented attention, which has led to extensive discussions on participation and inclusiveness in museums. Returning to the essence, this is a study of how people enter the museum and their psychological changes after entering. This is more like research on human behaviour or psychology, but it is undeniable that these are affected by the museum's architectural space environment. The design and arrangement of architectural space and circulation determine how people visit the museum and their experience and mood during the visit. Therefore, studying the performance of visitors in the museum cannot be separated from the architectural space design of the

museum analysis.

Today's museum is no longer a temple with limited functions of exhibitions and collections; it has developed into a multi-functional and cultural cluster. As a public realm, diverse functions contribute to the different public spaces in the museum. People's experiences and feedback on the public spaces in the museum will directly determine the attraction and appeal of the museum. In this sense, the design of the public space in museums seems quite important and necessary. According to the functions of the public space in the museum, it can be divided into three categories: exhibition spaces, circulation spaces and ancillary service spaces. The most essential and eye-catching one is the exhibition space, which undertakes the museum's main duty. Another vital space that usually accompanies the exhibition space is the circulation space. Different from other public facilities, there have a specific plot and logic context in museums. So, the circulation design becomes meaningful and powerful here and usually cooperates with the exhibition space. Ancillary service spaces, like reception, café and restaurants, gardens, and so on, make the museum more dynamic and diverse.

However, the space where people first arrive at the museum is easily overlooked compared to the exhibition and circulation spaces. It may be nothing more than a hallway or aisle leading to exhibition halls for some regular visitors to the museum. But for some first-time visitors, potential and occasional visitors, it may have influenced their decision to enter; this led to research on the arrival space. In some situations, the arrival space can be a precondition for visitors to get into the museum. Its architectural space and environment may create the first impression of the whole museum before the visiting journey. Only people entered the museum; other research about visitors' experiences and behaviours could go on. To fundamentally increase the frequency of museum visits by occasional and potential groups, the design of arrival spaces needs to be carefully examined. Hence, arrival space design is quite important and necessary for the museum to welcome more visitors.

Chapter 3. The Arrival Space

Introduction

The contemporary museum is, mostly, a public realm; it is no longer the franchise of only a few, as in earlier times. A modern museum's role is a place of education, a source of civic pride, and a place to enhance social behaviour and foster a sense of community by spending time with friends and strangers. In a museum, different functional spaces can be divided into several public places. Among these public places, the arrival space can be the first to influence and even determine whether visitors are interested and expect to enter the museum.

The arrival space may not be the space where visitors spend the longest time in the museum, but it is the space that visitors must go through to visit the museum. And, indeed, the area that could contain various functions. Arrival space is the museum service zone offering different needs, including a security room, cloakroom, information desk, entrance plaza and gardens, gift shops, etc. In order to serve all the public functions, the arrival space should be well managed and designed. Thus, attention and care should be given to planning and classifying this space and circulations connected with it.

Moreover, the arrival space needs to be very attractive for visitors as it's the first and last impression of the museum. Visitors will encounter a succession of experiences during their visit, which may bring on physical and mental fatigue (Robillard, 1982:21). Therefore, the arrival space should be impressive and keep attracting people to enter the museum at the same time as a multifunctional space to ease the fatigue of visitors. For example, building styles, size and proportion, diversity functions, availability of information, etc., can influence a museum’s attractiveness. To meet the visitors' expectations and tastes, how should the arrival space greet their visitors, and how to express its characteristics needs to be studied further on architecture design.

As a consequence, the research of arrival space design in museums should be taken seriously. In this chapter, the definition from the perspectives of the arrival space's boundary and functions will be discussed first. The architectural forms and users' experience of the arrival space will raise concern because of its characteristics and attractiveness. The typology based on spatial conditions of arriving space will be clarified, which can help understand the concept of reaching space more comprehensively through different cases. The social value of the arrival space in the museum will be highlighted from the aspects of function, place, and emotion.

3.1 Define the Arrival Space in Museums

As the first public space touched by people of the museum, the museum's arrival space refers to the entrance gates and a combination of its facilities, space atmosphere, surrounding environment, and human behaviours. Thus, the arrival space is like an introduction in the entire space sequence, representing an important first impression of the museum, among the many spatial sequence elements.

From the city perspective, the arrival space is the key node that connects the city block and the museum building simultaneously. It can soften the boundaries between the inner and outer while defining the realm's edges and the entrance location. In addition, the arrival space can be combined with the city streets and the surrounding natural landscape to form an urban landmark, which attracts visitors to the museum and at the same time drives the vitality of the surrounding area, thus expanding the public space of the museum entrance.

In terms of architecture, as an integral part of urban space and the museum’s public space, the arrival space has the independent unit body that can be given to the building personality and characteristics according to local conditions. It is the beginning of the architecture and the built environment. Through the design of the arrival space, attention is drawn step by step from the city streets to the museum building and its internal functions.

Due to the location and characteristics of the arrival space in the museum, it will affect the

visitor's impression of the museum and the interest in visiting. The arrival space is an important connection space between the museum and the city and a functional space that can affect visitors' experience. The study of arrival spaces in museums, therefore, needs to be given adequate attention. First, its birth's historical background and evolution process need to be understood to give a clearer definition in this research. Later, the arrival space's boundary, functions and implication will be mentioned in the definition.

3.1.1 Evolution of the arrival space

As mentioned above, the arrival space is often the first impression of the museum building and its exhibition content. It may be the entrance image as people walk up to the entrance gate or understand the interior space and decoration and the exhibition theme as one first enters the museum building (the definition will be explained in detail in 3.1.2). Although it took a long time for the museum to grow from a private collection to today's multifunctional public place, so does the arrival space. As an essential architecture space, the arrival space has been around since the museum appeared. With the expansion of the museum's architectural scale and the enrichment of its functions, the arrival space has gradually become independent to form one of the complete space systems of the museum.

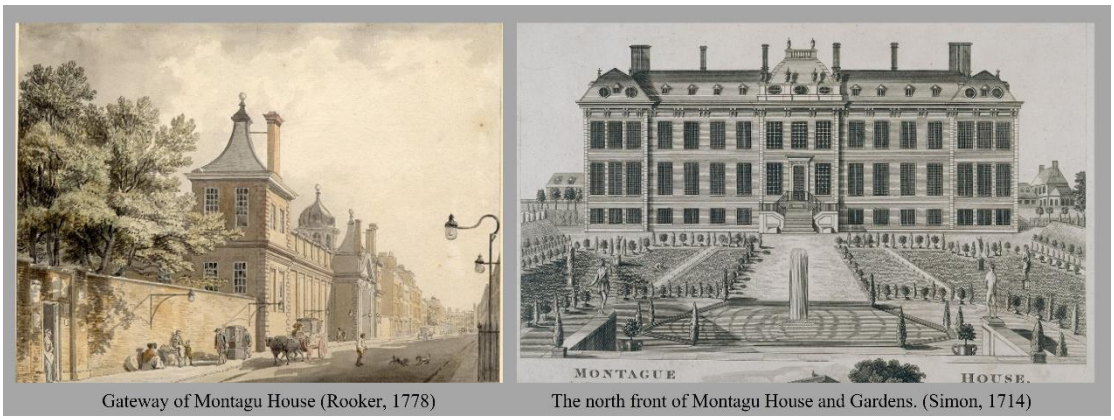
With the increase of visitors to the museum, visitors first impression of the museum become more and more significant, with the increasing demands for museums. The arrival space's functions, cultural context expression, and architectural form and technology have changed a lot since the museum is open to the public. This part will focus on different views to analyse the evolution and development of the arrival space.

3.1.1.1 Functional evolution

The 17th century to the present witnessed the emergence and development of public museums and the growth of the arrival space. Although the arrival space is rarely mentioned, it has been accompanied by the development of the museum from the original entrance and reception hall to the current multifunctional public area. As mentioned before, most museums in Europe were derived from the properties of royalty and nobility. These

museums represent the architectural features of that era, so as the arrival space: the high steps, grand entrances and magnificent gardens, which often reveal luxury and grandeur.

The first home of the British Museum, Montagu House, was a late 17th-century French-style house with an ornate interior decorate (The British Museum, 2019). This land was initially in the hands of the nobles, Henry VIII's Chancellor Thomas Wriothesley, and later the Montagu family took over and built the Montagu house after various ownership changes (ibid). One of its arrival spaces in the east is the high concrete walls that separated the house from the outside world, which is hard for passers-by to guess what's inside. On the other hand, the arrival space in the north has a beautiful garden in front of the Montagu House, which could access the house's interior (Figure 3-1). This stately building and its gardens later became the first national museum to open to all studious and curious persons in the middle of the 18th century (ibid). But the high walls and the imposing gardens difficultly make the public, especially the non-upper class, feel welcome.



Gateway of Montagu House (Rooker, 1778) The north front of Montagu House and Gardens. (Simon, 1714)

Figure 3-1 Gateway of Montagu House (Edited by author, 2019. Available from:< https://blog.britishmuseum.org/montagu-house-the-first-british-museum/ >, 17th May 2019)

Similar museums' arrival spaces, which evolved from the royal and noble property, continue their architecture's original luxurious and atmospheric characteristics. For example, the Louvre was opened in the late 18th century (Bresc-Bautier, 2003). In the hundreds of years of development of The Louvre Palace, it has gradually developed from a fortress, royal palace, royal museum, etc., to a public museum. Its arrival space retains the royal palace's original magnificent architecture and beautiful landscape (Figure 3-2).

These museums' arrival spaces do not have many service functions, often composed of a grand entrance gate and exquisite gardens or landscape.

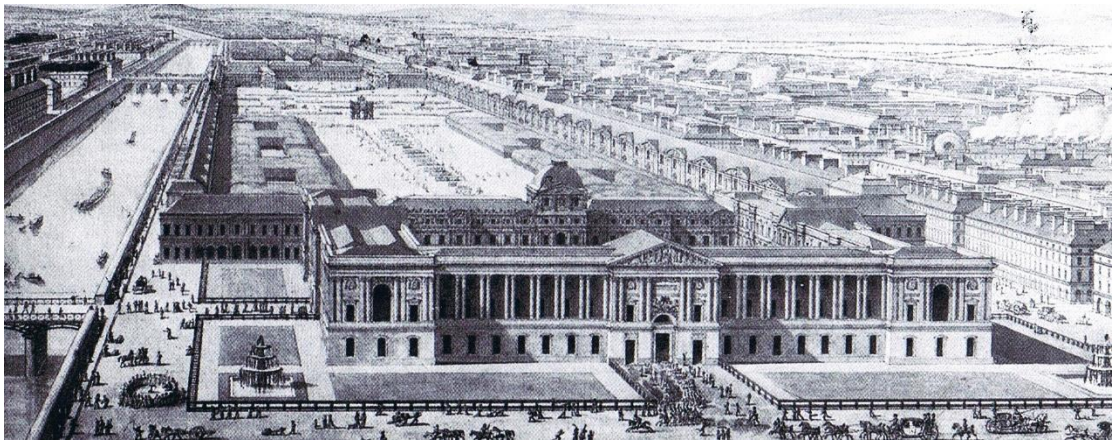


Figure 3-2 The Louvre palace in 1809 (Wikimedia Commons, 2019. Available from:< https://upload.wikimedia.org/wikipedia/commons/a/ae/Ducamp_de_Bussy_Louvre_Tuileries_2.jpg>, 17th May 2019)

Besides rulers and aristocrats, early practitioners of science and the merchant class formed collections precursors to museums as well. However, these museums make people feel more approachable. An American painter and naturalist named Charles Willson Peale built the Philadelphia Museum in 1786, which was considered the earliest public museum in the United States (Sellers, 1980; Library of Philadelphia, 2019). It looked extremely simple compared to the luxurious palace building. The main entrance at the side is not "over-decorated", which looks ordinary and easy to access (Figure 3-3). Peale also entertainingly hosted several experience activities to attract as many visitors as possible to visit his museum (Sellers, 1980; Genoways & Andrei, 2008:23; Library of Philadelphia, 2019). This building looks closer to the public rather than the exclusive place of the upper class. Its indoor's arrival space was just a narrow entrance hall, which can lead visitors to enter and through (Sellers, 1980). In terms of function, with a reception for checking tickets, it has few real functions.

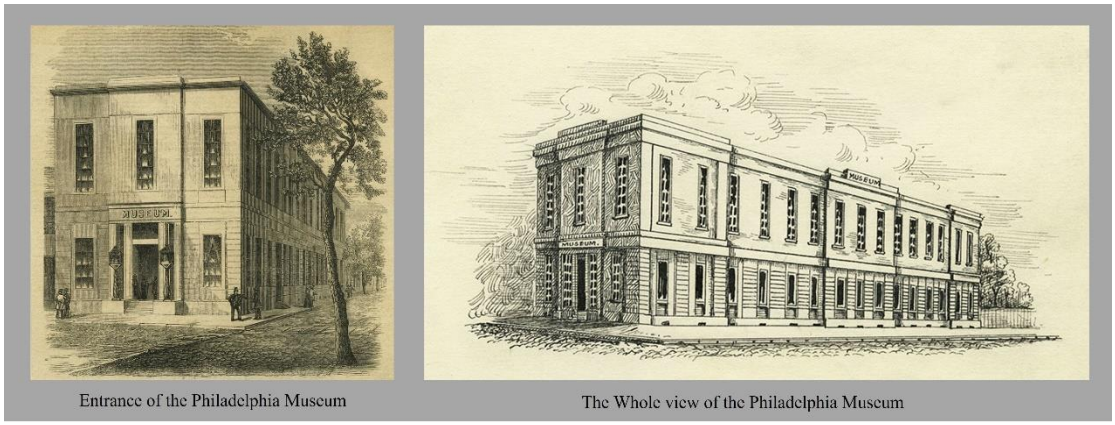


Figure 3-3 Entrance of the Philadelphia Museum (Library of Philadelphia, 2019. Available from:< https://libwww.freelibrary.org/digital/item/38954 >, 17th May 2019)

The 20th century saw a massive expansion in the field of public service. Both numbers of collections and visitors to some museums have increased unprecedentedly, leading the arrival space to become larger as a traffic hub. The original space of the museum became limited, and the museum began to consider expansion, such as the British Museum and the Louvre. The British Museum has built Europe's largest indoor public space-The Great Court so that the indoor arrival space can accommodate more visitors. Moreover, the Louvre add a new impressive entrance space with diverse functions in the late 20th century (Figure 3-4). In both of these museums, the expanded spaces are made of transparent materials (The ETFE roof of the Great Court and the Glass Pyramid entrance of the Louvre). They attempt to establish a connection with the external environment of the museum, thereby improving the closed internal environment of the traditional museum

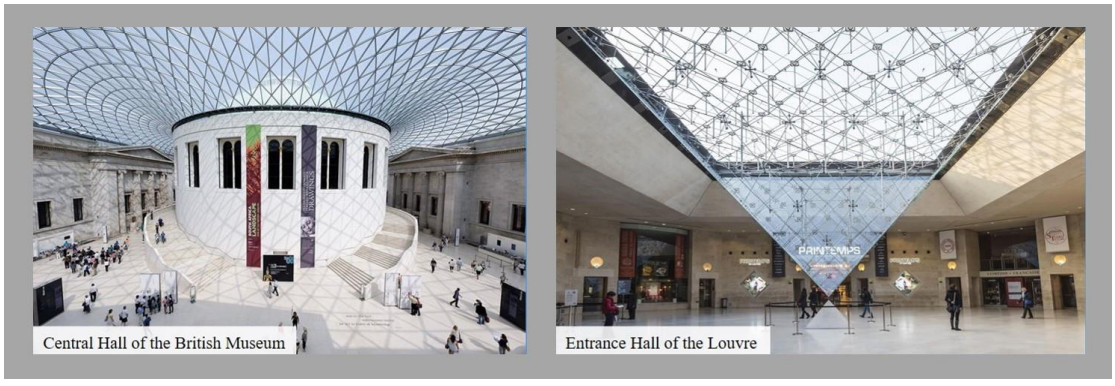


Figure 3-4 New arrival space after renovation (Author, 2013; Author, 2014)

Currently, the arrival space includes diverse functions to meet the majority of visitors' needs. The multi-functionalisation of the arrival space has become a conventional means of design, especially in large comprehensive museums. The arrival space is no longer limited to a single function of reception and traffic guidance to accommodate more visitors and enrich their activities in the limited space. It has increasingly developed into the museum's most flexible public area, containing various public activities like the Tate Modern Museum in London. After the expansion in 2016, the new arrival space expanded the indoor souvenir shop area and added part of the exhibition space. In front of its entrance plaza, there are often various performances by folk artists (Figure 3-5). The gradual enrichment of the arrival space's functions reflects the museum's desire to meet the diverse needs of visitors. At the same time, the cultural and humanistic background is gradually integrated into the design of the arrival space.

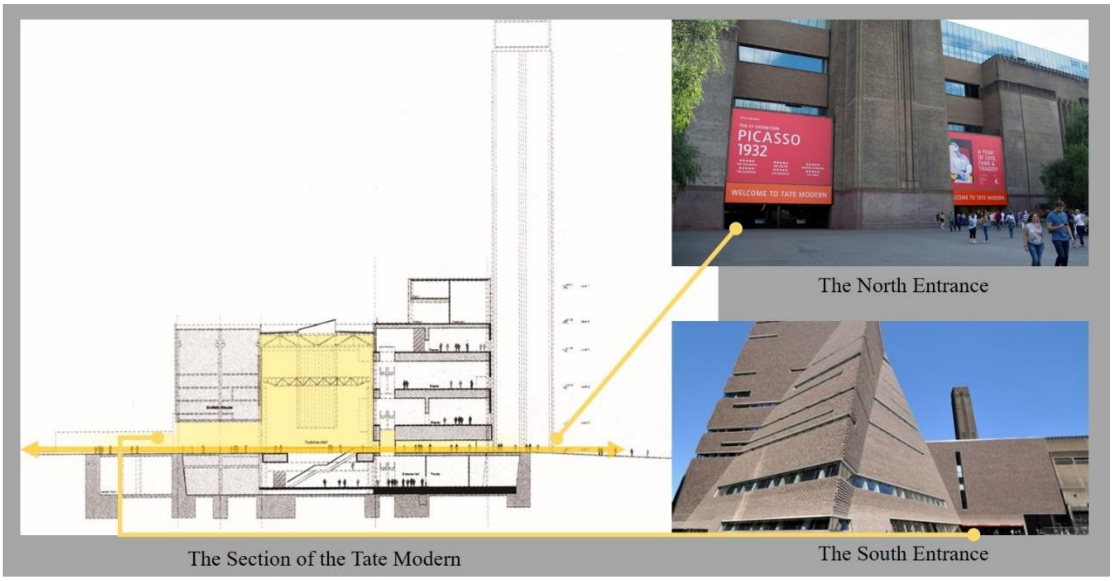


Figure 3-5 Arrival space running through north and south of the Tate Modern (Author, 2019)

3.1.1.2 Social and cultural evolution

In Chapter 2 on museums' publicness, it is mentioned that museums, as a part of the community, should fully play their role in the protection of local culture and cultural communication protection of local culture. Museums have opportunities to influence,

challenge and sometimes change how visitors think and inspire them to take action on big issues (Kelly, 2006). The inclusiveness of museums should emphasise public cooperation and participation to improve exhibitions and strengthen connections with the community (Salgado & Marttila, 2013). Not only the exhibits but also the museum's architectural space can express its culture and sprits. Especially for some contested sites or cultures, museums need to learn how to position themselves better around contentious topics and sensitive issues and build vibrant participatory cultures (Cameron, 2003; Kelly, 2006). As the primary space to welcome the public, the arrival space should attract and include visitors in the way they prefer, based on their needs.

Before the early 19th century, the museum rarely cared about visitors' views and understanding of museums. The Oxford Museum of Natural History is a Victorian neo-Gothic architecture that opened in 1860 (Oxford Museum of Natural History, 2020) (Figure 3-6). Designers hope to reflect the idea of "truth to nature" in architecture; together with sculptors, a series of delicate carvings of plants and animals are presented on the building's facade and interior (ibid). These sculptures try to reflect the theme of nature in the museum and pave the way for visitors to visit later (Figure 3-7). Unfortunately, only part of the sculptures was finally presented on the museum's facade due to funding issues. Nevertheless, the existing sculptures of plants and animals in detail of the building's facades can help attentive visitors understand the museum's exhibition theme before they enter the museum.



Figure 3-6 The Oxford Museum of Natural History (Author, 2017)



Figure 3-7 The Oxford Museum of Natural History (Author, 2017)

Nowadays, museums are more focused on creating a thematic atmosphere for tourists in the first place when people step into the museum, so the exhibition theme or local cultural

elements in the arrival space tend to be more direct. For example, the Tianjin Ji County Geological Museum in China uses local stone to visually simulate mountains' shape to visually express its theme of the history of tier and the fold of rocks in local history (Figure 3-8). Zaha Hadid Architects design the Sleuk Rith Institute, known as the genocide memorial in the Cambodian capital Phnom Penh. The building borrows parts of Angkor Wat in Cambodian and uses overlapping symmetries to form a complex geometric outlook (Figure 3-9). Although it reveals the darkest history in Cambodia, the designer hopes that while evoking visitors' commemoration and reflection, it can also become a local dynamic public place for all generations of the community to participate in (Sodaro, 2019).

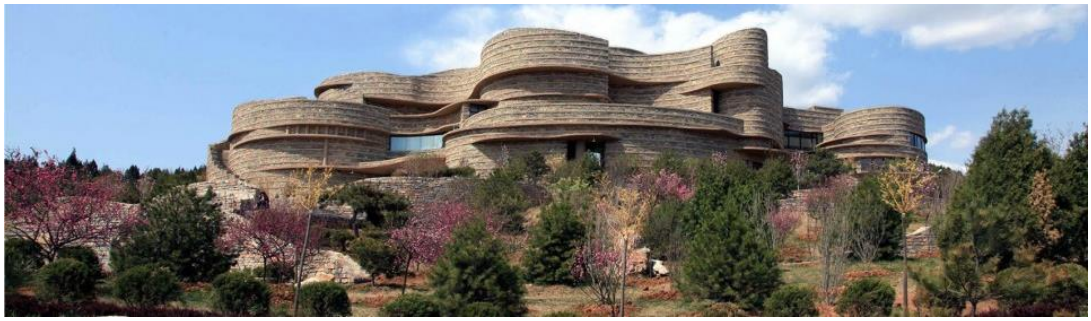


Figure 3-8 The external view of the building in harmony with the surrounding (KPTJ, 2014. Available from: <http://www.keputj.cn/system/2014/07/03/011255732.shtml>, 6th August 2018)

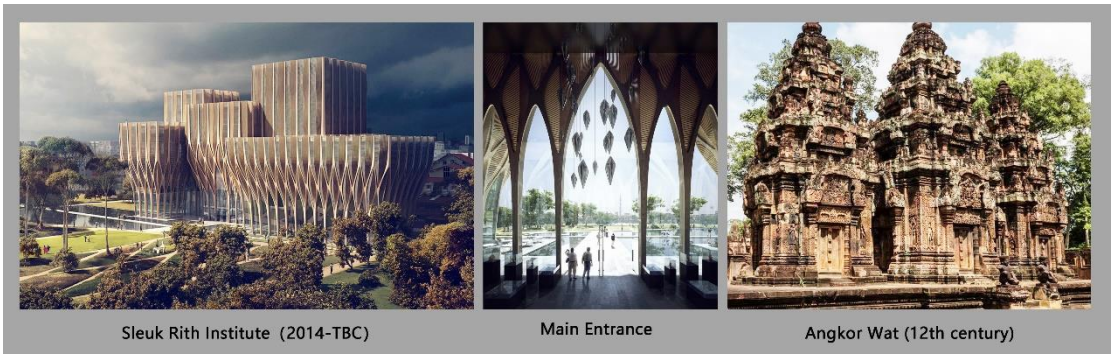


Figure 3-9 The Sleuk Rith Institute (Zaha Hadid Architects, 2014. Available from: < https://www.zaha-hadid.com/architecture/sleuk-rith-institute/ >, 6th August 2018)

Presently, more museums are committed to actively conveying local characteristics and culture in the first space where visitors arrive, paving the way for them to integrate better and understand the museum's exhibition themes.

3.1.1.3 Architectural form and technology evolution

In the early nineteenth century, the public museums' key characteristics typically contained a monumental entrance with a portico, a long colonnade running the length of the façade, and longitudinal exhibition spaces perhaps arranged sequentially around a rotunda or a courtyard, like the Louvre and British Museum that mentioned before. In the second half of the nineteenth century, however, a new kind of building for display appeared in England, initiated by the International Exhibitions, and radically different from previous 'temples of art'. The earliest example was the Crystal Palace, a glass and iron structure of prefabricated units designed by Joseph Paxton for the Great Exhibition held in London's Hyde Park in 1851. This 'alternative tradition' added two significant features to museum architecture, “impermanence and flexibility” (Giebelhausen, 2006: 232). Changes in the internal space organisation accompanied the changes in the buildings' exterior form: the layout with simple geometry was replaced by the free plan, organised by removable partitions, leading to new ideas about exhibition design. The new form was first applied to science museums, especially in art galleries and natural history museums. For example, the Oxford University Museum of Natural History is organised around large glass atria (Figure3-10). At the same time, however, many new museums followed the traditional typology. After the 20th century, the museum becomes more modern, often with a surprising architectural gesture or a unique volume. This recognizability can lie in the building's physical form or spatial layout (Tzortzi, 2016: 22).

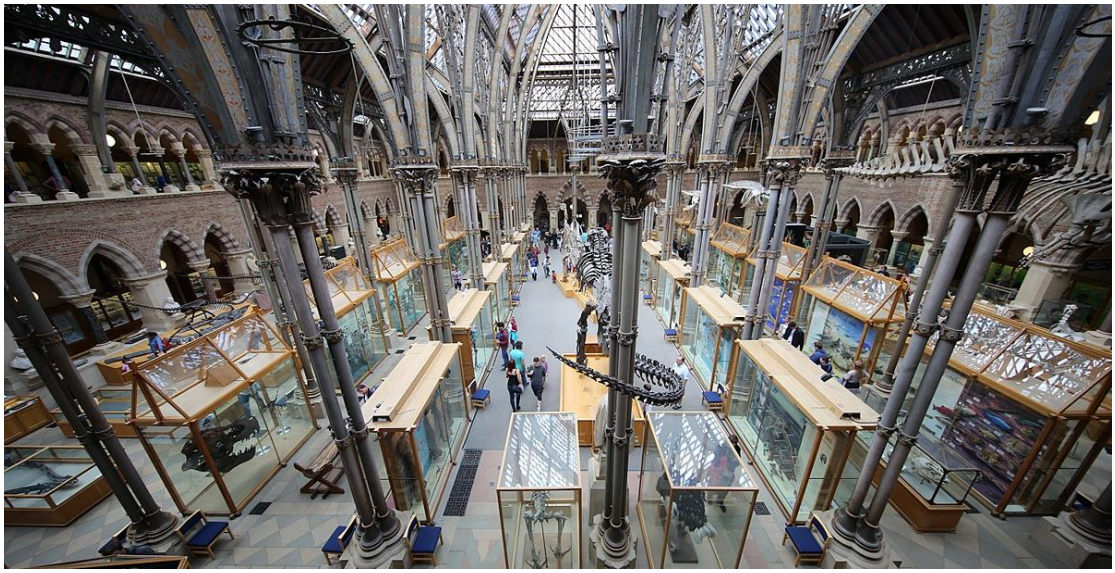


Figure 3-10 Glass roof and movable showcase in the atrium (Author, 2019)

The arrival space is not limited to the entrance hall of the museum. When people see a museum from a distance and approach it, they have already begun to sketch an impression of the museum. Therefore, the form and volume of the building and the application of materials will affect people's initial understanding of the museum. As more and more museums are built as landmarks in the city centre, recognisability has become one of the basic requirements of exterior architectural design. The contemporary museum has moved away from the classical style before the 20th century and has been replaced by the modern era's ever-changing novelty. Breakaway from the traditional palatial museum image, the pictures of contemporary style to the arrival space's impression become livelier and more approachable than the previous solemn atmosphere.

In order to be more attractive, the arrival spaces of some museums have been developed in terms of form design and the application of new materials. More and more bold designs are used in museums, such as the Royal Ontario Museum in Canada, which has been expanded many times, showing the different eras it has experienced from its façade (Figure 3-11). The original building (now the western wing) synthesised Italianate and Neo-Romanesque, which showed the heavily massed structure and rounded and segmented arched windows, decorative eave brackets, quoins, and cornices (Sabatino & Liscombe,

2016; Royal Ontario Museum, 2020). The east wing's expansion broke away from the original structure's heavy Italianate style replaced by Byzantine-influenced style in 1933. Gothic Revival elements in its relief carvings, gargoyles, and statues could be found in its façade, and there is an entrance rotunda of glass mosaic ceilings (Sabatino & Liscombe, 2016).

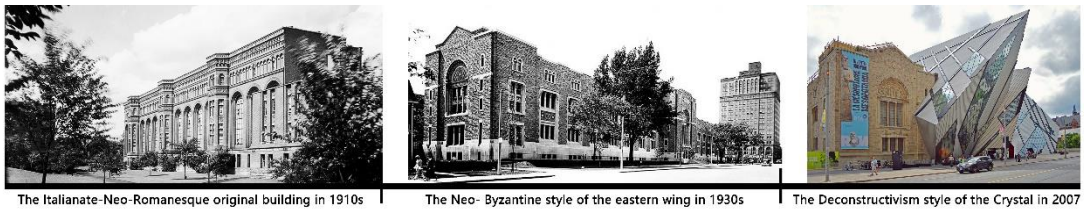


Figure 3-11 The evolution of the Royal Ontario Museum's entrance (Edited by author, 2019. Available from:< https://libeskind.com/work/royal-ontario-museum/ >, 6th August 2018)

In 2007, Daniel Libeskind expanded the museum's arrival space, making this museum become a controversial building due to its deconstructivist style. This part of the extension is built by a steel frame with glass and aluminium, which greatly contrasts with the original architectural style, brings a strong visual impact. The arrival space with a large entrance atrium separates the old historic building from the new, providing a nearly complete view of historic buildings' restored façades (Studio Libeskind, 2020). This challenging building can easily become an impressive landmark of the city.

In addition to drawing attention to novel architectural shapes, various new technologies are also gradually applied to the arrival space. For example, the Kunstmuseum Basel is the largest art museum in Switzerland. A LED light frieze was added to its façade during this museum's extension project in 2016, which creates a unique media façade (SEGD, 2020) (Figure 3-12). By providing a dynamic element within an otherwise static architecture, the museum creates the impression that the building itself is a dynamic organisation. Whether it exaggerates the unique architectural shapes or applies new technologies will help make an extraordinary impression on first-time visitors who arrive at the museum.



Figure 3-12 The active face of the Kunstmuseum Basel
(Available from: <https://www.archdaily.com/787353/at-kunstmuseum-basel-iart-creates-a-frieze-with-a-technological-twist>, 6th January 2019)

In summary, as museums have become more sophisticated, their arrival spaces have also evolved and have become a serious concern. By reviewing the evolution process that reflects on function, social and culture, architecture form, and technology understanding the museum's arrival space become clearer and deeper. Arrival space can not be simply understood as concepts such as entrances or museum's boundaries, and it should contain more. Thus, it should be clearly defined in terms of boundaries, functions, etc., which will help to carry out subsequent research.

3.1.2 Definition of the arrival space

People often regard the entrance of the museum as the first space to arrive. Still, they ignore that from the moment they get the museum's relevant information or see the museum's facade, they have already developed their association and thinking in their mind, which has already entered the boundary of the museum from the ideological perspective. The arrival space easily conjures up images of the entrance hall or the reception of the museum. While including these, the arrival space could refer to some open-air place, like an entrance plaza and façade exposed to the street. Therefore, to define the concept of arrival space, it is necessary to define its boundary first. It should include not only the entrance to the museum building but also the boundaries where visitors begin to encounter museum information

once they enter the museum area. For example, people see advertisements and guide signs about the museum in the entrance square in front of the museum or even the architectural image of the entire museum building.

The arrival space carries many substantive functions and people's initial impression of the museum architecture and the exhibition theme. The arrival space can be seen as a combination of several functional spaces in the museum, including gates, souvenir shops, entrance plazas, surroundings, and so on. Its form and scale are different according to the needs of different museums. Some museum's arrival spaces could be simply entrance halls that lead visitors directly to the exhibition area; some could be expansive entrance squares for passers-by to stay and entertain. Various functions and forms determine the variety and flexibility of the arrival space. Therefore, the definition of arrival space will focus on discussing its boundary and function from the perspective of the architecture design.

3.1.2.1 Boundary and information

The architectural boundary is the defining edge of the created spatial void. It is the invisible external layer of space created by the architectural mass or the spatial product of mass physically. The architectural boundary is considered the fundamental term of architecture that expresses the division, separation, or limitation of space. It can also be used to reflect the concept of the user's perception of space. It can essentially be understood as a permanent "confrontation and exchange" in different spatial orders (Connor, 2006). Arrival space is a part of the architectural realm in most cases, so its boundary belongs to the definition of architectural boundary. The boundary's appearance balances the space and the demands of the space so that the building has developed close, separate, and open forms (Figure 3-13). For example, a closed boundary can block sound and light transmission to create a secret and mysterious space. In contrast, an open boundary can promote the exchange of matter and information in adjacent spaces. The boundary of the space is not only the boundary of the museum building but also the boundary of the courtyard and landscape around the building.

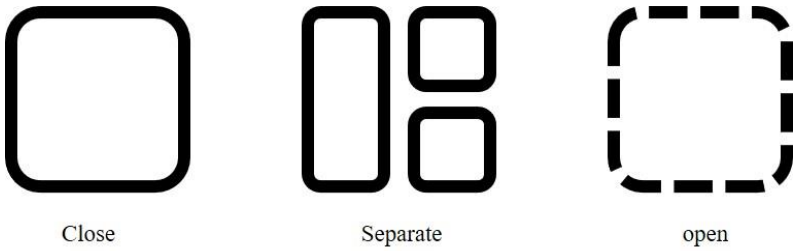


Figure 3-13 Boundary forms of architecture (Author, 2019)

It is necessary to understand that the arrival space does not just exist independently but as the beginning of the museum as a whole. Therefore, the discussion of it should always be included in the actual regional boundaries of the museum. As a concrete public place, the arrival space has its features while reflecting the museum's theme. Exactly as Norberg-Schulz mentioned, "material substance, shape, texture, and colour," these things together determine an "environmental character," which is the essence of place (Norberg-Schulz, 2019). Kevin Lynch describes the idea of edges as a connecting element to join two regions together and can be more or less perforated from a view of a city with its surroundings and elements (Lynch, 1960). The arrival space can reflect both the surrounding urban environment and the information inside the museum. A positive arrival space should be able to use its own and surrounding environmental elements to attract and stimulate visitors' interest and even resonant capable of generating inspirations or memories.

The boundary's spatial quality is a joint masterpiece of experience and atmosphere. The Zeitz Museum of Contemporary African Art (Zeitz MOCAA)was transformed from a historic grain silo building in Cape Town, South Africa, and opened in 2017. The museum's exterior greatly retains the architectural characteristics of the original silos, that is, the grading tower and 42 vertical cylinders (Heatherwick studio, 2020) (Figure3-14). The original industrial heritage features of the building have been hinted at before visitors entered the museum. An enclosed front desk is placed in the middle of the entrance space to support exhibition information and help, which is the only way visitors can enter the centre space. Despite the foreshadowing of the building shape, the large centre space converted by concrete tube structure in the entrance hall still brings visitors a strong visual impact, drawing people from historical sites' memory into a surreal space and time. Rough

and mottled concrete walls still retain the silo's industrial character (Figure 3-15). It creates an arrival space for visitors to reflect artistic information and evoke historical memory.

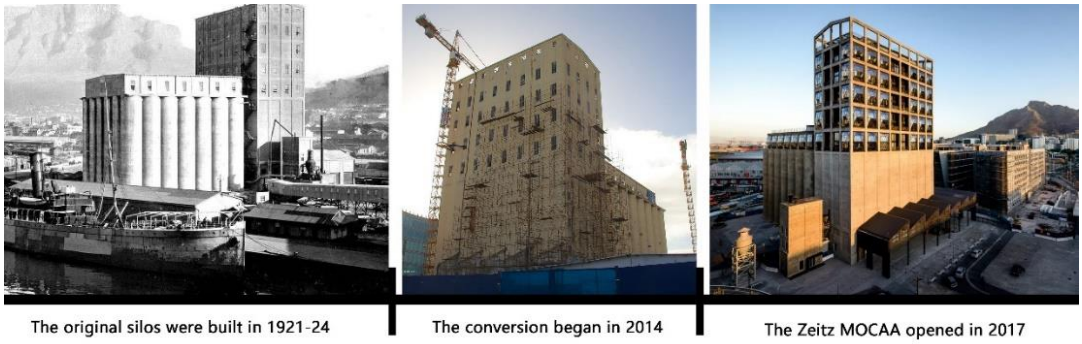


Figure 3-14 Transformation process of the Zeitz MOCAA (Edited by author, 2019. Available from: < https://www.archdaily.com/879763/zeitz-museum-of-contemporary-art-africa-heatherwick-studio >, 20th June 2019)



Figure 3-15 Main entrance space of the Zeitz MOCAA (Edited by author, 2019. Available from: < https://www.archdaily.com/879763/zeitz-museum-of-contemporary-art-africa-heatherwick-studio >, 20th June 2019)

Different architectural spaces reflect different themes and information through their various boundary forms, affecting their user's perceptions and emotions. As a result, the boundaries of the arrival space in museums could be an element created to manipulate the visitors who're about to enter the museum through signages for advertising information, diversity functions, unique visual scene stimulating the curiosity of the moving visiting flow. As a result, the museum's arrival space should satisfy the two conditions at the same time: one is within the museum's architectural boundaries, another is conveying information related to the museum to visitors.

3.1.2.2 Functions

As the first impression of the public service institution, providing visitors with relevant and valuable information is the most basic function of arrival space in museums. From the perspective of human behaviour, when people enter an unfamiliar environment, they need to locate the direction in the building and the visiting target to decide how to continue their journey. From the perspective of architectural space, whether space can catch passer-by's attention in a short time, stimulate their curiosity, and provide them with useful information determines whether people are willing to participate here.

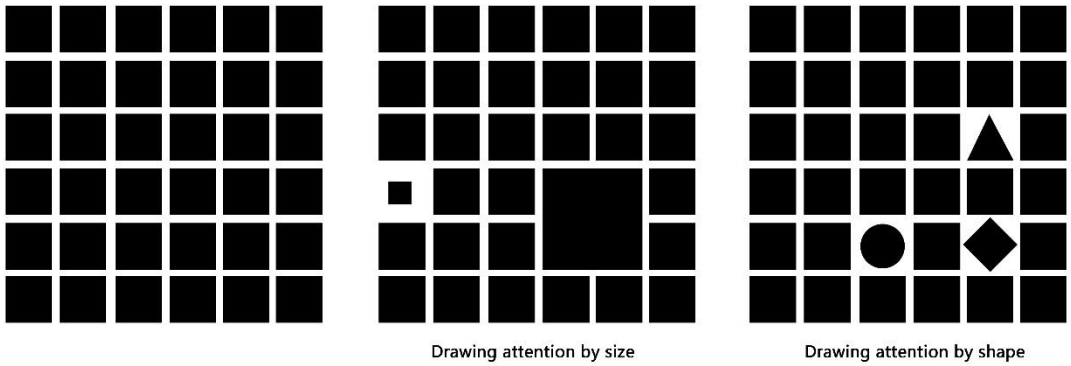


Figure 3-16 Space elements that attract visitors' attention (Author, 2020)

In order to be more attractive and unique, the arrival space should be visibly unique, such as exceptional size or a particular shape. If the space is significantly larger than other elements around it or is different from others' shapes, this space may easy to draw visitors' attention (Figure 3-16). For example, the arrival space in the British Museum's Great Court naturally became the focus of visitors' gatherings. Likewise, the Royal Ontario Museum, with the arrival space's weird shape, attracts people's attention (Figure 3-17).

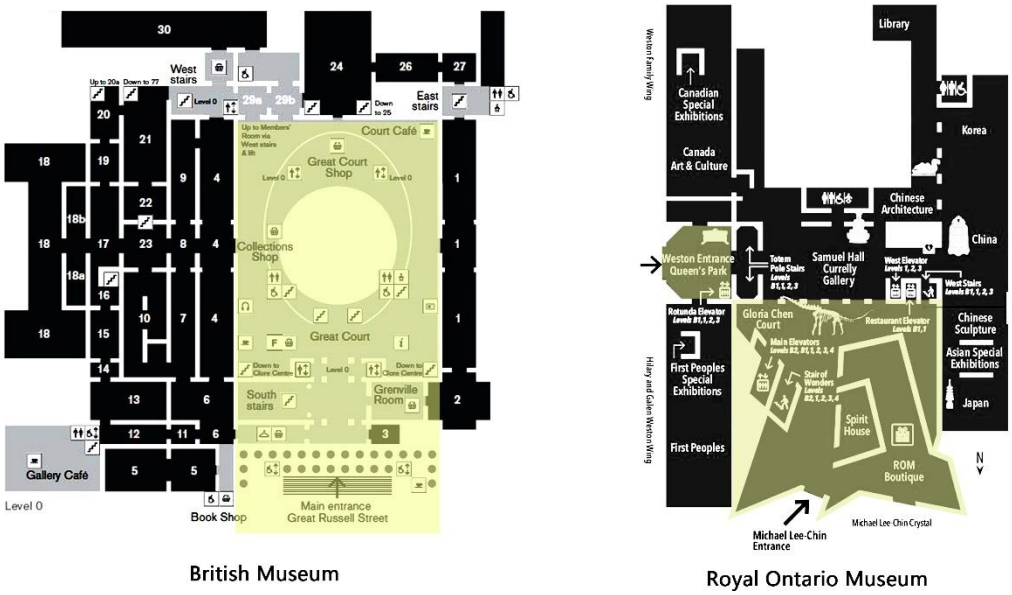


Figure 3-17 Different arrival spaces of the British Museum and the Royal Ontario Museum (Edited by author, 2020)

As early as the 1930s, scholars found that it's helpful to provide leaflets, guidance maps, and pictures of feature exhibits for first-time or casual visitors to stay longer and see more exhibitions in museums (Robillard, 1982). The evidence shows that visitors may feel confused and fatigued during their aimless wandering without direction. The undirected visitors are easy to get bored first and leave the museum soonest in the research of the National Museum of History and Technology, Washington, D.C., as early as 1973 (ibid). Thence, visitors are encouraged to use the guidance brochures and maps and exhibit introductions found in information desks or gift shops that could help with orientation, reducing fatigue, and exhibit selection. As visitor demand increases, the current arrival space is not only limited to providing tourist guides but has become more comprehensive.

The spacious space can more easily meet the diverse functions and activities. Figure 3-18 lists the functions in the arrival space, divided into three parts: service function, commercial function, and entertainment function. The service function provides basic information and inquiry services, including reception, toilets, transportation, accessible amenities, security, cloakroom, etc. In addition to the service functions that meet the basic needs of visitors, the commercial function refers to the souvenir shop, café, and restaurant in these

consuming zones. An entertainment function sometimes accompanies it. The entrance plaza, rest and waiting area, children's play place, and other leisure facilities can be involved in the entertainment function.



Figure 3-18 Various functions in arrival space (Author, 2020)

The functions of service, commercial, and entertainment allow visitors to have a better experience while visiting the exhibition. These functions can exist in any public space of the museum, but to attract more visitors, they are usually arranged in the most accessible area of the museum, like the arrival space. Because of the increase of these functions, public museums have gradually changed from a single place for education to a place with various functions such as social interaction and leisure.

3.1.3 Summary

As a part of the museum, the arrival space is the public and complex area inside the museum's location boundary. Firstly, museums have become diverse and refined in their functions to cater to a wider range of visitors, leading to high demand for arrival spaces directly. As a result, the arrival space is gradually becoming more functional with services, exhibitions, business and entertainment. Moreover, the arrival space design has begun from the humanism, considering the direct needs of their visitors, aiming to create an attractive and accessible comprehensive space, which is mostly represented by using special building

form, combining with new technology and people-friendly facilities and so on.

Consequently, based on the analysis of the arrival space's physical boundary and functions, its definition becomes clear. The arrival space of a museum is the first public space where people enter the boundary of the museum and can receive information about the museum before entering the main exhibition hall, which can cover services, commerce, entertainment and even temporary exhibitions. Figure 3-19 shows the physical boundary of the museum's arrival space in the building plane.

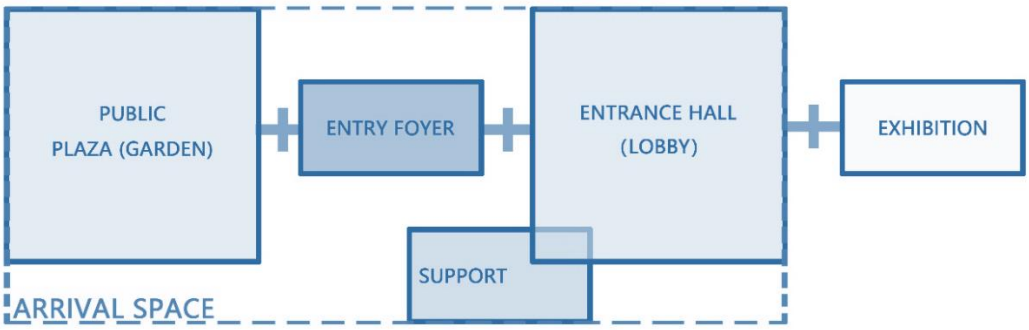


Figure 3-19 Arrival space (Author, 2019)

The arrival space could be the transition between the museum and the city street, connecting the outdoor environment and the indoor building space. It is also the intermediary for visitors to obtain the museum's initial information. As a communicator, the arrival space requires active encouragement and guidance of people into the museum. In the following, the arrival space will be studied and analysed in more detail according to the connection form it and its surroundings.

3.2 Typologies of the Arrival Space in Museums

Because of differences in geography, culture, and site, the museum's arrival space with different forms and shapes are created. Visitors can predict the experience in the museum through the perception of the arrival space. Therefore, it is necessary to know what architectural expressions of arrival spaces exist to understand how arrival spaces influence

people's experiences and perceptions, such as their spatial form, landscape and connection to the external environment. Therefore, it needs to categorise arrival spaces to discuss the various influences arising from their different architectural expressions.

The architectural space includes elements such as points, lines, surfaces, bodies, etc., which are also the basic elements that limit the space (Ching, 2014). The arrival space is the first public space within the museum boundary, and its connection to the external environment is directly related to the mood and experience of visitors entering the museum area. Space can show different effects through the control of lines, planes and other elements. It can be a completely open space without special restrictions, a semi-open space relying on fences or columns, or a completely closed space enclosed by walls, etc. Thus, in this research, the difference in the expression of the connection between the museum's main building and the environment outside the museum boundary is divided into three categories: wide open-air arrival space, semi-open arrival space, and indoor arrival space (Figure 3-20). Each of these categories will be illustrated with some examples. Through the analysis of these different types of arrival spaces, it will be helpful further to study the relationship between the behaviours of visitors, especially first-time visitors, and the architectural space in the museum, to reveal the significance and necessity of the existence of the arrived space in museums.

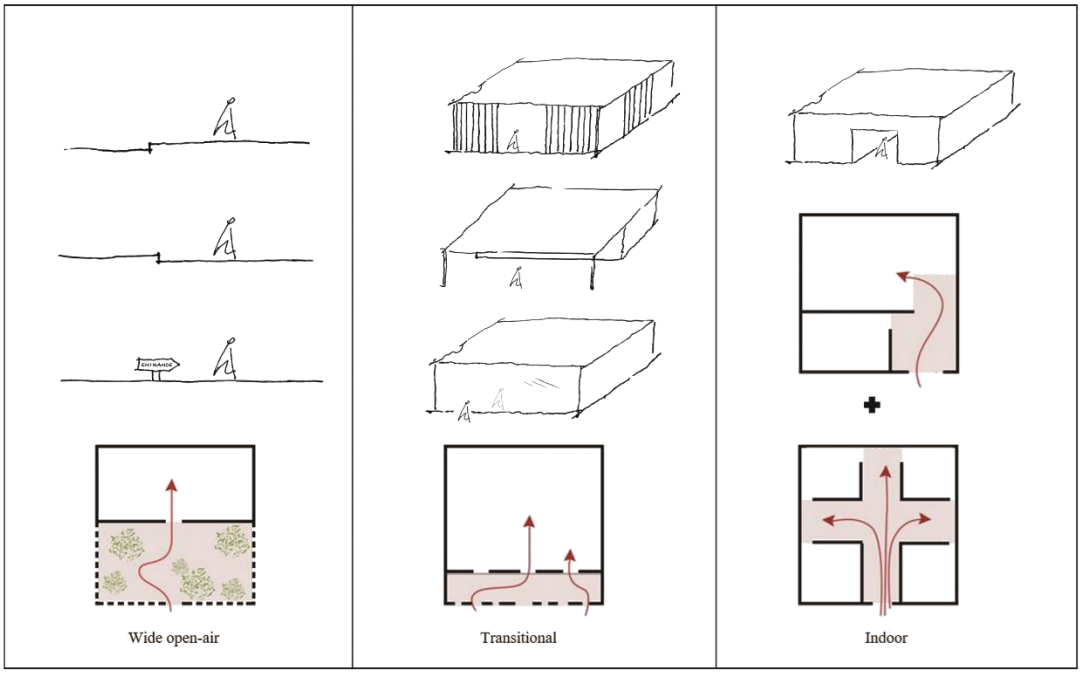


Figure 3-20 Three typologies of the arrival space (Author, 2019)

3.2.1 Wide open-air arrival space

Traditional museum buildings limit their entrances with thick and solid walls, and visitors may be prevented from entering the museum because of obstructed views. However, as the museum becomes more open to the public, more and more scholars have proposed the concept of a museum without walls (Malraux, 1967; Dean, 1969; Meades, 2012). Many modern museums are aware of this and actively use their outdoor space; even some old museums begin to push down their bounding walls and replace them with an open landscape planting. In this way, the wide open-air arrival space refers to its boundary being entirely open to the public, which means that the public can freely enter and exit this area to reach the museum's exhibition hall without being hindered by the building or other fences. This is more common in museums that are free to the public or open-air museums, etc.

3.2.1.1 Arrival space with the landscape planting

Some traditional museums evolved from royal buildings that often have large and well-

manicured entrance gardens or courtyards to highlight the grandeur and style of the building. In contrast, some modern museums emphasise the harmonious coexistence with the surrounding environment, often using the landscape as foundational elements for providing green spaces for residents and visitors to walk, entertain and communicate, step by step, to guide visitors into the museum.

The Shanghai Morden Art Museum waterfront served as infrastructure for coal transportation and storage in the past. Nevertheless, the function of the coal industry gradually disappeared in time. The project modified the previous coal industry waterfront into new open spaces for shanghai citizens to search its modern functions (Yiyu Design, 2019). The winding pedestrian ramp along the river becomes the museum's impressive arrival space (Figure 3-21). As a surface, the landscape can be horizontal, vertical, or at any angle or curvature. The design detail is to refill the brownfield with a layer of healing green for the ground under the ramp. By introducing a meadow as media, the park creates an environmental reflection of its industrial past and brings diverse nature and rich wildlife back to the site. Before entering the exhibition hall, the surrounding landscape can be used as part of the museum exhibition. While enjoying the scenery, people naturally walk into the museum. This kind of arrival space is completely exposed to the outside world, integrates with the urban landscape.



Figure3-21 The entrance ramp of the Shanghai Morden Art Museum (Available from:< https://www.landworks.gr/2019/04/01/shanghai-moma-museum-waterfront-park/ >, 20th June 2019)

3.2.1.2 Arrival space without boundary

The form of the open-air arrival space is more intuitive in the open-air museum[4] or eco-museum[5]. These two kinds of museums often show visitors the place's identity, culture, and historical life, thus preserving a valuable area, or even a large area, on the spot. They usually do not have intentionally built walls and borders. For a long time, the community where residents live is a dynamic museum, such as the Staffin Dinosaur Museum in Scotland, UK and the Suoga Eco-Museum Long Horned Miao (Figure 3-22). To protect the local unique native environment and avoid deliberate construction and renovation, there is no clear arrival space for these kinds of museums. Thus, this arrival space will not be discussed in detail in this scope.

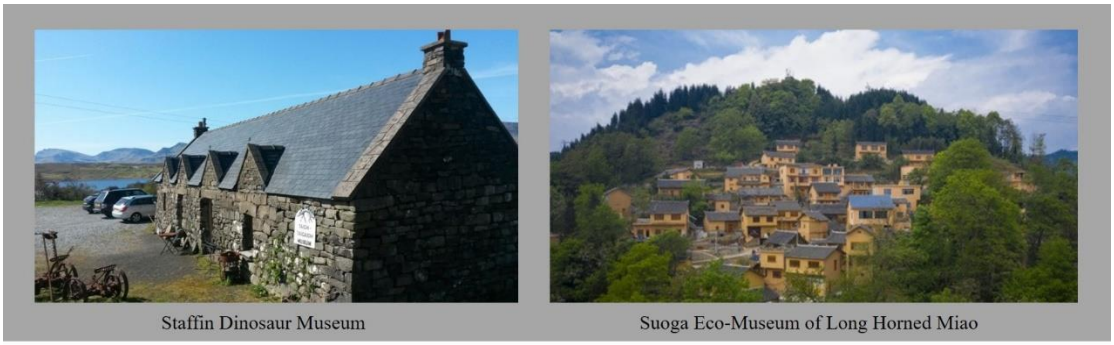


Figure3-22 Eco-Museum with local natural scenery (Edited by author, 2019)

Whether it is the artificial landscape of the arrival space in the urban museum or the natural landscape of the eco-museum, it is to convey and describe the information to their visitors. Landscape can reflect the same features and the architectural language, such as materials, shapes, functions and structures (Spirn, 1998: 15). On the other hand, the feeling of open-air landscaping can bring a back-to-nature aesthetic to a building and provide a unique

[4] The idea of open-air museum originates in the late 19th century, commonly used to show local life and history, which means to display its architecture, artifacts and other exhibits outdoors (Rentzhog, 2007).

[5] Ecomuseum was introduced by the French museologist Hugues de Varine in 1971, which is a dynamic way in which communities preserve, interpret, and manage their heritage for a sustainable development (Davis, 2016).

visitor experience, often revealing more information than the building itself.

For the wide open-air arrival space, architecture and landscape complement each other. Often the open-air arrival space does not stand alone but often works together with the museum's main building to help people transition from the city to the museum better. Many museums create an open space for the area in front of the entrance by setting back the main building, such as a square or courtyard. This provides an opportunity to bring the surrounding environment into the front of the building, and can further blur the boundary of the building and introduce nature into the architecture.

For example, the Museum of Modern Art, MoMA, has an indoor reception area and an outdoor sculpture garden together with its arrival space is both the beginning and the end of the visit (Figure 3-23). It is seen from outside the walls, it is an indoor arrival space, but it has an open natural environment once inside. It's more common in the arrival space that architecture and landscape occur simultaneously, involving each other without distinct boundaries.



Figure 3-23 Arrival space with the outdoor sculpture garden
(Available from: <https://heintges.com/moma-philip-johnson/>, 6th January 2019)

3.2.2 Semi-open arrival space

An intrinsic connection and longing for nature among humans exist (Bolos, 2009). The same applies to architectural design. Each building does not exist independently of its environment but interacts with its surroundings to a greater or lesser extent. In architecture, transitional space is used to define the space between the interior of a building and its exterior environment, which serves as both a buffer and a physical connection. Precisely as arrival space connects the gap between the museum's outdoor and indoor space, it is usually expressed as a transitional form of space. In contrast to a wide open-air arrival space, many museums will transfer visitors from the "outside" of the museum to the "inside" through the overlap of nature and architecture, thus creating a semi-open arrival space. This spatial form strengthens the connection between the museum's main building and its natural environment, making it easier for visitors to enter the building.

In Japanese architecture, the long roof eaves create an occupiable space underneath them,

called the "noki-shita," (Nitschke, 1993: 85). Since the overhangs define space beyond the enclosure as belonging to the building while incorporating outside landscape, which creates a semi-open space. Besides the space under the roof of the overhang, the building space enclosed by continuous columns and arches is also a kind of semi-open space. These architectural elements replace the solid walls and enclose a semi-open arrival space with the main museum building. These building elements can define space but do not necessarily create a complete interior space (Figure 3-24). The boundary of the building is both blurred and specifically defined, creating a dynamic relationship between the museum's main buildings and the site. Moreover, buildings can define and articulate arrival space using transparent materials, such as glass, ETFE and perforated metal sheets, etc. The façade by using these materials will not completely block the line of sight, allowing both indoor and outdoor visitors to achieve sight communication and the interaction of the environment. The following will illustrate with examples.

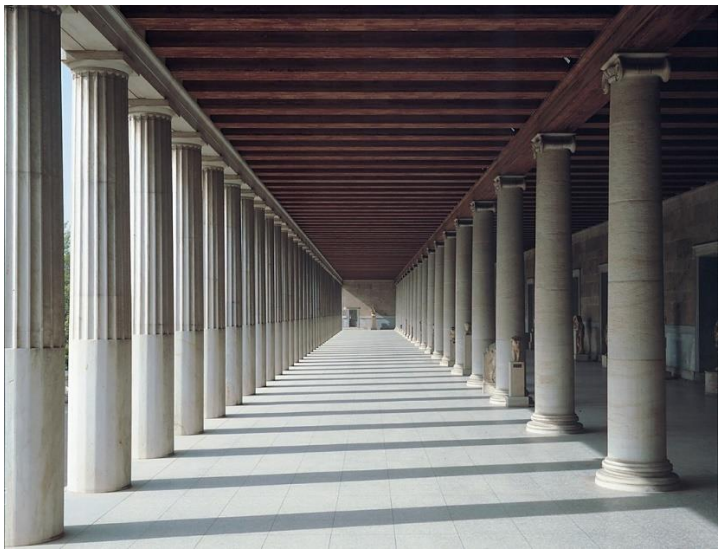


Figure 3-24 Transitional space created by continuous columns (ASCSA, 2019Avliable from:< http://agora.ascsa.net/id/agora/monument/stoa%20of%20attalos >, 6th January 2019)

3.2.2.1 Arrival space with large overhanging roof

The transitional architectural form is mainly to establish a communication space for

information exchange between indoor and outdoor. It can be a front porch formed by columns, several groups of short walls that can be freely combined, or a roof with large eaves. Regardless of the architectural form, its purpose is to enter the museum from the external environment naturally.

With the limitation of the former entrance, the Stedelijk Museum expanded to a new entrance in 2012 (Benthem Crouwel Architects,2019). By partly lifting the added volume and sinking the rest underground, the existing building remains virtually untouched and fully visible (Figure 3-25). The Stedelijk Museum is located in the Museumplein, a public plaza of museums' gathering place in Amsterdam. The new arrival space creates a large, open, transparent space with public functions such as a service desk, knowledge centre, museum shop and restaurant. The square is part of the building as much as it is a part of the Museumplein.



Figure 3-25 The new arrival space of the Stedelijk Museum (Available from: <https://www.archdaily.com/350843/stedelijk-museum-amsterdam-benthem-crouwel-architects>, 6th January 2019)

The wing-shaped, cantilevered roof over the square at the height of the stone frames reinforces the open transition from square to building and removes any doubts about the entrance's whereabouts. The smooth white volume, also known as 'the bathtub, ' has made a deep, powerful impression on visitors (Benthem Crouwel Architects, 2019) (Figure 3-26). Beneath the huge jutting roof creates a semi-open space for rest and entertainment, invents a smoother transition to the interior and generates a more profound entry statement.



Figure 3-26 The cantilevered roof of the new entrance (Available from: <https://www.archdaily.com/350843/stedelijk-museum-amsterdam-benthem-crouwel-architects>, 6th January 2019)

3.2.2.2 Arrival space by transparent façade

Differently, like using the big cantilevered roof to create a transition space between the inside and the outside world, transparent materials are also a common means. For example, the Riverside Museum in Glasgow by Zaha Hadid Architects has a big glass curtain wall that can allow people's view to look through the main exhibition space from the outside. Moreover, this also allows for natural lighting in the exhibition hall. While visiting the exhibits, visitors can also see the scene outside the exhibition space (Figure 3-27). Moreover, there is a spacious open-air space in front of the museum. The open-air space is keen on holding all kinds of social activities, from music events to outdoor sports competitions, attracting many views and leading more visitors to the museum.

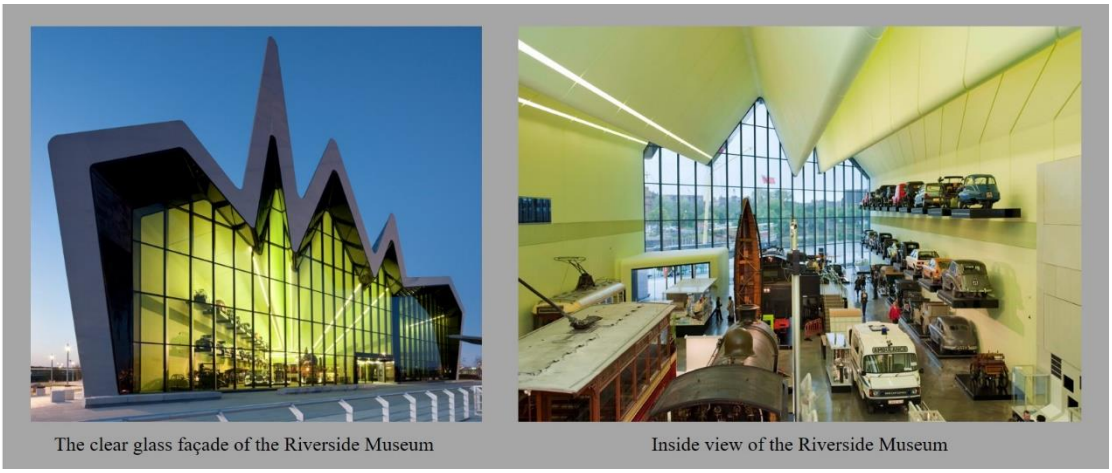


Figure 3-27. The Riverside Museum (Edited by Author, 2019. Available from:< https://www.dezeen.com/2011/06/10/riverside-museum-by-zaha-hadid-architects/ >, 6th January 2019)

The Aspen Art Museum design concept is based on the concept of transparency and openness, allowing people inside and outside the building to interact with the landscape. The Shigeru Ban Architects used the woven wood panel facade to cover the building's two main facades and became the symbol of the building (Figure 3-28). Its transparent facade reveals the internal structure and galleries, and through the action of light, people outside can see the change of shadow generated by the movement of visitors inside (Shigeru Ban Architects, 2014). At the same time, its special wood panel skin can attract the attention of pedestrians on the opposite street very well.



Figure 3-28 Aspen Art Museum (Shigeru Ban Architects, 2014. Available from:< http://www.shigerubanarchitects.com/works/2014_aspen-art-museum/index.html>, 6th January 2019)

The transitional arrival space mainly realises the interaction and communication between

outdoor and indoor environments by changing architectural forms and transitional facade materials. Some museums also actively use the open-air and transitional combination space in front of their entrances, such as squares, gardens, etc., as a transition before visitors enter the museum. These arrival spaces together create a buffer area for visitors to enter the museum. Visitors can even use arrival spaces to have some predictions and a preliminary understanding of the museum's exhibitions. However, to maintain their sense of mystery and visitors' curiosity, most museums still mainly adopt indoor-outdoor combinations or indoor arrival spaces.

3.2.3 Indoor arrival space

The museum's indoor arrival space can include reception, information desk, cloakroom, café, resting area, and diverse functions. The mixed functional features can be fully reflected here. How to arrange these functions in a fixed space and let visitors feel included and welcome? Routes and circulations connect the various functional parts of the space. So especially for first-time visitors, the museum is like a maze that arrival space should lead visitors naturally and easily into the exhibition without interrupting them. Clear direction and circulation become quite vital in the indoor arrival space design.

As the linear and radial form circulation characteristics discussed in 2.3.2.1 earlier, some museums' arrival spaces are the beginning of the linear visiting circulation with stronger guidance. While, in some museums, they are the centre of the traffic that give visitors more choices and flexibility. Regardless of the forms of the following exhibition halls, the basic duty of the circulation in the arrival space is to make sure visitors have direction and know where they want to go next. Based on orientation, the indoor arrival space can be visualised divided into the oriented space and free choice space.

3.2.3.1 Oriented arrival space

To ensure the logic and narratives in the following exhibitions, some museums have to fix their visiting circulation, like the history and memorial museums. Thus, their arrival space should have a powerful guidance ability. In indoor arrival spaces, besides the architecture

space, lights and specific colours, both the information desk or reception and architectural space can play a role in guidance.

The New Los Angeles Museum of the Holocaust was designed to merge seamlessly into the park's natural curvature. There is only one short entrance path that introduces visitors directly to the museum (Figure 3-29). After entering the interior arrival space, visitors are directly brought to the orientation point, like the information desk and reception area. They can get the visiting map and other related information from there (Figure 3-30). This kind of entrance passage formed by building a wall has a strong attraction. Visitors can imagine what is there to see in the museum before visiting the exhibitions through some signs and brochures offered by the orientation point. They do not need to choose the order of the exhibition hall, just follow the guide in the museum.



Figure 3-29. Entrance to the New Los Angeles Museum of the Holocaust (Available from: <http://architypereview.com/project/los-angeles-museum-of-the-holocaustissue_id994/>, 7th January 2019)



Figure 3-30. Indoor arrival space of the museum(Available from: <http://architypereview.com/project/los-angeles-museum-of-the-holocaustissue_id994/>, 7th January 2019)

However, most museums tend to give visitors some freedom in the arrival space, offering several routes for visitors in the arrival space. Visitors can choose their favourite route according to the signs (Figure 3-31). The oriented arrival space normally has clear directional cues, like eye-catching road signs, significant stairs or escalators and unique architectural space. These directional cues lead visitors to meet every exhibition continuously and make the visiting journey clear and fluent.

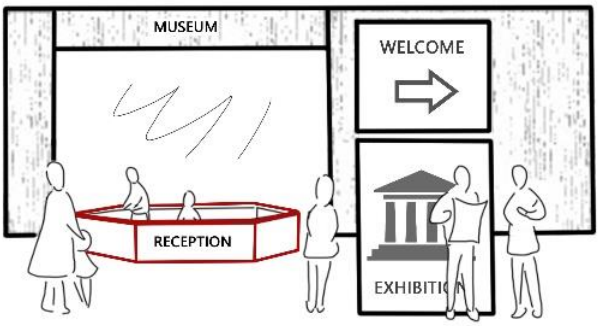


Figure 3-31 The oriented arrival space (Author, 2020)

3.2.3.2 Free choice arrival space

The free choice space provides visitors with more flexible options. In some large

comprehensive museums, the arrival space usually plays the role of a city living room or a visitor centre. It contains many leisure, entertainment, and even temporary exhibitions to attract tourists to gather and stay here. Usually, these arrival spaces contain various functions, giving people more choices to engage in different indoor activities, such as the big atrium and courtyard (Figure 3-32). Under ideal conditions, visitors can map out the overall configuration of the paths in the museum in the arrival space in their minds. In this way, visitors can get information from landmarks, signs, and directional cues in one comprehensive system. Thus, the orientation within the museum and understanding of its spatial layout should be clear. But in reality, even for some famous museums, it is difficult for visitors to map out the overall configuration of the paths in the museum in the arrival space, and even some wayfinding and signage can be obscured by crowds, such as the Pyramids in the Louvre, or the Great Court in the British Museum.

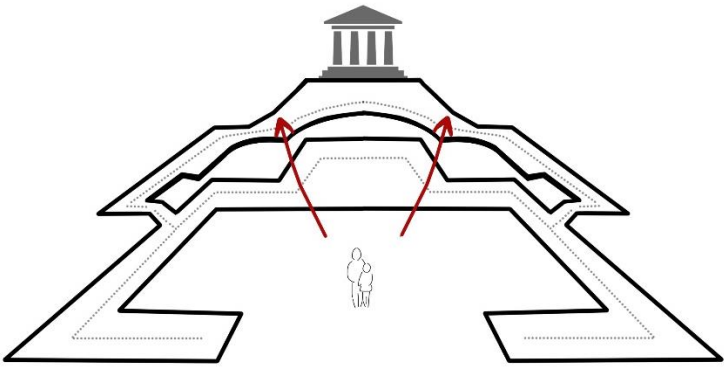


Figure 3-32 The free choice arrival space (Author, 2020)

The V&A Dundee was designed by Kengo Kuma and opened in 2018. The architect's original intention was to create this museum's arrival space as a city's public space for the local people, a place to linger whether or not they have come to see any exhibits, sheltered from the not always pleasant weather (V&A Dundee, 2019). Thus, the entrance hall becomes a large double-height volume with a broad stair and glass lift tower. When visitors entered the main hall, a light-filled space intended by the architect to be welcoming and accessible, a vibrant place to socialise with a café, shop, and other visitor facilities (Figure 3-33). The intuitive vertical traffic system, like broad straight stairs and lifts, various leisure functional parts, and signs on different floors, can help visitors map the museum's layout

and orientation as a whole. It is worth noting that although this arrival space is freer than the oriented space, it still plays a guiding role in the tourist's visit route according to the limitation of traffic space and the signs on each floor.



Figure 3-33 The arrival space of the V&A Dundee (Available from: < https://www.vam.ac.uk/blog/news/va-dundee-opens-to-the-world>, 7th January 2019)

The Tate Modern Museum London's arrival space is the Turbine Hall. People can find souvenir shops, cafes, temporary exhibitions, etc., in this rectangular, high-altitude space, as well as the flow of visitors on other floors (Figure 3-34). In such space, the signs and indicators and the repetition of landmarks such as black stairs, railing, etc., can act as directional cues. People come here to choose various activities freely, not just visit exhibitions; this kind of indoor arrival space is more like a public square connecting the city and the museum, allowing people to travel freely.

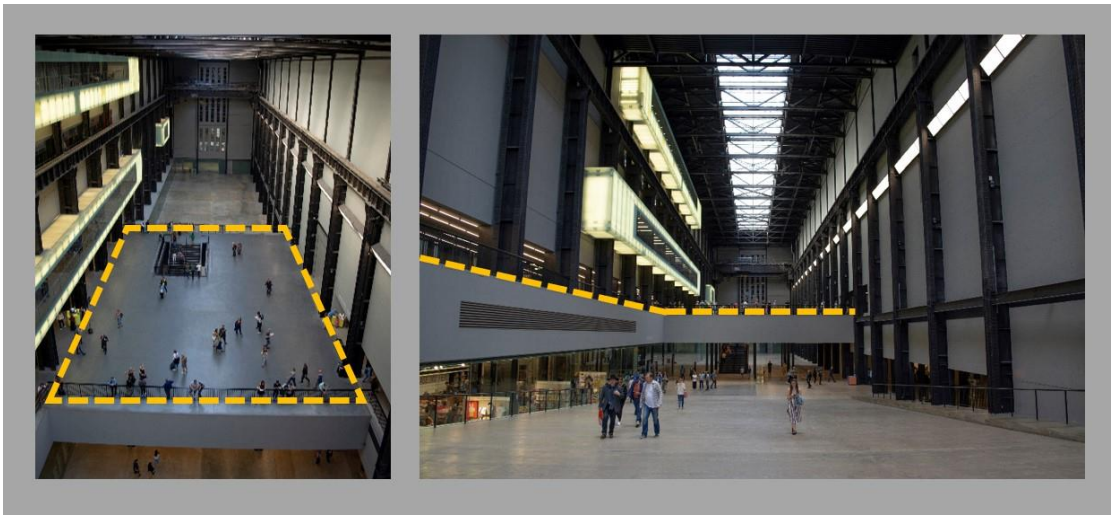


Figure 3-34 The arrival space of the Tate Morden Museum London (Author, 2019)

Compared with the oriented space, the free choice space is usually a representative area of the museum. Visitors choose the area that interests them most and may pass through it repeatedly when visiting other exhibition halls. Therefore, the free choice space will also have a certain positioning function, helping visitors to determine their location in the entire museum.

3.2.4 Summary

Through the relationship between the architectural space and the environment, the arrival space of the museum can be divided into wide open-air spaces, transitional spaces and indoor spaces (Figure 3-35). In museums, where the entrance space is composed of outdoor landscaping or no visible boundaries, the arrival space is usually completely open. Such arrival spaces often blend in with their surroundings, blurring the boundaries of the museum. Both transitional arrival spaces by architectural forms and materials establish good communication between outdoor and indoor spaces. No matter the wide open-air arrival space or transitional space, always work together with indoor space. Thus, the indoor arrival space will be paid attention more in the following research, through its layout arrangement, functional division and circulation design.

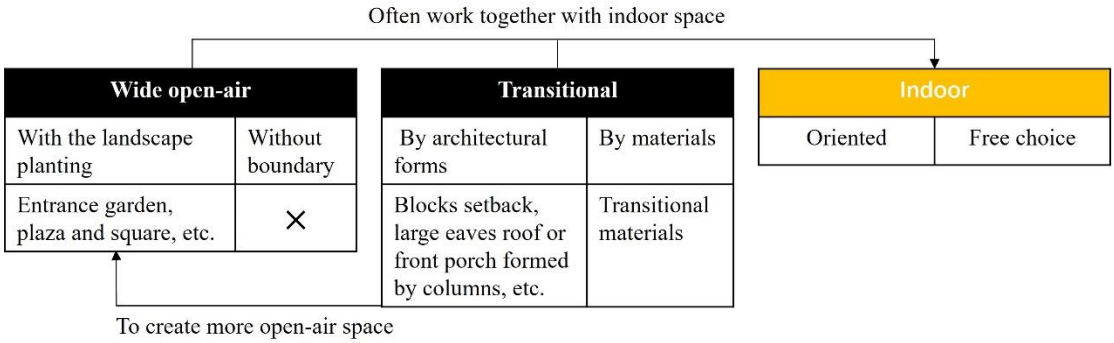


Figure 3-35 Typologies of the arrival space (Author, 2021)

There is no absolute classification of the arrival space. In most cases, the arrival space combines both open-air and indoor areas or even a combination of three typologies mentioned before. Whatever the architectural form of the arrival space, its ultimate purpose is to attract visitors and create a harmonious environment with the surroundings and help visitors better transition to the museum. It is the first decision point for people after entering the museum boundary. In the arrival space, people interact with each other through social life, making the space full of vitality and helping connect further the museum to its wider community. Although the arrival space is not as eye-catching as the exhibition space, it has an essential meaning in the museum's architectural space and the city.

3. 3 The Social Values of Arrival Space in Museums

As more and more visitors enter the museum, the arrival space becomes an essential part of the museum. The arrival space's intrinsic value is revealed, relying on the previous analysis of its architectural performance types. The arrival space's basic role in stimulating visitors' impressions and creating experiences is to adapt to the museum’s environment and a new understanding of identity. As the starting point of the real physical museum space, its social significance cannot be ignored. Additionally, to better play its role in the city, the arrival space still needs to establish good relations with the surrounding environment. It is not limited to the connection between space and architecture but should also include connecting the city's cultural context. This part will analyse the functional meaning, place meaning, and emotional meaning of arrival space from the perspective of architecture, city,

and users.

3.3.1 Functional meaning

The arrival space evolution process continuously integrates various functions from a single space into a mixed-function space today. In urban development, some scholars have long proposed that the overlapping and interweaving of activities crucially impacts the vitality of urban neighbourhoods (Jacobs, 2006). The concept of "exuberant diversity" in urban design also applies to public buildings' arrival spaces, such as museums. The concept of mixed-function space from Jane Jacobs's urban planning theory mentioned that the cities need a most intricate and close-grained diversity of uses that give each other constant mutual support, both economically and socially (Fainstein, 2005). If community building succeeds, the juxtaposition of space as a mixed-use environment must be present (Katz et al., 1994; Fulton, 1996). The proposition that space and space mix are important ingredients in humanising an urban setting (Gurian, 2006: 100). Without necessarily intending to, museums have become, increasingly, a mixed-use environment.

Focus on the museum's arrival space; diversity functions can meet visitors' different needs and create more activities in one space. The components and performance of functional diversity can be very different so that the museum’s arrival space gives visitors a unique impression. For example, the open-air arrival space and indoor arrival space can bring different experiences to visitors. Regardless of the variety of functional combinations and architectural forms, the arrival space, as the front area of the museum, needs to be accessible and provide clear guidance for visitors. Once these basic functions have been satisfied, it is necessary to consider creating a more enjoyable visitor experience by adding appropriate entertainment or other features.

3.3.1.1. Guidance and accessibility

The form and scale of the arrival space should accommodate visitors' movement, provide orientation assistance, and arrive at the desired exhibitions as directly as possible or select along the route they prefer to see. Thus, the arrangement of the arrival space must be clear

and easy to access. Most visitors are not part of a group tour, so an effort must be made to ensure that casual visitors are warmly greeted and assisted in finding their way through the reasonable Guidance in arrival space. Especially some visibly unique arrival space as the large transportation core or centre location such as the oriented and free choice arrival space, visitors may choose to return here multiple times to help them position themselves during the visit.

In addition, people have different interests and expectations, and many of them don't know what they are interested in when they enter the museum. It is impossible to collect all the visitors' interests and expectations, but we can try to think about the factors that hinder people's interests and expectations in the museum. Thus, the meaning of the arrival space of the museum should be designed to guide visitors to find their interests and meet their expectations first. If museum visitors can find connections to their own identities in their real and virtual journeys, their visiting space can become a socially meaningful space (Macleod, ed., 2005: 35). It is about the connection and transition between the outside world and arrival space and the visitors and arrival space. Arriving space should help people quickly locate the parts and contents that they are interested in or attractive to the museum in a short period of time to clarify their tour route. In the museum, it is necessary to help visitors reach the place they want to go through clear guidance and positioning through orientation point where they can get maps and brochures easily, markedly architectural elements, repeated landmarks, and other directional cues. Thus, the arrival space needs to take up the responsibility of guidance.

Moreover, the guidance and accessibility are limited to the physical space and the visitor's psychological space, such as access to the knowledge and guide people to accept information built on the visitor's experience of the engagement of the arrival space's various functions. If the place enables people to move in and through them easily, it is more likely to succeed (Adams & Tiesdell, 2012: 17). It may be easier for people to understand and accept the museum's space by making the well-trodden and readily visible routes that follow the natural movement, leading people to walk into more pleasant experiences.

3.3.1.2 Publicness and entertainment

What diverse audiences need is a diversity of spaces, spaces that excite and thrill, spaces that calm and provoke intense reflection, and spaces that stimulate thinking and learning (Macleod, ed., 2005: 59). Modern museums designed mixed-functional entrance halls or open-air community spaces to attract more passers-by. Furthermore, many traditional museum extensions or rebuilt their arrival space to welcome more visitors. Café, restaurant, shop, and some other entertainment functions are added in the arrival space, such as the Tate Modern, the Louvre, and the British Museum. Their new arrival space always attracts a lot of attention. Therefore, both publicness and entertainment of arrival space are increasingly emphasised and amplified.

However, the enhancement of the entertainment value also attracted a lot of negative voices. Especially in the Tate Modern, Richard Tomkins points that Tate Modern is more mall than a gallery, and by far its most crowded parts are its shops, cafés, and restaurants (Macleod, ed., 2005:59). The curators and the museum directors also complained about the same issue, 45% of the people go there just for social reasons rather than appreciate the incredible arts (Pollack, 2015). Similar comments have been made about the new entrance at the Louvre. Many academics bemoaned the 'decline' of the museum into a place of entertainment, where facilities such as shops and restaurants have too much prominence. They interfere with the purity of the cultural experience. And yet, in most museums, such facilities are key virtues in the eyes of the public and are just as central to the operation of the museum as any space containing collections (Macleod, ed., 2005: 59).

There is no right answer to show what the arrival space looks like. Each space could have endless possibilities for use. The first step of welcoming the visitors is to break down the widespread resistance to visiting museums in the first place. Both Weil (2004) and Goodman's (1988) explicit the role of the museum is contributing to a good quality of life as serving a greater public benefit. For the moment, fully developing the entertainment and leisure value in the arrival space could be necessary to attract tourists. It should be concerned that this perspective of the museum as a context for recreation should not

conflict with the museum's basic functions of collecting, exhibiting, and educating.

Based on expounding its essential functions, the functional significance of the arrival space emphasises the relationship and proportion between some functions and other areas of the museum. Furthermore, as the first and even the last visiting point, arrival space should welcome different visitors and naturally connect other parts of the museum to guide their visitors easily to find the routes that they desired at the beginning of the museum, so as to avoid the frustration and fatigue of being lost and confused in museums.

3.3.2 Place meaning

The museum architecture can achieve all sorts of impacts, such as inspire or confusing; dominate or complement; welcome or forbid; include or exclude (Macleod, ed., 2005: 54). In addition, museums have a softer power, which can influence people through persuasion, attraction, or setting the agenda (Lord & Blankenberg, 2015). Because of museums' impact on people's psychology and emotions, they have a unique significance in cities or communities. In its physical setting, the museum’s arrival space, in particular, consider the relationship between itself and its city. In most situations, the museum exists as a landmark and symbol in the community and city. This means it could have the spiritual leadership of their visitors and even a profound meaning for the locals.

As previously mentioned, the arrival space is the first space visitors could concentrate on feeling the real space before focusing on the exhibition. Thus, it is possible to influence people's emotions and thoughts through architectural means to the greatest extent. Grasping the expression of the place value of the arrival space would be a good impression for the following visit. They are especially reflected in the memorial and cultural museums, which usually have symbolic value as sites for commemorative events and could provide spiritual value through generating experiences of wonder, awe, and meaning.

3.3.2.1 For the museum

The arrival space serves as the face of the museum, occupying an excellent location within

the museum. It is the area that visitors must pass through or even stay in, the starting point for visitors to create an impression on the whole museum, and the decisive point for visitors to enter the museum. Thus, most national museums have large, marked, and open arrival spaces to attract and involve several people. Often, the key exhibits in the museum are also represented in the arrival space in different forms, such as the relief of the building façade, the theme colour, or even the more visually appealing posters. The sculptural (unveiled in 1852) composition over the portico of the south entrance to the British Museum incorporates items actually to be found inside the museum. It shows the story of human development through the ages in a narrative way, and in this way prepares the visitor to see the museum "as the simultaneous representation and fulfilment of that progression" (Gidal, 2001).

In addition, many historical museums' arrival spaces, the original old buildings have been transformed and expanded to adapt to the growing number of visitors and meet their needs. The Grand Louvre Pyramids has become the new landmark of the Louvre Museum since it was completed in 1993 by architect I. M. Pei. After this new arrival space opened, it has attracted more than double the number of tourists to visit, and even in 2018, the number of visitors has exceeded 10.2 million (The Louvre, 2019). A similar situation also occurred in the Royal Ontario Museum and the British Museum. Naturally, to break the local people's original impression of the museum and challenge the novel forms, these changes to the arrival space will cause considerable controversy. But the ultimate goal is to use the museum's optimal location to attract more visitors and make deep impressions, thus stimulating the vitality and economic development of the whole region. What kinds of natural or functions should arrival space contain, and how to create a new arrival space in existing buildings and make the architectural style of different times and environmental atmosphere more integration are the questions that need to be considered in these transformation cases. It is enough to show the importance of the arrival space in the whole museum.

3.3.2.2 For the society

The museums' internal spaces need to be treated as neighbourhoods within themselves opens additional possibilities for urban planning from a broader view (Gurian, 2001). So as the arrival space, which is the connection between the inside museum and the outside world. Museums are an important determinant of a 'sense of place' where people feel a particular attachment to an area with local knowledge (McArthur & Hall, 1996). In society, the museum's physical place within their surrounding neighbourhoods can make them more or less "owned" by the local communities.

As the project of the New Art Exchange in Hyson Green, Nottingham, its main theme is to show the region's cultural richness and diversity, and it is the first dedicated African, African Caribbean, and South Asian contemporary facility for the visual arts in the U.K. (New Art Exchange, 2018). Its location is in the main concentration area of the African and Asian immigrants and their descendants, and next to the Hyson Green Community Centre of Nottingham city. Its arrival space is enclosed by glass, which is close to the bustling streets of the city. Inside is the cafe and reception. The transparent glass creates a dialogue between visitors inside and pedestrians outside. The museum volume and transparent arrival space in line with the scale of neighbourhoods' buildings and streets make it easier for people to enter (Figure 3-36). Together with the community centre next to it, it undertakes to display the diverse local culture and provide communication activities for residents. Holidays and weekends are often crowded with people who bring their children to activities.



Figure 3-36 The New Art Exchange (Author 2019)

Like the New Art Exchange, the community museum's arrival space provides a place for residents to connect, interact, and learn. However, it can be more oriented toward contemporary issues and family visitation of the local area. Parents might take their children to learn important lessons in the museum, not fully taught in school (Weil, 2004: 268). Local distinctiveness and social interaction can be grouped into the category of interactivity. Lofland (2017) pointed out that there are two types of interactions within the public realm： one of them is people interacting with the place; another is the interaction between person to person. The museum's arrival space is a place to promote communication and interaction with the city and visitors, and residents and visitors.

Some large museums not just belong to residents but also need to face tourists from all over the world. Artists from all over the world will also create unexpected activities at their spacious open-air arrival spaces. Such as the square in front of the Riverside Museum in Glasgow and the public plaza of the Stedelijk Museum called Museumplein in Amsterdam. They are always filled with street artists and visitors who enhance the activity in the whole surrounding. The activity and vitality of the region bring about economic development and the promotion of popularity and have a positive impact on people's emotions.

A space full of local distinctiveness is beneficial to enhance the residents' sense of belonging and self-confidence (Lu, 2012). Like the New Art Exchange in Nottingham,

whose exhibition is rich in regional characteristics. The arrival space of museums in a new age can actively support and facilitate a range of public experiences with exhibition-social, spiritual, imaginal, therapeutic, aesthetic, and more. The place's significance of arrival space is to arouse people's emotional resonance, so its emotional value needs consideration.

3.3.3. Emotional meaning

In people's image, space is a place, and time is the occasion (Adams et al., 2013:11). So, in the same way, that the occasion of a well-attended exhibition brings an empty hall alive, the presence of people turns the otherwise empty abstraction of a museum space into the warm embrace of a public place. Places thus derive their meaning and value from people, and without them, they would remain mere elements of space defined by physical characteristics alone. In addition to the museum's physical functions to meet the visitors' expectations, visitors' psychological accessibility is also important. Some academics mentioned that the museum space begins earlier than it becomes the physical view. Their visitor enters the museum's 'psychological space' perhaps long before actually visiting (Macleod, ed., 2005: 55).

An essential challenge for the museum to become more attractive is to create places that better meet people's needs and aspirations. Too often, this end is obscured by excessive concentration on means, with the result that many museums spent a lot of time and energy on their abundant exhibits but ignored the first stop of the visiting journey—arrival space. For example, the unclear guide boards, small and cramped entrance space, unobtrusive information desk and introductions, limited rest area may lead to a bad impression of the arrival space. As an arrival space, it should be unique while ensuring the basic needs of tourists. The surrounding environment, functions, and characteristics of the arrival space discussed before can be seen as the visible components, just as they can be seen, be touched, and used. The arrival space's emotional impact on its users and residents is invisible and cannot be ignored.

3.3.3.1 Senses of empathy and identity

Vom Lehn and Heath (2003) propose that museums' publicness makes it necessary to understand how visitors around exhibits in social interaction with their companions and others who happen to be in the same space. Before the exhibition, the arrival space will serve as a prelude to creating a reasonable story and stimulating visitors' empathy. The museum should give their visitors a personal reason to return and let the potential and occasional visitors become more frequent. The primary impact of visiting a museum exhibition is to confirm, reinforce, and extend the visitor's existing beliefs (Doering, 1999:40). The most satisfying exhibitions for visitors resonate with their experience and provide new information in ways that confirm and enrich their view of the world. Because visitors need to see how museums are relevant and valuable to their own lives (Simon, 2010:35), this emotional interaction of the arrival space would directly reflect how the museum welcomes its visitors. It can give visitors a sense of psychological identity and a sense of warmth that they come to their place.

Further, the sympathetic response can be explained that different visitors producing the same sense for an object. This could be the chance of interaction because strangers will have in common with each other. Museum builds resilience when they connect the individual pain to other people's pain (Lord & Blankenberg, 2015). National 11th September Memorial Museum & Pavilion at the World Trade Centre (WTC) site opened to the public in 2014. Snøhetta, as the designer, tried to let the WTC Memorial site carries with it both the power of its history and new hope for the future. Reflective and transparent surfaces of the entrance encourage people to walk up close, touch and gaze into the building. Dean's (2002: 7) research illustrates when the study is guided, understandable labelling, or docent, learning will occur without duress and discomfort. Visitors outside the museum can see the two standing structural columns rescued from the original towers in the atrium through the inclined glass curtain wall (Figure 3-37). Although removed from their former location and function, they mark the site with their own profound and aesthetic gesture. The name of the Memorial Plaza is "Reflecting Absence." As visitors cross the plaza and approach the perimeter of the pools, their gaze drops to watch the water cascading into the

main pools, then flowing further over the second rim into the inner void (Figure 3-38). It is a physical reflection of the monumental absence created by the tragic events of 11th September. By preserving some of the original structures in place, its arrival space creates a place full of memories for residents, and at the same time, delivers a real and touchable environment for foreign tourists.



Figure 3-37 Look outside through the glass curtain wall (Author, 2014)



Figure 3-38 The Memorial Plaza (Author, 2014)

3.3.3.2 Confidence and scepticism

Curiosity is the first step to guide people to the museum. Still, confidence and suspicion

are the ways to ensure that visitors can go longer, which become the driving force for a continuing desire to learn (Griffin & Symington, 1999). A good museum attracts, entertains, arouses a curiosity which leads to questionings and thus promotes learning (Dana, 1971). Visitors' passion can be ignited by curiosity and confidence in the museum, which means the visitors can partially accept the physical environment and exhibition information. At the same time, it also allows discussion and exchange of controversial topics as an inclusive place. Thus, appropriate scepticism should be encouraged in the museum, which can stimulate the spirit of exploration of visitors and motivate the visitor to continue the visit.

Starting from the arrival space, factors such as the museum's appearance, volume, contextual information, etc., will impact people's confidence and suspicion. In addition, during the visit and in the community, the establishment of confidence helps to enhance the pride and self-identity of residents. Such as the Guggenheim Museum Bilbao that the local government initiated to leverage community revitalisation. Many people enter the psychological space of this museum, perhaps a long time before they decide to visit, because of its fame. Since it opens, the small city attracts millions of visitors, and more than 80% of them came to this museum, although the exhibitions inside often cause doubt and debate (Guggenheim, 2019). The Guggenheim Museum creates a successful psychological space for people's expectations. It attracts tourists from all over the world, which has increased the region's visibility and turned a struggling industrial town into a cultural metropolis. It greatly encouraged residents' confidence, but still needs to consider what they have to do then to turn their visitors into regular visitors and advocates is not to disappoint them when they first come.

The social value of the museum's arrival space is experienced through the visitor's sense of participants, the use of civic spaces, place, and community identity. The arrival space is a transition between the city and exhibitions; its social values are easier to highlight and should not be ignored. Although the arrival space can be designed in various forms, it all starts to realise the social values mentioned above.

Conclusion

Based on the idea of the new museology movement, every corner of the museum is trying to attract and include visitors, such as the central hall that could hold many people and the attractive gardens and courtyards. Like the first view and impression of the museum, the arrival space should take on more responsibilities. It is not just a simple entrance gate or passage to the exhibition area but a comprehensive area that covers multiple functions before the visiting journey. The analysis of the typology of arrival spaces reveals the architectural expression of the arrival space and the significance of its presence at the boundary between the city and the museum. Then, the arrival space's significance was further elaborated from several aspects of functional, spiritual and emotional fields to clarify the necessity of arrival space research for museum design. When people evaluate the museums they have visited, the contents of the exhibitions are undoubtedly the focus of discussion. Still, when they reached the museum, the arrival space already started impacting their visiting journey.

Arrival space matters intensely to the human experience of the whole museum, what's inside of this museum, how to visit it, and so on, conditions visitors' activities and interactions of the day. In addition to this, the functions, identities, or environment of the arrival space expression, particularly in different museums. Thus, the social, architectural, spatial, and environmental importance of arrival space makes it essential to keep the museum's public responsibilities and sustainable development in the community.

However, it is noteworthy that the arrival space is a pubic area; its popularity should be determined by its users: the visitors. It is inevitable here to consider the experience and feelings of visitors in this space. Why certain places feel better than others; why certain museums appear to be more welcome than others. These issues are all reflected through the visitor's feelings. The museum visiting experience is the individual's unique experience and personal experience of the architectural space and the building's relevant fields. The experience of visitors is usually tied to the expectations of the visitors. Through the experience's characteristics, visitors' museum experience is a continuous conscious activity

and a continuous course of time. Visitors' expectations of the space are constantly compared with their actual sensory feedback so that their satisfaction with the visiting experience is continuously changing after they enter the museum. To let visitors feel that the museum welcomes them should be the first step in creating a successful visiting experience.

As a consequence, it is necessary to continue studying the relationship between the arrival space design and their visitors' experience. What is the people's visiting experience formation process, and how will it affect the arrival space? These questions will further reveal how the arrival space should enhance its attractiveness in the architectural design from the perspective of human psychology and behaviour and better assist the museum in opening to the public.

Chapter 4. Experience of the Arrival Space

Introduction

The shift and refocus of the museum operational paradigm from collection-centred to education-centred and ultimately experience-centred places is the New Museology Movement's effect (Kotler, 1999). The architectural work is functional art. Art should not be explained, and it must be experienced (Rasmussen, 1964). However, everyone's cognitive experience is constantly changing as their impressions and expectations continue to affect the visiting experience. As part of the museum where visitors first come into contact, arrival space needs to create a positive and impressive experience for visitors.

Architects create architectural space for people according to their design concept. At the same time, people cannot directly learn anyone's experience but can know the expressions of the experience (Palmer, 1969). For example, visitors find it difficult to know how the architects' experience the space when designing it. But architects can express their experience through the colour, lights, material, and so on, making their visitors understand the information that architects want to deliver through these expressions. Therefore, to answer how to let the museum become a welcome, it needs to start with the people's visiting experience from their first step: the arrival space. Understanding how visitors experience the arrival space will provide the basis for subsequent research.

The concept of experience is mentioned in a wide range of fields. The museum is such a place to meet individuals and provide experiences and discussions, a social space where shared experiences occur, mediated by objects, environments, and individuals, generated through dialogue with individuals (Rung, 2007). It is not an instantaneous action, but the result of a continuous and cumulative interaction between the subject and the rest of the world, and much experience may accumulate from it (Falk & Dierking, 2016). To explore the arrival space's visiting experience, one needs to clarify its forming process, and essential characterises. Thus, the process of people experiencing space is the process of

understanding space expression and interpretation.

People's feelings, preferences and needs are hard to be measured. The museum as a public place is challenging to personalise one-on-one service to every visitor. However, the process of people's perception of the new environment follows similar rules. The specific design can decide and control what physical environment, functions, and themes can be presented to the visitor from the body level. When the design points of the space and people's cognitive nodes match each other, it may be possible to transform the intangible elements of human emotion into tangible means of measurement.

The atmosphere is a kind of intangible media between the museum's building space and their visitors' visiting experience. Therefore, reflecting the positive atmosphere through the museum space's tangible formation and expression to optimise the visiting experience is worth exploring. Thus, this chapter aims to explore the people's experience and the impact factors of the expressions in the architecture and then narrow it down to the museum's arrival space.

4.1 Concept of Experience in Different Fields

The concept of "experience" in the dictionary is that the practical things that occur and affect people's feelings may leave an impression (Cambridge Dictionary, 2019; Oxford English Dictionary, 2019). It is people's actual personal contact and observation of facts or events around them through their bodies. In today's people-oriented society, the importance of experience is emphasised from urban development to architectural design. It can be said that experience is one of the most important criteria for measuring the popularity of architectural space. Before figuring out how to create a good experience, it is necessary to start from the concept of the experience itself. The concept of experience has been deeply studied and discussed in many fields, which has laid a good theoretical foundation for the study of architectural experience.

4.1.1 In psychology

Experience is seen as a description of a state of mind. In comparison, different psychological ideas have different interpretations of experience. Sigmund Freud is the founder of psychoanalysis, who divided the human's mind into the conscious mind and the unconscious mind（Freud, 1922）. He advocates that experience is an instant fantasy, a memory of the past, a feeling of the present, and the early year's stored intention. The prototype of experience is a concrete expression of collective unconsciousness rooted in the human perceptual experience model, with the function of continuous evolution, recurrence and regeneration cycle（ibid）. Based on a large number of psychological experiments and tests, another psychologist, Mach, detailed a description and analysis of the characteristics of human senses and the synergy between them and claimed that experience is the key element of the process of all kinds of feelings (Mach, 1914). Therefore, the experience is an emotional re-creation that connects the past with the present and the future.

However, some academics believe that the experience is not entirely determined by the subject's inner emotions (person). The American psychologist William James mentions the concept of the stream of thought, who believed that bodily experience is the continuous thinking activities formed by the entanglement of external things and the inner world (James et al., 1890). Similarly, Abraham Maslow's peak experience theory in 1964 describes that people could generate an advanced form of perceiving reality, which refers to rare, exciting, deeply moving, exhilarating, elevating experiences (Maslow, 1964). The peak experience encourages people's instincts and encourages people to develop their potential for cooperation, success and creativity. Therefore, he believes that experience is the identity relationship between the subject "human" and the object "existing world" and its value generation's ultimate realm (ibid). Thus, from experience psychology, experience, as an activity, is realised by external activities and internal behaviours.

In the early 20th century, cognitive psychology began to develop. Gibson's theory holds that the body's sensory organs do not work independently but form a sensory system that

can obtain information without intellectual involvement (Gibson, 2014). Edward T. Hall first studied the relationship between space and perception and believed that spatial perception is a combination of sensory organs and direct receptors. Besides visual space, other sensory spaces exist simultaneously, such as auditory, olfactory, and tactile (Hall, 1966). Thus, the experience is the continuous perception process, which results from various senses of the body and the external environment. So, the study of experience is inseparable from the analysis of people's perception behaviour.

However, the study of human perception is not limited to the field of psychology. Merleau-Ponty's theory of phenomenology of perception regards perception as the most basic way of contact and communication between people and the world and believes that all human knowledge is generated within the vision opened by perceptual experience (Gallagher, 2010). Hence, perceptual experience research is also a philosophical study of the essence and state of human existence.

4.1.2 In philosophy

From the view of philosophy, the connotation of the experience has gone far beyond its general concept, representing a way of thinking that is opposed to the logical thinking commonly used in rationalism. Wilhelm Dilthey first introduced "experience" into the field of philosophy. He claimed that people could not understand themselves through reflection or introspection in objective concepts but always only in the living experience (Palmer, 1969). Dilthey's philosophy of life combines experience with the concept of life, believing that what is displayed in experience is life, and experience is the element of the life process itself. The self-cognition of the subject has been emphasised here, which echoes William James' idea of the consciousness of self. The nature people discovered in objects depends on the way of perceiving subjects.

The experience is a philosophical perspective based on people's empirical understanding of the embodiment of mind (Lakoff & Johnson, 1999). People's experience is based on the structure of the metaphor and can shape their perceptions and actions without ever noticing

them (Lakoff & Johnson, 2008). Thus, similar to Freud's thoughts, the experience may sometimes be described as an unconscious perception process.

Phenomenology is concerned with the study of phenomena that arise from the experience of being in the world. It seeks to understand the outside world as it is interpreted by and through human consciousness and experience. Edmund Husserl establishes the development of modern phenomenology in the early 20th century (Husserl, 2014). He was a break from the Cartesian system, which pitched stark distinctions between the outer real reality and reality's individual experience. Husserl purported that reality could be grasped by and through consciousness structures by applying what he called intentionality to the object of study or intentionally directing one's focus to describe realities (ibid). Based on his view, 'objects' experience as graspable entities that could be objectively studied, and all consciousness are 'intentional'. Heidegger was critical of Husserl's phenomenology. He employed the notion of 'dasein' or the human experience of being in the world. For Heidegger, consciousness is performed by the historical context (the past) from which it arises and the future (Hopkins, 2013). Objects of study cannot be neatly separated from their contexts, which means the experience of the object is also in the contexts. The 'dasein' actually expresses the 'time', which is the possibility and foundation of things in the scene and world (ibid). Reality and consciousness are co-creations. Because human understanding always arises from the relationship between the two actings upon each other.

While Merleau-Ponty introduces the experience as a kind of "meaning" (signification) or "sense", it is not semantic content, but rather the intuitive coherence things have for the people when they find these things and cope with them in people's practical circumstances (Merleau-Ponty, 2012). He returns to the human body and explains the phenomenon of experience through perception. People should regard the body not as a mere biological or physical unit but as the body which structures one's situation and experience within the world (Merleau-Ponty, 2012). It seems that the experience contains a stage of information processing, which after the perception, and such information handing is out of instinct, as an unconscious process. At the same time, the following stage of information processing is a conscious process that people normally find out solutions from their practice.

Similarly, Gonzalez explains the experience as a dialogue. The most important dynamic of conversation as a model for interpreting a text is "the give-and-take of question and answer" (Gonzalez, 2006). This implies that an experience is a processed form of unconscious information collection to conscious information analysis.

Narrow down to the field of architecture, people's experience of a space, building or site is also experienced through a combination of unconscious and conscious work in a certain period. Space experience is the memory of historical sites and the rational understanding of real life. Therefore, more and more relevant theories are applied to architecture design to fill the gap between the designer and the space users.

4.1.3 In architecture

Today's architectural space experience refers to the individual's unique experience and personal experience of the architectural space and the relevant fields of the building (e.g. site, historical context, regional culture, etc.). Since the records of human activities, the building has been continuously developed to meet people's needs. Until the 20th century, people began to study and explore the individual's experience of architecture theoretically.

Rasmussen emphasised the re-examination of various architectural elements and their organisational methods from the subjective feelings of human beings in *Experiencing Architecture* in 1964, which became the earlier work on architectural experience (Rasmussen, 1964). Later, the various sensory or perceptual systems of the human body in the architectural experience were discussed in detail in the book *Body, Memory and Architecture* in 1977. It cites Gibson's theory of the sensory system and emphasises the importance of other sensory perceptions beyond the visual to the architectural experience (Bloomer et al., 1977). Both Rasmussen and Bloomer's work is concerned about the body and the perception of architecture and space, which became the foundation of the emergence of architectural phenomenology.

Architectural phenomenology emerged in the middle and late 20th century, systematically studying architectural experience and perception. Norberg-Schulz understood architectural

experience as a phenomenon from the perspective of phenomenology (Norberg-Schulz, 1971; Haddad, 2010). Norberg-Schulz focused on the relationship of 'existential space that forms man's stable image of the environment and "the artistic or architectural space of man's created environment" in his books, the Existence space architecture (Norberg-Schulz, 1971; Habib & Sahhaf, 2012). His idea was influenced by Heidegger's early thought that was characterised by 'being in the world' and the late thought by 'poetic habitation of a human being'. He believed architecture should be built upon the life world and related to the material circumstance (Haddad, 2010). Then, he mentioned the spirit of space to analyse the spiritual nature of space in the book *Genius Loci: Towards a phenomenology of architecture* (Norberg-Schulz, 2019).

Similarly, the French sociologist Henri Lefebvre researched the concept of space and published a new theory of the social space in his book, named *The Production of Space* (Lefebvre & Nicholson-Smith, 1991). He gave up the traditional interpretation of space, which believes space is a static and objective one, or just too much emphasis on the spirit of the space and ignore the space itself (Merrifield et al., 2000: 171). Instead, he understands the space in social relations, which is organic and fluid and alive. Lefebvre extended space to the lived space, spiritual space and conceived space. These three spaces are recognised as fundamental to people's experiences of the world (Merrifield et al., 2000; Watkins, 2005). The building space will influence visitors' emotions and behaviours. Thus, space should try to connect the physical environment and the spiritual environment in which people live.

At the same time, some scholars started to pay attention to the impact of the environment on direct feelings. Edward T. Hall put forward a variety of interpersonal distance, which provides a psychological basis for the design of scale and size in the architectural space (Hall, 1966). Kevin Lynch mentioned the environmental image produced by immediate sensation and the past experience's memory (Lynch, 1991). They all discussed the reflection on the built environment through the perception through sense organs like eye, nose and skin.

Influenced by Merleau Ponty's philosophy of "lived body", some architects such as Steven Holl and Juhani Pallasmaa combined many architectural practices to explore and study architectural perception theory in the book *Questions of Perception-Phenomenology of Architecture* (Holl et al., 2006). Pallasmaa emphasised the importance of multi-sensory experience in Architecture. (Pallasmaa, 1994; Pallasmaa, 2005). Similarly, Peter Zumthor explored the tactile and perceptual fields of architectural space and materials from the composition and presence of the materials and the effect of light (Zumthor & Galbraith, 2006). They all deal with the architectural experience from the body's basic perception and architectural design perspective.

Thus, the architectural space experience is the common result of individual internal mental activity and external environment stimulation, which contains internal relations among architectural space, human beings, and the building space's physical environment. It involves the experience of the sense of place that may exist between the architectural space environment and the people of experience, which is mutual penetration and mutual sympathy. Moreover, an architectural space's physical environment includes the visual form, interface, material, functions, scene events, and other architectural space reality. These can be realised through the body's sensory experience, such as vision, touch, and hearing. The arrival space of the museum is also a space enclosed by architecture and environment. The visitor's contact and perception of this space are also accomplished through a series of body sensory experiences.

4.1.4 Summary

From the 20th century, driven by the trend of late modern philosophy, people begin to affirm life and respect life's value and significance. Hermeneutics and Phenomenology have inherited and developed the view of life-philosophy, demonstrated the ontological meaning of existence and attached importance to life experience. Dilthey points out that psychology grows out of the experience itself, so it must maintain its solid foundation throughout the experience (Palmer, 1969). The people's experience (subject) research should be carried out of the psychological scheme or rule. Later, the theory of pragmatism took the

application value of experience as the research object. In psychology, the discussion on the relationship between the subject's perception and the external environment on experience has never stopped. Heidegger, Merleau-Ponty, Gibson and others all systematically studied the experience and related concepts. The following Figure 4-1 shows these scholars' main theories of experience in psychology and philosophy. No matter in the field of psychology or philosophy, the research of experience emphasises the time, human's perception and the connection between the human and environment. Individuals' perception of the environment is the critical process of forming the experience.

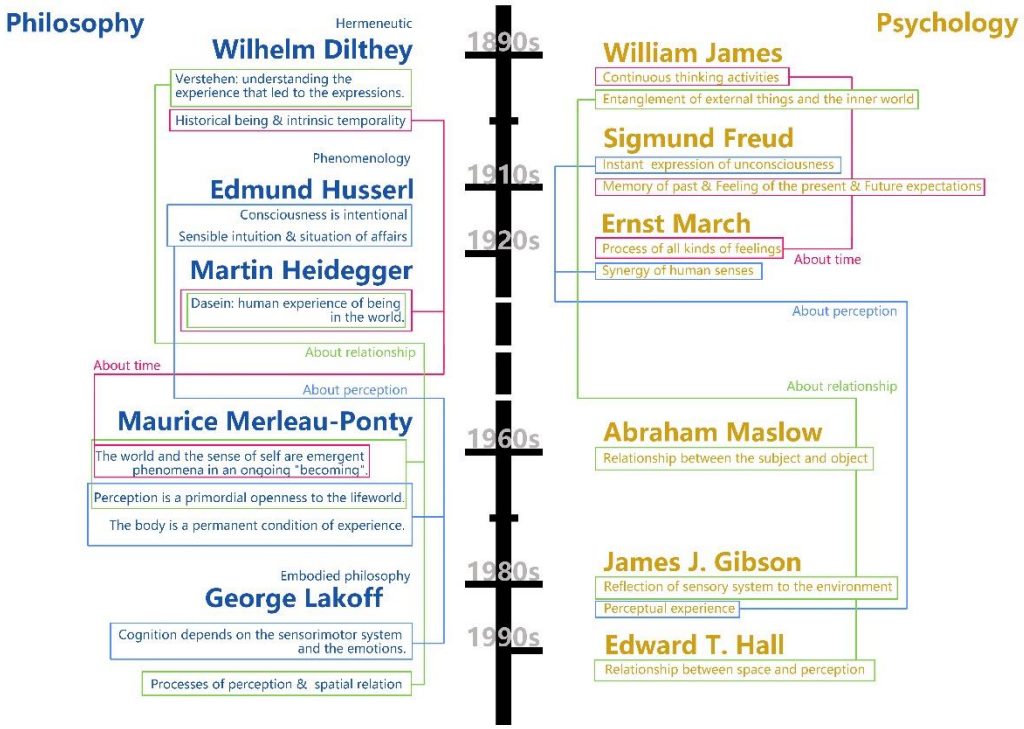


Figure 4-1 Understanding of experience in philosophy and psychology (Author, 2019)

Understanding human experience in architecture is based on the above theories of philosophy and psychology (Figure 4-2). However, despite the different research focus, from a macro perspective, people's experience can be understood as an activation process generated by external behaviour and inner perceptions under the built environment's continuous influence.

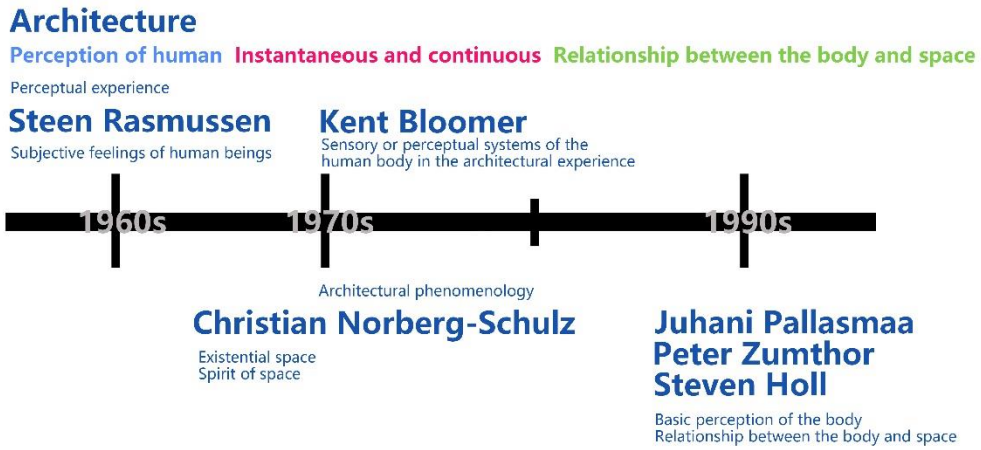


Figure 4-2 Understanding of experience in architecture (Author, 2019)

Whether people's participation in space experience is positive or negative, active or passive, it affects the richness of space information that people can receive, the resonance and the interaction between place experience and users. Architects directly influence space shaping and have an obligation to construct space artistic conception that can better guide the public to experience architectural space aesthetics and place spirit. The architecture provides people with a living environment and space and meets their material and spiritual needs. Its ultimate purpose is to make people get rich and in-depth life experience and perceive the world and themselves through the body in this experience. The museum's arrival space has to serve as an impressive experience for various visitors. Therefore, it is necessary to explore how the museum interprets its arrival space to the visitors and the factors, especially from the perspective of body perception, that can influence a museum's visiting experience.

4.2 Positive Visiting Experience in the Arrival Space

As a public space, museums' duty is no longer just to show the exhibits to the people but to interpret and explain them to their visitors as well. The arrival space can influence a visitor's experience through a variety of space forms and exhibits that can be perceived. The mediators from form to meaning are the person who uses and experiences the building in the museum (built environment). Any architecture form or exhibition decoration can

only have a specific meaning when it plays a role and influence on the people, which involves forming processes and characteristics of people's experience. People can experience feelings without first invoking a concept. Their bodily recognition of the senses of a situation first allows people to begin to make sense of it (Hale, 2016). Therefore, the body is like a medium that connects human's experience and the environment. Visitors generate the visiting experience through their body's perception of the arrival space environment.

4.2.1 Forming process of the experience

Before studying the relationship between experience and environment, it is necessary to understand how experience is formed in the specific environment. Based on previous research, people's experience is based on a series of events, including history memory, present perception and future expectations. People visiting museums are constantly stimulated by the environment, such as exhibits, lights, sounds, etc. Sometimes, visitors can recognise or be aware of these stimulations, which may directly relate to their memories and experiences and are limited by subjective consciousness and cognitive characteristics. Sometimes, visitors respond to their situation through the neurotic instinct and the subconscious, which doesn't require brain analysis. Either conscious or unconscious experience always comes together, and difficult to separate them into one complete visiting experience in the museum. Through visiting, learning, playing, and other activities in the museum, people acquire and exchange information consistent with people's cognitive processes. Human cognition is a series of psychological processes that absorb information through sensory organs and then understand, process, store and recycle it by some cognitive structural units, and then use the resulting information to solve practical problems (Guenther, 1998). Thus, a positive visiting experience should be a process by which visitors continuously and consciously cognit the arrival space.

While visitors' cognitive abilities are shaped by the interaction with the environment (Riegler, 2002). When a stimulus appears, the sensory system detects it, then stores and translates it into memory, and finally reacts to it. Thus, the positive experience is produced

during the cognitive system's operation, based on the people's process of cognition. Based on the previous study, the visiting experience should contain perception, consciousness and memory these three primary stages, and a positive experience may have a further stage: thinking and application (Figure 4-3).

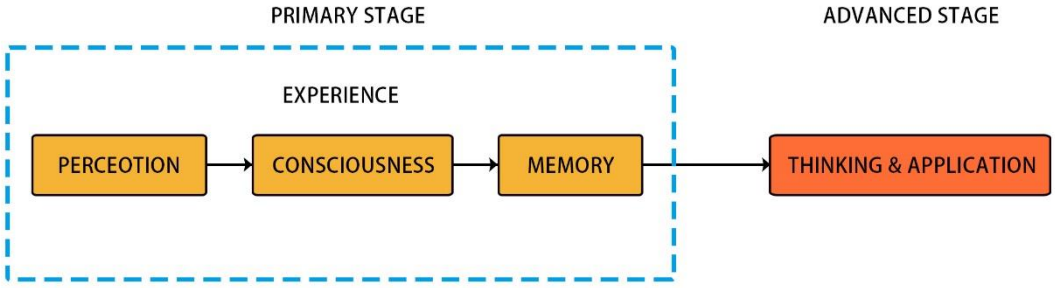


Figure 4-3 The process of positive visiting experience (Author, 2019)

4.2.1.1 Perception

All cognitive activities begin with sensory perception, which results from all the body's sensory organs working together. The sensory organs can collect the information (stimulation) from an outside environment called senses (MacLin & Solso, 2007). These senses will guide the body to react to the information, often unconsciously. The psychological Jams Gibson believed that various sensory organs form several sensory systems, making a coordinated judgment of external stimuli and obtaining the necessary information without intellectual operation (Gibson, 1960). While, when these reactions are tried to be explained, this process becomes a conscious one. The body perceives things instantaneously as a result of a combination of senses. Perception is the synthesis and integration of various senses, which is proved in the theory of the unity of senses by Lawrence Marks (Marks, 1982).

Although the various senses eventually cross and merge to form a relatively stable overall understanding of things, each sensation's effects are different under specific conditions. In most cases, the vision is the most important sense of the body, but the sense of hierarchy or order is not the same in some special circumstances. For example, visual and auditory

senses play a major role when appreciating painting and music, respectively. When in the darkroom, vision is blocked; accordingly, hearing becomes essential. When in the gallery or museum, there is always a high requirement of visitors' sight and circulation, so the senses of vision and motivation become vital. Further, with the study of synesthesia, psychologists found that vision is the most complex and finally developed sense among the human body's various senses, which could integrate touch, smell, hearing, and other senses (Cytowic, 2002).

Therefore, visual perception can induce the response of other sensory perceptions. For example, when people see a smooth curve, they may have a brisk feeling. This is because they have the kinesthetic experience, and the visual perception has already contained information about the sensory experience of the movement. Although various sensory organs can work together to help the body experience the world, vision as a central role cannot be ignored. How to reasonably guide the vision through the outside environment to actively stimulate the multiple feelings of other senses in the museum's arrival space is a problem worth considering.

4.2.1.2 Consciousness

Consciousness has a broad definition in the fields of philosophy, medicine, and psychology. The concept of consciousness mentioned here is a kind of stage in which the body could respond after the perception activities. As mentioned above, perception results from the interaction of multiple senses of the body after receiving stimulation. The information in the perception stage received will be further processed by the consciousness of the human.

The core functions of consciousness, namely, to adapt to the changing environment and fresh things. Academics discovered that babies are more interested in a talking face than a stationary one in the study of human consciousness (Bahrick & Lickliter, 2002). This is mainly because of a person speaking; the facial expressions and movements change with his voice in time and have a different rhythm, speed, and intensity. Through this multi-sensory pattern of stimulation, the infant is able to notice a meaningful full event, the

person speaking, while ignoring nearby unrelated visual and vocal stimulation (ibid). It seems that the sensory information provided by the change is a multi-perceptual mode of information, which could be synchronised in time, matched in space, and transmit the same rhythms, speeds, and intensities (Nanda, 2006). As a result, the body is easier to be attracted to constantly changing things than silent and motionless objects.

Consciousness is acquired through these attentions. Westen proposed the idea of attention operation and emphasised that through "attention", people are not overwhelmed by the numerous external stimuli in space and time but focus on their perceptions on the stimulation of specific projects in specific circumstances (Westen, 1999). The attention changes in real-time as the objects change, and thus, sensation forms a random dynamic perception pattern under the control of attention. This feature complicates and enriches the information processing during the experience process.

4.2.1.3 Memory

After perception collects the information and consciousness recognise the information, memory is a process of information storage. Juan Vives found that the more closely one attends to stimuli, the better they will be retained in his memory research (Johnson & Proctor, 2004). Memory is vital to experiences, and it is the retention of information over time to influence future action (Sherwood, 2015). A whole memory process includes memory coding, memory storage, and memory recall, these three stages (Tulving & Thomson, 1973). It could be the advantage status of the whole experience process.

Through the first two stages of the experience, people are the ability to recognise some familiar objects. This so-called recognition also goes through a series of information processing processes. For example, many templates have been created in a human's life experience, each corresponding to a meaning. A template is a generalised internal structure. When the sensory stimulus matches the stored template, the object can be identified for further processing and interpretation (Johnson & Proctor, 2004). The stored template can be understood as an abstract model of objects stored in long-term memory. When people

are exposed to clues that can trigger inner relevance, people will retrieve the stored information from memory (Schwarz et al., 1991). Figure 4-4 shows the course of template recognition.

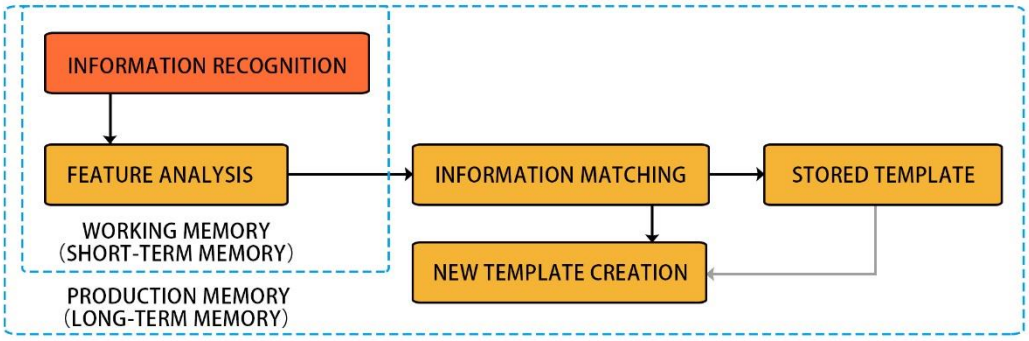


Figure 4-4 The course of template recognition (Johnson & Proctor, 2004: 210; Anderson, 2013; Edited by author, 2019)

In memory, the perception of reality and the stored templates may not be exactly the same. No matter the short-term memory or the long-term memory, all need to be processed through feature analysis, which may change the real information depending on different concerns. For example, when different people visit the same museum, they will have different impressions and evaluations. These are all related to the information they perceive when they visit, the points that attract attention and their own life experience.

Hence, the experience activities feel the objects' natural property and concentrate on the subject's emotional content and their life activities, which the object could contain and embody. Both experience and cognition are an inseparable part of subject-conscious activities. The purpose of experience activities is usually object centred, which tries to discover the characteristics and properties of objects and focus on the object's values to the subject (Fiske & Taylor, 1991; Augoustinos et al., 2014).

In the arrival space, some primary cognition may be contained in the process of visiting experiencing. The exhibits, space, built environment, etc. in here are more like tools or kinds of methods to help the visitors better comprehend the whole museum. Arrival space tries to create a positive visiting experience for visitors, which is museums' significance in

spreading culture and social value. Although each visiting experience is unique, just like the forming process of the experience itself, it also conforms to specific characteristics and rules. To create a welcoming architectural space in the museum, we need to identify the features of a positive visiting experience first.

4.2.2 Characteristics of the positive visiting experience in museums

As the forming stages of the experience shows, the visiting experience can be understood as an ongoing process in which visitors is influenced by multiple senses and environment within a museum, including the information transfer between the subject (visitor) and objects (environment). Similarly, the previous philosophical and psychological discussions focused on the three aspects of personal perception, relationship to the environment, and time of experience (Figure 4-1). Thus, the museum's positive visiting experience has the characteristics of comprehensive, interactive, and processive.

4.2.2.1 Comprehensive

Since the beginning of the 20th century, people have ushered in the information age. The museum's arrival space is developing from material-oriented to all-directional information-oriented. Everything is a pluralistic information synthesis, which has its external form, texture, and colour and has its inherent nature and characteristics and the mutual relationship with the outside world.

An unavoidable phenomenon is that sometimes people have experienced something, but it does not profoundly affect their consciousness and memory. Such a direct experience can only be counted as a transient sensory stimulus, which could not be understood as a positive experience with a whole meaning because there's no result of this process. The real experience comes typically from direct physical experience, and it will only happen during these individual body experiences are perceived as a whole with some meaning (Figure 4-5). The purpose of this kind of whole contains particular contents, development process and specific feelings (Anderson, 2013). This meaning will not disappear with time, and it's about being self-sufficient for a long time and having a long-term impact on the individual.

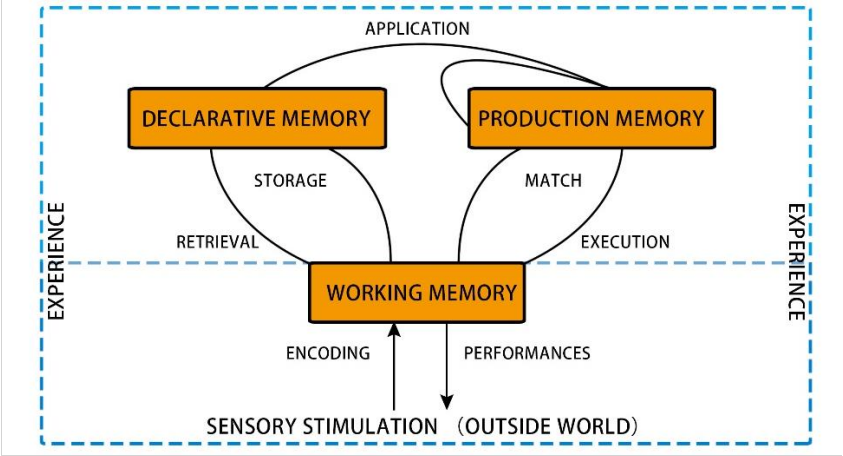


Figure 4-5 the process of the experience (Anderson, 2013; Edited by author, 2019）

For example, An impressive exhibition that people saw a long time ago, the feelings expressed by this experience will remain in their memory until today. Still, the physical entities (such as space, environment, sounds, etc.) on which the exhibition itself is based have no longer existed. The result of these comprehensive sensory stimulations from the surrounding generated the impression.

When facing a museum, visitors begin to receive information from the outside world through their senses continuously and conduct a comparative analysis with the information stored by themselves, which is a continuous and irreversible process. Every information delivered by the senses during this process may affect the subsequent results. Thus, this process is different from individual sensory stimulation. It makes consciousness present a wholeness state, making the experience more comprehensive and impressive than the general sensory stimulation.

Hans-Georg Gadamer points out that experience contains two elements: process and result in his research. The process of experience is a direct experience, and the result of experience is the specific content that can exist independently from it, which could become a self-sufficient whole with meaning. If something is called an experience or is evaluated as an experience, it is gathered into a unity of meaning through its meaning (Gadamer, 1997).

4.2.2.2 Interactive

A positive impression is the feedback of a good visiting experience. Experience is the result of human interaction with the external environment. In the process of interaction, both the active behaviour and the experience's passive reaction are involved. During the experience, the subject, people themselves, need to "do" or "receive" something. Too much doing or too much receiving could upset people's perceptual balance and makes the real experience lopsided (Simon, 2010; Falk & Dierking, 2016). However, a comprehensive application of multiple senses could engage visitors in an immersive experience. Sometimes, it is really needed to calm down and listen to the body and feelings instead of continuously participating. People involved in the environment, any actions that they take would influence their surrounding environment. Correspondingly, the environment will also react to the people. The problem is that too much stimulation may numb our senses and consciousness. One experience is easy to be disturbed and weakened by other information if it is not completed. When the experience process cannot be fully expressed, it can only become several pieces of information and difficult to keep in mind. This may prevent them from understanding the real implications of experience and difficult to have a deep impression.

Consequently, there should be a balance between active participation and passive acceptance in the process of experience. However, during the experience, the active and passive are only relative, not fixed. For example, visual perception is a relatively passive experience with less body participation than the sense of touch or movement. But sometimes, it relies more on subjective abstraction and analysis (Gibson, 1960). Even the passive experience of the visual perception could include active participation to trigger the association and analysis of visitors, and this is also the effect that museums hope to achieve.

For example, when visitor appreciates a painting with a long history, they may not just stare at the picture, at the same time, their minds would associate more information and feelings through their previous experience. The integrated experience distinguishes the experience from individual sensory stimulation. It makes consciousness present a wholeness state,

which makes the experience more comprehensive and impressive than the general sensory stimulation (Warnke, 2013). Therefore, the positive experience always contains more than the whole meaning of the specific content and object, making people think about the overall meaning of life and related things.

Due to the differences in the subject and environment of experience, there are different interactive activities between the experiencer and the object. Therefore, the result and development of experience cannot be a fixed pattern and goal. As a result, each experience is a unique and personalised experience.

4.2.2.3 Processive

From tiny cells to vast universes, everything is constantly growing and changing. Experience is also a process of change. However, the experience is not an instantaneous action. It results from a continuous and cumulative interaction between the subject and the rest of the world, and much experience may accumulate from it (Falk & Dierking, 2016). In this process, the body's reaction and operation need to continue for a while. Time is the only measure of the process of change, and it is clear that time is one of the vital issues during the experience (Pearson & Richards, 1994). Time can measure the speed and rhythm of things change and specify the sequence of the experience process, so it can indirectly reflect the content and characteristics of the experience.

In various experiences, because of the variety of interactions between the subjects and environment, every experience shows different speeds and rhythms. For example, the cycling and walking experience speed is different at the same distance, and the rhythm that causes landscape changes is completely different. Therefore, in the process of experiencing, the interaction between humans and the environment is constantly changing.

Experience is an irreversible process that unfolds in time. Although other experiences may be interspersed as far as a complete experience is concerned, they will still be developed in a certain order from the occurrence, progression to completion. As a living individual, their experience never stops, always reaching a certain connection between the past,

present, and future of life and always moving forward. The process of experience makes people think about the concepts of time, change, and invariability.

4.2.3 Summary

By summarising the characteristics of a positive visiting experience, it is found that if space can stimulate multiple perceptions of visitors, attract people to stay for a period of time and appropriately add some interactions with the environment, it may create a deeper impression in this area. In museums, the visiting experience is organised around a certain situation, and information only related to the situation will be easily noticed by the body. Like the star exhibits representing the exhibition's theme will always arouse people's onlookers in the exhibition hall and leave a deep impression. For example, figure 4-6 shows many visitors encircling the Rosetta Stone in the Egyptian exhibition hall of the British Museum. The situation makes the experience of the body become a process of exploration with expectation and subjective intention. Perhaps most people could not understand this exhibit's value and significance, but the crowd watching this environment is unforgettable. Some people may join in the fun, and some people may get tired of noisy surroundings.



Figure 4-6 The popular Rosetta Stone (Available from: <https://all3dp.com/british-museum-rosetta-stone-sketchfab/>, 16 Dec 2020)

Every link of the experience is closely connected, as the relationship between subjects,

objects and space in a certain period. This relationship occurs in a specific situation and environment called the **Atmosphere** in this study. In the interaction between humans and the environment, the atmosphere serves as the background of the experience and influences people's behaviour and activities. It is also the purpose and the result of the visiting experience (Figure 4-7). Therefore, the research question of how to provide visitors with a positive visiting experience in the arrival space is studying the influence of the atmosphere of the space on visitors.

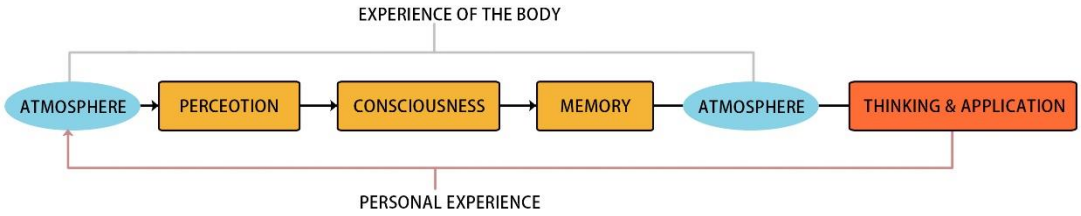


Figure 4-7 The update process of visiting experience (Author, 2019)

Although the atmosphere is an abstract idea, it is created by the physical objects in the space. All perceptible sources are the arrival space's tangible medium. To create a positive visiting experience needs to design a good atmosphere first. Accordingly, the tangible factors of creating an atmosphere in the museum should be discussed here.

4.3 Conditions for Creating an Atmosphere in the Arrival Space

People experience the atmosphere instantly through keen perception and emotion (Zumthor, 2006). The atmosphere includes everything in the space, such as people, air, light, noise, colours, materials, and even people's moods and feelings. Steven Hall believes that architecture's experience exceeds that of the film because it is a comprehensive perception and experience of things' nature. Architecture can be perceived through details, materials, spaces and other elements. Memory, time and space together can determine the architectural experience (Holl, 2000). There is an intimate relationship between people's emotions and their surroundings, and the atmosphere is the interaction between people and objects (Zumthor, 2006). The atmosphere of the arrival space is the same as the atmosphere of other public spaces in the museum. They involve the built environment and the objects

of the space and are the mediums between the visitors and their visiting experience. Therefore, the study of the arrival space’s atmosphere can be extended to the museum's public space.

When the same space is designed into different types, its atmosphere is completely different. For example, the sacred and quiet atmosphere in religious buildings, the bustling commercial atmosphere in the shopping centre, the quiet and comfortable learning atmosphere in the library, etc. Different buildings have specific spatial atmospheres. The atmosphere makes the objectively existing architectural space have content and themes, making it easier for people to understand and experience the space.

A good museum atmosphere can promote a positive visiting experience. The atmosphere is intangible and difficult to grasp, but the museum (building) can be perceived. As mentioned before, the atmosphere of the museum includes all the related things of the site. When the museum appears in front of people, its surrounding environment, the building shape, the interior space and so on will create an atmosphere to attract people. Thus, any element related to the museum may affect the creation of the atmosphere.

A positive visiting experience should be based on a sense of self evoking through architectural space. At this time, the architectural space acts as a kind of initiator to wake up people's perceptions, stimulate people's feelings, arouse people's memory, and form a museum's unique experience. Schulz emphasised the importance of people's acceptance in the place's design (Norberg-Schulz, 2019). Based on meeting the functional requirements, space design should pay attention to space quality for visitors' behaviour and psychology to achieve the harmonious interaction between people and space.

Rich spatial experience carries the whole integrated design elements of space. This comprehensive spatial experience is the traditional sensory stimulation and, more importantly, it affects people's perceptual cognition through design means. In the following analysis, the atmosphere's main factors will be discussed from the external environment to the internal details (from far to near) based on people's five basic senses and the formative

features of the positive experience.

4.3.1 Recognition of the architectural appearance

The museum does not exist on the site as an independent building but is inextricably linked to its neighbouring environment and the city context. They often occupy a unique location, some in the city's cultural centre and some adjacent to the scenic spots. Because of the nature of the museum itself, it occupies an important position in the city. On the other hand, museum buildings are endowed with more cultural expectations and shoulder the responsibility of improving the place's cultural quality compared with other buildings. Therefore, the museum's appearance is more iconic, diverse and thematic than other types of buildings.

Moreover, its basic function of publicness determines that museum buildings should be accessible, easily identifiable, attractive and so on. Therefore, the museum's location, building volume, shape, façade and details will affect visitors' direct feeling of the museum's appearance.

4.3.1.1 The relationship to surroundings

The environment is a relative concept, always relative to the central objects. When people walk to the museum, it is an independent building on the site and is identified along with its surrounding environment. Thus, the building is not an isolated and self-closed individual shape but needs to achieve its overall design. Moreover, architectural design's main problem is not purely visual performance but to create a space in which people can move and a new order associated with the external environment.

The creation of the arrival space's atmosphere is mainly reflected in its integration with the natural environment, especially the base with a special natural environment and cultural background, endowed with unique plot factors. The integration of space is recognised when certain elements in the building cause the remembered intention to be consistent with the local natural and cultural environment. Often under these conditions, the uniqueness of

space is easier to shape and easier to embody.

The Natural History Museum of Utah in the USA locates in the foothills of the Wasatch Range. Mountains and the Great Salt Lake create a singular natural landscape (Ennead Architects, 2011). The museum's formal and material qualities derive from the region's natural landscape of rock, soil, minerals and vegetation, conceived as the land abstract extension and transformation (ibid) (Figure 4-8). The museum tries to create harmony with its surroundings by blurring the distinction between natural environment and topography and intentional design.



Figure 4-8 Natural History Museum of Utah (Ennead Architects, 2011. Available from: < http://www.ennead.com/work/utah>, 06 Aug 2019)

4.3.1.2 Building image

Architectural form is the most intuitive manifestation of architectural connotation. The arrival space stimulates the senses of the audience and attracts their attention through the architectural image. Furthermore, the museum's architectural image is usually associated with the theme and context of the museum. Such as taking some metaphor or symbolic architectural language. This makes the museum more recognisable in the streets, inspires the visitors' imagination and conveys the museum's exhibition information. As a result, the building image is the museum's first look, which can directly arouse the public's desire to visit the museum.

For example, the Museum of Islamic Art in Qatar was designed by I. M. Pei. Many Islamic

architectural languages are used on this building, such as the stacked form of stone geometry, the horseshoe arches and muqarnas, which are easy to imagine the Mosque of Ahmad ibn Tulun, one of the oldest largest-scale intact mosques in existence (Figure 4-9). The distinctive Islamic style of appearance allows visitors to feel its unique cultural features before walking close to the museum. This white massive building volume on the artificial island in the sea with a dark colour is very eye-catching, and it also reflects the sacred sense of local cultural context. Through this impressive building image, visitors can guess the museum's theme and expect the exhibitions in it.

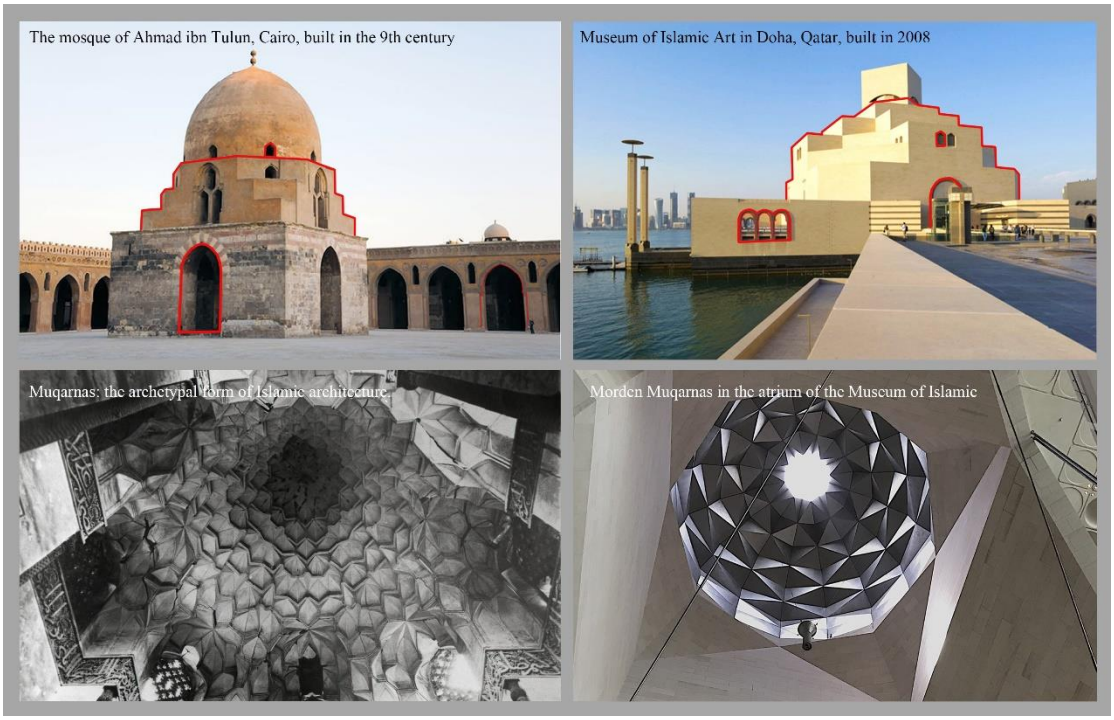


Figure 4-9 Similar Islamic architectural languages in the Museum of Islamic Art (Edited by author, 2019)

On the other hand, the museum is placed in the city, and its relationship with the city usually reflects people's overall perception of space. If arrival space is taken as the endpoint of the study, the change of scale is mainly reflected in the perceptual experience caused by the change of spatial scale sequence from outdoor to museum and then to arrival space. For example, visual changes caused by spatial distance create spatial levels of perspective, medium, and close. People come to the museum from a certain point in the city, which is a transition from an understanding of urban scale to an understanding of architectural scale.

The huge scale of building in the city makes the human scale appear small. A reasonable scale design enables people to restore the sense of scale in the city and makes the building image a pleasant closeness.

Jixi Museum is located in a historical town of the Anhui Province in China. Traditional dwellings surround the site. In order to keep the original scale and proportion of the street and buildings, the museum adopts an open-air courtyard layout that comes from the traditional Chinese village. The entire building is covered under a continuous roof with an undulating profile and texture that mimics the county's mountains and waters (Figure 4-10). The dark tiles of the roof and white walls fully reflect the Hui style, which fit into the surrounding environment (Figure 4-11). Although there is no grand architectural volume, the Jixi museum makes it easier for locals to access and accept by showing the local architectural, cultural characteristics and creating pleasant street scales.



Figure 4-10 The site of Jixi Museum, China (Available from: < https://www.gooood.cn/jixi-museum-china-by-atelier-li-xinggang.htm>, 06 Aug 2019)

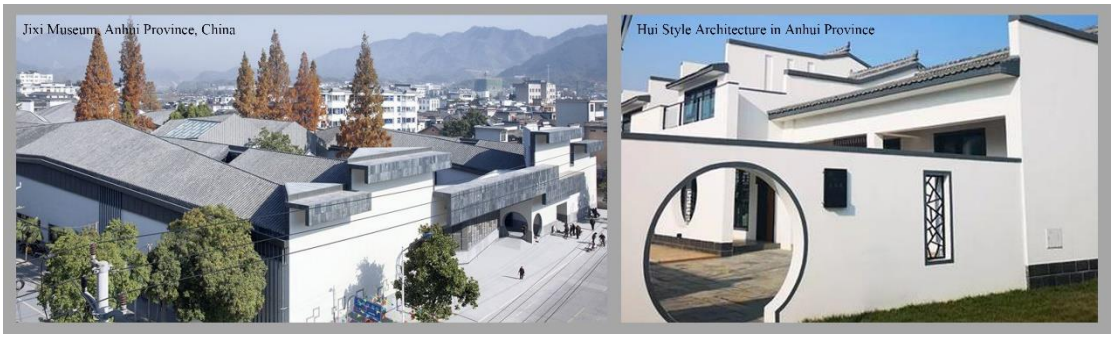


Figure 4-11 The architecture languages come from the local building (Available from: < https://www.gooood.cn/jixi-museum-china-by-atelier-li-xinggang.htm>, 06 Aug 2019)

Sometimes, first-time and potential visitors are unfamiliar with the museum's whole building, but what arrival space can be brought to them is the parts of the building, such as the colour, material, and decoration of the façade. People understand the whole through individual parts and pieces. In this way, the importance of detail is reflected. The expression of detail also helps to convey the designer's intentions and affects visitors' experience, which will be discussed later in 4.3.2.8.

Architectural experience results from the comprehensive effect of multiple senses and should not only focus on the architectural image's visual effect (Pallasmaa, 2012). It is an incompletely visiting experience if only emphasised the architectural image's visual effects and ignored other body senses. People interpret the museum's building image and relationship with the surrounding environment from a macroscopic visual perspective to experience the arrival space's atmosphere. Whether the museum is in a harmonious or opposing relationship with the surrounding environment, it paves the way for its indoor atmosphere. More details will be found when visitors walk closer to the museum's building, and more senses may be stimulated.

4.3.2 Atmosphere of indoor spaces

Sight, hearing, smell, taste and touch make up the body's five basic senses. Based on the five senses, people perceive the building through physical, sensory stimulation caused by materials, scale, layout, sounds, temperature, and other elements. Thus, these indoor architecture elements are essential for the creation of an interior space atmosphere.

From the perspective of the view, the museum's surroundings, building's volume or scale can create an overall impression. Then, after going to the front of the museum or the indoor space, visitors can feel the atmosphere through the materials' texture, the museum's layout, nature lights and details and so on. Although the materials, proportions, layout, lights, sounds, details, and so on will be discussed separately, these conditions should be

understood as a continuous and comprehensive experience regarding the whole arrival space's atmosphere.

4.3.2.1 Materials

The material itself has a sense of multiple sensory combinations. Schopenhauer believes the direct experience of the texture, hardness, and other aspects of the material through the senses is crucial for understanding an architectural work (Young, 2013). The physical properties of materials are mainly acquired through people's visual, tactile and other perceptual experiences (Holl, 2000). The combination of materials forms architectural space. Reasonable material design can stimulate people's perceptions and form a rich experience of space. Thus, the colour, texture and regionality of the material can give people different perception experiences.

Among the various visual elements of the human body, colour is a sensitive and expressive element. It is also an element that can express the architect's personal feelings. The colour of the material can cause people to feel the space of scale, temperature, distance, etc., and cause people to have different emotions. Figure 4-12 shows that different colours that materials express can create a different atmosphere in the museum. For example, the Natural History Museum of Utah's indoor atmosphere is dominated by brown colour, which echoes the mountain environment outside.

Similarly, the black and white style of the Jixi Museum also matches the surrounding architectural styles. The bright orange colour makes the Malmö Museum of Art more noticeable and impressive throughout the street. The tranquil blue colour makes visitors instantly experience the feeling of the deep seabed in the Ozeaneum Stralsund.

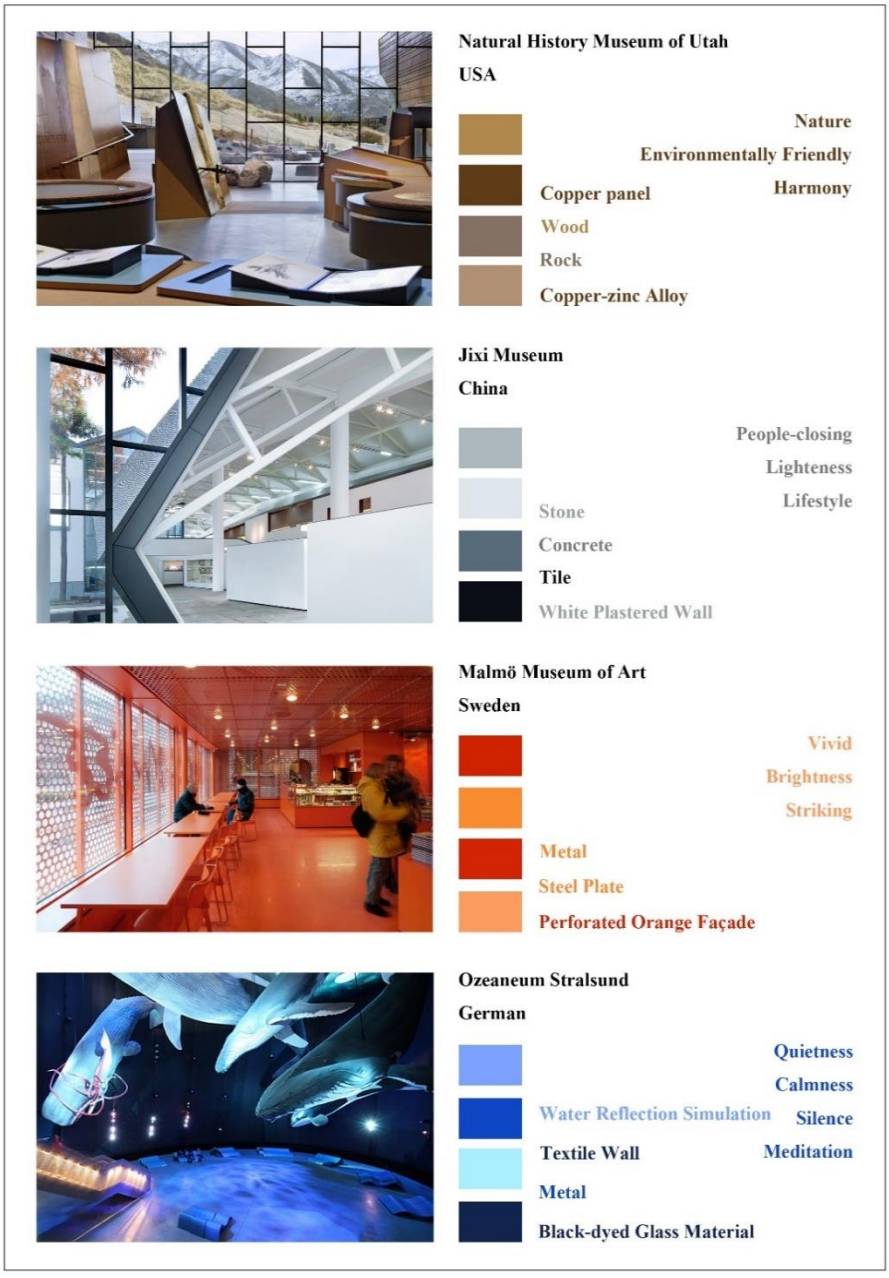


Figure 4-12 Material's colours show different atmospheres (Author, 2019)

Besides the colours, the texture of the material can influence people's feelings as well. Such as wood can bring people a warm feeling and easy access, while metal makes people feel cold and hard. The material's texture is reflected in the material's roughness and detail, which can trigger the sense of touch. The smooth surface excites the feeling of slipping with fingers, and the rough surface makes people stroke carefully. Such as the plastered

wall in the Jixi Museum, the rough texture is reminiscent of the ancient Jixi town. With the development of technology, the material has also produced some new textures that give people different feelings. For example, perforated aluminium panels in the Malmö Museum of Art allow the material to exhibit transparency and dynamic through the changeable shadow patterns that it creates (Figure 4-13).

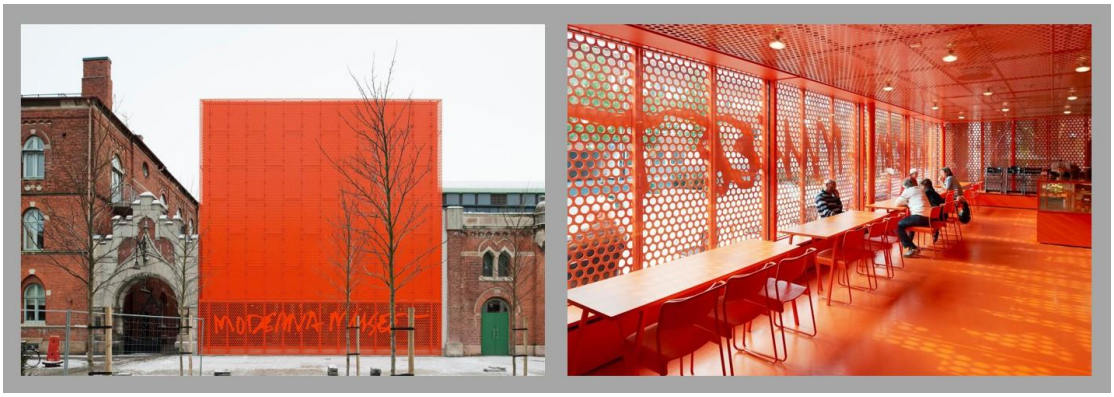


Figure 4-13 The perforated aluminium façade of the Malmö Museum of Art (Available from:< https://www.e-architect.com/sweden/moderna-museet-malmo >, 07 Aug 2019)

In addition to the intuitive visual and tactile experience, the rational use of materials can evoke visitors' deeper cognition. The regionalism of materials uses architectural materials that can cause regional emotion and regional culture for architectural design. Such as local materials are used to highlight local features in the museum or integrate architecture with the environment to express respect for the area's unique natural or cultural environment. The Natural History Museum of Utah, Jixi Museum and Tianjin Ji County Geological Museum (Mentioned in 3.1.1) show harmony with their surrounding environment through local materials, which can arouse their region's cultural identity and place identity.

Furthermore, the materials in the building are not static elements. Changes in the ageing and wear of materials all imply the time course of a building's life. Therefore, the use of natural materials in the architectural image can help people feel the existence of time. Such as eroded walls, polished wooden furniture, rusted metal products and so on. These natural materials will give people a clue to the time, reminding them of the moment when these materials have been brand new, which will lead to thinking about time. It is also in the

continuous change of time that materials acquire life as they can get old.

The Lodève Museum is a reconstruction project on a historic site that was completed in France, 2018. Modern concrete walls contrast with the ancient brick walls in the entrance lobby, which creates a material dialogue between historical and contemporary buildings (Figure 4-14). By comparing the colours and texture of the surface, visitors can strongly feel the erosion of walls over time. This space's design is that people are more willing to approach the building, resulting in finely nuanced visual perceptions.



Figure 4-14 Two angels of the entrance lobby in the Lodève Museum (Available from: < https://www.gooood.cn/lodeve-museum-by-projectiles.htm >, 08 Aug 2019)

4.3.2.2 Scale and proportion

The scale is not absolute but a kind of relative feeling, which means people judge the size relation of one object to another. The scale is, therefore, at least a comparison between two kinds of objects. Understanding architecture means that people subconsciously use their bodies to measure an object or a building and project their body schema into their building space (Pallasmaa, 2012). The human figure is the principal source of proportion among the classical architecture orders (*Marcus Vitruvius Pollio, De architecture).* Rasmussen believes the good proportion can attract great attention by researching the golden section

and "Le Modulor" in the *Experience Architecture* (Rasmussen, 1964*)*. From the museum's proportion to its neighbourhood and city to space within the museum, the indoor space to the people and people can all affect the visiting experience.

Both Hall and Gehl mentioned that the scale of distance would affect the communication between people and space (Hall, 1966; Gehl, 2011). Gehl interprets the different sensory experiences brought by different distances between people and buildings, and cities through specific data (Gehl, 2013). There is a universal psychological distance between people (Figure 4-15). Too close distance will lead to tension between people, and too distant will make the relationship between people appear cold; at this time, the scale has lost the condition of forming the place. Such as a crowded lobby makes people feel noisy and unwilling to stay, an empty hall will make people consciously quiet and avoid noise. Reasonable scale relationship and scale expression design are important conditions for the atmosphere to form.

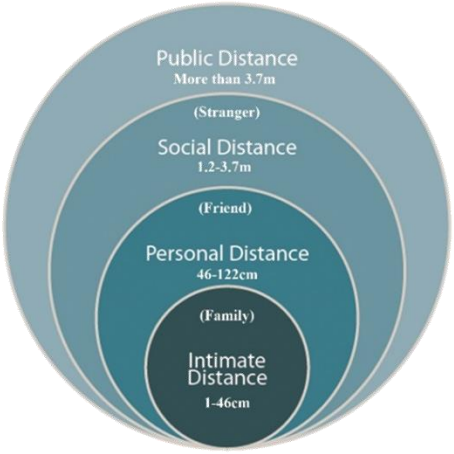


Figure 4-15 Psychological distance between people (Available from:< https://casework.eu/lesson/proximity-and-distance/>, 08 Aug 2019)

The dimensions emphasised above are to create a comfortable relationship between people and space. While museums usually require specific themes, which are different from other architecture. Sometimes, the extreme scale can help to create a special atmosphere in the space. For example, there are many narrow and deep spaces, pointed corners and very high enclosed spaces in the Jewish Museum Berlin (Figure 4-16). When people enter these

spaces, they can easily catch the extremely painful and dark historical theme reflected in the building.

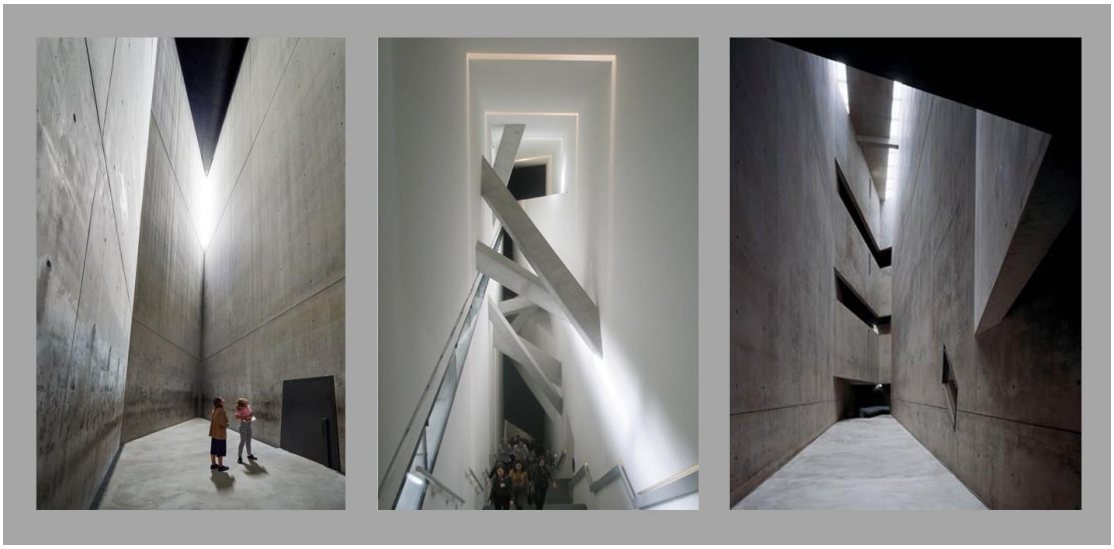


Figure 4-16 Extreme spatial scales in Jewish Museum Berlin (Author, 2014)

Typically, large museums tend to create a large scale of arrival space to cope with various functions. However, people are always used to interacting in smaller circles that they are familiar with, so it is necessary to subdivide the large space into more small scales through design methods. The main principle that this scale is perceived is the scale of detail, which visitors can recognise or touch.

4.3.2.3 Layouts

The visitor's experience in the museum is rarely achieved in a static state but motion. They are following the path and the layout of space to experience the atmosphere. The organisation of the museum space's path structure is mainly a guide to the movement of visitors from the whole space, which can stimulate or restrict the initiative of the visitors (See details in 2.3.2).

Many museums prefer to create an atrium space that could connect different exhibition rooms. This atrium space is like a central transportation hub; visitors get together and orient themselves to the whole museum. Such as the British Museum's central hall. It contains

shops, cafés, rest benches, and temporary exhibitions. People arriving here are free to choose their preferred visiting route, which creates more surprise and expectations. Sometimes the layout can also guide visitors' step by step into the museum's atmosphere, especially in some historical themed museums. For example, the Jewish Museum Berlin and the Memorial Hall of the Victims in Nanjing Massacre by Japanese Invaders. Both of their layouts provide clear orientation, and visitors can experience each exhibition area logically. The clear and legible space can effectively avoid visitors' hesitation and stagnation, which can help create an energetic atmosphere in the museum.

In addition to the materials, scale and structure of the above building entities, factors such as light, sound, smell, and temperature are also the keys to the museum's atmosphere. These elements often echo the exhibition's theme, inspiring visitors' cognition from multiple sensory perspectives and thus serve as the finishing touch.

4.3.2.4 Lights

Louis Kahn believes that light can give power to architecture that affects the interior space and atmosphere. Light presents objects in front of people through the objective existence of architectural forms, building materials, building structures and other buildings that people can perceive. In some situations, the colour scene created by light can help the museum space echo the theme and the atmosphere better. As mentioned in 4.3.2.1, light and materials give different space emotions through colour. Orange and red spaces make people feel active and enthusiastic, blue and white spaces make people feel calm and relaxed (Figure 4-12). On the other hand, the changes of light and shadow can shape and limit the space over time to feel the dynamic of space. The museum space can guide people's bodies through the light to experience the perception, which can touch people's hearts.

In the perceptual realm, movement is an essential quality enhancing the perceptions of the space of the body, apart from stable spatial perceptions. Movement renders the space a lived or perceptual space. Because of the primacy of the body, the change in experience

arises either due to the movement of objects in relation to the body or as a result of the movement of the body concerning objects. In a particular space, the change of light and shadow over time produces a dramatic effect.

Steven Holl points out that design galleries impact the way people view art. They are more than a static background (Holl, 2000). He uses the sun-path diagram to design the curvilinear volume in the Kiasma Museum of Contemporary Art in Helsinki (Figure 4-17). The gallery acts as a mirror to or container of the low sunlight available in the northern latitudes. The atrium's light is complemented by the daylighting to the galleries, each of which opens differently to the sky, taking light directly or indirectly from various directions.

What is more, the curved form of museum building marks the spatial formation of exhibition galleries, which are not regularly square but in varying forms and sizes. When people walk through the gallery, they can feel the light and shadow changes in different spaces. Thus, the galleries provide an experience in combination with the light and sizes.



Figure 4-17 Kiasma Museum of Contemporary Art (Edited by author, 2019)

4.3.2.5 Sounds

Auditory stimulation is different from visual stimulation because visitors usually use the visual system to consciously and actively see the surrounding information while using their auditory system to listen to the sounds generated in the surrounding environment usually carried out in an unintentional and passive situation (Merleau-Ponty, 2005). Zumthor believes that every building has its sound, which is not caused by friction (Zumthor,

2006:30). Maybe the environment of the building can create a unique sound that people perceive. Sound is increasingly becoming a medium of choice for presenting the exhibition narrative and serving multiple functions. For example, audio guides can guide visitors to the valuable information behind the exhibits; the sounds of the exhibits themselves can try to reproduce the "live events" and capture the real-life context of the exhibits.

The sound usually plays a vital role in the ambience of the atmosphere, such as silent space, it is easy to arouse people's meditation, but noisy space will make the crowd active. In addition, some special music or sound will evoke people's related memories. Therefore, sound can be widely valued and applied in the museum as an element shaping the architectural atmosphere.

One of the Jewish Museum Berlin's permanent exhibitions, called the "Shalekhet" (Fallen Leaves), is based on sound design to stimulate the memory fragments of its visitors (Jewish Museum Berlin, 2019). Thousands of faces punched out of steel and distributed on the ground in a narrow and high Memory Void of the Libeskind building (Figure 4-18). Visitors are encouraged to walk on these faces and listen to the sounds created by the metal sheets. The sound will quickly reflect back and forth through the surrounding walls. The pathetic echo continues like the crying of victims in such a voided space, making the atmosphere here more depressing and painful. The visitor's mood became depressed, as well. Sound is caused by movement and causes movement. The perfect combination of sound and the visitor's body is formed through the visitor's movement, which stimulates people's inner fluctuations and provides them with a sense of participation in experiencing the museum space.



Figure 4-18 The art installation of Shalekhet (Fallen Leaves) (Author, 2014)

The increasing presence of sound in museums has the potential to underpin and further extend the prominence of experience in exhibitions. Different environments are accompanied by different background sounds, such as birdsong, flowing water, and the sound of the wind blowing leaves, all of which are reminiscent of the forest in nature, noisy crowds, and cars' honking remind people of a busy city. Sometimes, extreme ambient sounds can have a negative impact on the visitor's experience. For example, the too noisy exhibition hall is easy to make visitors lose patience, and too quiet a space will make people feel uneasy and nervous. On the other hand, different kinds of sound have played a positive role in arousing people's memory and cognition and contributing to a multimodal environment. Moreover, the reasonable use of sound in the arrival space sometimes helps people interpret the space better than words and images. In this context, sound design is increasingly considered an integral part of museum design.

4.3.2.6 Scents

For the special atmosphere, the scent has a similar function as the sound. The sensory experience of smell can often stimulate the memory and thinking of the forgotten place. It usually carries a strong personal memory and emotion.

Shuijingfang Museum exhibits the heritage site of winemaking in Yuan density in China. As a theme museum of traditional wine culture, the Shuijingfang Museum permeates the smell of alcohol produced during the brewing process into the exhibition space (Figure 4-19). When visitors approach the museum entrance, the smell of alcohol instantly evokes the visitors' memory and cognition of wine in their daily life. According to the contents on display, there are smells associated with the winemaking process throughout the museum area, which gives visitors a more immediate sensory experience.

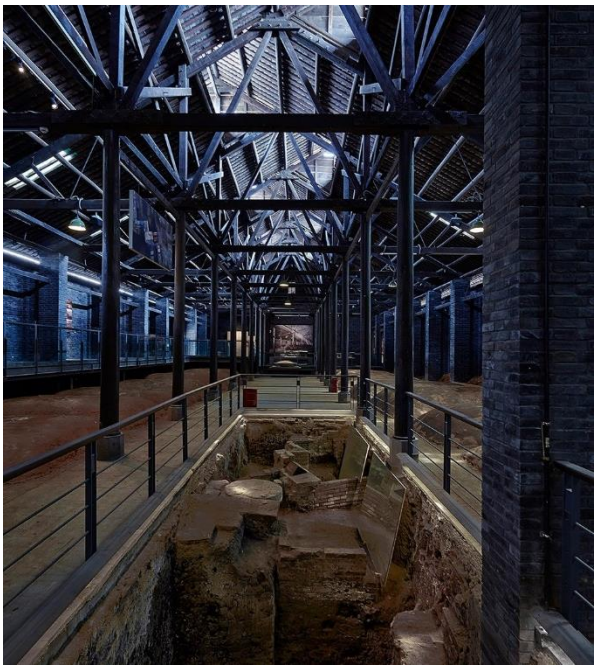


Figure 4-19 The exhibition space of the Shuijingfang Museum (Available from: < https://www.gooood.cn/shuijingfang-museum-by-jiakun-architects.htm > 09 Aug 2019)

In addition to the atmosphere enhanced by the smell of the exhibits in the museum, the plants in the museum and the scents of the surroundings may also shape a specific atmosphere and create a unique spatial experience. The Dixon Gallery and Gardens is an

art museum in the USA. The fragrant plants used in perfumery are shown in its garden. Visitors can smell bottles filled with essential oils or rub the leaves of scented plants. Through stacking different fragrant soap bars, visitors can create their smells of the soap bars. It chose to tie into scent and symbolism by teaching about perfumery.

Many academics mention that the sense of smell had been labelled unimportant or deemed forgotten (Classen et al. 2002; Levent & Pascual-Leone, 2014). However, people's perception of certain things is judged by smell, such as the fragrance of flowers and the taste of freshly baked bread. Sometimes the specific smell can contribute to a positive and engaging visitor experience. As the museum pursues a multi-sensory experience, the smell should be valued as one of the five basic senses. The smell is still a valuable tool in providing visitors with a more immersive experience in the museum to create a unique space atmosphere.

4.3.2.7 Temperature and humidity

Zumthor is emotionally convinced that every building has a certain temperature (Zumthor, 2006:34). From a physics perspective, materials can absorb and transfer heat from the surrounding environment. Different materials transfer heat at a different rate and more or less extract warmth from people's bodies. Following people's experience of life, lots of wooden beams seem warmer than steel columns in the same space. Moreover, the perception of temperature and humidity that certain materials bring to people also changes the environment. For example, the metal is cold, but when used as a facade in direct sunlight during the hot summer months, the hot temperatures are felt as people approach.

The temperature and humidity of the atmosphere here result from both physical and mental experience, which exists in what people see, smell, and touch. For example, when mentioning the rain forest, people can associate a hot and humid environment with their experience; when mentioning polar glaciers, people can relate a frigid and dry environment. In reverse, some specific temperature and humidity can arouse visitors' memories and earlier experiences in museums. Hence, specific temperature and humidity can also be used

to set off the atmosphere in museum design.

4.3.2.8 Details

Space enters into the use scale of people, which can be observed and felt by people when they are close enough to the building, starting from the details of the building. Each person's subjective observation ability is different, so the perception of detail is also different from person to person. In the design, each detail impacts the space experience, and the detail design can enhance the aesthetic taste of the space and further sublimate people's visiting experience in the museum. For example, The Tate Modern in London, which has been transformed from an old power station, retains a large number of original building's steel beams and structures. After entering the museum, the concrete stairs and black iron handrails are consistent with people's impressions of industrial architecture (Figure 4-20). The delicate carvings of plants and animals on the columns and walls in the Oxford Museum of Natural History help people understand the space's nature theme better.

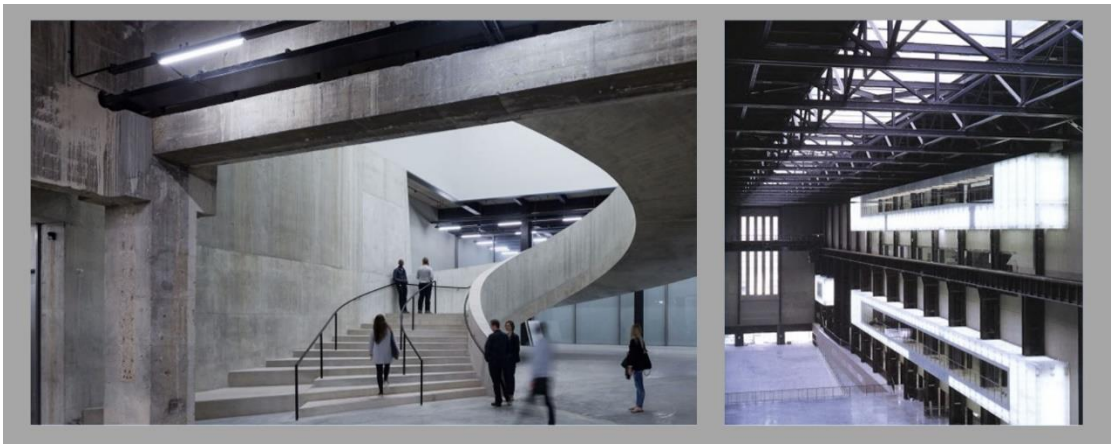


Figure 4-20 Industrial elements can be seen everywhere in the Tate Morden London (Author, 2018)

The existence of details makes the whole building achieve a harmonious state of existence, making it easier for people to have a holistic perception of space. Therefore, the final purpose of the detailed design is to echo the main body of the space. In addition, the detailed design can stimulate the sense of touch and further enhance the building's perceptibility by processing detailed elements. The conditions listed above are complementary and mutually influential.

4.3.3 Summary

The arrival space's atmosphere here mainly refers to the user's psychological space, which is the expansion of the internal body to the surroundings. Different spatial forms will produce different visual tension. These visual tensions come from the morphological elements of their spatial environment, which inspire people to produce visual or thinking activities, and the use of different morphological elements can create different spatial atmospheres. It integrates architectural elements such as scale, form, light and shadow, materials, sound, temperature, and indoor and outdoor environments that affect the atmosphere together in the space.

People are often touched by the atmosphere in the building's interior space, such as mysterious, sad, lively, cheerful, etc. Suppose the atmosphere conveyed by the architectural space corresponds to the functions and themes of the space. In that case, it can produce a strong sense of identity and belonging and make the space users deeply impressed. Even a few years later, users still remember an unforgettable space experience at that time.

Conclusion

"Experience" is emerging as a significant source of value-added to contemporary cultural production. In this case, it is not an abstract or a theoretical concern; rather, it refers to well-designed means for attracting cultural consumers by catering to their needs in a stimulating environment of sought-after memorable events. The fantastic architectural appearance and the attractive theme in the arrival space could determine visitors' appeals. However, a satisfying visiting experience is a key to retaining visitors. Since the new museology movement, there is a growing emphasis on the visitor experience in museums. Architects need to help others to experience the museum's arrival space through some architectural means.

For the same arrival space, each visiting experience may be different. It is the product of visitors' past impressions, current situations and experiences combined with future

expectations. Even the same person gets a different impression of the same place because of each experience's specificity. It is worth noting that consciousness sometimes becomes numb for familiar atmospheres. They appear as fixed silhouettes and forms, thus losing the freshness of the perceived experience based on the forming process of the visiting experience. Therefore, maintaining freshness is a point that cannot be ignored in creating an arrival space atmosphere.

Through analysing the characteristics of the positive experience, it can be seen that the architectural visiting experience is a continuous conscious activity in a continuous-time course. The real environment includes a variety of sensory, and the experience results from multiple sensory effects throughout the psychological scheme. Physical, sensory stimulation is the first step in creating a museum space atmosphere, including the perception of materials, morphological recognition and spatial perception. The use of building materials, the control of spatial scales and building proportions, the design of layouts and circulations in the arrival space, and so on can influence visitors' initial perception. They can identify familiar or interesting things from the numerous sensory messages and make judgments and reactions to the information.

In sensory recognition, vision is the most direct and primary recognition during the visiting experience. Normally, vision accompanied by depth perception such as hearing, smelling, and touching further formed an impressive sense of experience and integrates the above sensory information to understand a certain atmosphere, which is the final result of the visiting experience in museums.

The above conditions for creating and understanding the atmospheres can help to attract and keep visitors staying effectively in the arrival space. However, in reality, visitors have different preferences and backgrounds; it satisfies the above conditions that visitors may have a positive visiting experience from the perspective of an architect. Focusing on the arrival space and verifying that the space is welcomed by visitors is the key problem encountered in the museum design. Therefore, an assessment system of visitors' experience in arrival space must be established in the following chapters.

Chapter 5. Welcoming Atmosphere in the Arrival Space

Introduction

Space is a continuous area within the dimensions of height, depth, and width. The atmosphere gives the space personality and recognition. The museum's arrival space is like a container, which involves functions, circulation, physical environment, scale, aesthetic value, etc. These elements work together to create an atmosphere and influence people's experience when they arrive at the museum and may affect the subsequent visiting experience.

The visiting experience is formed during the interaction between the visitors and the museum space. The atmosphere as the medium influences their visitors' experience through everything in the space, which emphasises the transmission of information. In this situation, the museum space plays the role of "narrator", who organises the building both inside and outside the surrounding environment. It establishes a new structural relationship to create a public space and convey a certain cultural landscape implication. Visitors are identified as the audience or readers in the narrative context. They have to receive the information from the atmosphere in the arrival space.

The atmosphere is not only a medium connecting visitors and space but also a text for visitors to interpret the space. Roland Barthes concludes, the text's meaning cannot come from the author; the reader must actively create it through a process of textual analysis (Barthes, 1980). A "text" is not merely passively accepted by the audience, but that the reader/viewer interprets the text's meanings based on their cultural background and life experiences (Hall, 2003). Therefore, visitors as readers in the museum are not only passive receivers but also active narrators. To achieve visitors' satisfaction, designers need to stimulate more initiative for visitors through the objective space. In other words, a museum should express 'welcoming emotion' to visitors, just as the museum regards its visitors as hosts. When visitors actively participate in and interpret the space, the museum can

encourage these visitors to concentrate on the exhibition and be frequented.

Since the museum began to become public in the late 17th century, many efforts were made to welcome visitors. However, as Chapter 4 mentioned, space can influence the user's perception and experience by creating a specific atmosphere. Therefore, architects need to create a welcoming atmosphere in the museum first, leading their visitors from being involved in the real object environment to feel welcome in the museum. Arrival space is the first place where a museum can deliver such 'welcoming emotion' to visitors. Thus, the concept of a welcoming atmosphere will be discussed in this part.

In addition, museums globally are continuously growing, which will place increased demands on staff and facilities. To continue to meet the needs of museum visitors, architects and museum professionals must evaluate visitor behaviour patterns that influence museum environments and translate these into design implications. In terms of architecture, when talking about visitors' experience, it requires translating people's feeling factor that affects the tangible design in a specific space. How do visitors use this space? What can visitors see and feel in this space? How do they get to or through this space? Based on these, an assessment system should be built from the usability, image, and accessibility of these three angles and provide a visible approach for influencing the intangible issues, such as the tourists' enthusiasm promotion, emotional regulation and interest stimulation. Later, through these comprehensive analyses, to make clear how an arrival space creates a welcoming atmosphere.

5.1 Define a Welcoming Atmosphere

Through previous studies, the atmosphere of the space can be perceived by people when they enter the space. The so-called "space" includes two major aspects of physical space and psychological space. The physical space refers to the enclosed space defined by physical entities; the mental space is the ideal spatial feeling triggered by visual elements such as the location, size, scale, form, colour, material, and texture of the physical space. Only the space atmosphere with its characteristics could give visitors a deep impression

and unique experience. If the museum is given to humans' personalities, the arrival space that greets visitors for the first time in the museum should be cheerful or mysterious and attractive. That's the reason many museums design their arrival space in different types to show their contexts, such as using wide-open parks, transparent or reflective material on the entrance surface, or opening a direct path to the main hall by concealing the interior space. It is noteworthy that these objective methods of spatial treatment are developed based on tourists' subjective experience and are continuously improved through their visitors' feedback.

When visitors actively participate in and interpret the space, just as they regard themselves as the museum's host, they are free to enter their territory as many times as they like. Therefore, as a public realm, museums should meet the needs of the majority of visitors and show a welcoming attitude rather than shut them out. Therefore, the Welcoming Atmosphere in this research can be defined as an atmosphere in an ideal space that visitors can feel connected and engaged inside, and through the activities (unconscious or conscious), people can experience value, be respected and be supported.

5.1.1 Understanding of welcome

A welcome is an expression of a pleasant, encouraging and supportive state of mind that visitors will feel upon their arrival, which is usually determined by the surrounding atmosphere at that time (Cambridge Dictionary, 2019). Today, the word "welcome" is often associated with customer behaviour and is widely discussed in retail and service. They define "welcoming" as a perception of whether people feel like they "fit" or belong in the store, are valued as customers, and are comfortable with the shopping experience (Baker et al., 2007). Increased attention to visitors implies that museum marketing has become progressively vital (McLean, 1997; Walsh, 2002). It suggests that the museum need to pay attention to the market-oriented development direction (Wilson, 1988). Museums need to attract more visitors and strive to meet their needs to achieve the museum's market operation (Johnson, 2003). Hence, the museum needs to consider opening the door to welcome more people like other public places such as stores and restaurants. When the

product image or retail store image matches the consumer's self-image, they prefer this product or to shop in this environment, which can be called the process of self-congruity (Sirgy et al., 2000; Baker et al., 2007).

Self-congruity occurs when visitors believe they match the exhibition or museum image in the arrival space. When visitors assess elements, which are perceived as consistent or similar to their self-perceptions in the museum environment, this creates self-congruity or the sense of empathy and identity mentioned before. Therefore, to determine the appropriate "match or fit" between visitors, museum space's elements are vital to achieving the welcoming atmosphere in museums. The arrival space as the first stop to welcome visitors should let visitors feel fully inclusive and delighted. For example, the Jixi Museum uses the expression of local architectural characteristics to show the appearance of the museum, making the residents feel friendly and familiar (see details in 4.3.1.2). The Shuijingfang museum informs visitors of its exhibition theme through the volatile alcohol smell in the space so that people can experience the culture of wine from multiple senses (see details in 4.3.2.6). These are just through the physical atmosphere to deliver the experience of welcoming. In addition, some human elements like the service of the staff and other people's actions will affect visitors' self-congruity in the arrival space as well, which need to be studied following.

The visitor perceives the welcome due to the museum's environment and actions toward a visitor. Suppose there is a match between a person's self-concept and their perceived museum image as cued by the arrival space elements. In that case, the individual is more likely to think favourably about the museum and visit it. Greeting the arriving people in a polite or friendly way can be seen in a welcome manner. People feel welcome in the museum means that they can approve and receive things in this space gladly or feel very pleasing because they have much needed or desired aspects for this space.

5.1.2 Welcome and unwelcome factors in arrival spaces

According to the research on the process of experience and the museum's physical

environment's atmosphere design in Chapter 4, this study needs to centre their research focus on visitor experiences. Lots of museum studies have been done on promoting satisfying experiences and learning among visitors (Loomis, 1993; Sheng & Chen, 2012; Falk & Dierking, 2016). Among them, both physical environmental factors and subjective humanistic factors are mentioned, which are important for decision making in museum marketing and exhibition design (Scott, 2000; Vom Lehn, 2010). The self-congruity that visitors establish in the arrival space will influence the quality of their visiting experience, satisfaction and sustainable visiting. From the designer's perspective, the welcome and unwelcome elements in the arrival space can affect people's self-congruity need to attract attention. Moreover, various visitor groups may have different understandings of welcome, which need to be treated in a specific way sometimes.

5.1.2.1 Architectural environment

The architectural environment allows visitors to get the most intuitive experience through multiple senses. Space atmosphere, layout and surrounding environment as cues to determine whether people should stay or leave and interpret whether they belong or not. Visitors can feel welcome when the general aesthetics and their understanding of the space match their expectations. For example, the spatial aesthetics brought by the architectural form can be eye-catching; the arrival space's atmosphere can meet individual needs. Some perceptions of welcome are attributed to an interaction between the space environment and visitors requirements. For example, the clear signs and a highly directional space layout that is easy to find when visitors get lost, enough benches to rest, and the clues related to the exhibition in the space decoration attract visitors to explore and learn. The visitors can find it enjoyable to see signals that they are expected in the environment. This reflection of visitors' self-congruity can help museums and designers make sure they meet visitors' satisfices. Other details, like the size of letters on signs, the intensity of noise, and the intensity of smells or light in the space mentioned in section 4.3.2, can create a welcoming or unwelcome sense for visitors.

A person feels accepted in their very familiar places, like at home. When the museum

triggers a sense of familiarity, it signals that the person is expected and welcome. This is because the reasonable expression of the environment helps to arouse visitors' imagination as to what following exhibitions or space could be like, and because they can relate to these ideas and feel familiarity, i.e. welcome (Sirgy et al., 2000). For example, the Museum of Islamic Art in Qatar has created a building image of modern and indigenous architectural identity for the local people by borrowing many Islamic architectural elements. Thus, it could develop a sense of familiarity and intimacy that makes the museum more accessible to the residents.

Notably, some groups, such as the disabled and vulnerable, are more sensitive to the welcome factors of the space environment. In addition to the space's atmosphere, they usually have high expectations of the facilities that affect their actions during visiting, especially those with mobility disabilities. For example, the width of aisles, the location of the exit, the general accessibility of exhibits and other visiting routes. The neglect of these design characteristics may become an unwelcoming signal for the visitors. Therefore, the architectural environment's welcoming elements affect the environmental atmosphere like layout, lights, sounds and colours, accessibility, special care, and other considerations for the disabled and vulnerable groups (see details in 5.2.3.4).

5.1.2.2 Staff services

The space of the museum shapes an environment that promotes communication. It refers to the exchange of information between people and exhibitions and the language communication between people. Among the arrival space, the most frequently encountered is the communication between visitors and staff. In marketing, the customers' perceptions of welcome depend greatly upon service personnel (Sirgy et al., 2000). In the museum, visitors' questions about exhibitions and other information can be asked with the staff at the arrival space's information desk. The words, languages, actions, attitudes, and characteristics of museum staff cause visitors to feel welcome or unwelcome. In the museum management, staff should care about their visitors' needs and make themselves available to assist others when they need help.

Museums serve the community and people from different backgrounds and ages. To communicate with the public, the museum layout and exhibit design and the staff services must be adaptive to the museum's diversified audience. The museum staff should seek ways of making their visits as interesting as possible, giving visitors what they expect in return for their time and effort. Ideally, staff can even seek to surprise and reward them. For example, at the entrance to the Natural History Museum in London, staff sometimes dress up as dinosaurs to interact with children waiting in line to enter the museum to ease the tiring wait in long queues. People of different races and different ages should experience the feeling of being respected and treated fairly in the museum. For example, visitors can find exhibition information in their language at the information desk and the staff's wide acceptance of visitors from different cultural and educational backgrounds. People can get valuable information in the arrival space according to their own needs.

Visitors need to be greeted upon entering a museum, offered help but not pushed. They expect staff to be knowledgeable and friendly. When visitors can get clear and correct information services from arrival space, it will greatly shorten their time for guessing and choosing exhibition contexts, thus alleviating their anxiety and worry about the following unknown journeys. The service of the museum staff can directly reflect the museum's subjective welcome to visitors and help visitors guide and introduce the museum's space identification. Of course, the staff's service is a topic worthy of an in-depth discussion in the museum's management, which will not be expanded in detail here.

5.1.2.3 Other visitors

As the name suggests, public space is a freely accessible, social place made up of many people. Therefore individual people in public space cannot avoid interacting with and influencing the surrounding social environment or other people. Visitors not only learn new things through experience but also learn knowledge from their companions. People create content and meaning in museums through their interpersonal interaction (Weil, 2004: 270). As a public institution, the museum's entrance space or the central hall often gathers large crowds. However, quantitative change leads to qualitative change. With the increase in

crowding, visitors' perception of welcoming elements in the architectural environment may change qualitatively, affecting their visiting experience.

Normally, what other visitors said or can't make visitors feel unwelcome, but a crowded condition will make people lose patience in a short time (Samis & Michaeison, 2016). Crowded people can block the view of the visitors, hinder the accessibility of the space, and even affect the visitors' judgment of their location. Simultaneously, the noisy sound will also become larger with the increase of visitors, which will make people ignore the original background sound in the space. The spatial atmosphere that the museum tries to create will be easily broken by crowds, which is also a reason for forcing visitors to withdraw from the visit. It is not easy to avoid crowding in a space with a complicated flow of people, but some positive methods can be used to alleviate the feeling of crowding. For the large space, the separation that divides a large space into a series of separated spaces is common, reducing the amount of interference and emphasising the difference between vision and function to reduce crowdedness. British Museum’s courtyard includes many functional areas, which are arranged in the four corners and around the sides of the curved staircase in the middle (Figure 5-1). In this way, the functional spaces at the corners and in the middle can attract people who need to stay, while the space between them can be used for people to move freely. On the other hand, it is necessary to control the excessive input of environmental information and not over-decorate the design so that the limited space appears to be filled visually. Promoting the movement of people's flow in the arrival space and reducing the wandering and stagnation of visitors at major traffic intersections are effective ways to reduce the impact of conflicts among them.

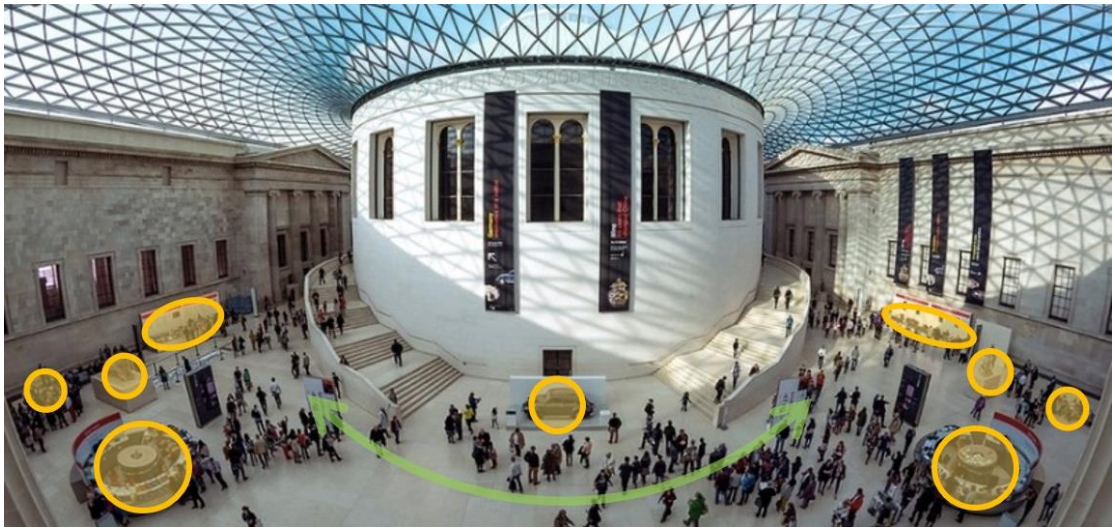


Figure 5-1 The division of large spaces in the British Museum (Edited by author, 2019)

However, too few visitors also make people doubt space. It is easy to focus on active visitors in a lively space, while no one wants to be noticed in a strange and empty space. When the arrival space is too empty, or there are far more staff than other visitors, it will cause visitors to hesitate to enter. Excessive attention can easily overwhelm visitors. Thus, sensory distractions caused by other visitors are also unwelcome elements in the arrival space. In the arrival space, a moderate amount of people will neither disturb the original atmosphere design of the museum nor make people feel nervous and at the same time attract visitors to visit.

5.1.3 Summary

The welcoming atmosphere is a particular focus on visitors, and the emphasis is on their experiences of being in the museum and their immediate experience of the environment. To understand that experience, often the focus becomes the interaction of behaviour, in which the visitor interacts with the arrival space. The museum experience is a continually shifting interaction among personal, social and physical contexts (Falk & Dierking, 2016). Visitors interact with and form impressions of any elements in arrival space, including other visitors, staff, space layout, lighting, sounds etc., all of which may contribute to evaluations of welcoming experience and decisions to enter or return to the museum.

Understanding the welcome and unwelcome factors derived from visitors during their arrival space experiences is beneficial in attempting to develop maximum enjoyment and appreciation among visitors relating to their encounters at the museum. Visitor studies, including studies of experience and visitors' expectations, are important for museums in terms of management and development (Sheng & Chen, 2012). Visitors' expectations of the museum are throughout the museum and are constantly changing as the environment changes. By grasping the welcome and promoting factors, both the museum's physical attractions and personal experiential gains can maximise the value of museum experiences.

5.2 Assessment System of Visiting Experience (ASVE)

The popularity of the arrival space cannot be judged unilaterally from the physical conditions of the space atmosphere. During visiting, people will influence and change the environment as it influences and changes them (Carmona et al., 2012:133). Visitor behaviour studies conducted in museum environments can support the museum to understand visitors' basic needs to create a more conducive environment for visitors to enjoy. However, in practical design, the proposition for visitor needs is still ignored by both clients and designers for various reasons, such as financial constraints, limited project time, etc. This makes it impossible to conduct extensive research on visitors' behaviours. The museum's physical atmosphere design and the interaction between the inside staff and visitors are welcome and unwelcome elements in the museum. The omission of visitors' behaviours and needs may decrease their satisfaction and loos of desired educational impact.

On the other side, visitors need often are ignored because they are not represented in the team that programmes and designs the building or its exhibits. Ideally, various points of view by visitors needs should be considered from the beginning of a new museum design, which a museum design team need to be established the visitors needs analysis during the first stages of planning. This requires the participation of groups of visitors from different backgrounds in society. Although the various participants working together could help guarantee a balanced approach, it is difficult to achieve. If the designer can judge visitors'

behaviour experience through a specific comprehensive assessment system, then the problem may be much easier. However, there are currently no assessment criteria specifically designed for museum spaces and visitor experiences. As the first public space where visitors come into contact with the museum, the assessment system can be considered from the public space.

Mehta proposed that the qualities of public space should be considered from five aspects: inclusiveness, meaningful activities, pleasurability, safety and comfort (Mehta, 2014). Inclusiveness here mainly refers to the accessibility of the space; that is, one of the important criteria to become a public space is to ensure that the space is accessible. In addition to accessibility and comfort, a good image and social activities should not be ignored for creating a successful public space (Project for Public Places, 2019). In the study of the arrival space's social value in Chapter 3 and the space atmosphere in Chapter 4, the arrival space's functions, visitor's activities and accessibility, the place and emotional meaning created by the arrival space's image will directly or indirectly affect the visiting experience. Therefore, if the arrival space in a museum is to be welcomed, it can be considered in terms of the experience of activities and comfort for visitors (usability), accessibility, and image.

The conditions for evaluating its popularity have gradually become clear through the previous theoretical analysis of the museum's arrival space's physical elements and visitors' subjective experience. It is well-known within an architectural practice that a facility's worth can be measured by its ability to accommodate its intended use and by knowing about the users who have the most direct and extensive relationship with facility use. Each building prototype carries a different set of requirements; thus, human needs must be understood and studied within the framework of each design problem. In space, the functions, circulation, physical environment, scale, aesthetic value and so on, all of these issues can influence people's experience when they arrive at the museum and may affect their experience of subsequent viewing exhibitions. Therefore, the first step is to clarify the relationship between visitors and these elements in the arrival space.

In the face of various functions and layouts, will visitors be able to participate in them actively? Will they be able to understand what is on display? Will they think the functions are meaningful to them? Will they do not get lost in an unfamiliar space? These questions will reveal the degree of visitors' acceptance of the arrival space and the popularity of the arrival space. These involve people's social engagement, visual preference, and spatial recognition in the museum. Based on these, the Assessment System of Visiting Experience will result from usability, image, and accessibility. These three aspects to comprehensive analyses on how to design a welcoming atmosphere in arrival space. In view of these three aspects, specific suggestions and questions will be put forward to establish a complete question bank for subsequent visitor behaviour research, the Assessment System of Visiting Experience (ASVE).

5.2.1 Usability

Space is all about being used. Based on the specific background and architectural rules, designers give the corresponding functions to the arrival space. However, designers are also based on visitors' basic needs for the use of the arrival space. As the main users, visitors' behaviours in the arrival space are always key to evaluating and judging space usage.

The use of a space and its functions directly influence the user's experience of the space. The various functions in the space generate a diverse range of activities, attracting wide groups of people. From the perspective of the arrival space's physical elements, its functional significance provides visitors with a flexible, multi-choice function cluster (see details in 3.3.1). Moreover, through the discussion of people's cognitive behaviour in 4.2, it can be found that appropriate activities can make people participate in and leave an impression. Still, too many messy activities will distract people's attention and affect people's moods. Therefore, in order to enrich the arrival space, a single function should be avoided, but at the same time should avoid excessive activity in the limited area. Essentially 'The mix of uses (whether within a building, a street or an area) can help to determine how well-used a place is, and what economic and social activities it will support' (DETR &

CABE 2000:31). The table below shows mixed functions in some museums mentioned in Chapters 4 and 5 (Table 5-1). It clearly shows that most museums' arrival spaces contain three or more functions, except some museums with wide-open air arrival spaces. Some larger museums even have seven or eight functions to serve visitors. The various functions and facilities in the arrival space can be expressed in many kinds of architectural forms and enrich visitors' activities, thus prompting them to generate more communication in the museum.

Type	Name	Functions								
		Garden/ square/ plaza	Reception/ information desk	Cloak room	Restaurant & Café	Souvenir shop	Rest area/ seats	Toilets	Accessibility facilities	Exhibition area
Wide-open air	Shanghai Morden Art Museum	●							●	
	Staffin Dinosaur Museum	●								●
Transition	MOMA	●	●	●		●		●	●	●
	Stedelijk Museum	●	●	●	●	●	●		●	
	National 9/ 11 Memorial Museum	●	●			●			●	●
	Riverside Museum	●	●		●	●		●	●	●
Indoor (Orientational)	New Los Angeles Museum of the Holocaust	●	●					●	●	
	Museum of Contemporary Art Kiasma	●	●		●	●		●	●	
Indoor (Traffic centred)	The V&A Dundee	●	●	●	●	●	●	●	●	
	Tate Morden	●	●	●				●	●	●
	Guggenheim Museum Bilbao	●	●	●				●	●	●

Table 5-1 Mixed functions in different museums (Author, 2019)

Diversified communication can promote the generation of rich activities and behaviours in the limited space, which invisibly stimulates the vitality in the space. The vibrant space will attract more visitors continuously, thus ensuring the sustainable development of the arrival space. Whether this space is easy to use or visitors would like to use this space. Only by understanding the usage of space can it better carry out the following research.

Consequently, visitors as the main users in the arrival space, the degree and frequency of their use, and the number and extent of participants can reflect their welcoming experience in terms of the museum's physical facilities. Thus, the following part will explain what specific questions should be adopted to obtain the corresponding information when facing the actual research in arrival space from the aspects of diversity, vitality, and sustainability,

respectively.

5.2.1.1 Diversity

In most scenarios, the usage of the space depends on its diverse and changeable functions. Following the multi-cultural and diverse cities development, museums have become, increasingly, a diverse space. The arrival space will welcome different people from all kinds of backgrounds from all over the world. In 3.3.1, it mentioned that mixed-use could be one of the arrival space's functional meanings. Arrival space should serve enough activities and contents to reply to the diversification of visitor groups. Thus, the diversity here does not only refer to the diversity of spatial functions but also the diversity of users.

The Victoria and Albert Museum's new entrance—Exhibition Road Quarter was completed in 2017. This new entrance aims to entice people into the museum better and try to truly connect with their Exhibition Road neighbours, the Science Museum and Natural History Museum (Figure 5-2). What's more, the new entrance creates an open area called the Sackler Courtyard, limited by some simple and angular lines, making the place modern (Figure 5-3).

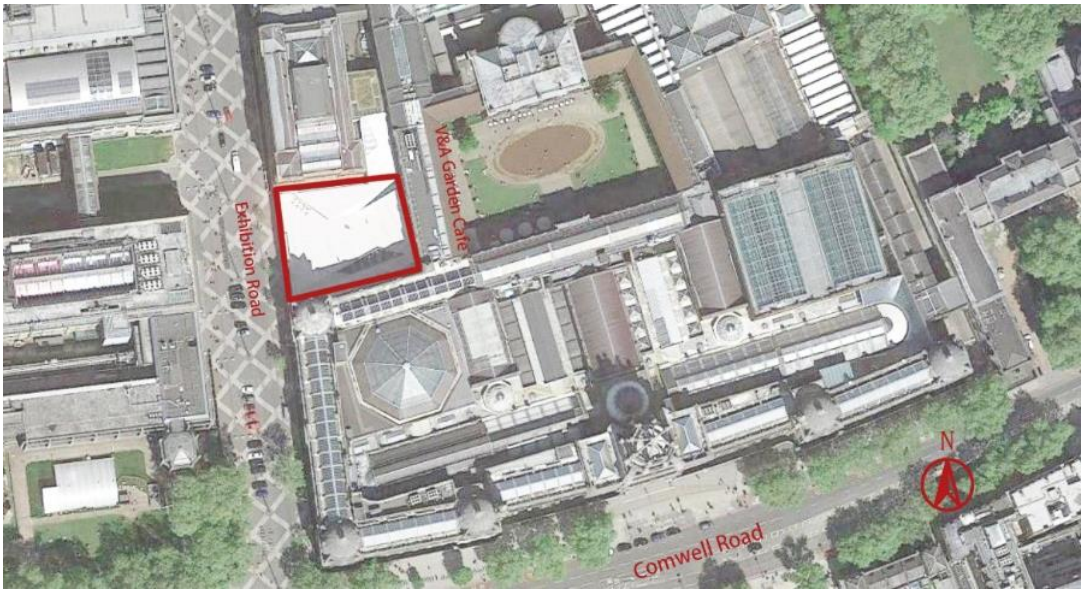


Figure 5-2. New Entrance of V&A (Google earth 2019; Edited by Author, 2019)



Figure 5-3. Sackler Courtyard under the sunshine (V&A, 2018. Available from: < https://www.vam.ac.uk/blog/digital/designing-a-new-welcome-experience-at-the-va >, 16th Feb 2019)

Designers tried to offer a transitionary space to ease some people who are intimidated into the museum. This space is called a 'decompression zone' as a belt to connect a threshold space between the busy Exhibition Road and the museum itself (Price, 2018). The square includes big steps for people to sit on, a café in a modern irregular volume and some transparent area that can see what happened underground. It can be seen that the designer has made a lot of efforts to make the space look richer.

However, the fact is that not many people stay in this arrival space. In the afternoon, the direct sunlight on the courtyard's light-grey tiles makes the whole area very dazzling, and most people pass directly through this area instead of staying here for rest. Compared with this entrance courtyard, the courtyard in the museum's centre named John Madejski Garden is more popular, which is a real oasis for people to enjoy a break (Figure 5-4). Some designer's trendy designs are often exhibited here, such as structures or pavilions and other small architectural pieces. The Sackler Courtyard was not only a shortcut to the interior, and it should contain more meanings to introduce their visitors to use this area fully.

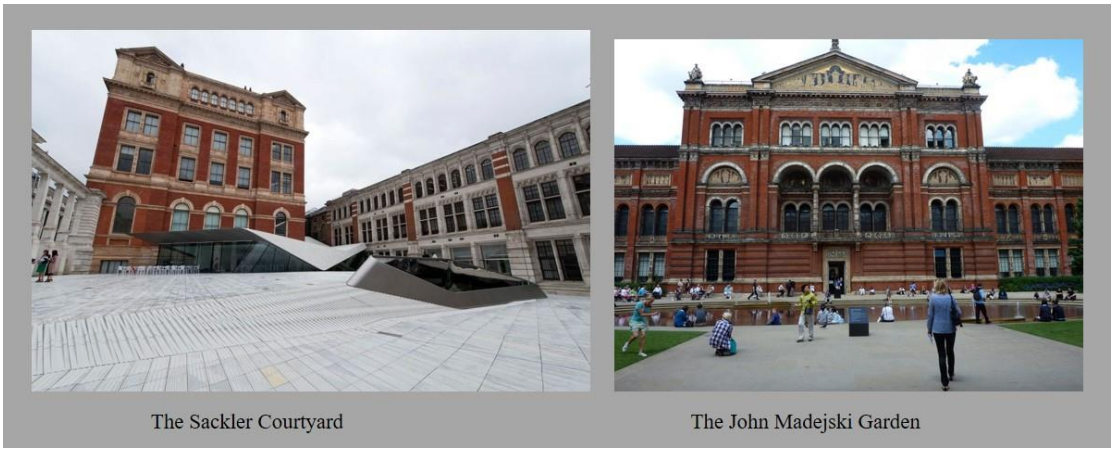


Figure 5-4 People in the two courtyards at the same period (Author, 2018)

In 2018, artists created an interactive modular maze-like installation during the London design festival called MultiPly in the Sackler Courtyard (Figure 5-5). The arrival of this temporary exhibition has attracted a lot of attention to the courtyard. Visitors can touch and walk through these structures; they took photos, chatting and rest here. Thus, the original space becomes multi-functional because of people's rich activities. In this way, an arrival space needs to offer mixed functions to attract visitors to have more activities.



Figure 5-5 MultiPly in the Sackler Courtyard (V&A, 2018. Available from: < https://www.vam.ac.uk/event/XDry8vBm/multiply-sept-2018 >, 21st May 2019)

Beyond the functional division, the museum is a public place to deliver knowledge, culture,

and lasting information. It is a place full of narrative and stories. Different from the exhibition halls, the arrival space has more flexible in expressing themes. Creating more interesting and fantastic content in the arrival space should be another assessment side of the diversity.

Although the arrival space has to contain mixed functions in a certain area, it still needs to consider as a whole with the narrative. The clear content and topics of interest are some of the motivations for people to continue to visit. It is necessary to introduce or let their visitors understand the museum in this space suitably, especially for the ethnic minorities, consisting of diverse groups of individuals with varying aspirations, social standing, and cultural backgrounds. When these people can find their language or some stories and culture introductions related to their culture in the arrival space, they may feel warm and proud in this space. It should be an excellent way to show the publicness of the arrival space.

The more varied a place, the more it attracts diverse groups. The interactive installation in the Sackler Courtyard attracts many kids and young people to play and take photos. Some foreign visitors will also be attracted by the lively atmosphere. Similarly, the previous examples include the expanded arrival space of the Stedelijk Museum and Louvre Pyramid. Both of their new arrival space contains more functions and can involve more activities and groups, which become more popular.

As a consequence, the diverse content and activities may inspire more respect and understandings. It is a nice chance to deliver the multi-culture to their wide-ranging audiences through the arrival space's diverse functions. Some details of the design, such as the brochures and propaganda films in a different language and different countries' food in the restaurant, can make people in different groups feel welcome. When streams people poured into the museum, it raises the issue of the vitality of the space.

5.2.1.2 Vitality

The diverse functions encourage and attract people to participate in the arrival space, thus

promoting the flow of people and making this area lively and energetic. Lynch (1984) identifies vitality as the degree to which the form of places supports human beings' functions, biological requirements, and capabilities. Vitality can reflect the degree of social success in the area. To borrow Montgomery's definition, the vitality in a museum's arrival space refers to the number of people in and around the space (visitors flows) across different times of the day and the uptake of facilities (Montgomery, 1998). Vitality in the arrival space is vital because it makes the space feel alive and lively and increases the museum's passive enjoyment, encouraging social interaction and providing opportunities for cultural exchange. The vitality is a product of both the visual quality of the environment and the variety of the supported activities (Jalaladdini & Oktay, 2012). Therefore, vitality is one of the assessment standards to verify the welcoming of the arrival space design. Compared with exhibition halls and other public spaces in the museum, the arrival space seems more flexible without specific functions and fixed design patterns. Therefore, more efforts should be made in stimulating the enthusiasm of the social population.

Extreme quiet and dead space makes visitors feel excluded; diverse functions and the lively crowd can encourage more activities in a limited space. Appropriate activities can make people participate and leave an impression, but too many messy activities will distract people's attention and affect their mood. Thus, some popular museums have to limit the number of everyday visitors to ensure their visiting experience. It is necessary to enrich the arrival space, but at the same time should avoid excessive activities and population in the limited area.

As early as more than 40 years ago, some scholars have proposed that the museum's role is to enliven the community and enlighten the people it serves (American Association of Museums, 1972). The social significance of the arrival space needs to focus on their visitor's vitality and care about the vitality of the museum's surrounding environment. Active locations can bring a steady flow of visitors to the museum. Correspondingly, the welcomed museum's arrival space can also drive the vitality of the surrounding streets and communities. Like the New Art Exchange in Nottingham, it shows the culture of the local people of African descent and promotes communication among the residents. The cafe, in

its arrival space, is always full of residents sitting and chatting.

5.2.1.3 Sustainability

Sustainability is increasingly a primary concern of society due to awareness of climate change, shifts in the global economy, and a growing understanding that there are limits to growth. The notion of sustainability as a holistic world view that aims to meet the human population's needs while maintaining the natural environment in an un-degraded form provides a potent vision for all individuals to work towards, regardless of one's professional or personal situation (Worts, 1998). The usability of the arrival space also needs to treat in a sustainable concept. Curiosity is one of the main reasons that attract people to come to the museum. Keeping the arrival space's vitality then attracts more people to continue visiting in a long time to the future is a problem that deserves the museum's continuous consideration. There have interconnections in an arrival space's original form and purpose and subsequent human interventions over time. The space influence people's action, while people's preferences change the development of the space.

The exhibits inside the museum may remain the same for decades. Still, social opportunities such as events and temporary exhibitions in arriving spaces can remain fresh and attract new visitors and repeat visitors. Focusing on the arrival space, the flexible layout, diverse activities and energy-saving facilities all embodied the idea of sustainable development. When people experience the welcoming atmosphere in the space, they will proactively pass this information to the people around them, encouraging more people to participate. Thus, the constant attraction of visitors is an aspect of the museum's popularity. The arrival space will also deal with future development issues, such as promoting community education and maintaining social harmony. Sustainability can be understood as a balance that maintains the relationship between visitors and the arrival space and is also a criterion for the museum's positive growth.

5.2.1.4 Key questions

The arrival space as the first stop of the museum normally has a high visitor's flowrate. If

it is not available for visitors to reasonably use, it may prevent visitors from the museum's following journey. People will consciously choose among the environmental opportunities available to them. It is possible to consider whether the functions and design of the arrival space meet their visitors' requirements. For example, the facilities and areas where visitors use the most or least frequently in the space, the length of time visitors stay in different areas, the number of people who enter the space at different times, etc.

After the above analysis about the usability activities of the arrival space, the following table shows the three qualities of the usability's assessment points (Table 5-2). Each point raises corresponding questions for different aspects. These questions involve collecting visitors' experience in using functions and participating in activities, thus helping the museum understand better people's needs and actual applications in the future.

Usability	Diversity	Functions	How many functions are there in the space?
			Are the facilities in the space easy to use?
			Do the functions meet visitors' expectations?
			How flexible of the facilities/ area? OR Does the facility/ area have multiple uses?
			Are there choices of things to do?
		Contents	Can the users understand the designer's idea?
			How often are topics/advertisements updated?
		Users	What are the visitors' reflections after using the facilities?
			Are the space contents/ information generally acceptable?
			Are users in the space composed of different ages, religions, and genders?
			Is there a good balance of different groups?
	Vitality	How long does the visitor stay in the space?	
		How often are the facilities used in the space?	
		What's the most popular/ loneliest facilities/ area in the space?	
		Are people in groups? Are they talking with one another?	
	Sustainability	How to keep the attractions of visitors, especially regular visitors in this space?	
		Can the space be used throughout the day?	
		Is the space easy to be transformed?	
		What's the future direction of the space?	
		Do people bring their friends and relatives to see the space, or do they point to one of its features with pride?	

Table 5-2 Design questions about usability (Author, 2020)

5.2.2 Image

Although experience is a multi-sensory process, aesthetic appreciation of the environment is primarily visual and kinaesthetic (through movement) (see Chapter 4). Visual aesthetic appreciation of environments is a product of perception and cognition; that is, what stimuli people perceive and how they process, interpret, judge and feel about the information gathered. It is inseparable from and significantly influenced by how people feel about a particular environment, whether they care about it and what that environment means to them whether they value it.

Arrival space is the beginning of the whole museum, what kinds of image it presented to their visitor and how people feel it will affect visitors following visiting experience. A reasonable and impressive start can encourage the audience to continue their journey in the museum. Although the exquisite and unique exhibits can attract many people to visit, they cannot be separated from the previous environment's setting and paving. The physical environment creates a human's psychological feeling. Among the five basic senses, the vision is the primary sense during the museum visit. The visual aspect of architecture matters to the extent that people care more about environments that they find attractive and visually appealing attractive environments are thus more likely to be robust and sustainable (Carmona et al., 2012: 200). Besides, the visiting experience is a multi-sensory process with hearing, smelling, touching, etc. All of these senses play a significant role in creating visitors' visiting images.

Visitors' image of the museum is a product of perception and cognition: what stimuli visitors perceive and how they process, interpret, judge, and feel about the information gathered, inseparable from and significantly influenced. The first and last impressions, legibility of the space and context, comfortable scale and environment, and distinctive characteristics in expression, all of these will build the museum's original image in the minds of visitors and affect their welcoming experience in arrival space.

5.2.2.1 Impression

People rely on first impressions as an important tool to interpret social behaviour, which profoundly affects their everyday lives (Gilron & Gutchess, 2012). Chapter 4 states that impressive knowledge will form memories, which can help people determine what they should approach or avoid. In this way, the museum has to create a positive impression for its visitors to keep its popularity and make visitors willing to approach. Since the arrival space can have different architectural forms (see details in 3.2), people's initial impression of the museum’s space is divided into outdoor and indoor. Of course, the museum's surrounding environment and geographical location indirectly affect people's judgment.

Outdoor impression

When facing a museum, visitors begin to continuously receive information from the outside world through their senses and conduct a comparative analysis with the information stored by themselves, which is a continuous and irreversible process. Whether the museum's building is grand or easy-going, the building's appearance will become the first solid mass to be perceived and may leave a preliminary impression. Every information delivered by the senses during this process may affect the subsequent results. Therefore, it is important to care about visitors' feelings about the museums' appearance, which can help clarify the relationship between buildings and their users. Do visitors care about the museum's image? Is the appearance of the museum meets visitors' inner expectations? Did they notice the details on the facades? How do they evaluate this building? During the following field research, these questions need to be found, which may relate to the social conventions and customs and the mass aesthetic culture level and aesthetic mentality.

A successful building appearance is a good advertisement to attract visitors. Sometimes, the museum's image can reflect or outdid the ambitious design concept of designers, such as the glass pyramid entrance of the Louvre and the crystal entrance of the Royal Ontario Museum, which always attract people's eyes. Sometimes, to highlight the local, regional characteristics, the museum needs to conform to the surrounding environment, such as the Natural History Museum of Utah and the Suzhou Museum.

The Guggenheim Museum Bilbao was initiated by the local government to leverage community revitalisation. The museum sites on an old wharf on a curve of the Nervión, which tried to redevelop their culture and leisure and represent the recovery of the river banks for the city (Guggenheim, 2019). Its architect, Frank Gehry, created a spectacular façade with more than thirty thousand extremely thin titanium sheets (ibid). Since it opens, the small city attracts millions of visitors, and more than 80% of them came to this museum because of its amazing appearance (Figure 5-6).

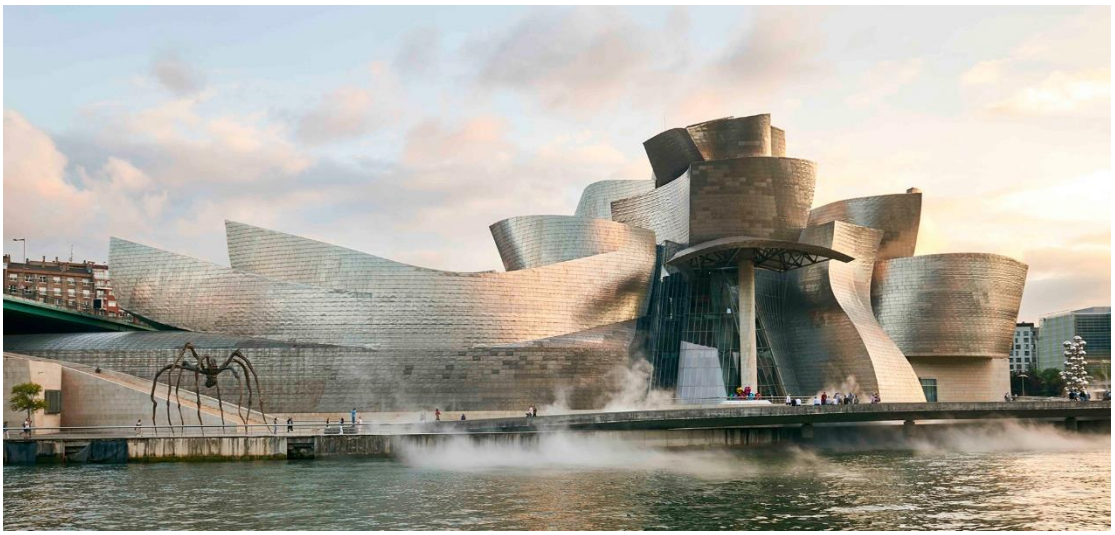


Figure 5-6 Guggenheim Museum Bilbao (Guggenheim Bilbao, 2019. Available from< https://www.guggenheim-bilbao.eus/en/the-building > 16th Feb 2019)

In addition, the outdoor environment is also an important element that can influence people's impression formation. The Estonian National Museum is built on an abandoned airstrip of the former Soviet military base, which ruins a painful history during World War II (Archi Tonic, 2019). The special geographical location allows visitors to have more feelings about the museum. This museum becomes a continuation of the airfield. The roof is lifting and expanding towards the sky. The deep entrance is like a whirlpool, which can inhale the visitor into the landscape and the heart of the museum (Figure 5-7).



Figure 5-7 The arrival space of the Estonian National Museum (DGT, 2016. Available from< https://www.gooood.cn/ethnographic-museum-tartu-estonia-by-dgt.htm>, 16th Feb 2019)

Indoor impression

After people enter the museum's building, all their senses and active participant bodies will be involved in their impression formation. A positive impression is the feedback of a good visiting experience. Experience is the result of human interaction with the external environment. People can see all the things in the arrival space, their feeling about the indoor environment, the time they can stay here, and so on. All of these are the small parts of the interaction between the arrival space and their visitors. In the process of interaction, both the active behaviour and the passive reaction of the experiencer are involved. During the experience, the subject, people themselves, need to "do" or "receive" something. Too much doing or too much receiving could upset people's perceptual balance and makes the real experience lopsided (Simon, 2010; Falk & Dierking, 2016).

Although a comprehensive application of multiple senses could engage the visitor in an immersive experience, sometimes, it is needed to calm down and listen to the body and feelings instead of continuously participating. Too much stimulation may numb our senses and consciousness. One experience is easy to be disturbed and weakened by other information if it is not completed. When the experience process cannot be fully expressed, it can only become several pieces of information and difficult to keep in mind. This may prevent them from understanding the real implications of experience and difficult to have a deep impression. Thus, the indoor arrival space should let their visitor keep a balance between active participation and passive acceptance in the process of experience.

5.2.2.2 Legibility

The way of interpretation is a big problem that always bothers curators and architects when they design exhibitions. Even in the arrival space, in which there are no exhibition functions in most cases, they still need to consider how to interpret the information to their visitors. To welcome visitors, we need to let them easy to understand the exhibition and museum. Of course, the arrival space is a place to answer visitors' questions and introduce the whole museum. Hence, the nature of legibility is quite vital here. In addition to signs

and maps, these are based on the legibility of the words and texts. Space's legibility is more difficult to control, which is mainly reflected in the orientation of the space and the interpretation of the atmosphere of the space by visitors.

In some big museums, the arrival space is the role of a transport hub, which connects different exhibition rooms. When visitors enter such a space, a clear space orientation seems important. Like the California Academy of Sciences, visitors can see through the transparent glass to see each exhibition hall's different theme in the arrival space (Figure 5-8). Shanghai Nature History Museum creates two levels underground's big atrium around the arrival space. When visitors enter the arrival space located on the first level, they can easily find what happens on every floor through the atrium (Figure 5-9).

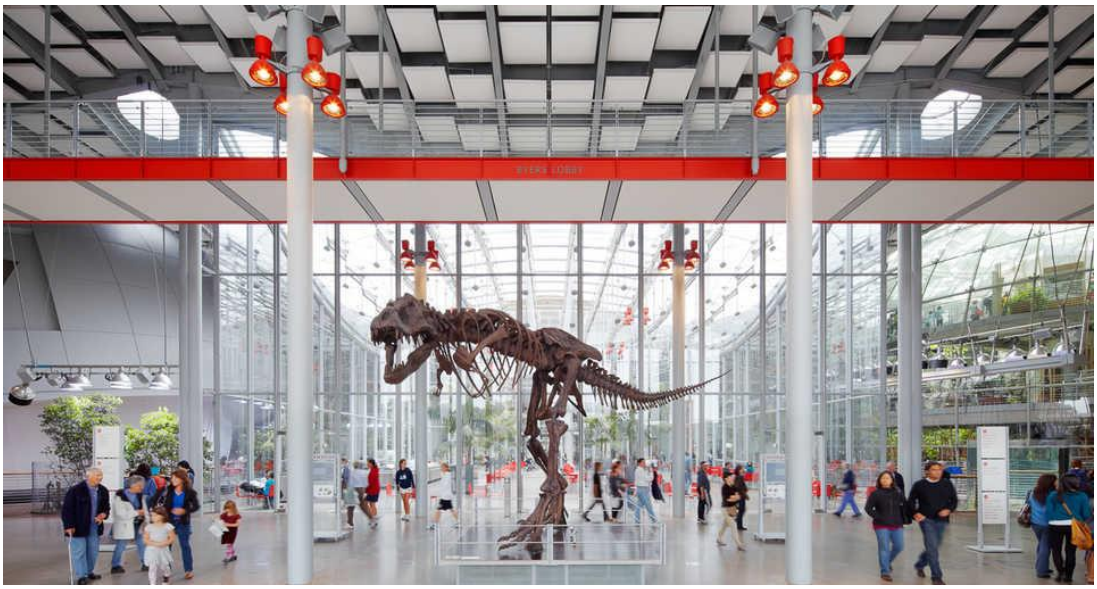


Figure 5-8 Arrival space of the California Academy of Sciences (Available from: < https://www.klook.com/en-HK/activity/7472-california-academy-of-sciences-san-francisco/ >, 17th Feb 2019)

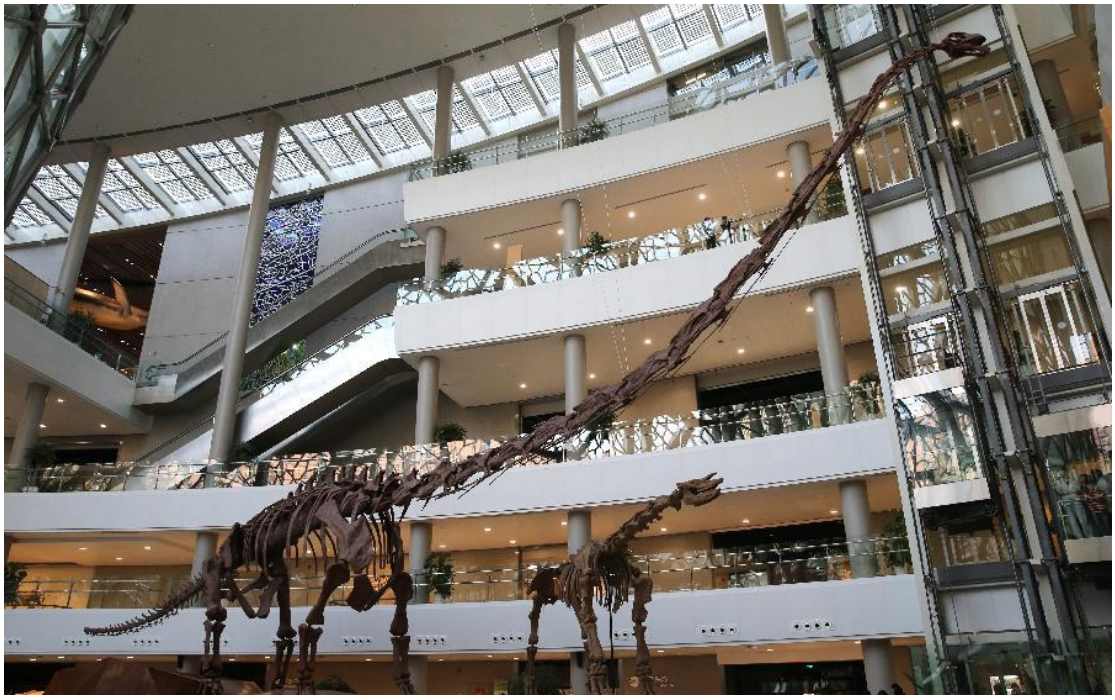


Figure 5-9 Shanghai Nature History Museum (Available from: < http://www.china.org.cn/photos/2015-04/19/content_35360565_4.htm>, 17th Feb 2019)

Legibility is one of the crucial conditions of creating visitors' visiting experience. When people come to a new place, the striking signs and clear layout will play a vital role in leading visitors to interpret the space. The exhibition's words and context should be noticeable and easy to read. In addition, the atmosphere of the space also influences the visitors' understanding of the museum theme. Section 4.3 mentioned the materials, light, sounds, details etc., that can create a specific atmosphere in the space. For example, some natural history museums use animals and plants carved on architectural elements (columns, floor tiles) to help visitors interpret the themes of exhibitions about nature. Some war-themed museums make visitors experience the pain and despair of war through dark colours and special sounds in the space.

The interpretation here is not just interpreting objects but also deciphering interpretation--in other words, anticipating and negotiating between the meanings constructed by visitors and the meanings constructed by museums (Vallance, 1998). For example, designers gave arrival space meaning; visitors use this space by their understandings. It is a process of

mutual interpretation and understanding.

5.2.2.3 Comfort

Comfort is a prerequisite of successful public spaces. The length of time people stay in a public space is a function and an indicator of its comfort. Sense of comfort includes physiological comfort, which is decided by environmental factors like sunlight, temperature and ventilation, and psychological comfort, driven by space's content, character, and atmosphere.

Physiological comfort

The temperature, humidity, light and sound of the surrounding environment can directly influence visitors' physical environment experience. A welcoming atmosphere should make users feel comfortable and want to spend more time in it. The comfortable environment is a very basic but essential condition to let visitors be welcomed in the space. It should be noticed that the arrival space is a public place and a part of the museum. The arrival space's main duty is still to help visitors have a better understanding of the exhibition. Therefore, unlike other public realms, a comfortable environment will be measured according to different exhibition themes.

Some museums try to create a real environment to relate to their exhibition and build an immersive image for their visitors when they first come into the arrival space. Such as simulating the hot and humid environment of the rainforest to express the tropical topic. However, this special environment may be far from the traditional understanding of comfort in people' minds. The distinctive environment in the specific space can express the exhibition's theme more vividly to their visitors, who enjoy it.

Consequently, for some museums that need to convey specific information to visitors, there is no clear definition of the comfort standards through the control of physical data. Instead, the comfortable environment should be the one that can make they can have a better understanding of the space, standing in the visitor's point of view.

Psychological comfort

The architectural space gives people psychological feelings. Both noisy, overcrowded spaces and empty, cold spaces can affect visitors ' visual experiences. Proportion is a method to produce a balance in all buildings by obeying a certain modulus in detail and overall. In the classical order of architecture, the human image is the main source of proportion. According to Vitruvius, the proportions of the human body show the ideal proportion of the human body created by Leonardo Da Vinci, inspired by the concept of square and circle by the ancient Roman architect Vitruvian (Figure 5-10). The "body" becomes the prototype for people to perceive the world and construct the architectural environment. Proportion is the relation between the different parts of a building and between any individual parts and the whole. Although arrival spaces come in various sizes and shapes from the museum's angle, the indoor space should be proportionate to the number of people it can hold. The "body" becomes the prototype for people to perceive the world and construct the architectural environment. As the vitality of space mentioned earlier in this chapter, the visitors' number and space's capacity should be reasonable and can build a comfortable space atmosphere.

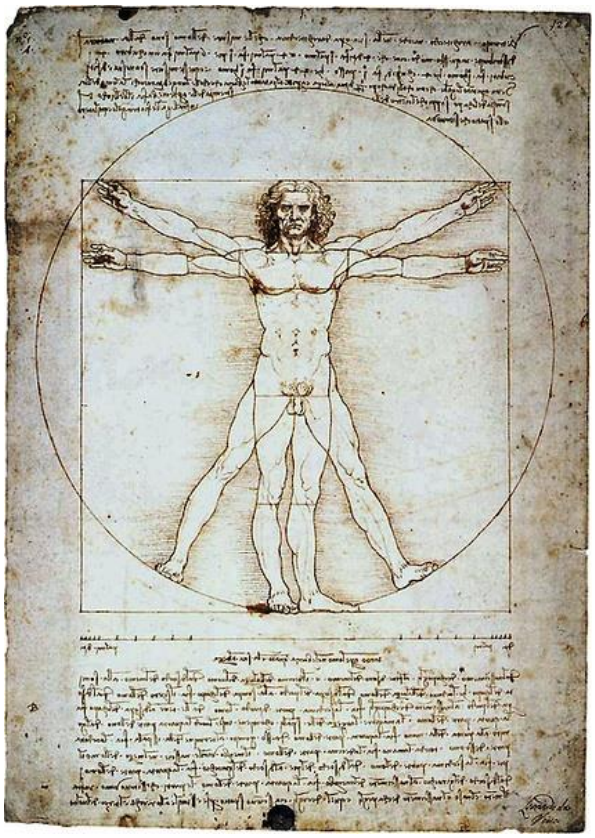


Figure 5-10 The proportions of the human body according to Vitruvius (Available from:< https://contentdm.lib.byu.edu/digital/collection/Civilization/id/732/ >, 17th Feb 2019)

The details of the space and the size of facilities in the arrival space should be reasonable for various groups of visitors, like design facilities for different age groups. It also needs to be considered the comfortable use of the disabled and children's scale in the arrival space (see details in 5.1.2.1). A welcoming atmosphere should be welcome to all kinds of groups and let them participate in the space. When visitors can easily find suitable facilities for them, it's easier for them to feel that they own a place in the space.

In addition, some temporary exhibitions can be held in the arrival space. Unlike the exhibition rooms, the temporary exhibition in arrival space should be positive for visitors to participate, showing it welcome to all people. It needs to create a comfortable psychological state for all kinds of visitors. In this way, the exhibition should try to avoid some sensitive topics. If visitors can feel happy and comfortable after joining the exhibition in the arrival space, it will prompt them to continue visiting this museum.

5.2.2.4 Distinctiveness

Arrival space is easy to be ignored but must exist during the whole design process. It is the beginning of the narrative of the whole museum. Thus, a reasonable and impressive start can encourage the audience to continue their journey in the museum. Although the exquisite and unique exhibits focus on museum visits, they cannot be separated from the previous environment's setting and paving. Arrival spaces need to have their character and personality to be impressive. It can draw out the special identity and authenticity of the museum by highlighting and enhancing some key elements.

Distinctiveness is concerned fundamentally with preserving and enhancing special places (Clifford & King, 1993). Every place has its unique geographic, physical and environmental characteristics and combines unique cultural circumstances manifest. Like the Natural History Museum of Utah and Tianjin Ji County Geological Museum, they followed the mountain environment around them. The Museum of Islamic Art and Suzhou Museum reflected their local culture in the building forms. Suppose all the museums' arrival space just meets the basic functions and building scales without any identities. In that case, all the arrival spaces may become similar and hard to be recognised by their visitors. Therefore, with a welcoming atmosphere, the arrival space should tend to display distinctiveness. From the local level, the distinction space involves highlighting and enhancing whatever can draw out that location's particular identity and authenticity. Such an arrival space could publicise the charms of the location. This helps visitors easily concentrate on the theme and creates an impressive visiting experience from the museum's level.

Based on people's daily cognitive and living experience, the colour, texture, detailing and shape, and so on can contribute to the arrival space's character. For example, the New Los Angeles Museum of the Holocaust and the Tirpitz Museum both reflect the theme of war, who share many similarities in the selection of facades materials and the design of the entrance ramp (Figure 5-11). The solid concrete is easy to associate with the strong fortress of war, and the gradually rising walls on both sides of the entrance seem to bring visitors

underground and open the door of hidden stories. The differentiation of the environment enriches people's spatial experience and thereby enlarges their perception abilities.



Figure 5-11 Similar approach to the entrance building (Edited by author, 2019. Available from:< https://www.archdaily.com/467894/los-angeles-museum-of-the-holocaust-belzberg-architects; https://www.archdaily.com/875965/tirpitz-big >, 18th Feb 2019)

Local distinctiveness is essentially about the place and people's relationship with it. Therefore, local cultural heritage needs to be preserved. The local museum is the bridge between local heritage and people; it links closely and enhances residents' sense of pride (Clifford & King, 1993). Thus, it is necessary to express the museum's distinctiveness, especially in the arrival space, which is the most direct space in public.

5.2.2.5 Key questions

People's experience is a holistic process rather than experiencing any single part in isolation.

Based on Gestalt theory, no matter the pleasures and difficulties the visitor's experience with the environment, it can be related to visitors' ease or difficulty in mentally grouping different elements from the visual field (Meiss, 2013). Thus, the museum's impression, legibility, comfort, and distinctness will make visitors minds on creating their impressions and memories in the arrival space. There are four essential attributes of image aspect are identified when designing a welcoming arrival space. In each part, the visitors' perception of the attribute is quite considerable. These attributes can translate into a series of generalised questions below (Table 5-3):

Image	Impression	Outdoor	What do visitors think of the museum's building?
			How do visitors like the entrance/façade/environment of this museum?/ Does the space make a good first impression?
			Do visitors care about what the museum's surrounding looks?
		Indoor	Are people taking pictures? Are there many photo opportunities available?
			How do visitors like the indoor atmosphere?
			What is the most impressive thing for visitors in the space?
			Can visitors notice the specific design in the space?
	Legibility	Space	How do visitors find this space?
			Do visitors know where they go next? OR Is the space shows direction clearly?
			Can visitors understand the atmosphere of the space?
		Contents	Are there enough signs/ information panels in the space?
			Are the signs/ information panels easy to find?
			Is the language of the signs/ information panels easy to read and understand?
	Comfort	Physical	Are visitors happy with the physical environment of the space?
			Does the physical environment meet visitors needs and expectations?
			Are there enough places to sit? Are seats conveniently located?
		Psychological	Do visitors feel the flows are very crowded/ noisy that affecting their visiting experience in the space?
			Are people happy? Do people make eye contact with each other?
			Are the facilities easy to use for different groups of visitors?
			Is the exhibition contents/ theme suitable and comfortable for different groups of visitors?
	Distinctiveness	Does the museum highlight the distinction of the city/ region?	
		Can visitors be aware of the distinctive features of the space?	

Table 5-3 Design questions about Image (Author, 2020)

5.2.3 Accessibility

As a public realm, the accessibility of a museum is one of the decisive factors affecting its visitors' experience. Typically visitors avoid going to unfamiliar places if they could not find relevant access information. Most people are very likely to return to an area with good

accessibility (Euan's Guide Access Survey, 2015). At the beginning of the twentieth century, Dana (1917) first proposed the importance of museums' accessibility. She mentioned that objects in museums should be put where the most people can quickly and easily visit them (Dana, 1917). The concept of accessibility in museums today is no longer limited to ease of physical access. It includes accessibility to knowledge and information for visitors and even the virtual visit online. Visitors can access the museum's website, brochures, and information panels to easily learn about the exhibition, reflecting the museum accessibility (Simon, 2010). For museums in general, improving accessibility by changing the space environment is still an effective method.

The boundary, function arrangement, space division, etc., establish the museum's physical environment. The accessibility of the boundaries can determine whether people will enter the museum without any problems. For national museums, thousands of visitors visit here every day, many foreigners also often come for the first time. The visitors don't want to miss anything; they need to understand immediately which way to go, how big the museum is and how long they will need to see it. Disordered space arrangements can easily make visitors get lost and waste limited time on finding the way. At the same time, it is easy to cause traffic congestion at fork points and affect people's visit experience. Thus, space division and its clarity are quite important here.

In this research, the accessibility of the visiting experience can be considered from the physical environment and the psychological built these two aspects. The physical environment refers to the arrival space's real built environment, like the boundary of the space, linkage of other surrounding buildings and internal spaces, and the guidance for visitors to access that mentioned above. The museum does not exist independently in the city; it closely connects with the surrounding environment. Its location, traffic accessibility, and the visual accessibility of the city streets can affect the enthusiasm and initiative of visitors to enter the museum.

The psychological built is also a decisive factor affecting the accessibility of visitors. Museums open to the public means they allow everybody to access them. However, there

is no absolute public realm, and the degree of openness of museums varies for different groups. Thus, to become truly public access, different socio-economic, gender, and ethnic groups should be considered in one space. In this part, the accessibility will be considered through the boundary, clarity, and disabled and vulnerable groups these aspects.

5.2.3.1 Boundary

As a public space, many scholars emphasised the significance of the boundary of the space. They believe that the edge will affect the space's vitality. Space's edge is a line or interface with no thickness and a place or zone with volume (Alexander et al. 1977: 753). In the definition of arrival space in Chapter 3, its boundary was particularly emphasised. The arrival space is the most direct connection with the external world, which boundary represents the edge between the visitors' access to the museum and outside.

Many old and traditional museums always have a grand gate and massive walls, showing the museum's very clear boundary, like the British Museum and V&A (Figure 5-12). Some modern museums with distinctive façade that contrast sharply with their surroundings also express clear boundaries to their visitors, such as the Malmö Museum of Art and New Art Exchange. Because of the existence of boundaries, space becomes concrete. The function of boundaries is to limit the space, which causes the private and public characters of the space.

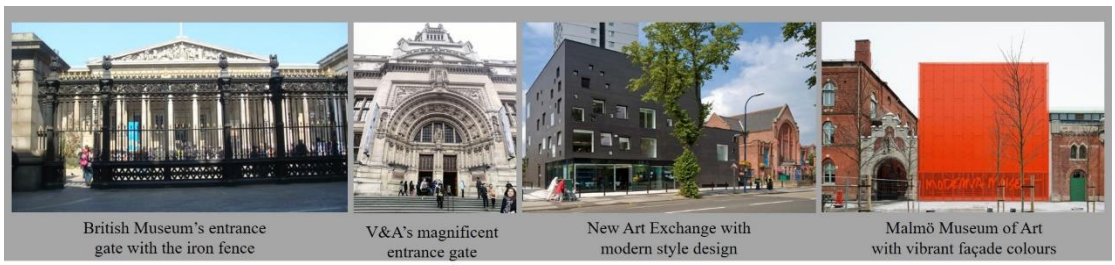


Figure 5-12 Museums' clear boundaries (Edited by author, 2019)

Although the museum is a public place, it is also a place full of mystery and curiosity. Thus, proper privacy for the following exhibitions is conducive to arousing visitors' interest in the arrival space. The boundaries also need to be designed to enable a range of indoor and

'private' activities to co-exist in close physical proximity with a range of outdoor and 'public' activities. For example, when views in museums, the noticeable façade can provide interest to passers-by, like an advertisement of the museum to attract more people. Transparent building skin can promote communication between indoor and outdoor, and the indoor visitors can view out of the activities in the street. Like the Riverside Museum in Glasgow and the 9/11, Memorial & Museum mentioned before. Both of them are covered by a large glass curtain wall, which can deliver the outside and inside views. Various activities can take place in these huge squares before the museum. All these events connect the museum to its surroundings and push the museum's boundaries beyond its gates. When people are attracted to the museum's front entrance to participate in various activities, they are more likely to visit the museum. These museums attract more people to enter the museum by various activities on their open-air arrival spaces and the building image with advertising effect.

Besides the museum's style and facades, the number of entrances, clarity of information pannels, and activity directly visible from public space can indicate people's access to the museum. Sometimes, to relieve people's tension and pressure for visiting museums, weakening the museum's boundaries becomes another approach to encourage the accessibility of the museum.

Unlike the museum with clear boundaries, the museum's blurring boundaries show themselves more directly and clearly to visitors. The plants and landscape sometimes become immateriality boundaries for the materiality museums. Sometimes, plazas, squares and small parks in front of the entrance also help weak boundaries and play a role in mitigation. As support for visitor-watching, the edge of a space can be enhanced by providing formal (seating, benches, etc.) and informal (stringcourses, column bases, low walls, steps, etc.) places to sit.

The Perez Art Museum Miami locates at the edge of the Atlantic, blurring the boundary between architecture and landscape (American Society of Landscape Architects, 2015). Without walls, the museum is hidden under the roof formed by huge sun visors and trellis

(Figure 5-13). The elevated ground floor becomes a public plaza that allows people to walk through freely. The native plantings provide accessible connections between the Museums and their surroundings. The Museum grounds blend seamlessly with the adjacent park, with edges are intended to blur, creating an immersive experience for visitors.



Figure 5-13 The Perez Art Museum Miami (Available from:< https://www.archdaily.com/493736/perez-art-museum-herzog-and-de-meuron >, 18th Feb 2019)

The boundary separates the museum from the outside world, but the arrival space connects the two again. Therefore, the arrival space should be designed to gradually integrate the visitor into the museum's atmosphere that is acceptable to the visitor, which requires consideration of the connections and transitions between the arrival space and the surrounding spaces.

One of the key design elements is often the organisation of entrances, changes of level through steps and ramps, and the treatment of views into and out from the museum building. These key design elements should show their welcome visitors' characteristics in the arrival space as the connection or transition area. For example, in front of the Centre Pompidou in Paris is the gentle slope towards the entrance. It creates an entrance plaza by the slope of the terrain. The descent makes it easier for people to enter the building than the big steps in front of the museum. For example, compared to the crowds sitting and relaxing on the

Centre Pompidou's square, few people linger long on the large steps in front of the Metropolitan Museum of Art in New York (Figure 5-14). Despite the inside exhibits' absolute appeal, visitors are still easily hindered by the many steps at the entrance, especially in the hot summer.



Figure 5-14 The design of the arrival space leads to different activities (Author, 2019)

Moreover, some design elements that reflect details, such as handrails, special colours, and materials, can also play a role in the connection. The Staatsgalerie Stuttgart is an art museum in Germany that uses various colours as functional identifiers to lead its visitors. The bright pink and blue steel pipes as the exaggerated handrails with the public walkway lead to the main entrance (Figure 5-15). Recognisable colours make it easy to find the museum entrance and become the link between the street and the museum.



Figure 5-15 Bright colours of the Staatsgalerie Stuttgart (Available from:< https://www.archdaily.com/124725/ad-classics-neue-staatsgalerie-james-stirling >, 18th Feb 2019)

5.2.3.2 Clarity

An essential challenge for the museum to become more welcome is to create places that better meet people's needs and aspirations. Too often, this end is obscured by excessive concentration on means, with the result that many museums spent a lot of time and energy on their abundant exhibits but ignored many simple but meaningful methods in arrival space. No matter how precious the exhibits are and how rich the exhibition's contents are, unclear guide boards, chaotic flow of visitors, and unobtrusive information desk and introductions, any of these problems will reduce the visiting experience. The clear circulation and bold guide panels in the arrival space help lead people's flow and connect each functional area in this place. Such as different museum themes expressed by different design styles and colours can make visitors clearer where they are and where they want to go.

The Van Gogh Museum in Amsterdam is one of the Netherlands' most popular museums. A new entrance with a bent glass façade was designed to meet the ever-growing stream of

visitors requirements. Many paintings of Van Gogh reflected his capture of the sunlight. Similarly, the new arrival space wants to create a sunny atmosphere with clear glass and natural light (Hans van Heeswijk, 2019). Even the main staircase and its structure are both designed by glass. When visitors come into this area, they will experience a bright, spacious space without any obstruction of view. In the new arrival hall, people can take a glance at all sorts of functional areas arranged around. All the signs are coloured in vibrant yellow, which is one of the usual colours in Van Gogh's paintings (Figure 5-16) (ibid). The arrival space connects the old and new museum galleries, and visitors can freely choose their route through the spacious and clear passages and staircases (Figure 5-17). In addition, the bright architecture of this space is strongly recognisable and helps visitors identify their location in the overall museum.



Figure 5-16 The Van Gogh Museum's new entrance hall (Available from:< https://www.archdaily.com/772991/van-gogh-museum-hans-van-heeswijk-architects >, 20th Feb 2019)



Figure 5-17 The arrival space connects the old and new galleries (Edited by author, 2019. Available from:< https://www.archdaily.com/772991/van-gogh-museum-hans-van-heeswijk-architects >, 20th Feb 2019)

5.2.3.3 Disabled and vulnerable groups

Many physical barriers prevent the disabled, the elderly, those with young children in pushchairs, and disadvantaged groups from visiting museums. Because of the design standardised of specific items, such as doors, handles, and toilets, many people with a range of physiological impairments are impossible to use. Moreover, some designs or content involve sensitive topics, which may cause psychological discomfort for some people, which will deepen their misunderstanding of the museum and even prevent them from visiting the museum. Museums should provide convenience for all groups of people to express their welcome to the public. Hence, designing for disadvantaged groups is an assessment standard that cannot be ignored.

The museum should provide a wider variety of space than now exists because there are so many distinct groups and types of individuals, some of whom are not present catered. Nowadays, most museums have wheelchair access and toilets for the disabled. However, the disadvantaged group is not only referring to the people who sit in a wheelchair. For example, just 4% of the population with disabilities in the UK. are wheelchair users (Imrie & Hall, 2003). As populations live longer, disability is no longer the exception. It is increasingly the expectation as ageing takes its toll on even the healthiest individuals' physical and mental faculties (Carmona et al., 2012). The oldest age group (over 85 years) has been part of the population growth in some countries such as the U.K. and the U.S. over the last few decades and is also the group most at risk of disease and disability (Christensen et al., 2009). Therefore, the needs of those with disadvantages should be considered an integral part of the design process. By meeting their needs, museums and environments will perform better for all users.

For these disabled and vulnerable groups, the question of how to make the arrival space more easily to find and reach and people can read and interpret the signals for the use of the building is clearly of particular concern. The clarity of function and distinctive features in the built environment help visitors to navigate (Burton & Mitchell, 2006: 37). Good design can help overcome the problems experienced by disadvantaged groups of

effectively-being trapped and isolated in museums. However, studying the engagement of the disabled in the museum is another wide topic that is not the focus of this research and will not be discussed here.

5.2.3.4 Key questions

In order to welcome a wide range of visitors, museums should first meet the basic physical accessibility of people, such as creating buffered and transitional boundaries, designing friendly and accessible entrances, and creating a clear layout and orientated space. This physical accessibility leads to a consideration of the psychological accessibility of visitors, such as the identification of the space's information and the reception of exhibition content. The series of questions below will help to build the analysis system of accessibility in arrival space (Table 5-4).

Accessibility	Boundary	Is the location of the museum easy to reach?	
		What clues did visitors use to find the entrance?	
		Are the clues of the entrance of the museum clear and easy to find?	
		How do visitors feel like the museum's surrounding environment?	
		Is there a good connection between the space and the adjacent buildings, or is it surrounded by blank walls?	
		Can people see the space from a distance? Is its interior visible from the outside?	
		Are there any connections between the outdoor and indoor environment and contents?	
	Clarity	Space	How the arrival space connects other rooms?
			How to introduce the outdoor visitors into the museum by space design?
			Can visitors feel the transition between the arrival space and other indoor rooms?
			Can visitors make sure their locations of the museum through the space design?
			What is the movement path of the flow of people in the space?
			Do the roads and paths through the space take people where they actually want to go?
		Contexts	Are the signs easy to find for the visitors?
			Are the signs easy to read and understand?
			Can visitors make sure their locations of the museum through the signs/ maps?
	Disabled & vulnerable groups	Are there any facilitates (accessibility) designed for them?	
		Is the accessibility easy to find and use?	
		Are they happy to use the facilitates designed for them? OR Will they have psychological barriers to using these facilities designed for them?	

Table 5-4 Design questions about accessibility (Author, 2020)

5.2.4 Summary

The arrival space is where the museum holds social and economic exchanges, friends meet and cultures mix. They are the "front porches" of the museum. People interact with each other and with society here. When arrival spaces create a welcoming atmosphere, they become the stage for public life in the city.

Through the study of the formation process of experience and the behaviour of visitors, it

is found that the popular arrival space usually has the following characteristics. With diversified **usability**, people can engage in various activities, a good **image** that can attract people to stay, and an easily **accessible** entrance, both to its location and other areas within the museum. These aspects developed the Assessment System of Visiting Experience (ASVE) to help designers judge a museum's arrival space good or bad.

The usability, image, and accessibility of these three aspects are mutually independent and have overlapping parts. Richly functions sometimes can create an impressive image; a comfortable environment is one of the necessary conditions to ensure that various groups access the museum. Figure 5-18 introduces the ASVE in detail. Theoretically, when the design of the arrival space meets most of the elements covered by the three aspects of usability, image and accessibility, the user will feel a welcoming atmosphere in the space. Thus, this kind of arrival space will offer a welcoming experience.

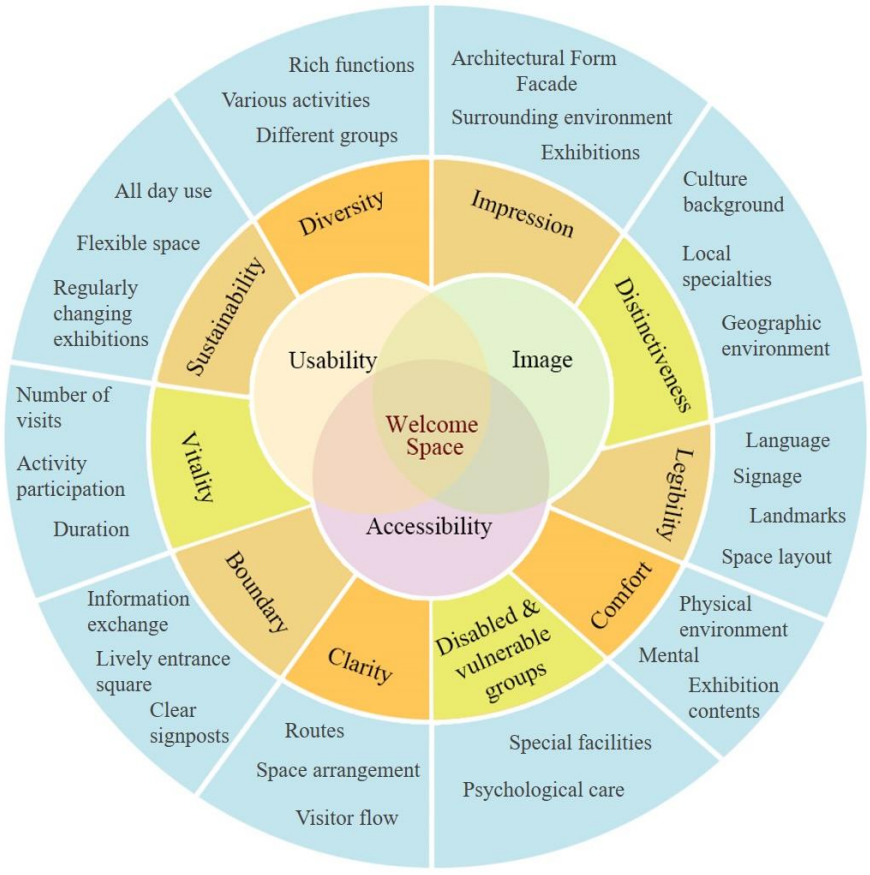


Figure 5-18 Assessment System of Visiting Experience (Author, 2020)

Conclusion

Creating a positive and welcoming visiting experience contributes to the sustainable development of museums. Architects can help museums from tangible physical environmental aspects to become more welcome through understanding the welcoming atmosphere, which is a process of mutual communication and influence. With the development of the museum, people's cognition and needs are changing. Listening to and understanding visitors' needs is also an essential reflection of the people-oriented idea in modern museums. Although the museum is trying to create a pleasant atmosphere for its visitors, it is still difficult to avoid the existence of some unwelcome factors. It is necessary to classify the various elements in the arrival space to sort out a comprehensive system. Building the assessment system of visiting experience (ASVE) in arrival space can provide a reference and design framework for architects in creating a welcoming atmosphere for visitors. Visitors can feel more welcome from involving in the real object environment in the museum.

The arrival space in the welcoming atmosphere can be easy to create a welcoming experience for its users. Creating a welcoming atmosphere in the arrival space is essential to attract a wide range of visitors to the museum. The concept of a welcoming atmosphere can exist in various parts of the museum from a wide view, like the entrance hall, exhibition room or lounge. Still, only the arrival space could play a decisive role in visitors' first impression and expectations, directly affecting their visiting experience.

From the perspective of geographic location, arrival space is the beginning and end (in most instances) of the visiting journey and directly connects the outside world. From the museum's functions, arrival space is the reception of the whole museum, which visitors learn about the museum from here. Therefore, arrival space matters intensely to the human experience of the whole museum. As an arrival space, it should be unique while ensuring the basic needs of tourists. Based on the study of space's atmosphere in Chapter 4 and the concept of welcome in museums in Chapter 5, visitors' sense of arrival space is related to how they use the functions of the space and what activities they can engage in. Both outside

and indoor images can affect visitors' feelings as well. Also, accessibility is the basic requirement of public space. As a result, to evaluate an arrival space, it needs to consider the usability, image, and accessibility of these three aspects, which build the assessment system of visiting experience (ASVE) of this research. These three aspects of the arrival space can be seen as the visible components, just as they can be seen, touched, and used. The ASVE transformed the main factors that affect visitors' visiting experience into specific design problems. This will facilitate the quantitative evaluation and analysis of the following cases (see Chapter 6). The ASVE will be further analysed and verified through specific cases in the following chapters to refine the theory.

Chapter 6. Case Study of the Natural History Museum in London

Introduction

Chapter 5 establishes an assessment system for the visitor experience (ASVE) to develop a design plan for creating a welcoming atmosphere in the arrival space. The ASVE translates the design approach into assessing an arrival space's tangible physical elements through usability, image and accessibility. It can be used to determine whether a space is popular by observing visitor behaviour and interviewing visitors' subjective feelings. However, this evaluation system only stays at the theoretical level, which needs to be tested and refined through practical cases in this chapter.

The Natural History Museum (NHM) in London has been open to the public for more than 100 years. Because of its vast range of natural history exhibits and collections, it becomes one of the most famous museums in Europe and the top attraction in the UK. It attracts millions of visitors every year, which guarantees the possibility of obtaining a large amount of research data. In response to visitors' growing number and requirements, it has undergone two extensions to create the three main entrances that exist today. The arrival spaces at the three entrances have different architectural atmospheres, depending on the age of construction and the theme of the exhibition. The visiting experience caused by these three arrival spaces' different architectural atmospheres will be discussed and investigated through ASVE.

This chapter firstly provides a short introduction to the NHM, including its historical background and the field research plan designed according to its characteristics and the ASVE. Later, it will analyse the three arrival spaces of the NHM, respectively, which reflect different architectural styles, exhibition themes, and different atmospheres. Thus, data collection was carried out separately for the distinguishing features of each arrival

space.

6.1 Introduction to the Case

The assessment system (ASVE) summarised in Chapter 5 needs to be tested by real cases. Because of the different types, sizes, and target populations of the museums worldwide, it is more persuasive to find a comprehensive case with an absolute scale, and the public has generally accepted it. The Natural History Museum in London is one of the most famous and popular museums globally. Its development has witnessed the journey of European museums and the popularisation of natural science to the public. In its more than 100 years of development, it has undergone two major expansions. Each construction reflects a different architectural feature, which has created three arrival spaces with different styles and distinctive identities: entrances with their surroundings on Cromwell Road, Exhibition Road and Queen's Gate (Figure 6-1). These three arrival spaces of the NHM involves different exhibition theme and different functional arrangement interior (Table 6.1).

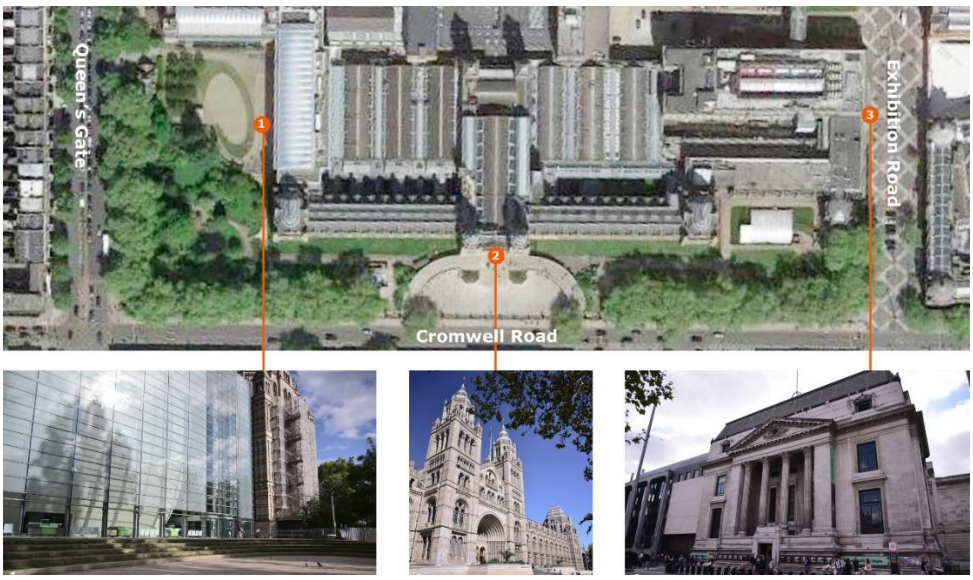


Figure 6-1 Three entrances of the Natural History Museum from the plan (Google map, 2019. Edited by author, 2019)

The arrival space on Cromwell Road is the earliest of the three arrival spaces to be built. Its mixed style of Gothic Revival and Romanesque architecture makes people feel the

grandeur of 19th-century architecture. In contrast, the arrival space on Exhibition Road is understated and plain, without too many fine reliefs. It incorporated the original Geological Museum into the NHM and was opened to the public in the late 20th century. The arrival space on Queen's Gate is not open every day. It connects to the Darwin Centre, which is accessible through the interior of the NHM. This 21st-century modern building with an all-glass facade contrasts with the architecture of the other two arrival spaces. Visitors may have various feelings about them. This part will focus on its evolutionary history and the corresponding research design to deeply understand the visitor's understanding and feeling of the arriving space.

Arrival space	On Cromwell Road	On Exhibition Road	On Queen's Gate
Built Time	1864-1881	1929-1996	2002-2009
Architectural style	Mixture of Gothic Revival and twelfth-century Romanesque-style architecture with lavish terracotta decoration.	Mixture of functionalist architecture and neoclassical style.	Unique and modern architecture with large lass curtain wall and sphere shape.
Designer	Alfred Waterhouse (Under the guidance of Richard Owen).	Sir Richard Allison & John Markham designed in 1922. Neal Potter & Pawson Williams designed Earth Hall in 1996.	C.F. Møller designed the 2nd phase of the Darwin Centre in 2009.
Exhibition Theme	Natural life and history.	Geological science and palaeontology.	Zoological specimens' room and research area.
Accessibility	Long entrance ramps; East lawn, connects to the underground passage.	Small size entrance, opposites the V&A Exhibition Road Quarter.	Open at special times only; accessible from other indoor halls.
Functions	Information desk, exhibitions, cloak room, shop, restaurant & café, toilets, rest benches.	Information desk, cloak room, restaurant & café, shop, exhibitions, toilets.	Exhibitions, café, scientific research room, cloak room, toilets, rest benches, courtyard.

Table 6.1 Three arrival spaces of the NHM (Author, 2019)

6.1.1 Historical background

The Natural History Museum (NHM) in Kensington, London, was officially known as British Museum (Natural History) until its legal separation from the British Museum in 1963 (Natural History Museum, 2019). Professor Richard Owen put a lot of effort into proposing the new building in South Kensington(Girouard, 2005: 9). After more than five years of proposals, the Trustees of the British Museum accepted Owen's idea in 1860 (ibid).

Finally, originating from collections within the British Museum, the landmark Alfred Waterhouse building was built and opened by 1881 (Girouard, 2005; Lotzof, 2019; Natural History Museum, 2019). Today, the museum is exhibiting a vast range of specimens from various segments of natural history. From the look of the whole museum, it is a gorgeous Victorian building, ambitious and very imposing.

6.1.1.1 The evolution of the building layout

Before the Natural History Museum opened to the public in South Kensington, its architectural design has sparked many discussions at that moment. In 1859, Owen sketched a building draft for his ideal natural history museum (Girouard, 2005: 12). He designed a vast museum, which could almost show everything (ibid). The new building to be symmetrical and contained two domes in the centre. The bigger one was a circular hall for showing typical collections. Behind it was to be a circular lecture theatre (Figure 6-2). At the same time, an exhibition on such a large scale caused a lot of criticism. Most scientists preferred to create a much smaller area for public display, storage, research, etc. Later, at the request of the Parliament, Owen had to shrink the space by half. In his 1862 scheme, as figure 6-2 shows, the circular hall was above the round theatre in the middle, so exhibition and education could be juxtaposed as 'two ways of producing knowledge' (Huang, 2008:59). The long corridor along the frontage links with each small gallery arranged like the comb's teeth (Girouard, 2005: 12; Psarra, 2009: 141). At that time, museum design was still focused on collecting and education, without much consideration for the visitor's point of view.

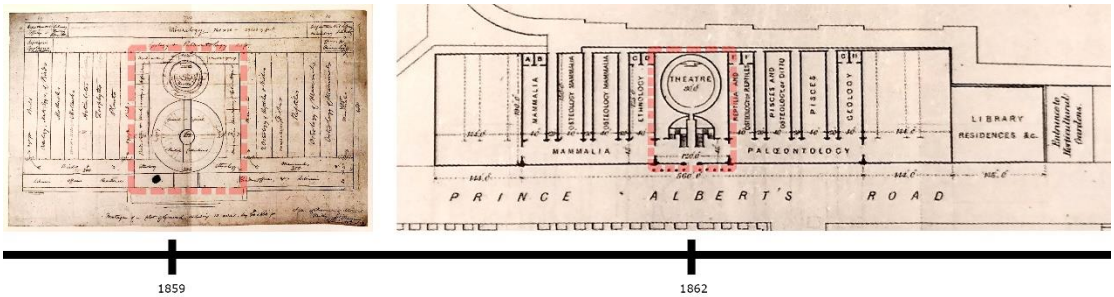


Figure 6-2 Owen's schemes in 1859 and 1862 (Girouard, 2005. Edited by author, 2019)

Meanwhile, a design competition for the new museum is underway. The winning entry in the architectural competition was a grand sequence of apartments as a cathedral of science included a circular staircase hall and a large lecture theatre in the centre submitted by Captain Frances Fowke (Figure 6-3). His museum is entered through a set of doors flanked by columns modelled on Fingle's Cave in ScotlandTerra-cotta has been used as a unifying decorative material. There are carvings of beats and plants, both imaginary and real, but Fowke died shortly afterwards. So, the scheme was taken over by Alfred Waterhouse, who had designed the Edinburgh Museum of Science and Art and the 1862 Exhibition Building in London (Girouard, 2005; Thackray & Press, 2013; Lotzof, 2019). He had revised the plans significantly and changed the style from Renaissance to German Romanesque style by adding characteristic facades and ornate decorations, which would afford both the grandeur and simplicity of this building. In the centre, the rectangular hall in the manner of a cathedral nave with 'side chapels' replaced the central dome and abolished the lecture theatre. Waterhouse departed from Fowke in the direction required by the museum's officers; however, by introducing subdivisions to reduce the size of his compartments and increase the wall-space (Thackray & Press, 2013; Bullen, 2006) (Figure 6-3).

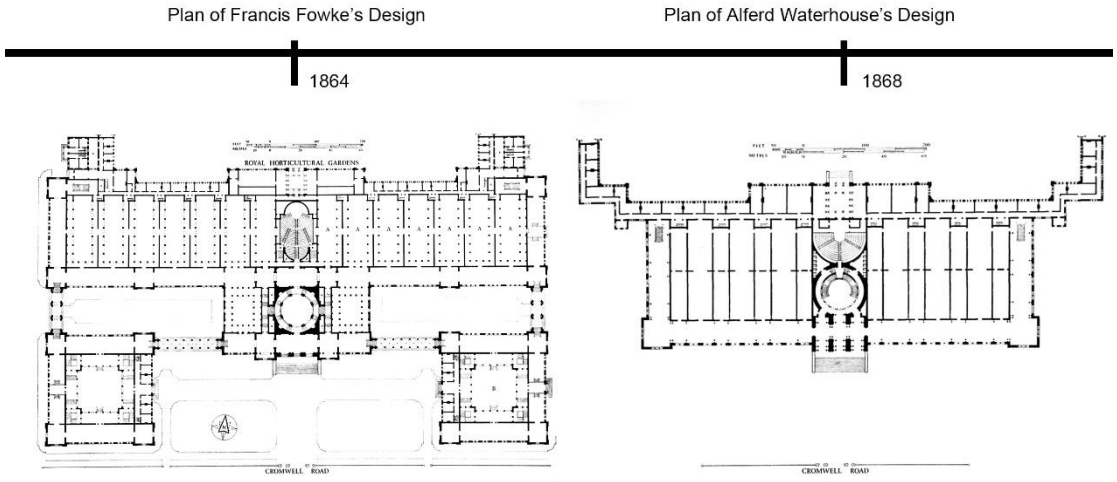


Figure 6-3 Plan comparison of the Natural History Museum in the 1860s (London, 1975. Edited by author, 2019)

With the limitation of the economy and some political reasons, the design draft was

modified several times. Finally, Waterhouse's scheme revealed a high level of similarity with Owen's spatial concept and the layout was designed in symmetry with a central hall and grand stairs (Psarra, 2009). Finally, the new building, which was realised as the permanent edifice of the Natural History Museum in London in 1881 (Figure 6-4). The architecture style articulated a message of the cathedral of nature, which has been called "a cathedral to science" (Lotzof, 2019).

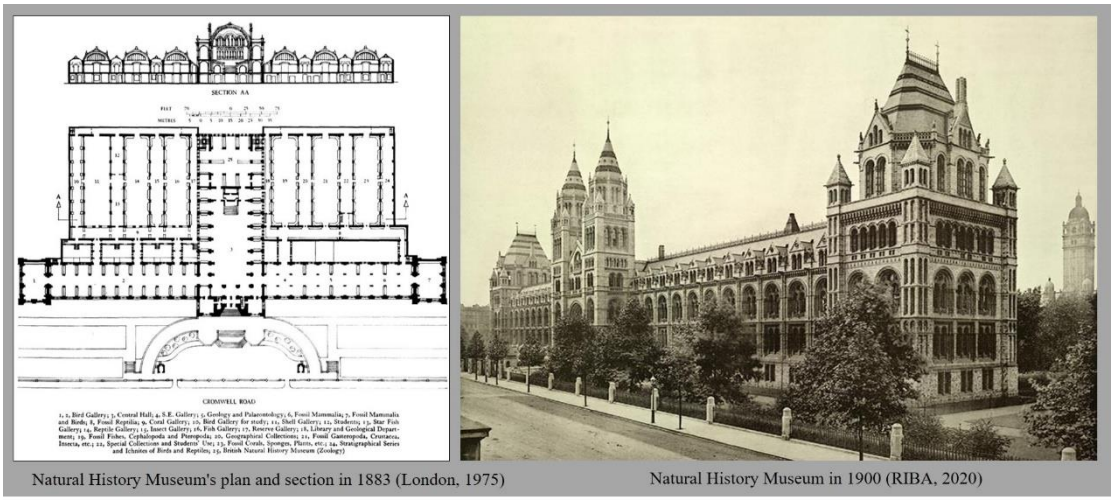


Figure 6-4 Natural History Museum's plan and section in 1883 (Natural History Museum, 2020)

Since then, the NHM has been famous for its stunning architecture and rich collection. It attracts around four million people from all over the world to visit the museum every year. Its enormous size is an indication of its central public role in bringing science to the people. There are two expansions made in the NHM (see details in 6.2). One is the rebuilt of the Earth Gallery in 1996, which incorporated the Geological Museum in 1986, the red area in figure 6-5 (Natural History Museum, 2019). Another is the addition of the Darwin Centre in 2002, the yellow colour in figure 6-5 (ibid). Thus, the museum adds two more entrances with different styles to the original. The entrance on Queens Gate that connects the Darwin Centre is rarely open to the public, and visitors can reach it indoors or through the Wildlife Garden next to the entrance on Exhibition road. These three entrances, together with their surroundings, form three different styles of arrival space. Based on the ASVE, these three arrival spaces will be separately evaluated from the useability, image and accessibility

aspects. Thus, to reveal how the concept of arrival space might be applied to visitors' welcoming experience.

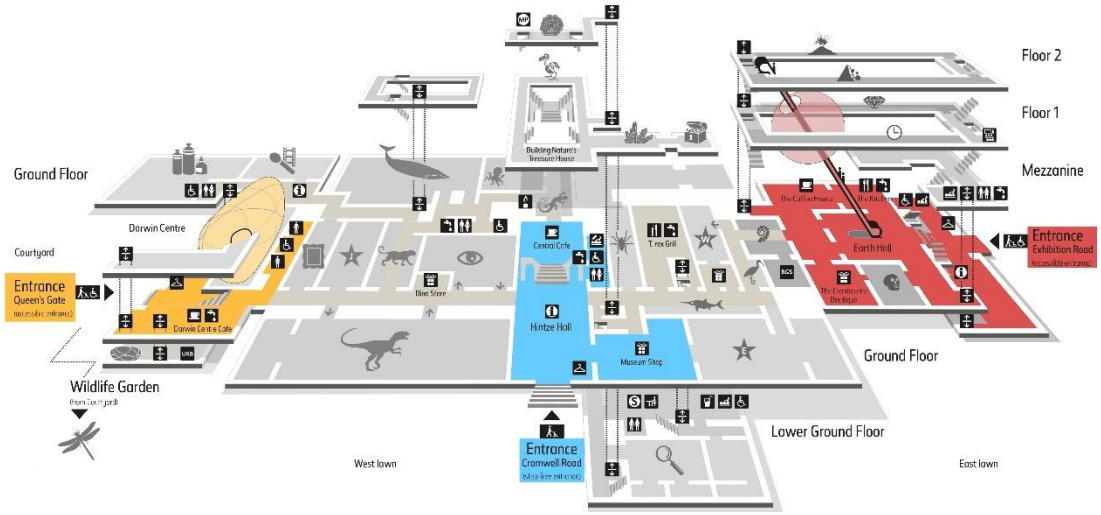


Figure 6-5 Natural History Museum's plan (Natural History Museum, 2019; Edited by author, 2019)

6.1.1.2 Public preferences

In addition to the NHM's rich history and the advantage of having multiple arrival spaces, the theme of the museum's natural history has always been the key to catering to public preferences. The publication of Charles Darwin's *On the Origin of Species* in 1859 has sparked heated discussions and debates in natural history's academic field (Thackray & Press, 2013). As a result, more and more people have become curious about the origin and evolution of life. The exhibition's theme, which is very popular with the public, attracts a wide range of groups to NHM, involving people of all ages, ethnicities and cultural backgrounds.

However, in the early building of the NHM, Richard Owen believed that all of nature was influenced by a divine ordering, and a natural history museum should display a 'comprehensive, philosophic, and connected view' of all the different classes (Girouard, 2005). Therefore, Owen wanted to build his museum to display all collections to the public in a series of parallel galleries, which were arranged by biological classification but equally laid out one by one (Psarra, 2009: 143). It can be found in his original sketches of the NHM

(Figure 6-6). By this design, Owen wanted every visitor to receive a clear understanding of taxonomy and tried to clarify all species' equal positions after being created by God (Yanni, 2005; Girouard, 2005). Later, as the public became more receptive to Darwin's theory, the logical arrangement between the museum's exhibits echoed the logic of species' evolutionary development so that they were more easily understood and accepted by visitors (Bullen, 2006).

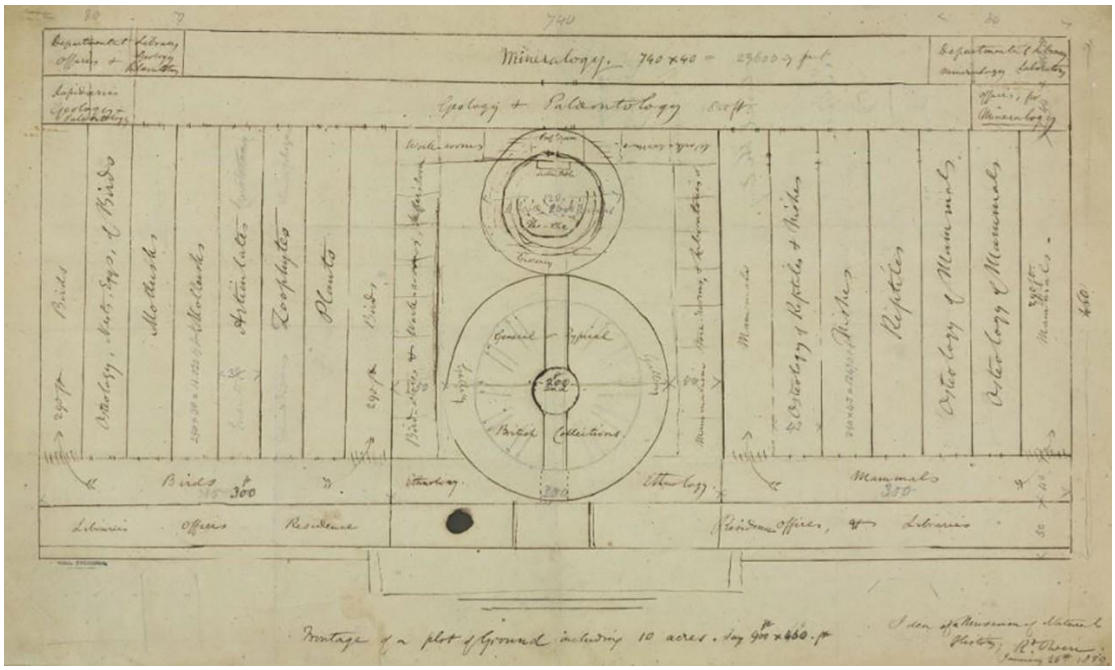


Figure 6-6 Richard Owen's architectural sketch of the Natural History Museum in 1859 (Lotzof, 2019)

Regardless of the exhibition contents' arrangement, the main architectural plan of the museum follows the 19th-century design by Water House. Even today, it is still possible to see the layout with a spinal cord and ribs laid out in an orderly fashion in the NHM. The Hintze Hall that connects Cromwell Road's entrance controls the east and the west wings, which forms a spinal cord linking the rear gallery spaces (Figure 6-7). The museum connects the original Geological Museum and the newly built Darwin Center to form today's huge architectural volume and rich exhibitions. In order to guide visitors, the museum divides the exhibition area into the red area, green area, blue area and orange area according to different colours. In addition, it sets the information desk in the three

entrances(Figure 6-8).

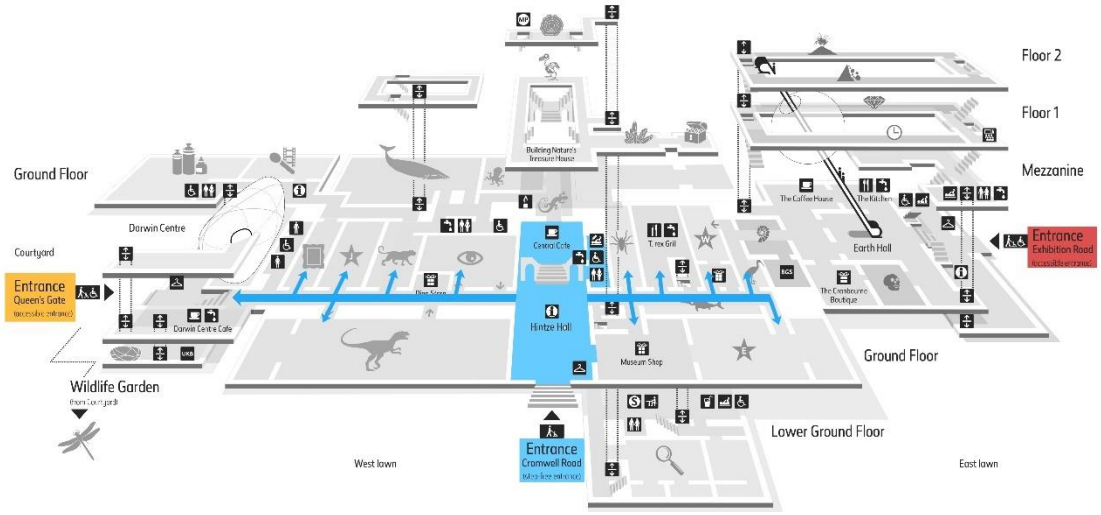


Figure 6-7 Main visiting circulations from the entrance on Cromwell Road (Natural History Museum, 2019; Edited by author, 2019)



Figure 6-8 Different coloured zones in the NHM (Natural History Museum, 2020. Available from:< https://www.nhm.ac.uk/content/dam/nhmwww/visit/map/museum-map-july-2020.pdf>, 4th August 2020)

In addition to a wide range of exhibits and recognisable exhibition areas, the museum's

architectural design is also designed to be as relevant to the theme of nature as possible to draw attention to it. Although the main building of the NHM is a combination of Gothic and Romanesque, which was popular in the 19th century, the architect Waterhouse used the natural world as an inspiration, combining traditional architecture with decorations with images of nature. With the help and guidance of Owen, his innovative design made terracotta covering the ironwork of the entire building and used living and extinct animals' images as terracotta decorations (Figure 6-9). 'The ornament was divided into two main classes: the west, zoological, half was decorated with living, the east geological half with extinct species' (Girouard 2005: 57; Stearn, 1998). Even today, these exquisitely carved animal and plant reliefs still bring visual shock and surprise to visitors.



Figure 6-9 The terracotta decorations designed by Alfred Waterhouse in the NHM (Lotzof, 2019. Available from:< https://www.nhm.ac.uk/discover/alfred-waterhouse-museum-building-cathedral-to-nature.html>, 13th October 2019)

Above all, the NHM has attracted visitors worldwide with a large enough scale and capacity and its enduring popularity of the natural history exhibition theme. Based on the museum's annual review research, there are 5.3 million people visited here in 2019, which shows an increasing trend compared with previous years (Natural History Museum, 2020). The continuous flow of visitors provides great convenience and feasibility for the collection of survey data. What's more, the museum's management and research system are becoming more and more perfect with the development of nearly a century. Numerous

social surveys are carried out here every year, which also supports the following research.

6.1.2 Research design

The primary purpose of this research is to collect the data of visitors' behaviours in the three arrival spaces and discover the relationship between visiting experience and arrival space. Then, explore how to create a welcoming visiting experience by designing a good arrival space for the public. The ASVE in Chapter 4 is based on the theoretical analysis of various cases, so field research is needed to determine whether the evaluation framework is feasible. The arrival space's popularity among visitors will be judged from the usability, image and accessibility of these three perspectives through massive data collection. For the authenticity and validity of the data, different research methods are needed to collect data for different problems, which will be introduced in detail below.

6.1.2.1 Questionnaires

To make the research more credible, a large amount of feedback information from people with different backgrounds and ages needs to be collected in the NHM. The questionnaire is a quick and efficient means of obtaining large amounts of data from a huge sample of people. The setting of the corresponding questions can reflect the attitudes, preferences, opinions, and intentions of different groups of visitors.

Three kinds of questionnaires are designed based on different arrival spaces of the NHM (Appendix I), and all questions are multiple-choice questions. Questions related to the aspects of space's usability that visitors can engage, their feelings about space's image, and the accessibility. For example, Questionnaires in Hintze Hall are designed for Cromwell Road's arrival space; the first question is to understand the accessibility of the visitors in the space. Question 2 and 4 are to investigate visitors' impression of the space and the degree of interpretation of the content, and Question 3 focus on the participation of activities in this space. Later, Questions 5 to 8 will collect respondents' overall feelings and evaluation of this arrival space. In Questionnaire 2 and 3, some questions are changed based on each arrival space's different factors. More details will be discussed in section 6.2.

All the questionnaires can ensure that visitors complete within 2 minutes to avoid negative emotions caused by too many questions and presented in an electronic questionnaire. To avoid missing details and avoid limiting the scope for respondents to supply answers that reflect their true feelings on a topic, most closed questions have an open option that allows people to fill in their feelings. The research will randomly select residents and tourists from different backgrounds and ages in the three arrival spaces of the NHM. All people who are being recruited are voluntary and adults (including parents with children). There are 350 data (140 Questionnaires in Hintze Hall, 120 Questionnaires in Earth Hall and 90 Questionnaires in DC2) collected for all questionnaires. These data were collected between July and September of 2019. Through this data collection, both visitors' spatial and mental experiences will be analysed further.

6.1.2.2 Observations

However, the feedback from tourists in the questionnaires is sometimes inaccurate and thwarted by their misguided understanding. For example, sometimes survey respondents outright lie about their perceptions on sensitive topics to present a better view of themselves (Stephens-Davidowitz & Pabon, 2017). Thus, simply using the questionnaire will make the reliability of the survey questionable. In this situation, observational research can supplement the data gaps in the questionnaire by directly observing and recording the visitors' ongoing behaviours in the museum. Researchers can capture data on what participants do as opposed to what they say they do, which can gather more reliable insights.

The NHM is a large-scale and complex building, and its arrival space is also an important transportation hub. A large number of visitors will flood in from the entrances on the Conwell Road and Exhibition Road every day. People's behaviour in a natural setting is vital to this research, so it is necessary to observe people's behaviour after arriving at the museum and tracking their movements, helping to understand how people participate in activities in the arrival space their response to spatial clarity. Furthermore, the similarities and differences between each arrival space of the NHM can be tested with the same theory and factors in different spaces, like visitors' accessibility, without explicit outside

intervention. In this sense, data collection in different spaces can complement each other to create a more comprehensive database.

Sometimes, standing by and listening to the conversation between visitors about the museum and its exhibits may get more real and valuable information than interviewing them directly. Visitors taking photos, resting, reading information panels and how long they stay in some areas will be recorded. The data is collected by two fixed periods (busy and quiet periods) with four-time slots of different days. The researcher does not intervene in the setting and naturalistic observation from a reasonable distance. There are 84 paths (42 paths in Hintze Hall and 42 paths in Earth Hall) records.

6.1.2.3 Interviews

Compared with the questionnaires and observations, interviews just collect information from a very small group of people, insiders of museums or representative visitors. Talking to specific interviewees allows for a more detailed understanding of their views, behaviours, experiences, etc. In particular, establishing some open questions is more likely to trigger a wide range of information from the research subject (King et al., 2018).

This study interviewed five interviewees, including three visitors and two staff members from different museums (Natural History Museum London and Nottingham Natural History Museum), which explores people's interpretation of the museum's experience, image, content understanding and development from different angles. Some predefined questions or topics, such as whether the space is popular and satisfactory, what kind of space they have in mind, and the limitations of the existing space, will be asked at the beginning (Appendix II). Then, according to the content of the interview, further, explore some targeted questions. Thus, the interview can produce powerful data that provide insights into the participants' experiences, perceptions or opinions (Peters & Halcomb, 2015).

The entire interviews were recorded, and the respondents' content and word frequency will be analysed by the software NVivo later, which summarises the impact factors that

influence museums' welcoming space. Combining the data obtained from the questionnaire and observations will help build a more comprehensive database to discuss the welcoming experience in arrival space.

Ultimately the ASVE in arrival space ought to be assessed based on the interview, observation, and questionnaire. These three research methods to the scope of the investigation in the selected case of the arrival spaces in the NHM. Influenced by the weather, the limited number of researchers and other factors, the research was mainly carried out in the indoor environment of the three arrival spaces. The following will analyse and discuss the three arrival spaces of the NHM, respectively.

6.2 Three Arrival Spaces of the Natural History Museum

6.2.1 Arrival space on Cromwell Road: East Lawn & Hintze Hall

The entrance on Cromwell Road is the earliest one opened to the public and still the most iconic main entrance of the Natural history Museum (Figure 6-10). Under Exhibition Road, there is a pedestrian subway pass through, which was built in 1885 (Natural History Museum, 2020). Because the underground passage of the subway South Kensington station can be directly connected to the east lawn in front of the NHM, the east area of the building is the first thing that comes to most visitors' attention (Figure 6-11). Since the iron gate on Cromwell Road is only open on certain days, visitors will usually come to the Cromwell Road entrance through the west lawn. However, as early as the 20th century, people hardly allowed any activities on the lawn. For example, walking on the grass and the use of strollers or bicycles are prohibited, and children must be strictly supervised (Natural History Museum, 2020). Now the lawn has been completely open to the public and has become a public place for citizens to relax and entertain. In summer, the lawn is a good place for people to stay and picnic in the city. Sometimes there are also temporary exhibitions. While in winter, the lawn changes to the ice rinks that attract many people, especially in the Christmas season (Figure 6-12).



Figure 6-10 The image of the arrival space on Cromwell Road (Google map, 2019)



Figure 6-11 Underground passage connecting the east lawn of the museum (Google map, 2019; edited by the author, 2019)

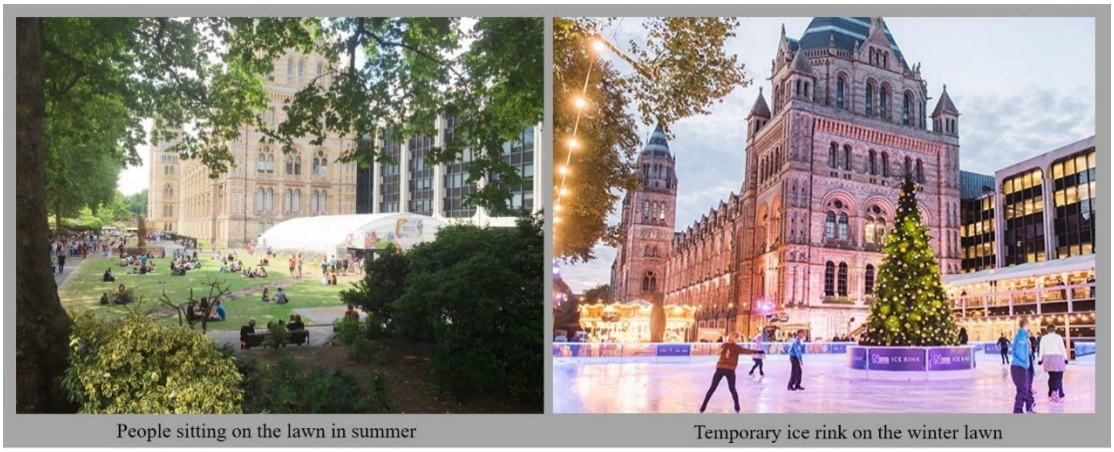


Figure 6-11 Activities on the east lawn (Edited by author, 2019)

Passing through the east lawn, people can come to the gate by following the two huge ramps in front of the building. In front of the building, the long ramps provide several good angles for visitors to enjoy the nice building, attracting some people to stop here to take photos. The Gothic Revival architectural style's gate connects the Central Hall, which is called the Hintze Hall. There are 4 million visitors who entered the museum via the Central Hall between 2011 and 2012. A further million visitors entered the museum via its other entrances and are likely to have encountered the Hintze Hall at some point during their visit (Hobson, 2014). Therefore, Hintze Hall is an important museum's indoor space that needs further research. From the view of function and architectural layout, this space can be divided into three parts: the double-height hall space in the middle (central space), alcoves on both sides of the ground floor (wonder bays) and the balconies on the upper level (Figure 6-12). These three parts include all sightlines of the visitors after they arrived in this space.



Figure 6-12 Spatial division of the Hintze Hall (Author, 2020)

6.2.1.1 Central space with the suspended blue whale skeleton

The central space creates a classical Romanesque atmosphere with rounded arches, ornate columns and grand staircases. Dormers on both sides of the roof and big high windows in the wall made the most natural light for Museum displays. When the Hintze Hall firstly opened to the public in 1881, it showed people a magnificent and empty cathedral-like central area (Figure 6-13). Then, this space was gradually filled with exhibits. Due to its central location throughout the museum, it is also the main entrance's indoor arrival space.

The exhibits placed here are often the museum's star attraction.



Figure 6-13 Hintze Hall in 1881 (Natural History Museum, 2019)

The central hall's first 20 years or so hosted a sperm whale specimen, which sat on the floor. Then, in 1907, a huge stuffed African bull elephant called George took centre stage. It dominated the hall until 1979 when the Diplodocus named Dippy appeared (Figure 6-14). All these exhibits help the natural history museum to make a deep impression on its visitors. For example, the Diplodocus has existed in the arrival space for nearly 40 years. The survey from the NHM in 2013 shows that everyone knows there are Dinosaurs on display at the NHM, regardless of whether they have visited (Holmes, 2013). Compared to the knowledge of other key content or specimens, the dinosaurs in the museum have always been the most impressive. Therefore, the indoor arrival space's central exhibits greatly influence people's perceptions of museum themes.

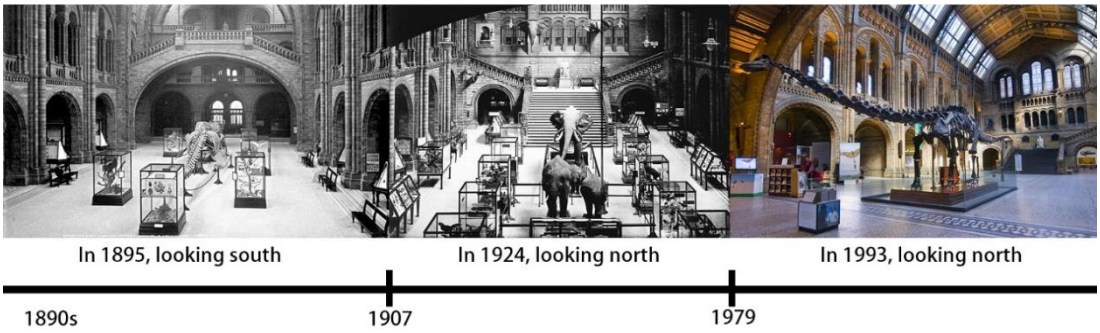


Figure 6-14 The evolution of the exhibits' arrangement (Natural History Museum, 2019; edited by the author, 2019)

In July 2017, the blue whale skeleton named “Hope” replaced the Dippy the dinosaur as the centrepiece of the museum's great entrance hall (Figure 6-15). This blue whale skeleton's colour and texture fit the terracotta walls of Alfred Waterhouse's neo-Romanesque structure superbly. People who enter this space are easily shocked by the exquisite architecture and the visually striking blue whale skeleton. The museum's marine mammal's curator arranged the skeleton in an S-shaped lunge-feeding pose, which would let visitors have a deep impression of a real 25.2-metre whale swooping gracefully from the ceiling (Cookson, 2017). Almost all visitors entering the Hintze Hall look up to admire or even photograph the blue whale skeleton hanging overhead.

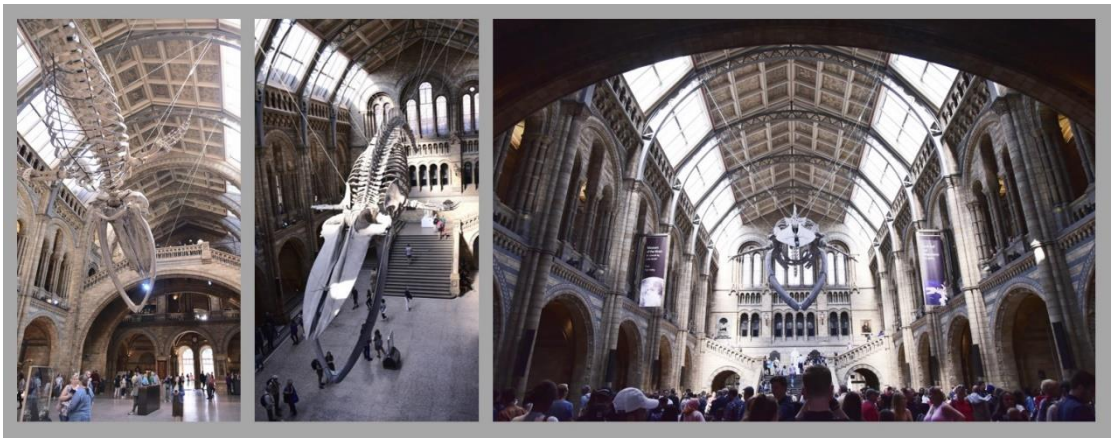


Figure 6-15 The new icon in the Hintze Hall since 2017 (Author, 2019)

In addition to the impressive image, as the arrival space of a large museum, space's clarity is also very important. The Hintze Hall hopes to help visitors orient themselves *physically* and *intellectually* in the museum, resulting in an *"improved visitor welcome, circulation*

and wayfinding/orientation in Central Hall, encouraging visitors to spread to the upper galleries and throughout the building" (Hobson, 2014). From the observation in 2019, most visitors' flow comes from the outdoor entrance for the first time; only a few people reach here through the east exit and the souvenir shop (a lot of them are back here after a tour). The Hintze Hall is often an area that visitors must pass through or even return to several times. Thus, the Hintze Hall should help visitors orient themselves physically due to its spatial layout and signs.

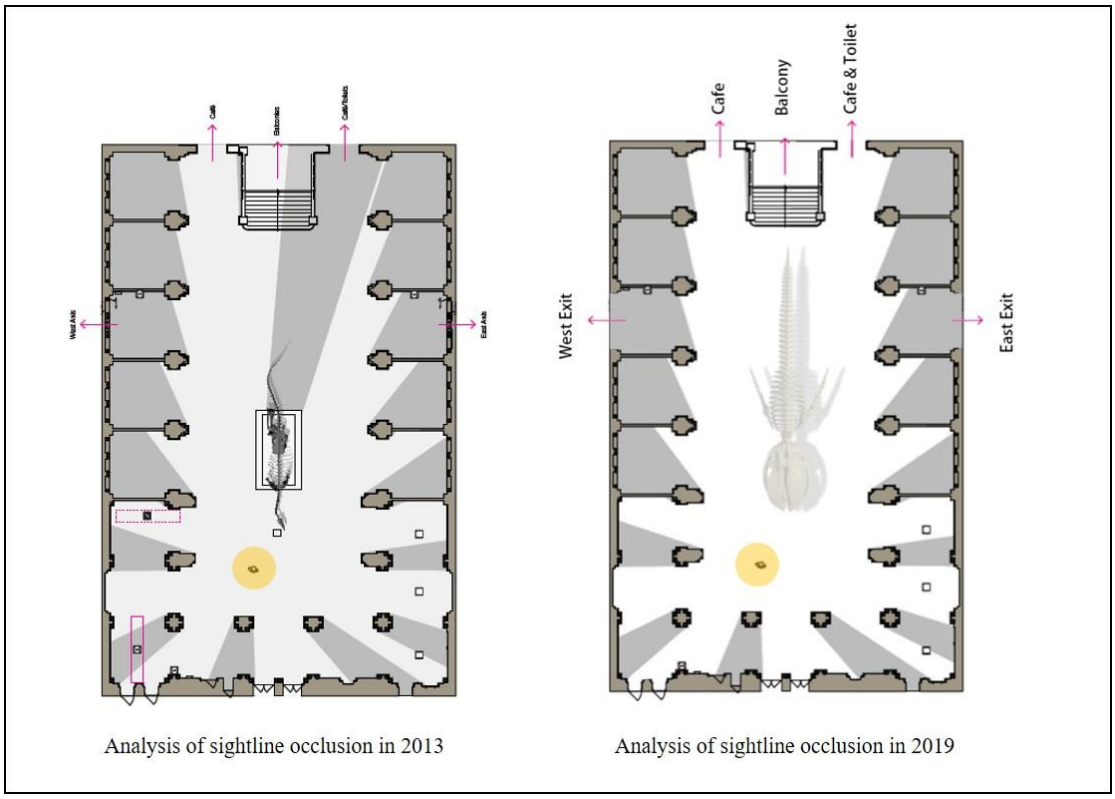


Figure 6-16 Analysis of sightline occlusion (Holmes, 2013; Author, 2019; edited by the author, 2019)

However, during the peak tourist season, the obstruction of the view in the Hintze Hall can be a major factor that influences the visitor experience. Dippy occupies the central position of the hall before 2017. Previous research at the NHM has shown that only 10% of visitors go up to the Hintze Hall balconies within the first 10 minutes of entering the Museum (Holmes, 2013). One of the main reasons is that the Diplodocus obstructed the half staircase (Figure 6-16). By contrast, visitors are easier to notice the grand stairs under the

huge blue whale skeleton nowadays. Figure 6-16 explain how different central exhibits affect people's sight in the Hintze Hall. When visitors stand at the beginning of the space (The yellow point), the shadow represents the part of their blocked view. Through the latest survey in 2019, 36% of visitors went upstairs directly after entering the entrance (By Author, 2019). As other exhibition halls are more attractive, this diminishes the interest in climbing the grand staircase. A local male visitor aged 40-50 said this in the interview:

> "I always come here with my family (once a month), but I hardly go up this staircase. My kids prefer to go straight to see the dinosaurs. The scenery here is so amazing and impressive that I stay here for a while at a time." (Hintze Hall, Sat. 17th August 2019, 15:20. Recording by Author, 2019)

He was waiting for the rest of his family near the grand staircase's west side at the interview time. It is difficult to predict whether the upstairs exhibition will be more exciting than the dinosaur exhibition next to it. Compared with the always busy crowd at the west exit (to the dinosaur exhibition), the grand staircase's presence further hinders people's motivation to go upstairs. Additionally, the big staircase is also a physical challenge for some visitors, especially for people with mobility problems. The lift to the upper floors is hidden outside the west exit of the lobby, which is not directly visible. Therefore, it isn't easy to be found by visitors in Hintze Hall.

When people arrive in a new environment, visual accessibility is very important. Except for both sides' nearest alcoves at the beginning, other exhibits and the west and east aisles are hidden by the successive columns and walls (Figure 6-16). There are almost no eye-catching signs to maintain the integrity of the hall's architectural features, except for a few giant posters hanging on the upper balcony. The columns and walls of alcoves break visitors' sights, plus a scarcity of visual cues, visitors may struggle to know where they should go next. Although the stairwell in the middle is visible, it is not clear where it leads and in most cases, it was used as a background for taking pictures. Moreover, during busy periods, features below the height of a person, such as corridor entrances, alcoves of two

sides, signage, information desks and so on, are obscured from view (Figure 6-17). Unclear orientation and low visibility will easily make people hesitate and cause congestion, which may affect the visiting experience.



Figure 6-17 Diagram to show what is obscured during busy periods (Author, 2019)

6.2.1.2 Wonder Bays

The Wonder Bays are the ten ground-floor alcoves on both sides of the Hintze Hall (another two alcoves are the east and west exits), which comes from Professor Richard Owen's original idea about museums. Owen wanted to use the concept of an "Index Museum" to introduce the study of nature through the exhibition of typical specimens and the offering of lectures in the museum (Stearn, 1998). He described it as an "apartment devoted to specimens selected to show the principal groups of organised beings" type characters. It would also serve as a synopsis of the entire collection for those who did not have time or the knowledge to appreciate the extensive collections. Within the "Index Museum" would be representative specimens of these groups displaying their essential features (Stearn, 1998:57, Girouard 2005). In Owen's original design, the six recesses communicating on each side with the central space of the main hall, which intended 'to convey an outline of this museum's natural history (Figure6-18).

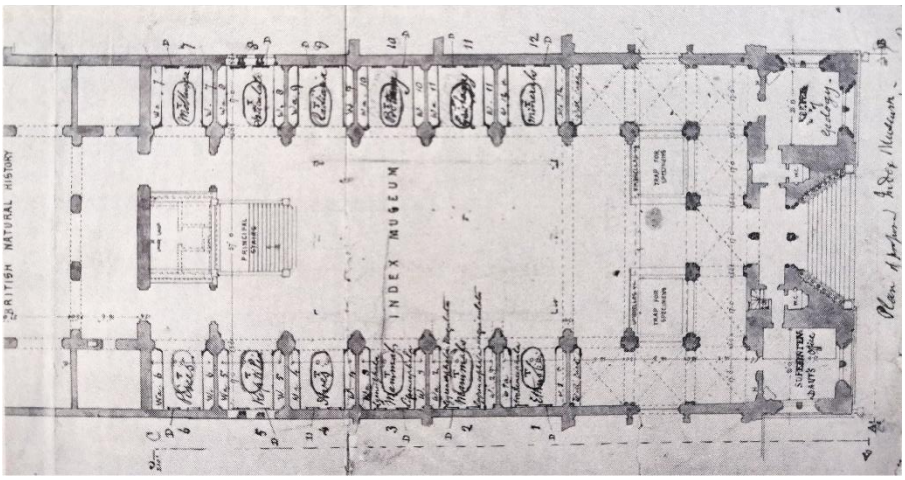


Figure 6-18 Owen's 1879 plan for the main hall of the Natural History Museum (Stearn, 1998)

Due to wonder bays' prime location of the main entrance that allows for many visitors, only be very representative and valuable exhibits to be placed here to attract visitors' eyes. Richard Owen had originally planned to display extinct species in the building's east wing and living species in the west. To reflect his vision, the five bays on the eastern side of Hintze Hall will represent the origins and evolution of life on the Earth, and the five bays to the west will show the diversity of life today and in the future (Natural History Museum, 2017). Figure 6-19 shows the exhibits currently on the display of the Wonder Bays. The eastern side shows extinct American mastodon skeletons, dinosaurs and plant fossils, and evidence of people exploring the Earth and space, which reveals the influence and exploration of human activities on the natural world. The western side encompasses the different species found in nature today, from mammals and fish to plants and insects. NHM uses the different exhibits in the ten alcoves to inform visitors about the richness of what its galleries cover, from ancient life to the future of space exploration. It is also a visual and effective way for the arrival space to convey relevant exhibition information to visitors. Through the communication with the staff in the NHM, can know:

> "Suppose visitors have patiently visited each alcove carefully. In that case, they will find that these exhibits are trying to tell people about the impact of climate change on the natural world and the importance of protecting the environment. Unfortunately, few people will do this."

(Hintze Hall, Sat. 9th August 2019, 10:00. Recording by Author, 2019)

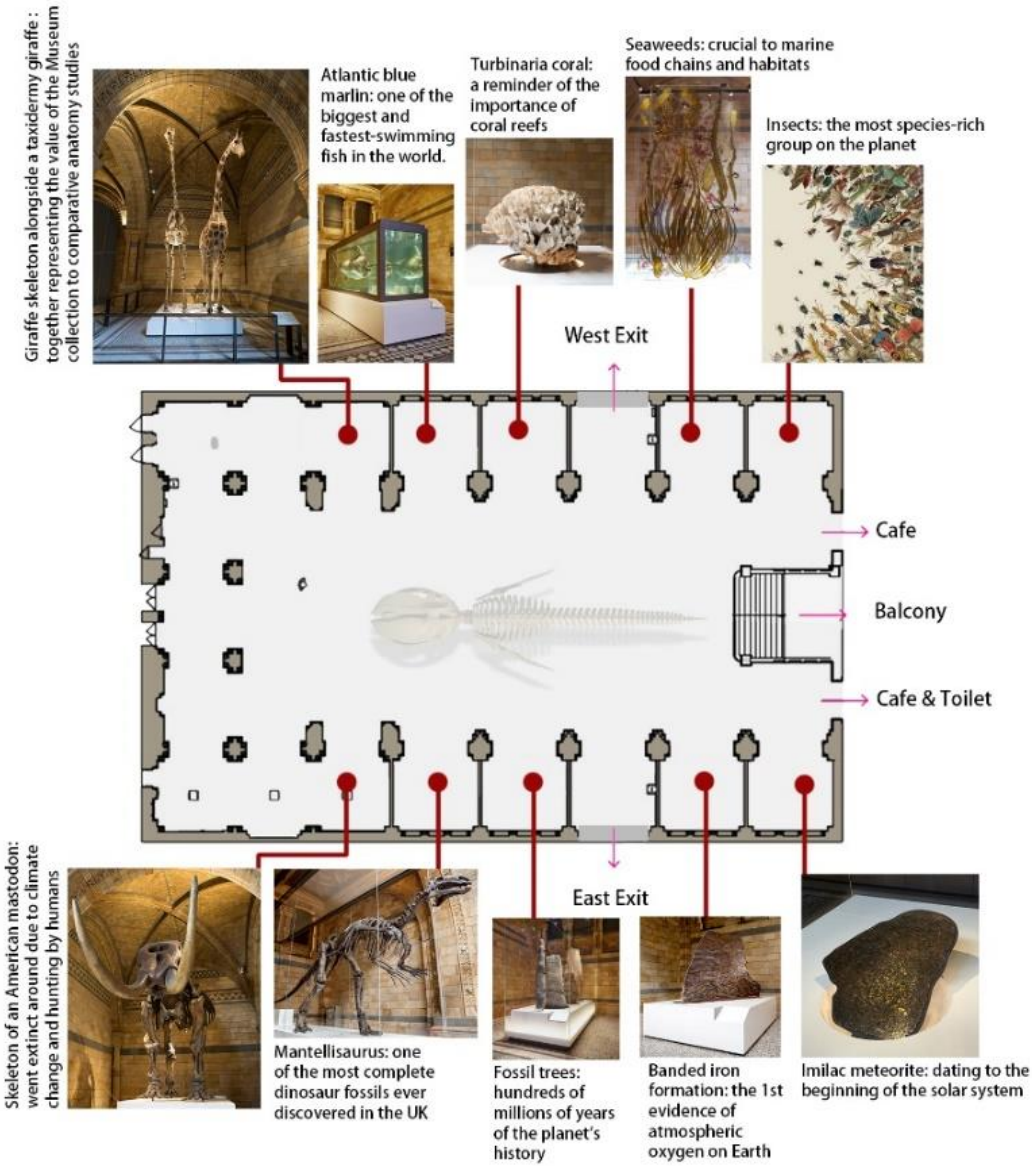


Figure 6-19 Exhibits in Wonder Bays (Author, 2019)

Nearly one-third of visitors entering via Cromwell Road missing to visit the Wonder Bays at the start of their visit through the observation. Only 4% of visitors firstly notice the alcoves on both sides when they entered this space. The huge whale skeleton and the magnificent architecture space attract 90% attention successfully (Figure 6-20).

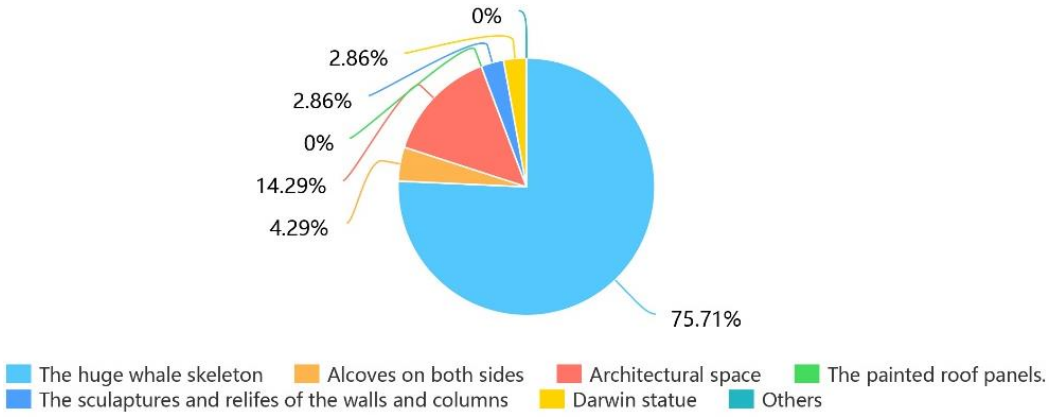


Figure 6-20 What did visitors first notice in this space (Author, 2019)

However, more than half of visitors choose to stay in Wonder Bays for a while (Figure 6-21). The tracking record shows that two-fifths of visitors (41%) entering the Museum via Cromwell Road visit at least one Wonder Bay. Most of those (64%) visit two or more bays. A fifth (21%) visit four or more but only 6% visit all ten.

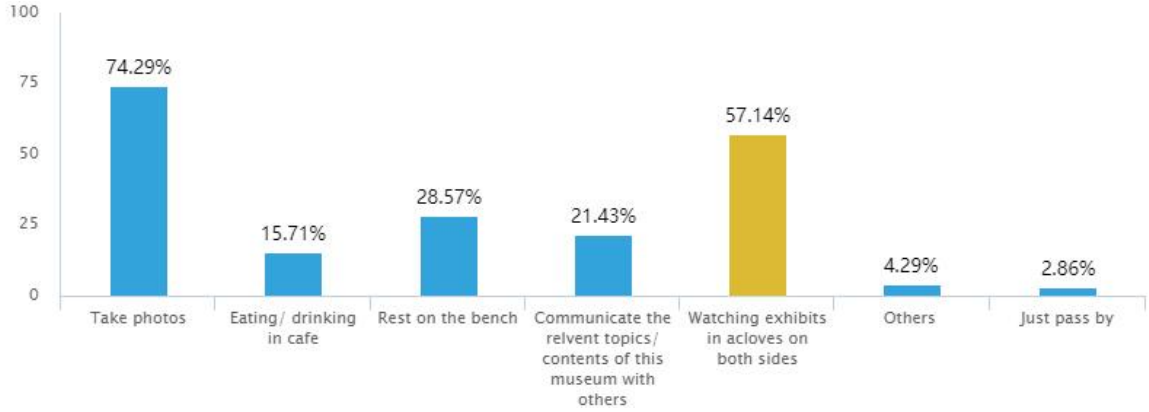


Figure 6-21 What attracted visitors to spend some time in this space (Author, 2019)

Figure 6-22 shows the frequency of visits to various parts in the Hintze Hall's ground floor by space syntax, which reflects people's accessibility to the building space under normal circumstances. The darker the shading, the more visitors stay in the area at a certain time. It can be found that the most frequented bays are located nearest to the entrance gate. The bays in the South East, which connects the way to the souvenir shop, also gathered groups of people to stay. Especially during the summer holidays, many tour groups choose to gather in this area and wait for others. However, the bays in the North East helped by

the presence of benches in this area are used by visitors using the toilets or resting or waiting for others. The least frequented bays are located in the North West as they receive the least passing traffic.

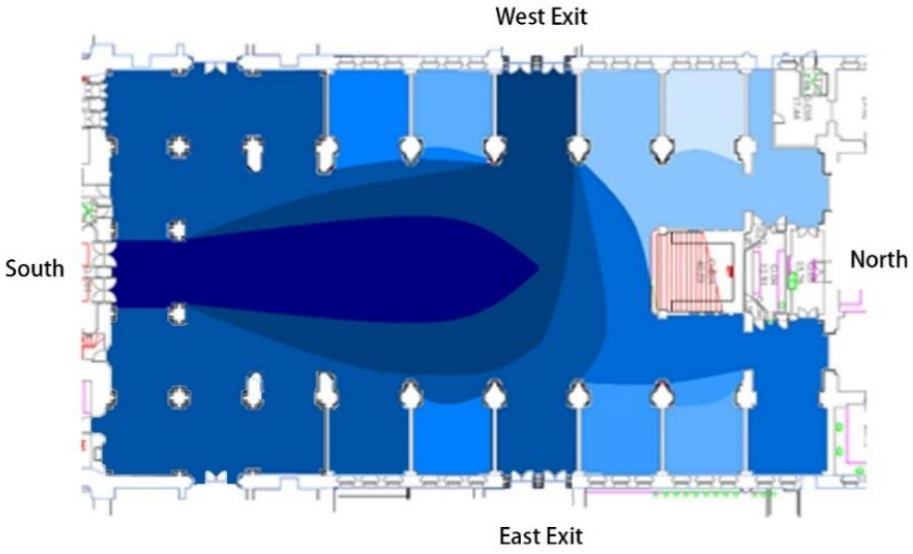


Figure 6-22 The most visited parts of the ground floor (Author, 2019)

The exhibits as big skeletons and stuffed animals, usually attract more attention than specimens of plants and minerals through observation. But this does not exclude that their location influences them. For example, the exhibits of tall giraffe skeleton with a taxidermy giraffe (the 1st west bay), the Atlantic blue marlin (the 2nd west bay), the big skeleton of an American mastodon (the 1st east bay) and the completely Mantellisaurus's fossil (the 2nd east bay) are the most popular exhibits of the ten wonder bays. Their locations that nearest to the main entrance plays a big role in welcoming visitors as well.

6.2.1.3 Balconies

The second-floor balconies in the Hintze Hall are an easy area to overlook by visitors. The Romanesque style interior and intricately carved and decorated columns make the balconies and the entire building space integrated (Figure 6-23). Without any signs and visual clues, visitors often marvel at the whole architectural space's surprise and neglect the exquisite exhibits behind the balconies.

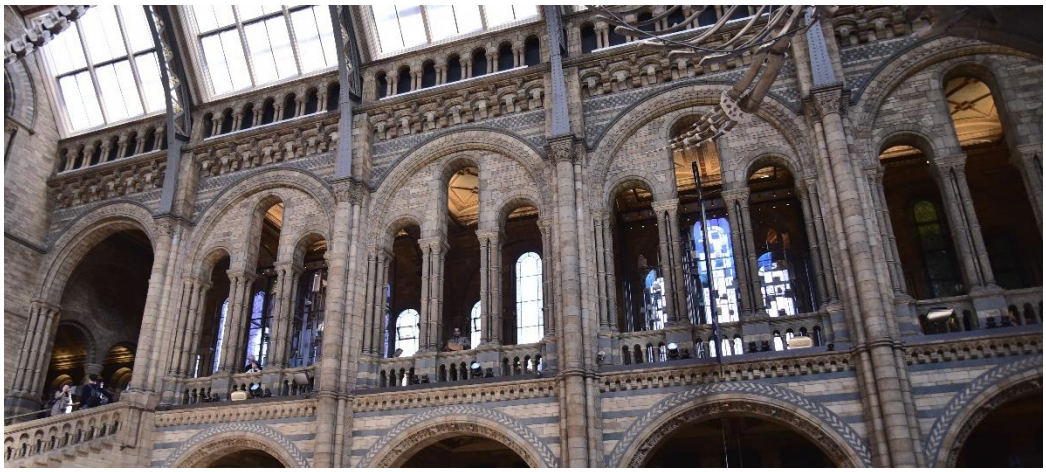


Figure 6-23 The second-floor balconies in the Hintze Hall (Author, 2019)

Since the hanging whale skeleton replaces Diplodocus, the big stairs to the upper floors become more visible, encouraging more visitors to explore, and most people stay on the steps to take photos or even sit down to rest (Figure 6-24). It seems visitors who enter the Museum via Exhibition Road are less likely to go up to the balconies than those entering via Cromwell Road. Although some visitors entering via Exhibition Road did arrive at the Hintze Hall within that timeframe, only a few of them went to the balconies.



Figure 6-24 People take photos on the big steps (Author, 2019)

As previously mentioned in section 6.2.1.1, the main reasons why visitors don't go up to the balconies seem to lack awareness of what is on offer and difficulty finding an accessible route up there. Visitors may struggle to locate an accessible route to the balconies due to the lift being located outside the hall with no signage. In addition, visitors cannot see into the Balconies from the Ground floor, and there are no other visual clues telling visitors what they might find up there. This lack of awareness of the balcony content is corroborated by interviews with visitors and staff in 2019. Many visitors said they do not normally visit the balconies because they felt they had seen everything by visiting the galleries downstairs. Those who visit upstairs are typically in a more "exploratory" mood.

The upper floor space's cleverness is not limited to its exhibits, and it provides a place for people to enjoy the whale skeleton from different angles (Figure 6-25). On the other hand, the architecture itself is also an impressive exhibition, including the balconies, bridge and stairwell with beautiful caves. When visitors move to different layers, they can see various scenes. Views from upstairs and downstairs can echo each other, which means visitors become a part of the exhibition from other visitors' views.

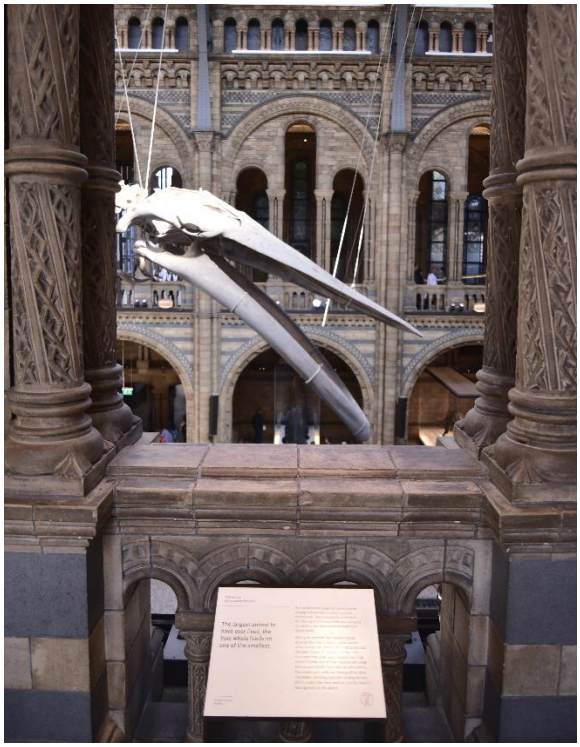


Figure 6-25 The new angle to see the blue whale with an explanation board (Author, 2019)

The romanesque entrance elements, a grand staircase, an intricately painted ceiling, and relief carvings of plants and animals together make the Hintze Hall become one of London's most distinctive spaces. As mentioned in 6.1.1, this space has always echoed the theme of nature in many details, such as carvings on balustrades and columns and painted ceilings (Figure 6-26). The ceiling is covered by various plants' paintings, which is a detail that most visitors miss in a rush to see the collections (Figure 6-27). Moreover, 162 decorated hand-painted panels could date when the museum opened to the public in 1881 (Pavid, 2016). Finally, the grand stair and upper floor's balconies provide visitors with different viewing angles to appreciate this magnificent space.



Figure 6-26 Decorative details in Hintze Hall (Author, 2019)

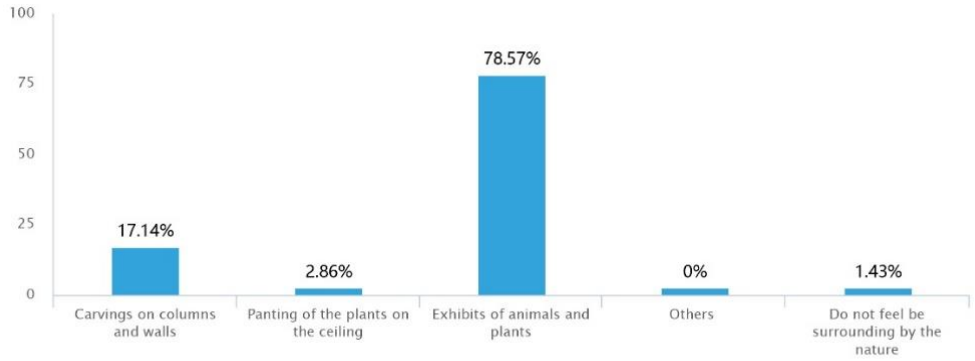


Figure 6-27 Survey on the element that could remind visitors of the theme of NATURE in this hall most (Author, 2019)

6.2.1.4 Summary

In the Hintze Hall, 42 visitors' movements were randomly selected and collected at different times of two days (Figure 6-28, Appendix III). All these people came to the Hintze Hall through the entrance on Cowell Road. As the main entrance of the NHM, there are usually long queues outside the gate. The NHM separates one portal as the entrance and another one as the exit to avoid congestion and the direction's conflict between visitors' flows. This space behaves very differently during busy and quieter times. Visitors movements were tracked separately in August 2019 (during public's holidays) and September 2019 (during school's term time). The number of visitors is significantly different due to different periods of the NHM, and their visiting routes changed due to changes in the surrounding environment.

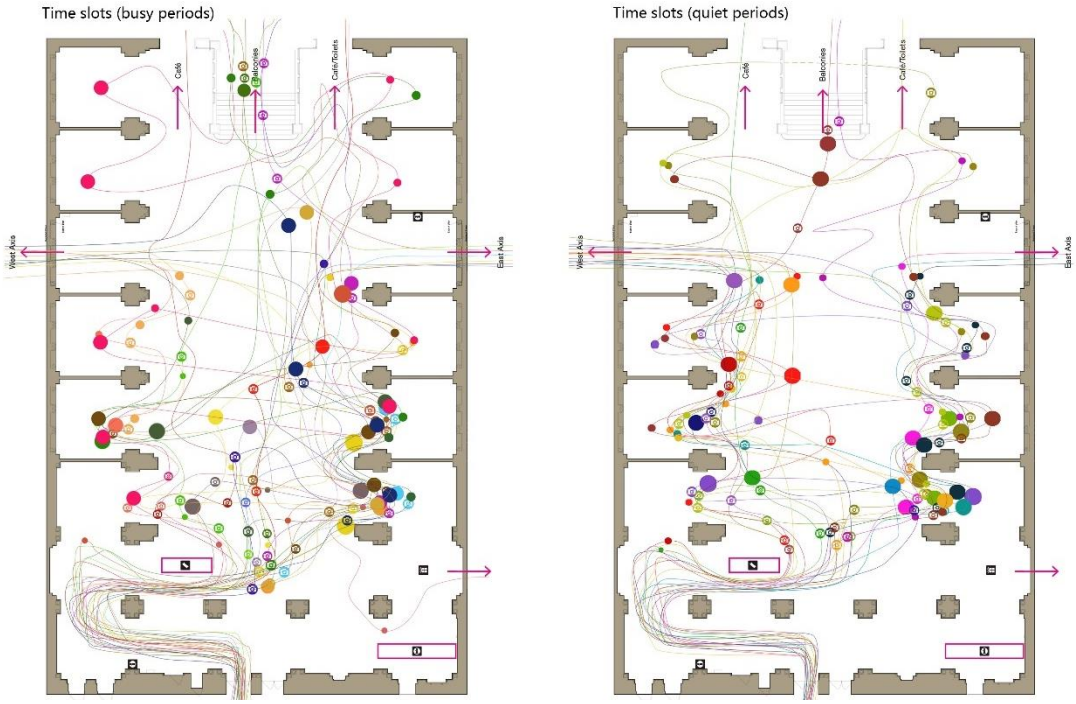


Figure 6-28 Movements records in busy and quiet periods (Author, 2019)

After visitors entrancing the indoor space, almost all the people stopped in this area for a short while to take photos of the architecture and the giant blue whale's skeleton hanging from the ceiling. Some people went to the sides to shoot whales from different angles;

simultaneously, they enter the first Wonder bays of both parties. Visitors will pass the first Wonder bay on the left when they queue up through the bag check and donation desk. However, the moving forward visiting flows and the more shocking blue whales and architecture space soon grabbed all the attention. The first two Wonder bays of each side are the most popular area of the Hintze Hall. Some continue onto the third, with very few visitors being observed visiting all bays, especially in the busy periods. Many people prefer to stay outside of the Wonder bays to take more pictures of the building and the whale.

After the third Wonder bay on one side, visitors then identify the entrances to other galleries, and many were observed using the maps to decide where they go next. Thus, near the exits' two alcoves, some people hesitated and stayed here for a while to get their orientation. The congestion quickly began to open up towards the East and West corridors' entrances in the busy period. Visitors then crossed from one side to the other once they have identified their chosen destination. The west corridor was always more energetic than the east one, as it connects the hottest gallery of Dinosaurs.

Since the first two Wonder Bays were crowded with people in the busy period, some people chose to go straight up the big stairs in the middle through the hall after staying here for a short time. The platform on the significant steps had become another point where people were willing to stop taking pictures. The many people on the ground floor are an excellent way to prevent others from blocking the beautiful background. There are a few seats for resting in the aisles and alcoves on either side of the grand staircase, but they are limited in number. Many people chose to sit on the significant steps to rest when busy time, but this would hinder the traffic. In comparison, few people went immediately up the stairs to the balconies during quiet time. Visitors showed more patience to come into the Wonder bays.

The Hintze Hall is the heart of the NHM. Not only is it a major arrival and orientation point, but it is also a major re-orientation point. It is a hub from which the major arterials leading to the rest of the museum originate. Visitors come back here mid-way through their visit to access other parts of the NHM. The grandeur of the architecture and iconic blue whale form

prominent navigation references. However, it is still difficult for some visitors to find the connection between this hall and the other galleries in the NHM. During busy times, visitor congestion further reduces east and west corridors' visibility without visual cues to aid navigation. The route through to café and stairs are the only visible routes; however, no information is presented where they lead. Visitors had to stop to look at the map or ask the staff for help. However, during the busy period, the museum should consider some visible clues to easily help visitors build their mental maps. The detailed analysis will be presented in Chapter 7.

6.2.2 Arrival space on Exhibition Road: Earth Hall

Another important entrance of the NHM is the entrance on Exhibition Road, which connects the Earth Hall. It is located in the northeast corner of the main building designed by Waterhouse and was developed from the Geological Museum of the British Geological Survey. The Geological Museum became a part of the NHM in 1986, a neoclassical style building designed and built by Sir Richard Allison and John Markham from 1929 to 1933 (Historic England, 2019). Until now, the appearance of the entrance has remained the design of the year. A solid cube with a big porch of four tall Collins columns (Figure 6-29). Compared with the magnificent and exquisite Waterhouse building, it seems simpler and more unadorned. The Geological Museum's south face was completely obscured by the NHM's east wing's extension project in 1975 (Wang, 2013: 118). The extension building is a functionalist architecture with a simple glass curtain wall and concrete frame, linking the Geological Museum and the Main museum (Figure 6-30). Its understated appearance is difficult to attract people's attention compared to the adjacent magnificent Victorian-style building. The new museum's galleries were completely rebuilt and reopened as the Earth Galleries from 1996 to now, which connect the Waterhouse's building.



Figure 6-29 The entrance on Exhibition Road (Author, 2019)

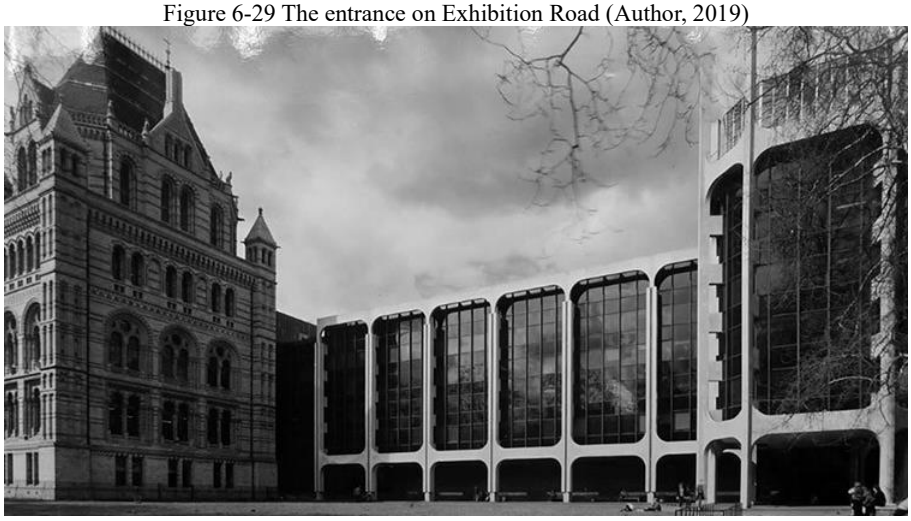


Figure 6-30 NHM's east wing's extension project in 1975 (Natural History Museum, 2020)

The crowd entering this entrance is mainly from the direction of the intersection of Exhibition Road and Cromwell Road. There are also visitors from the Science Museum on the side and the V&A across the street. In the peak season, a long queue is usually in front of the entrance. After walking through the small entrance gate, visitors can see the information desk and cloakroom (Figure 6-31). Until people stepped onto the significant steps, the three-story atrium called Earth Hall gradually appeared in front of them.



Figure 6-31 Inside view of the Entrance on Exhibition Road (Author, 2019)

The Earth Hall is a space with a modern and dynamic setting that could accommodate up to 500 people. Initially, Neal Potter became the Earth Hall designer in 1993, and he wanted to turn the space into an atrium with two walls and incorporated the elemental intention of water and fire (Wang, 2013: 147). However, because of its high cost, the NHM finally gave up its idea and chose Pawson Williams's design in 1996 (ibid). The New design kept Neal Potter's idea, which added an impressive giant metal Earth sculpture in the middle of the central atrium and an escalator passes through it. This can be effectively overcome visitors' reluctance to visit the upper galleries by "pulling" them (Natural History Museum, 2019).

Meanwhile, the changing colours of lights and sounds from far and near make the metal Earth sculpture the focal point of this arrival space. Both sides of the walls are covered by slate, and the major stars and planets are painted onto them. The museum's geological exhibits are displayed within the walls. Like the Hintze Hall, the large skylights on the roof ensures plenty of natural light (Figure 6-32).



Figure 6-32 Skylights of the entrance halls (Author, 2019)

The survey on Exhibition Road's arrival space is mainly carried out indoors in the Earth Hall. The whole space is divided into three parts for analysis according to the spatial location and the degree of people's visit: the Stegosaurus fossil at the beginning point, the big escalator in the middle, and showcases on both sides of the wall (Figure 6-33).



Figure 6-33 Spatial division of the Earth Hall (Author, 2020)

6.2.2.1. The Stegosaurus fossil as the central exhibits

The Earth Hall is the Geological Museum's arrival space, which tries to create an atmosphere that could let visitors be involved in the universe and space. It includes a celestial map adorning Earth Hall's walls, provides a beautiful backdrop to the metal Earth sculpture, and an impressive large Stegosaurus fossil (Figure 6-34). However, before the museum unveiled this popular Stegosaurus fossil in 2014, the Earth Hall was decorated by a group of six symbolic statues after 1996, which tried to draw parallels between the early civilisations' gods and geological processes (Natural History Museum, 2014). Six iconic figures were representing visions of Earth's past, present and future (ibid).



Figure 6-34 The exhibits changes of the Earth Hall (Law, 2013; Author, 2019)

Currently, the Stegosaurus fossil successfully keeps most tourists staying in front of it and taking photos with it. Through the observation, more than 85% of families with young children stayed here for a long time (more than 3 minutes), even during busy periods. In addition, nearly all families with kids and 55% adults without children visited the fossil for a short while (less than 3minutes) (Further analysis in 6.2.2.4). There are three information broads about this Stegosaurus fossil's background around the exhibition stand. Each introduction is short enough that many people stop to read it, but few people read all three panels in a row. Moreover, a touching electronic display screen on the second-floor corridor offers detailed background information about this exhibit, and people can see it from different angles (Figure6-35).



Figure 6-35 Information boards of Stegosaurus fossil on the 2nd Floor (Author, 2019)

6.2.2.2 Escalator to the Earth

The Earth Hall's theme wants to tell stories of the planet people live in and the solar system. To echo this theme, Pawson Williams Architects created a metal sphere structure with a diameter of 12 meters floating in the middle of the atrium (Historic England, 2019). Originally, they created spinning metal-earth, which can better attract tourists' attention, but due to some technical reasons, this global sculpture was eventually fixed in 1997 (ibid). The designers positioned the entrance space to become a welcoming, non-didactic area to the museum. Thus, this arrival space's aim is usually as eye-catching and evocative indications of the exhibition that follows, yet do not require the visitor to stop and read a didactic label (Macleod, 2005: 172). In this way, the Earth Hall's vital function is access or the entry connecting other galleries.

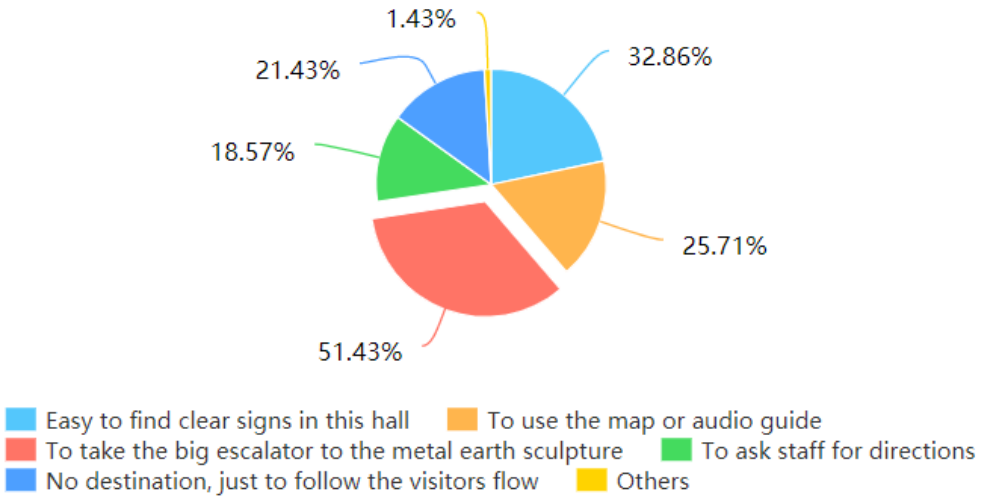


Figure 6-36 How do you know where to go next? (Author, 2019)

The escalator with the giant metal-earth sculpture is the Earth Hall's focal point, which attracts many visitors' attention. More than half of visitors want to take the 12-meter high giant escalator to find what is inside through this mysterious earth model (Figure 6-36). The escalator leads to the 3rd-floor galleries, and people can learn about Volcanoes and Earthquakes and so on. The giant metal-earth sculpture becomes a good predictor, which hints at this exhibition's theme visually and intuitively. More than 75% of visitors agree

that they learn this area's theme and contents through this concrete Earth (Figure 6-37). In addition, the colourful lights and sounds stimulate visitors through multiple senses, creating an immersive atmosphere for them.

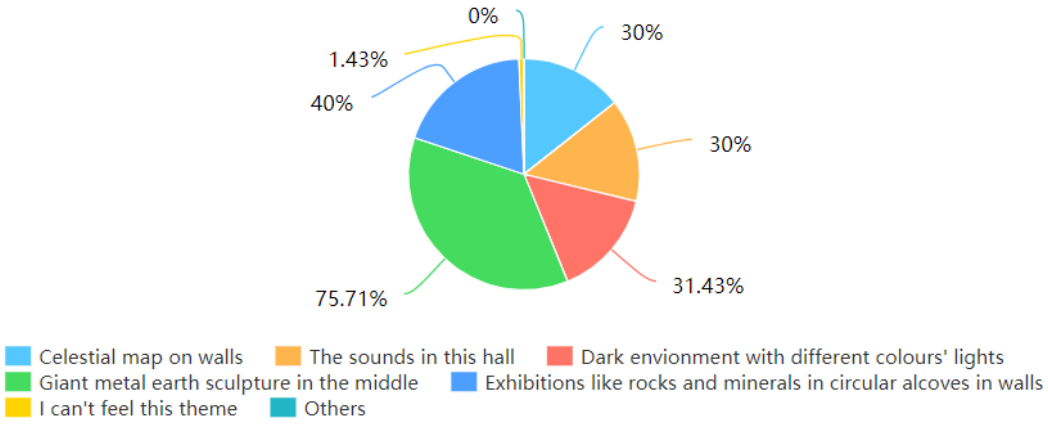


Figure 6-37 Which element reminds you of the theme of our planet and solar system in this hall most? (Author, 2019)

The dark background makes the sphere appear to be floating in this atrium from a distance. Signs with led lights that lead to other galleries become easier to recognise against the dark background. The escalator to the metal-earth and the exhibition space on the ground becomes clear, directional channels. People can know where to go next by the textual description of the sign or the abstract model.

6.2.2.3 Showcase on the walls

Traditional natural history museums easily build visual fatigue when their visitors face serried ranks of dead creatures or minerals objects. It is difficult for such museums to get rid of the atmosphere of death and preaching. The celestial map adorning the 18-metre-high slate walls and some representative precious metals and fluorescent minerals are displayed separately in the wall window to avoid the dense arrangement of exhibits (Figure 6-38). People are surrounded by remarkable exhibits, which will tell the history of the Earth.



Figure 6-38 Showcases in the wall in Earth Hall (Author, 2019)

There are 20 showcases of the walls on two sides. Similar to the Hintze Hall, the exhibits on either side of the starting point were viewed the most, and few people stopped at each exhibit. Most people prefer to walk along one side by watching the display slowly to the exit, except for the crowds attracted by the escalator, which is an especially noticeable phenomenon during busy times.

When it's summer vacation or other public holidays, the number of visitors to the NHM increased significantly, especially for families with children. The large Stegosaurus fossil becomes their first stop as they entered the Earth Hall, and crowded people on the escalator attract more to get on it. Through the conversation with the young female staff, who stands on the north side of the stegosaurus fossil, it can be found that:

> "During the summer vacation, there are many tour groups and families with children every day. People will gather here to take pictures of the stegosaurus fossil. Most people marvel at this huge Earth, and children can't wait to take their parents to take the elevator to visit. Some people even start recording from entering the lobby until they board the escalator." (Earth Gallery, Sat. 9th August 2019, 11:15. Recording by

Author, 2019)

Because tour groups and summer camps have time limits, few of them patiently watch the exhibits on the walls. As a result, windows on the two sides of the wall are easily overlooked in the crowd, which can be easily found in the following tracking survey as well—this atrium changes to real access to other unknown exhibition halls.

6.2.2.4 Summary

In the Earth Hall, 44 visitors' movements were tracked at different times of the day (Figure 6-39, Appendix III). All these people entered the NHM through Exhibition Road's entrance, but it isn't easy to make sure whether they are visiting for the first time. The average visiting time in this hall is about 8.5 minutes, including some people who just had a short stay then passed. Nevertheless, some people carefully appreciated the exhibits in the showcases one by one.



Figure 6-39 Movements records in busy and quiet periods (Author, 2019)

Same as the records in the Hintze Hall, visitors movements were recorded in busy and quiet periods, and each period was divided into four-time slots. The busy periods include 11:30-

12:00, 14:00-14:30, 14:30-15:00, and 15:00-16:30 (Figure 3-40). Quiet periods include 10:00-10:30, 10:30-11:00, 16:30-17:00, and 17:00-17:30 (Figure 3-41). In the hall, there are also mutual influences and experiences between people. Thus visitors' movements will be slightly different in busy and quiet periods.

Visitors typically walked around the Stegosaurus fossil and stopped to watch the exhibits on one side of the wall incidentally. Usually, the first three exhibits in both sides' showcases were the most-watched by visitors, and more time was spent here. However, few people can watch all the showcases of both sides. The escalator to the metal-earth and the exit gates to other halls like the hall of dinosaurs may easily break visitors' patience in viewing exhibits. More people preferred to stop to look at the showcases one by one in quiet periods compared with the busy time. Full of people crowded in such space during busy periods and many people just being pushed forward by the crowd and the proportion of taking the escalator was also more significant.

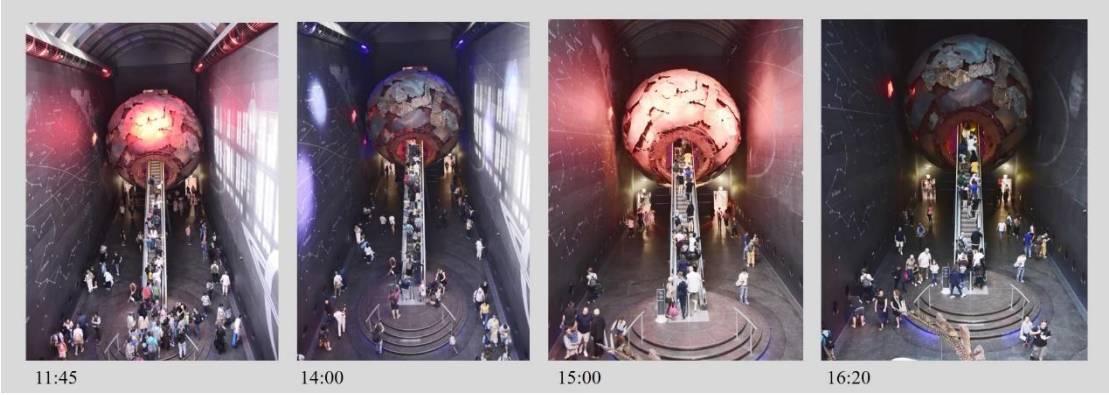


Figure 6-40 Visitors movements in the busy periods (Author, 2019)

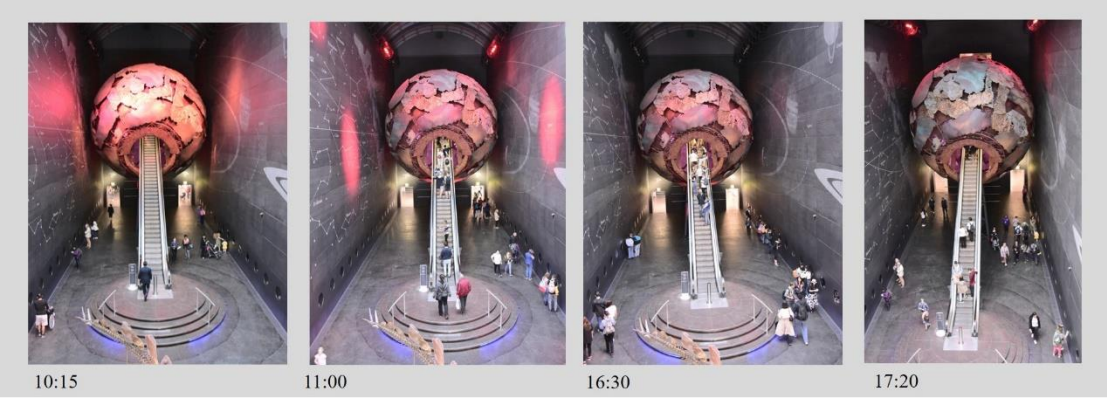


Figure 6-41 Visitors movements in the quiet periods (Author, 2019)

Besides standing in front of the star Stegosaurus fossil, another hot spot for photos is on the round steps in the middle, which is the start of the giant escalator. The appropriate height difference is enough to give people a better angle of shooting, and it is also an excellent point to take a photo with the metal-earth. However, even short stays can easily cause congestion at the escalator's start due to limited platform space. Therefore, the staff has to maintain order after an interval.

The escalator was always full of visitors during busy periods. On the slowly moving elevator, visitors had the opportunity to appreciate the celestial maps on both sides again, and some young people were keen to find their constellations. The changing light and the sounds inside the sphere made its mystery. From most people's observation, it can be felt that they are full of curiosity and exclamation as the escalator slowly enters the sphere.

The area near the exit below the escalator is very dark, and almost no one stays here. The signs with lights above the exits are conspicuous on a dark background, helping visitors orientate themselves quickly. One of the most popular dinosaur galleries is drawn in the form of pictures, which is very intuitive for visitors, especially for children (Figure 6-42). The map at the beginning of the Earth Hall, the escalator, and the sphere are directly displayed on the map, helping visitors locate vertical space (Figure 6-43).

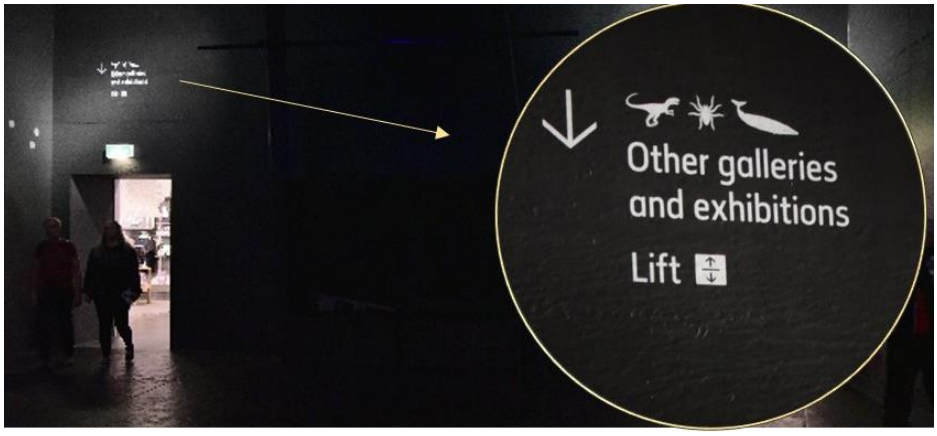


Figure 6-42 Replace textual descriptions with icon images (Author, 2019)



Figure 6-43 Guide map of the Earth Hall (Author, 2019)

It needs to be noted that figure 6-39 only recorded the visitors' route from the entrance on Exhibition Road; thus, visitors coming here from other parts of the museum are excluded. The Earth Hall is between the Gallery of Human Evolution and the Café, and it also connects the access to the souvenir shop and Waterhouse building. Many visitors may come back to the Earth Hall mid-way through their visit to access the café or other galleries or even take the escalator again. Therefore, the direction of visitors' movement is not one-way; connecting the exits of the Waterhouse building will also attract visitors to come in, which made the limited space more crowded when it's busy.

6.2.3 Arrival space on the Queen's Gate: the Darwin Centre phase 2 & the courtyard

In fact, in addition to the above two attractive entrances, the NHM has an entrance on the Queen's Gate worth mentioning. Although it is not often open to the public, its modern architectural form and courtyard as a means of arrival space deserve to be discussed here.

The modern style building on the Queen's Gate, known as the Darwin Centre, was announced to be built in two phases (DC1 and DC2) starting in 1999 (Figure 6-44). The original intent of the expansion of this area was to relieve the tension of the exhibition space and show the exhibits in the museum as much as possible to the visitors (Thackray & Press, 2013). Additionally, The NHM hopes to change traditional museums' stereotypes in such a new way, giving visitors more accessibility and interaction with them (Natural

History Museum, 2019).



Figure 6-44 Darwin Centre and courtyard (Natural History Museum, 2019. Available from:< https://www.nhm.ac.uk/business-services/filming/darwin-centre.html >, 20th October 2019)

DC1 officially opened in 2002, and DC2 was opened in 2009 (Natural History Museum, 2019). The atrium enabled public members to view collections in masse for the first time and allow visitors to see the scientists' daily working status through the glass windows. There are two modern areas from DC's arrival space: The atrium with Cocoon and the outdoor courtyard. It should be noted that since the gate to this entrance is only open on select days or events, it is often not the area where visitors first arrive. Most visitors come here through the inside aisle of the museum. As an area connected to an outdoor courtyard, it still attracts a large number of visitors to stay here during sunny days.

6.2.3.1 The Cocoon

The main building of the DC2 is an iconic design that features an enormous 'cocoon' of hand-finished concrete within a large glass building (Wang, 2013). This 8-storey white Cocoon is an organically shaped, light and airy 21st Century structure, which is full of modern elements and is the most striking in contrast with the German Romanesque

architecture of the original museum. A glass lift runs up the Cocoon's edge and enables guests to appreciate the spectacular views of the breathtaking curved structure. The entrance has been framed through a glass cube minimalist aesthetic. The curved cocoon shape looms in the glass curtain wall that is highly reminiscent of contemporary art gallery design (Figure 6-45).

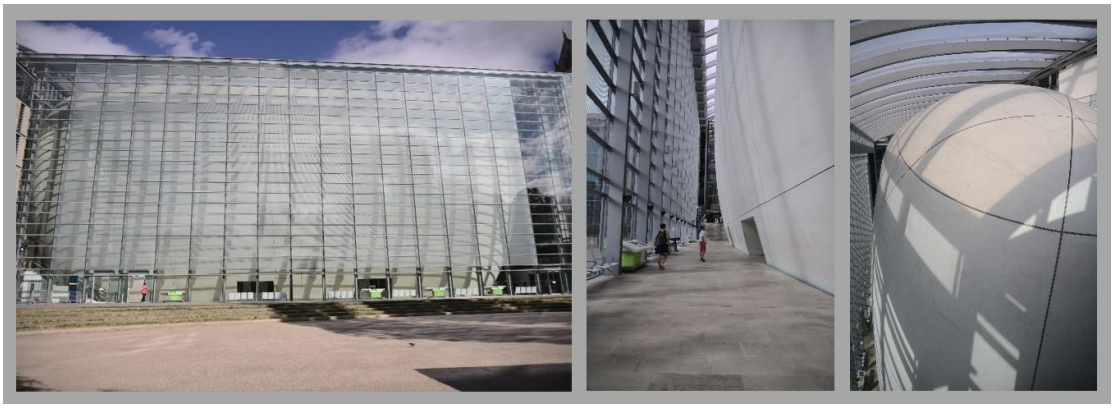


Figure 6-45 Darwin Centre 2 (Author, 2019)

The atrium's bright space and good spaciness create impressive visuals for their visitors. More than half of people prefer to have a rest here and enjoy the modernist building (Figure 6-46). On a sunny day, the sun shines through the grille of the glass curtain wall to project changing light and shadow in the atrium, making the space full of dynamic (Figure 6-47). However, too strong sunlight makes the white space appear more dazzling and the inside temperature rise, very few people would like to stay here during the noon period. Less than 12% of people visit the showcase in the lobby for more than 3 minutes, 35% take a rest at seats, and about 16% will queue directly at the lift's area and wait to go upstairs to visit more exhibitions, over 30% visitors prefer to go directly through the hall to the outdoor courtyard. A female overseas visitor aged 40-50 with her family said this in the interview:

> "Other places are full of people, it is very quiet, and there are seats to rest. It's very different from other places. It's very modern and fashionable. I'm not sure what this building means. It may be related to science. It's like a spaceship parked here. I looked through the window,

and it should be an office," said the interviewer and his son (aged 10). (The entrance hall of the Cocoon, Sat. 17th August 2019, 16:08. Recording by Guo, 2019)

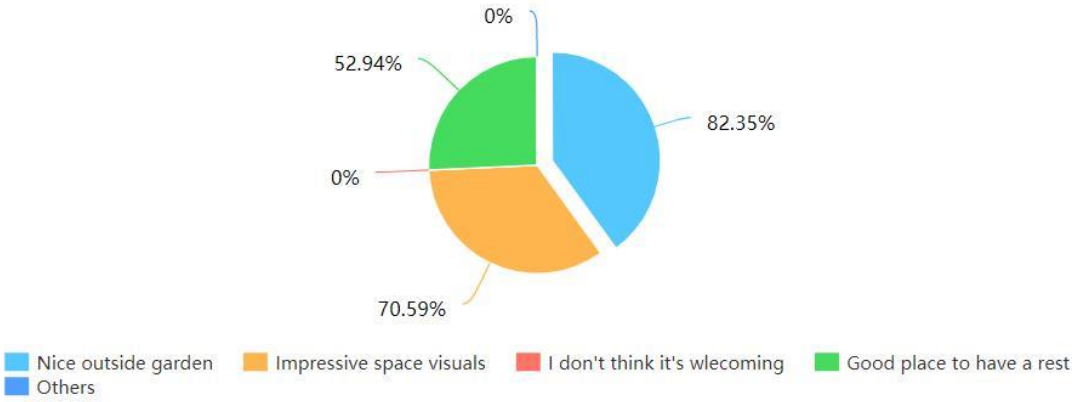


Figure 6-46 How do you feel this hall is a friendly and welcoming space for visitors? (Author, 2019)

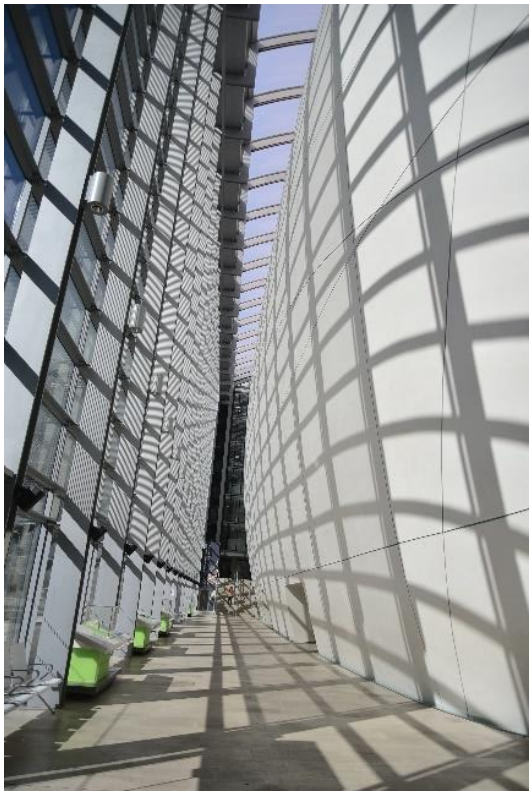


Figure 6-47 Light and shadow changes in the corridor (Author, 2019)

6.2.3.2 The Courtyard

The outdoor courtyard, a secluded space surrounded by curved steps, creates a bright place for the lively museum. Although this is not the main entrance for visitors to the museum, and even many people have never noticed it here, its quiet and natural atmosphere brings people a temporary experience away from the city's hustle and bustle. According to the survey of visitors, this outdoor courtyard connects to the Wildlife Garden to convey the concept of contact with nature. More than 80% of visitors believe this outdoor garden can make them feel a welcoming and friendly place to stay (Figure 6-44). Through the observation, 60% of people who come to this zone prefer to stay here for about 3 to 8 minutes. Even there are 10% of people have a rest in here more than 10 minutes. Compare with the indoor space of the DC2. People are willing to stay longer in the outdoor courtyard, which of course, depends mainly on the weather (Figure 6-48). The large glass curtain wall of the DC 2 ensures communication between indoor and outdoor sights.



Figure 6-48 Visitors gather in the courtyard to enjoy the sun (Author, 2017)

In addition to daily visits, the museum also uses this area for social events to accommodate more than one hundred guests, such as receptions and parties in the evening (Figure 6-49). Different from the other two solid entrances of the NHM, the arrival space of DC 2 looks

more straightforward and transparent with full of modernistic breathing.



Figure 6-49 Evening event in the open yard (Natural History Museum, 2019)

Due to the different eras of construction and the exhibition themes expressed, these three-arrival spaces represent different characteristics and styles. Visitors marvel at the exquisite architecture and huge whales in the Hintze Hall; are curious about the mysterious atmosphere of giant metal-earth and celestial map with light changes in the Earth Hall; enjoy the modern style and sunshine huge glass curtain wall in the Darwin Centre. Each arrival space has its character and impressive image. People generate a variety of behaviours and visitor experiences in different spaces. Later research in Chapter 7 will explain how visitors could feel different levels of welcome in these three different spaces based on the ASVE.

Conclusion

In this chapter, the selection of the data collected from the NHM is presented to show visitors' actions and attitudes with its three arrival spaces: on Cromwell Road, Exhibition Road and Queen's Gate, and the affections of design factors on visiting experience. These three different architectural styles and themes of the arrival space make the research objects more comprehensive. At the same time, the high visitor volume also provides a guarantee

for the collection of data. Due to time constraints, weather, and flow of people, this survey did not conduct questionnaires and interviews in the outdoor West Lawn and CD2 courtyard. Instead, all research work is done in the indoor space. Therefore, there are certain limitations in the study of the open-air arrival space.

The indoor arrival spaces are studied according to their respective characteristics by dividing them into zones. For example, the Hintze Hall includes its star exhibits of the whale skeleton, ten Wonder Bays and upstairs balconies. The Earth Hall contains the central exhibits of the Stegosaurus fossil, the big earth sculpture with an escalator and a series of showcases on the two sides of walls. The DC2's entrance atrium has a relatively simple space arrangement with a cocoon-shaped sphere and a few showcases next to the glass curtain wall, whose courtyard draws attention more easily. No matter central exhibits or a series of showcases, escalators or stairs, alcoves or balconies, atrium or courtyard, all these physical factors of the spaces can affect the visitor's visiting experience in the museum through the survey.

It lasts for six months to collect data. Including visiting the museum at different times of the day and days of the week and observing and documenting the behaviour and movement patterns of 84 visitors; Conducted a detailed audit of the Central Hall and upper balconies, Earth Hall and Darwin Centre 2 documenting existing signs and information provision, architectural details and key dimensions; conducted informal interviews with staff and finished e-questionnaires with visitors over the world.

The visiting experience is an intangible psychological process, but it is produced by various physical factors such as architectural space, exhibition design and environmental sounds. Therefore, creating a welcoming experience needs to use these physical factors wisely. At the same time, the mood, range and trajectory of visitors are also influenced by physical factors and are reflected in their visiting behaviour. In the next chapter, the research data will be further analysed under the ASVE system to summarise the design factors required to create a popular space. On this basis, the main behavioural and emotional expressions of visitors in the arrival space are elaborated.

Chapter 7. Design Strategy: How to Create a Welcoming Experience in Museums

Introduction

Visitors' welcoming experience is a positive result of the whole visit, inseparable from the comprehensive influence of architecture, space, environment, and other people. The museum's popular and welcoming arrival space should adapt its diversified visitors to the building, layout, and exhibition design from the previous research. As the museum's first impression of the initial (or the last as well) place, the arrival space needs to find solutions of making the visits as exciting and enjoyable as possible by giving visitors what they expect in return for their time and effort. Ideally, it should also seek to surprise and enlighten them. The Natural History Museum London survey shows the variety of actions and behaviours of a diversity of museum visitors occurs in its three arrival spaces. To maintain the popularity of this historical museum, it is not enough to rely solely on dinosaurs and other natural history exhibits. Using existing resources and materials to establish the internal connection between visitors and museums is considerable challenge designers need to face.

The essential part of the data collection in the NHM is to randomly and systematically record the characteristics of people who come to see what the arrival space has to offer. Without this information, it is aiming blindly in meeting the needs of its visitors. Like most other public institutions, museums provide goods and services for the users. While recording various behaviours of users, it is necessary to understand the causes of these behaviours and the expects, preferences and reflections of their customers. It can seriously attempt to attract more potential visitors and enable designers to provide more efficient and effective future museum environments.

To further analyse and understand the collected data in Chapter 6, section 7.1 summarises

the design factors that can affect visitors' behaviours through Usability, Image, and Accessibility. Based on the ASVE and narrowed down the findings to ensure that visitor behaviour in the arrival spaces is mainly influenced by two aspects: orientation and attention in 7.2. Although none of the spaces made people feel unwelcome through the ASVE (Assessment System of Visiting Experience), the degree to which they felt welcome and their behaviours in these areas was different. Later, the 3E (Enjoyment, Engagement and Enlightenment) Strategy is proposed as the key to transferring visitors' intangible emotions to the tangible design strategies in section 7.3. It provides specific design advice for architects from a broader view of the whole museum, which may provide a design basis for other public buildings.

7.1 Findings by the ASVE

The research of the Natural History Museum in London mainly focuses on the visitor's use of the three arrival spaces, the images presented in the space, and the accessibility of the space. Although the scales, exhibition themes, and architectural styles of the three arrival spaces are not the same, it is found through data collection that they can meet the needs of most visitors and make people feel the welcoming atmosphere.

This part will synthesise the survey data of three arrival spaces and further analyse how usability, images and accessibility of the space through ASVE make the arrival space a welcoming space and put forward the specific design strategies. With the design strategy proposed, the key factors that positively impact the behaviour of visitors in the arrival space will be clarified, which will provide a basis for further research and discovery of the relationship between visitors and the arrival space.

7.1.1 Usability

The three arrival spaces' indoor space(Hintze Hall, Earth Hall and DC2's entrance atrium) meet the conditions of diversity, activity and sustainability of the usability in different levels. Whether it is a busy public holiday or a quiet working day, the three spaces will be

visited by many people. Particularly, the Hintze Hall and the Earth Hall offer more exhibits of the inside space, which can help visitors quickly understand the theme of the exhibition after the arrival space. Most visitors prefer to take photos and watch the exhibition for a while in the Hintze Hall and the Earth Hall. Exhibits near the entrance are often visited the most, and few people insist on going through every exhibit in the hall, which is especially obvious in the Earth Hall. There are too many small showcases on both sides of the Earth Hall (22 showcases on each side), and both exhibition format and exhibits are similar that it is difficult for visitors to have the patience to look through them. Moreover, the central escalator easily interrupts their visit and draws people into space on the upper floor.

Even with fewer exhibits, it is hard to guarantee that visitors will insist on viewing all of them. The quiet showcases placed beside the glass curtain wall in the DC2's atrium are far less attractive than the lively courtyard outside. People are more willing to enjoy the sunshine and get close to nature in the courtyard. In the Hintze Hall, it is easy for people to stop at the exits to other exhibition areas to ignore the following exhibits in the hall (Appendix 4 -7). In tracking visitors' tracks, it can be seen that particular traffic spaces can easily distract people from visiting the exhibits and thus reduce their interest in subsequent exhibits. For example, the exit in the middle of the hall, the striking grand staircase and the central escalator. Rich functions and facilities can successfully attract visitors' attention, but too many repeated facilities and the same functions are also easy to make visitors feel tired and weaken their attentions so that the facilities in the space can not be fully used.

The three indoor arrival spaces all contain five or more functions from the diversity and vitality aspects, which can attract tourists from different groups to participate. In addition to information desks, cloakrooms, café, rest seats and toilets that can meet the basic needs of visitors, each arrival space also sets up representative exhibitions according to their respective exhibition themes and spatial layout. In the Hintze Hall, located in the museum's central space, more than seventy per cent of visitors stay here to be involved in two or more activities. The impressive architectural vision and curiosity exhibits attract a lot of people to take photos after they entered this space. A similar situation happens in the Earth Hall as well. In the DC2, because of its inconspicuous location and the exhibition showcases'

limitation, many visitors prefer to use it as a rest area to relieve fatigue during visits (Figure 7-1).

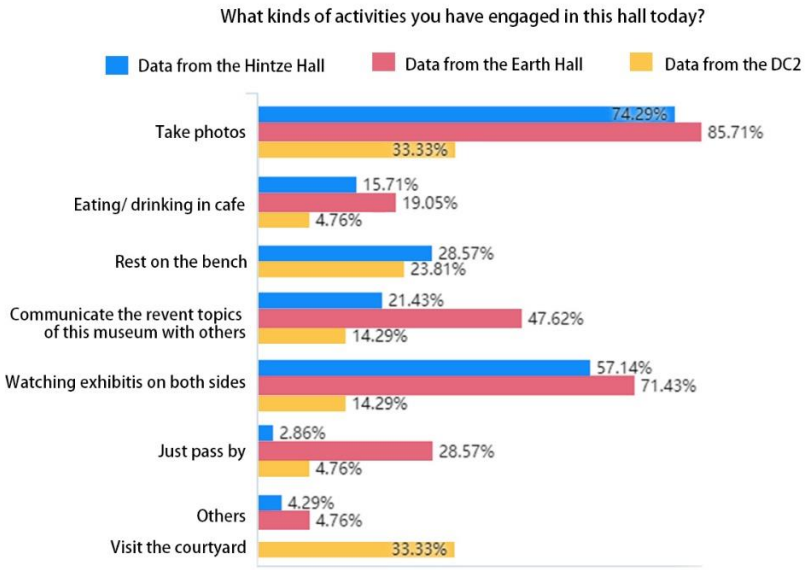


Figure 7-1 Visitors' activities in three arrival spaces (Author, 2019)

Moreover, staff and other visitors' actions can influence people's participation as well. For example, in the Earth Hall, Nearly 20% of people would like to seek staff help during the visit, and more than 21% will follow the flow of people to visit the Earth Hall. This can also be seen from the site observation in the Hintze Hall; the more visitors gather, the easier it is to attract people's attention, although this may require others to wait behind them.

To give full play to the function of each arrival space, the museum organises various activities in these spaces in addition to its regular opening. From children's themed activities to parties and some conference events, the space served different purposes in each period of time, which is an embodiment of sustainability. The museum has been adapting to the changing social environment while influencing society. In 2020 and 2021, social distance and lockdown due to the pandemics and museums have to close. The NHM's website builds the programme "Try at home" to help the people at home continue communicating with the museum, including interactive games between family members, lectures, crafts etc. (Figure 7-2). In addition, the "Virtual Museum: 14 ways to explore from

home" creates a virtual self-guided tour of the whole museum for people at home. They can visit each exhibition hall by audio guides that serve the website. Whether it is virtual or in reality, the museum hopes to establish and maintain contact with the people and actively demonstrate its welcome to public participation.

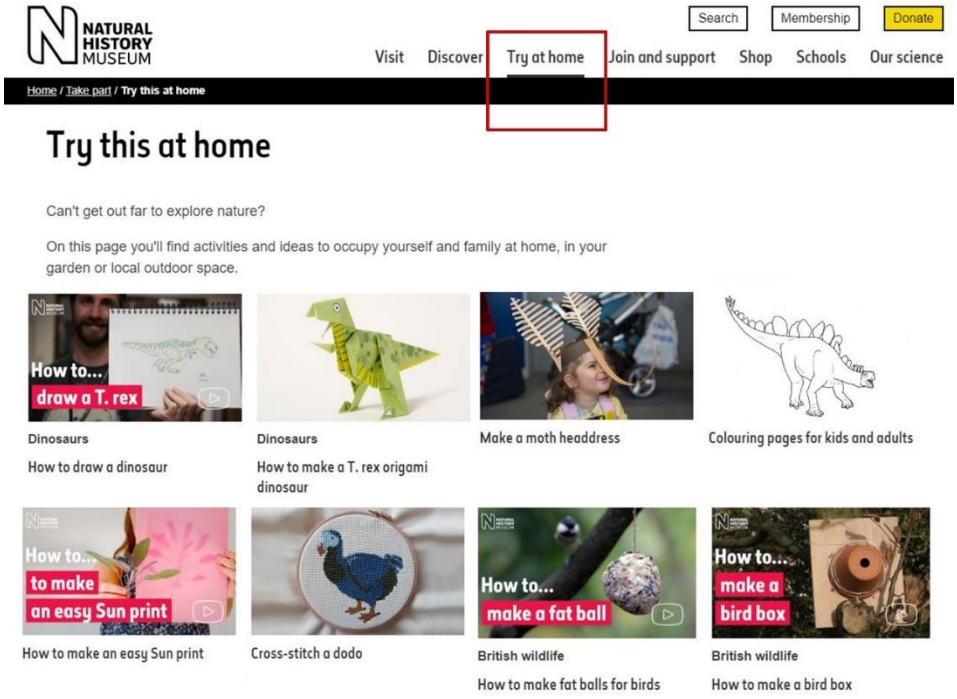


Figure 7-2 Screenshot of the NHM's website (Natural History Museum, 2021, edited by the author, 2021. Available from:< https://www.nhm.ac.uk/take-part/try-this-at-home.html>, 17th January 2021)

7.1.2. Image

The image of the arrival space has the most intuitive impact on the visitor's experience. The three arrival spaces present unique outdoor spaces due to the different construction years, ranging from exquisite Victorian architecture to extremely simple modern architecture. People can interpret the long history of the NHM from three different styles of building facades. The indoor spaces also have their features according to their respective themes. The image of three arrival spaces will be analysed from the view of impression, legibility and distinctiveness.

More than 70% of visitors believe that impressive architectural visuals can help create a

welcoming space in Hintze Hall's survey (Figure 7-3). Thus, the design of architecture space plays a vital role in forming a welcoming experience in museums. The Hintze Hall contains a distinctive architectural style, which can be seen as representative of the Victorian era. Such a magnificent architectural space will immediately attract people, stop to admire and take pictures. In particular, the huge whale skeleton suspended over the hall successfully became the hall's focal point, leaving a deep impression on visitors. The glass inlay on the roof ensures natural lighting in the hall, and the golden sunlight could complement the golden painting on the ceiling. Plants and animals' carvings on the columns and walls stimulate attentive visitors to explore the theme of nature. The Stegosaurus fossil and earth sculpture in the Earth Hall and the big white Cocoon in the DC2 all become the most representative impressions of their spaces. These impressions that rely on exhibits or special architectural images are often more profound than simple words. People can easily remember the huge whale skeletons, mysterious earth sculptures or modern Cocoon instead of the names such as Hintze Hall, Earth Hall or DC2.

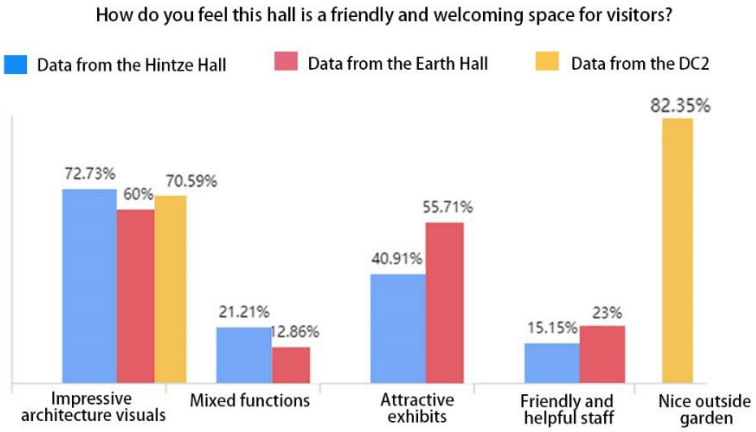


Figure 7-3 Visitor's feeling of the three arrival spaces (Author, 2019)

Although the words are not as intuitive as the images, the guidance of the words and the introduction of the exhibits' contents are especially important in the unfamiliar space for visitors. The atmosphere and decoration of the space can lead people to understand and guess the exhibition hall's theme and content, thus enhancing the legibility of the space. At the same time, the appearance of words can precisely reveal the answer, which can

encourage and stimulate their interest in exploration. In the first few wonder bays near the entrance, the information boards are read by most people in the Hintze Hall. More than half of people will read the core exhibit's introduction, like the stegosaurs fossil's information pannel in the Earth Hall. However, crowds of people in front of popular exhibits often hinder people's reading patience. On the upper floor of the Earth Hall, more exhibition information about the stegosaurs is displayed, which provides visitors with an overlook of the exhibit and an opportunity to get to know it better while avoiding being distracted by crowds (Figure 7-4). Additional, the information board language, font, colour, paragraph length and so on will affect the visitor's reading and understanding, which is not the focus of this study and will not be discussed in detail. Besides the visual experience, the stimulation of other senses also played a positive role in the visit. For example, 30% of respondents felt that the background sound playing on a loop in the Earth Hall deepened their understanding of the theme.



Figure 7-4 More information about the stegosaurs fossil on the upper floor (Author, 2019)

On the other hand, the comfort and distinctiveness of the space also affect the formation of museum images by visitors. The DC2 embodies a modern and unique sense of space with an architectural style and colours that are different from other entrances. Although more than 40% of people are impressed by its architectural style and bright and spacious space, the average stay time of visitors here does not exceed 5 minutes, except for others who take a seat on the seat. In summer, the strong sunlight makes the atrium formed by the glass curtain wall and white Cocoon hot and dazzling. Compared to this, people are more willing

to move in the outdoor courtyard. In the Hintze Hall, the afternoon sun, about 15:00-17:00, also affects the hall's physical comfort. People's eyesight is susceptible to direct sunlight and reflections, making more visitors sit on the steps to relax than at other periods of the day.

7.1.3. Accessibility

The accessibility includes easily accessible boundaries, reasonable and logical connections and transition, clarity of indoor space, and special access design for the disabled and the vulnerable group from the previous study. As a very hot attraction, the guide signs of the NHM have been widely seen in public places such as subway and coach stations nearby. Guided by street signs, first-time visitors can easily find the museum entrance, and each entry is disabled friendly and easy to go inside. The guidance and explanation of the NHM's staff outside the entrance also encouraged tourists to a certain extent. Even during the summer vacation with high visits, the long queue at the entrance did not dispel people's enthusiasm for visiting.

Both of the gates on Cromwell road and exhibition road are the main entrances of the NHM. The cathedral-like Hintze Hall as the main entrance dominates the whole building. This arrival space gives visitors' right to choose their visiting routes freely. More than half of the visitors are satisfied with the physical accessibility of this space from the survey. In contrast, the balconies on the first floor may not be eye-catching as the wonder bays exhibit. The beautiful architectural structure hides the upper floor's exhibition contents, and effective signages should be useful here.

On the other hand, the accessibility of exhibition contents also has significant meaning in creating a visiting experience. Most first-time visitors may have very little idea of what is on display at this museum, other than Dinosaurs. Involuntarily, the west exit to the dinosaur hall always has been busy, which sometimes, the long queue may block other visitors to access the wonder bays on the westside. The visitor may often ignore content that they have no prior interest in to make the visit more manageable. This could result in them

missing content that they could develop a new interest in. Moreover, the immense volume and variety of exhibition content may let visitors struggle to build a mental model of the museum's whole layout, who would easily feel confused about the museum. The lack of a clear location plan in the Hintze Hall, which may not help visitors familiarise themselves with the environment.

However, in the Earth Hall, the map panel on the hall's entrance wall introduces the space arrangement of this zone logically with simple icons and text (Figure 6-43). The impressive image of the escalator to the earth sculpture is abstracted into icons that are easy to identify and understand, helping their visitors build a mental model before visiting. Compared with the Hintze Hall, The movement trajectory of people in this space is more clear and firm, less likely to be irresolute and hesitant in traffic intersections for a long time. Particularly, the setting of the lifts at the entrance and the eye-catching escalator in the middle of the hall make it easier for people to visit upstairs. In the same period, 52% of people choose to use the escalator in the Earth Hall, while only 24% go upstairs by the big steps in the Hintze Hall. Hintze Hall's big staircase might be a challenge for the disadvantaged group to the upper levels. A lift is also around here, which is placed in the east exit. Thus, it is easy to be missed.

As the Hintze Hall and Earth Hall's indoor arrival spaces, whether through the guidance of the traffic space or the map and signs, it provide support for the connection and transition to other exhibition spaces. Tourists rarely use the Darwin Centre (the DC2) as the first stop to visit the NHM because the Queen's Gate entrance is not often open to the public. Thus, the main visiting flow in the DC2 comes from Hintze Hall's west exit direction. The space between the glass curtain wall and the Cocoon is long and narrow, with a large white step at the end. Most visitors usually return halfway through. Few people will step up the stairs during the observation period. People mainly choose to take the elevator directly on the other side. Therefore, there is very little traffic flow in this space, and the seats next to the glass curtain wall provide a quiet rest area for people. Unlike the other two spaces, it creates the chance to encourage people to get in touch with real nature.

7.1.4 Summary

Through communication, questionnaires and observations can reflect visitors' attitudes and preferences, thus clearly defining the design factors that affect the visiting experience. The main design factors that emerged from case studies are as follows:

- The diversity of functional space can create more opportunities for visitors to participate. Although few people visit every part of the entire arrival space, most people participate in two or three activities. The participation of other visitors will attract more people to gather and thus play a positive role in the activity of the space. The functions of the arrival space are not fixed. The same space with mixed primary uses can activate the museum in different periods of the day to reflect its flexibility and sustainable development.
- The visual image directly affects the impression of people. They are easily impressed by the unique architectural space and shocking exhibits. Visitors hope to understand the space's themes through the architectural elements, exhibits or short texts and their speculations in the space. Overly abstract and obscure expressions will make them feel incomprehensible, thereby reducing the enthusiasm of the visit.
- Build a mental model about the location by showing a complete map of the museum to visitors before the visit, in case they get lost during the tour. People tend to stop and hesitate at traffic forks. Few people take the initiative to seek the help of staff when they get lost, so the spatial layout and traffic guidance signs should be as clear and visible as possible. Ramps and elevators are easier to give people motivation than stairs.

In the ASVE, the Useability, Image, and Accessibility, these three are judgments of the museum's arrival space from the perspective of visitors. The questionnaire and observation method designed on this basis can effectively reflect the visitors' experience of the architecture and the built environment, reflected through their behaviours in the arrival space. The purpose of the arrival space is to promote the occurrence and continuity of

people's visiting behaviour. The findings by ASVE show the functional diversity space, impressive and easy understanding visual image, and mental model about the location in the museum can play a positive role in creating a welcome atmosphere.

However, the findings by the ASVE are just a public realm perspective based on the museum's arrival space, which is in line with the architects' and visitors' perception and understanding of a welcoming experience. However, the key factors in the space that influence visitor behaviour can be further refined in architecture design.

7.2 Key Factors Based on the ASVE and Visitor's Behaviours

The surveys of visitor behaviour in the NHM's arrival spaces record their visitors' movements, reactions, interactions, how long they stay, what they skip, where they go and with whom, etc. As the objective physical environment, the arrival spaces motivate different people to occur in various behaviours. In turn, these behaviours can reflect people's emotions, which can reflect their welcoming experience directly. Identify these critical performances and learning criteria for measuring the impact of museum spaces on museum visitors and some essential issues of significance for architects and designers.

People's environment and themselves influence their behaviours. Besides the visitors' preferences and personality, the museum's space atmosphere, exhibits, and other visitors and staff, these objective environment is closely related to their behaviour during museum visiting. Based on the observation and questionnaires in the three arrival spaces of the NHM, the visiting route, exhibits, and their environmental surroundings have high-frequency attention. NVivo counts the high-frequency vocabulary on the basic elements of what people think a welcome museum's arrival space should contain through five interview records (Figure 7-5). Both randomly selected three visitors and two professionally experienced museum staff repeatedly expressed their concerns in relation to the exhibits, the layout of the building space, the comfort of the environment, the services and the activities available. Among them, the rich and attractive exhibits and activities and the easy-to-understand visiting route and spatial structure are the easiest for visitors to accept

this area. On the other hand, the museum staff interviewed are more concerned about whether the content of the exhibition is attractive and easy to understand for the public. These results are similar to the findings by the ASVE. The design factors include diversity functions and activities, attractive exhibitions, clear visiting routes, impressive building images etc., which mentioned above promote the occurrence of visitor behaviour in the arrival space.



Figure 7-5 The word cloud of what people think a welcome museum's arrival space should contain? (Author, 2019)

The above discussion and analysis have referred to the attractiveness of space, architecture, exhibits and activities to visitors. And attractiveness is also an important factor in helping to retain visitors to the arrival space. A welcoming space must have a strong and sustainable attractiveness. Suppose all design elements in the arrival space are abstracted as points and the visitor's movement as lines. The point is the attractive factors in the arrival space: exhibits, events, architectural decorations, or a building area. A line is a directional movement trajectory generated by the visitor under the influence of the point and themselves. In that case, the problem of creating a welcoming experience is reduced to a discussion of the visitor's attractiveness of the points and lines in a certain space (Figure 7-6).

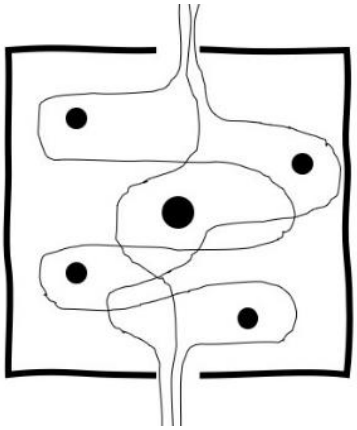


Figure 7-6 The abstract relationship of visitor's behaviour, design factors and space (Author, 2020)

The existence of points in the space affects the creation of lines, and the lines with different directions will make the points have different effects. The interaction of points and lines forms the experience of space. Thus, the research about welcoming space's attractiveness relates to the two core issues: **orientation** and **attention** of the arrival space (Figure 7-7). This is also consistent with the primary function and meaning of the arrival space mentioned in Chapter 3. Based on the ASVE, the diversity and sustainable use of the space, vibrant activities, impressive and distinctive space images can be the active attention points in the arrivals space. Accessible boundary, clarity layout and legible images orientate visitors gradually into the museum after the arrival space. This section will integrate the findings of ASVE, focusing on the two key factors of orientation and attention, and pave the way for further discussion of the interaction between visitor and arrival space.

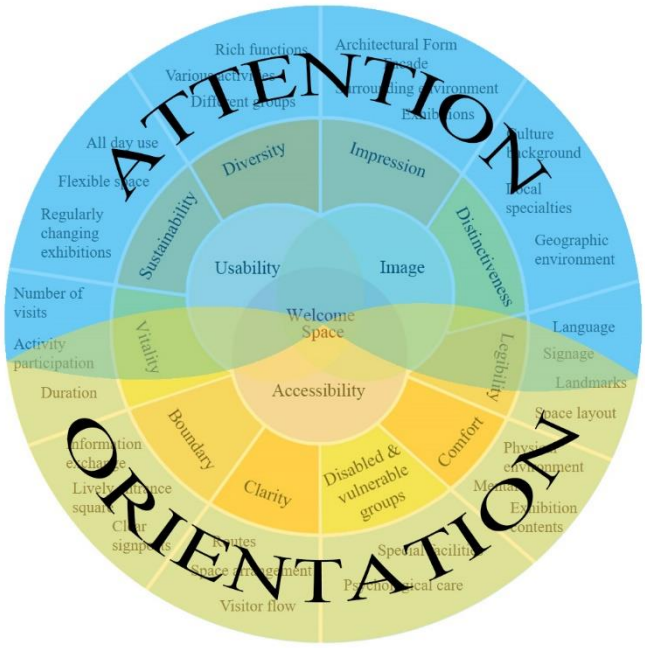


Figure 7-7 Orientation and attention in the arrival space (Author, 2020)

7.2.1 Orientation

The route visitors take in the museum is closely related to their experience. Choosing the tour route, whether the route is clear and easy to pass, will affect people's impression of the museum. Kevin Lynch's definition of a route is a path that the observer may pass or conceptually pass(Lynch, 1960). The formation of the route depends on the interrelationship between various elements in the space. The route is more often an orientation or a symbolic direction. People choose the path with different objectivity under the subjective feeling. When the psychological and objective are relatively clear, people will choose the shortest route to achieve the goal quickly. For example, students who are running late and office workers in the subway have explicit goals. However, in the case of vague goals, people tend to choose a state of immersion in roaming; the choice of the path is lengthy and irregular. People will change their trajectory when they see an unexpected presence or cue, such as walking in parks and shopping malls.

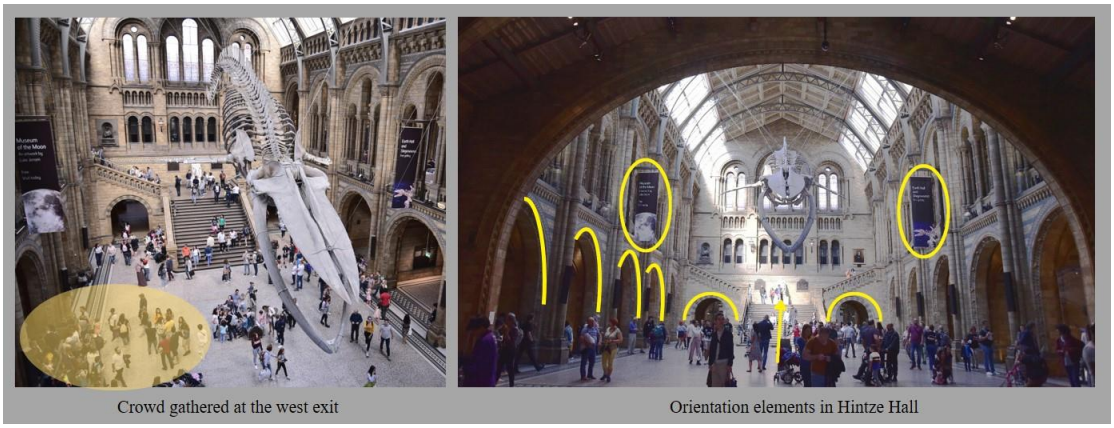
Clear orientation can help the museum ensure their visitors comprehend and appreciate the

exhibition and its purposes and make people feel physically and psychologically comfortable and clear. In July 2018, the survey on the accessibility of museum's spaces was carried out around Nottingham Natural History Museum and the Nottingham Contemporary. The 85 respondents were mainly local Nottingham residents and university students. More than 85% of visitors believe that they need to make sure their indoor orientation by some supplementary means, like a map, audio guide and signs (Date collection by Author, 2018). Among these people, 63% feel confused and easy to lose patience when they have been unable to clear their direction. Even 10% feel tension and panic if they stay in such an unfamiliar and disorienting space for a long time (ibid).

Museum visitors not only need to know where they are and where they are going but also need assistance in making the best use of their limited visiting time, especially in large museums like the NHM. Chapter 4 and 5 both discussed the guidance device, circulation and views, and space's proportion and scale, which can easily affect visitors to locate the orientation. A clear and definite orientation can help to maintain people's confidence in staying in an unfamiliar environment. In turn, confidence can support them to have the patience to continue visiting. Visitors' route selection, traffic flow and the range of movements in the arrival space are strongly influenced by the architecture design. Some environmental cues, such as building plans, exhibition arrangements, and signages, lead visitors' behaviours silently.

In Hinze Hall, there are several routes for visitors to select freely. They can create various visiting situations through the lead of signage, path and layouts and so on. In this ample scale space, architectural elements like the giant staircase and both sides' arches can be the obvious sign for traffic guidance. Especially when the sun shines into the hall through the skylight, it highlights the central position of the big stairs. The marvellous architecture style and the shocking central exhibit gain main attention, the big stairs still played a prominent guiding role. But compared to climbing such big stairs, the east and west exits are hidden in the alcoves are more attractive. Significantly, the west exit, which connects the famous gallery of dinosaurs, attracts a steady stream of people (Figure 7-8). Figure 7-8 shows the elements that can express the orientation in this area. Besides, when doing questionnaire

surveys, the frequency of being asked for directions was significantly higher than that of the Earth Hall. This may be because there is no map or plane to show how this hall's position of the whole museum. Compared to the vast spatial scale of the hall, the signages are limited in the background. Few people can notice those banners on the top. Labelling the most popular exhibition guides clearly in the main arrival space helps visitors quickly locate the entire museum space and reduce stops and congestion at the entrance and exit.



Crowd gathered at the west exit

Orientation elements in Hintze Hall

Figure 7-8 Direction signals in the Hintze Hall (Author, 2019)

In the Earth Hall, the escalator with the metal-earth sculpture can strongly lead the traffic flow. During the observation, more than 60% of people choose to use the escalator to reach the upper floor; the questionnaire is 51.43%. The entire hall creates a dark cosmic atmosphere, and the showcases of both sides here can lead visitors with the lights inside (Figure 7-9). Thus, the space under the big elevator forms a passage leading to other exhibition halls.



Figure 7-9 A series of exhibition showcases on the long wall (Author, 2019)

Thus, the unique or obvious traffic signs and spatial structures can play a decisive guiding role. The main vertical traffic space can pull the visitor's flow upstairs and provides visitors with the opportunity to view the space from different angles and heights. Most visitors prefer to take photos on the stairs of the Hintze Hall of the NHM. Going up the giant escalator to the earth looks easier and more fun than walking through the Earth Hall. Simultaneously, the gathering and movement of crowds also play a guiding role in individual experience. In the Earth Hall, in the case of a strongly oriented escalator, a further 21.43% said they just choose the journey with the large flow of people.

Based on the phenomena that emerged in the above surveys, the orientation issues in the arrival spaces can relate to the visitor behaviours' aspects (Table 7-1). Typically, the arrival space can connect several exhibition halls, providing a different choice for their visitors. In this way, the building layouts to the information boards can be the clues to help people make the route selection. Like the recurring architectural elements (arches in the Hintze Hall and exhibition showcases in the Earth Hall), lights (nature lights of the Hintze Hall and the DC2, and artificial lights in the Earth Hall) and conventional text guides (i.e. panels signages, landmarks). Meanwhile, following the traffic flow is an easy way for locating the position, particularly in the fixed route museums. And it is hard to miss some popular exhibitions. The scale and accessibility of traffic space will bring different psychological feelings to visitors in the crowd. The straightforward orientation design is to let visitors know where they want to go and display the arrival space's location in the entire building.

Clear orientation in the arrival space allows visitors to familiarise themselves with the museum more quickly to plan and organise their route and guide them through the museum.

ORIENTATION	Route selection	Conventional text guides
		Sensory guidance: Lights
		Architectural landmarks
	Traffic flow	Scale: Corridor width
		Accessibility: Entries to other parts
		Circulation

Table 7-1 Oriented design points (Author, 2020)

7.2.2 Attention

Attention is the concentration of the mind on a particular piece of information. When all kinds of information enter people's consciousness, they pay attention to a specific one and then decide whether to take action (Davenport & Beck, 2001). It refers to how people pay attention to a subject, an event, behaviour or even an object and the various information behind it. The level of attention includes, one is whether visitors notice (the attractiveness of the display); another is how long the visitor has paid attention (the continuity of the state). Visitors' attention as a motive force for them to keep moving forward also varies with the surrounding environment's perception, such as the central exhibit, diversity and contrast of the space, exterior and interior views, signage's colour, decoration's texture information panels and background atmosphere.

Naturally, specific themes and star displays can inspire curiosity and interest, just as the NHM's way to the dinosaur section is always packed with people in the Hintze Hall. When interviewees were asked what exhibits NHM had, almost all interviewees would blurt out dinosaurs during the interview. As the main entrances of the NHM, the whale skeleton hanging above the Hintze Hall and the stegosaurus fossil at the beginning of the Earth Hall have attracted people for a long time (Figure 7-10). Additionally, the walking distance can affect visitors' attention as well. Figure 7-11 overlays visitor traces during busy periods and

quiet periods, showing the length of time people spend in each arrival space and the frequency of visits to different locations. The exhibits furthest from the entrance often don't get enough attention. The exit that appears midway may also be one reason that hinders people from visiting the later exhibits, such as the east and west exits of the Hintze Hall. Many interviewees also mentioned that the distinctive architectural style is also one reason that attracts them to stop and watch in the Hintze Hall. In the Earth Hall, the dark background with particular sounds can arouse people's curiosity and desire to explore and help them better understand the cosmos' theme.

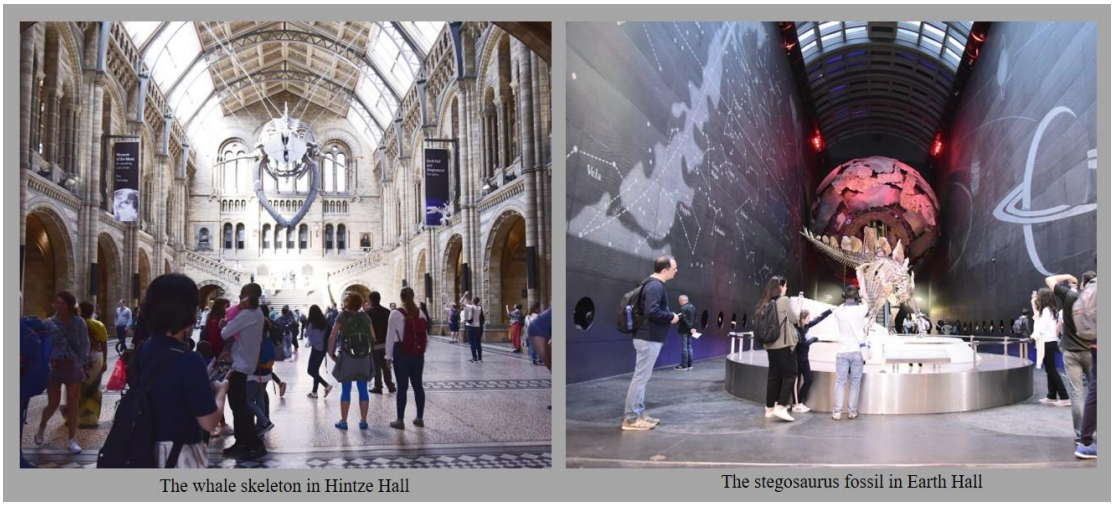


Figure 7-10 Central Exhibits in NHM's indoor arrival space (Author, 2019)

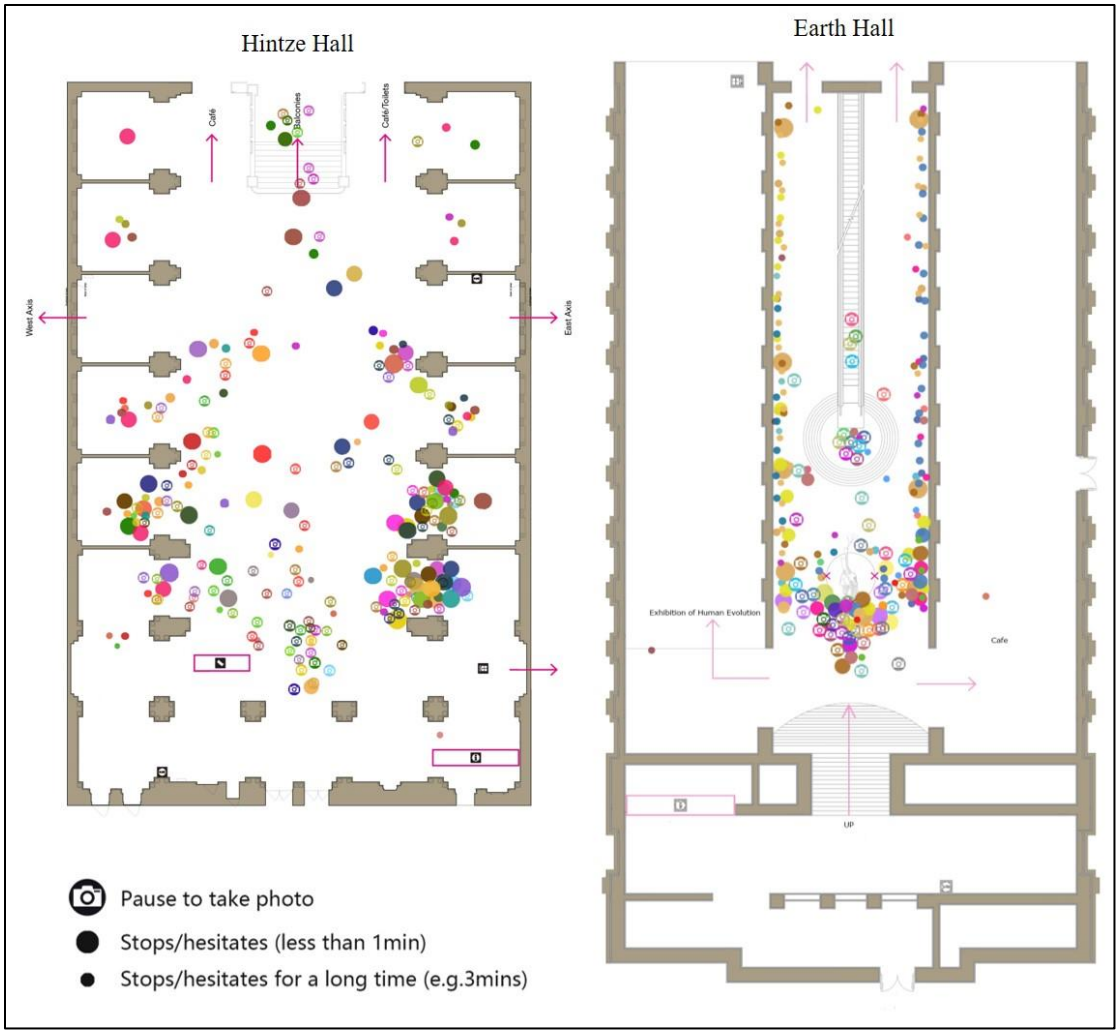


Figure 7-11 The trajectory of the length of stay of visitors (Author, 2019)

Another side needs to be concerned to avoid museum fatigue, which was initially mentioned by Benjamin Gilman. Museum fatigue is the main problem that keeps people from paying attention during their visit journey (Gilman, 1916). Some studies have shown that visitors usually spend more time in the first hall they visit than other exhibition halls visited later (Falk & Dierking, 2016). In this way, the museum fatigue usually happens later in the later visiting process. However, the arrival space is sometimes used as both the beginning and end of the tour or the whole building's core space that must be faced with this issue.

Usually, fatigue is a sign of reduced interest. Too little content in the space makes people

feel monotonous and dissatisfied, while too much content in the space is dazzling and easy to get bored. Object satiation is one of the reasons that cause museum fatigue, which is related to visitors' emotions (Bitgood, 2009). The resulting decrease in interest can be controlled to some extent by arranging exhibits to provide the greatest possible diversity. For example, the wonder bays show different types of exhibits, from animals' fossils to plant specimens in the Hintze Hall.

In contrast, the average time for visitors to visit the exhibits here (13 minutes) is longer than the time spent watching the minerals in the Earth Hall's two-sided showcase (8 minutes). In the DC2, the limited space and a small number of exhibits do not give people too many route choices and attractions, so the time to visit here is very short, except sitting and resting in this area. However, these three arrival spaces serve as different exhibition themes of the NHM, which allow visitors to move through different exhibition halls to stay interested. Similar to the impact of walking distance mentioned before, visitors' satiation will also cause exhibits near the entrance to be frequently visited by energetic tourists, while exhibits in the distance are less noticed.

On the other hand, the noise and crowded environment, monotonous space, too long walking routes, and lack of challenging exhibitions and insufficient rest area may bring visitors' physical and mental fatigue. In Hintze Hall, many people will come back to here after the visit, especially after two o 'clock in the afternoon, there will be more people gathered in the hall, the resting place will be crowded, even some people will sit on the big step, but in order to ensure the traffic unobstructed, the staff have to discourage people from sitting on the big steps to rest. Moreover, in the summer, the temperature turns high at the same time, which makes the people more restless in this hall. A similar situation also happened in the DC2. The strong sunlight would pass through the glass curtain wall at noon and reflect on the white cocoon building, hot and dazzling. In addition, the lack of rest space is also one of the factors that undermine the patience of visitors in the Hintze Hall. Crowded people will make the environment noisy and block the view, which will affect the decision of the orientation as well. Therefore, the physical comforts like nature temperature, seat set, noise, view accessibility and so on in the arrival space should not be ignored.

In summary, the following table describes the design aspects in the arrival space that affect people's attention (Table 7-2).

ATTENTION	Attention distractors & Attention attractors	Central exhibits
		Walking distance
		Backgrounds
	Satiation	Exhibition (numbers, types, quality)
		Architecture: Diversity layout, decorations
		Engaged activities
	Physical comforts	Temperature
		Seats setting
		Sound/ Noise
		View blocked

Table 7-2 Attention design points (Author, 2020)

7.2.3 Summary

The final aim of analysing the influencing factors of visitor behaviours is to explore how to create a welcoming experience in the arrival space and make the arrival space attractive. The design of orientation and attention can cause various behaviours in the arrival space through the previous research. It should be noted that people's attention will be consumed with time and distance, so there are particularly popular and unpopular areas in each arrival space. A moderate amount of unwelcome areas does not affect the visitor's welcoming experience, which can be confirmed from the three arrival spaces' three questionnaire surveys. Although some survey respondents are dissatisfied with the noisy environment, crowded people and unclear signs in the arrival space, almost no one objected to this as a welcoming space in the overall evaluation.

When asking visitors whether they can feel this space is a friendly and welcoming space for them, in the Hintze Hall, 94.29% of people said yes, 94.96% in the Earth Hall, 96.83% in the DC2's atrium. No one chooses the negative option in Hintze Hall and DC2. Just under 6% of the participants neither feel good nor bad in these three arrival spaces. The results of the questionnaires showed that most people are satisfied with the experience of the three arrival spaces (Figure 7-12). Interestingly, although few people stay in the DC2

during the survey, the feedback of the questionnaire is still that most people are satisfied with this area. The ratio of the options not good or not bad is much higher than the other two spaces. This may be due to people being more used to expressing their dissatisfaction subtly or completing the questionnaire as quickly as possible. Therefore, in order to ensure the authenticity and effectiveness of the survey, it is necessary to combine the questionnaire, observation and interview data for comprehensive analysis.

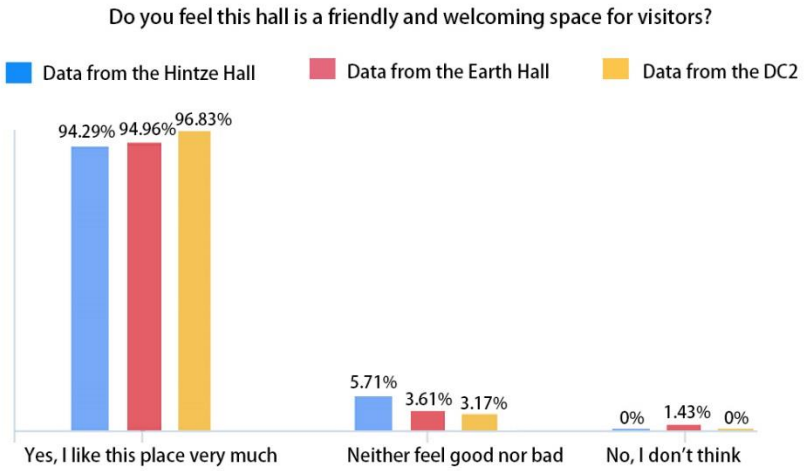


Figure 7-12 Visitor's feeling of the three arrival spaces (Author, 2019)

Consequently, the relationship between visitors and the arrival space can be further interpreted, referring to the interaction between the people's behaviour and the environment's atmosphere. Based on the abstract concept of points and lines in the arrival space above, considering the objective paths (the attention points) in and around the arrival space as a "primary mesh" is fixed and exists in space. These impersonal elements would give the first impression of visiting the museums. Because of their different attention and visiting goals, the visitors are free and flexible to move inside, and their movements (the movement trajectory lines) build up the "secondary mesh", which follow the primary mesh but with a variety of circulations. The visiting experience and the absorption of knowledge, these subjective and intangible accessibilities become the "tertiary mesh", which come from the comprehensive reflection of the first two meshes (Figure 7-13). In this grid, each mesh is interlocking and has a progressive relationship.

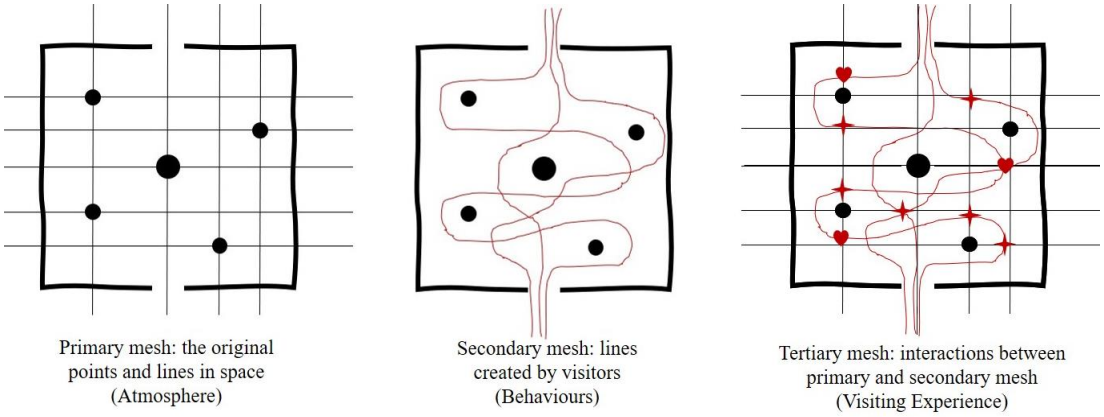


Figure 7-13 Mesh model of arrival space (Author, 2020)

The visiting experience was originally an abstract and indescribable concept. But through this mesh model, creating a welcoming experience is especially important to grasp the connection of the primary mesh, that is, the initial design of the architectural space and exhibition. Only when the architect has laid the foundations of the primary mesh can a series of subsequent interactions between visitor behaviour and the environment be triggered. The ASVE is about helping architects create an intelligent hub of design elements that they can refer to. Stand on the ASVE, key factors of orientation and attention are central to the design of the arrival space. The good primary mesh can generate active secondary and tertiary mesh, which leads to the final positive visiting experience.

The next part will further discuss the interactions between behaviours and the environment created by the positive visiting experience. By exploring the progressive relationship between people's behaviour and spatial interaction, it can clarify the design strategies needed to create a welcoming experience.

7.3 Design Strategies for Architects

The essence of the popularisation of museums is respect for people at all levels of society, to maximise the interest of the public to participate, and to make the museum a more attractive and pleasant place. The purpose of creating a welcoming experience is to allow the designer to create space from the point of view of the museum's primary user, the visitor.

In other words, it is an expression of the museum's care for visitors and an echo of the "visitors first" philosophy of the New Museology Movement. The German philosopher Heidegger defined "caring" as the real existence of human life, which is a caring attitude towards other people or things, an idea of doing something seriously, the deepest real desire, and short-term or long-term attention (Heidegger et al., 1962). "Caring" also means a mental state of "Engrossment", that is, the state of being mentally responsible for something or someone's anxiety, worry or concern. It embodies the desire and need for "caring" as a relationship. In the museum, it emphasises respect, understanding, care and love for its visitors.

People visit the museum for various purposes. The welcoming atmosphere enables visitors to meet a series of behavioural and psychological needs while enjoying the pleasant environmental quality and obtaining spiritual and material satisfaction during the visit. The visitor is constantly interacting with the original setting in the space. The interaction will be positive under the care of the museum. In this section, three positive interactions will be discussed, which translates the untouchable visitor emotions and the inspiration generated by the interaction of ideas, the visitor experience, and tangible design guidelines.

7.3.1 3E interactions

The welcoming experience is a subjective feeling. The emotions generated by visitors in the museum are subjective, and the recorded behaviours are objective. Merleau-Ponty describes understanding the world needs to return to existence and perceive the world through the interaction between the human body and environment (Merleau-Ponty, 2004). As he explains, the sensory experience must be concerning the body because the body is the means by which sensation occurs. The body is always at the centre of its perceptual field, regardless of the objects being perceived. So, the importance of the body is reflected here (ibid). People are the core design elements of the museum design. The only criterion to judge the success of an exhibition building is how people feel about it. Architects are not only designing museums but also creating sensory experiences for their visitors. People's feelings are reflected through a series of interactions between their bodies and the arrival

space. When people enter the arrival space, they can enjoy various exhibitions, participate in diversity activists and even inspire new ideas.

In the questionnaires, the majority of respondents could enjoy the three arrival spaces (Figure 7-14). More than half of respondents thought the Earth Hall could inspire their curiosity. Thus, a significant number of people agree that the NHM's arrival spaces can inspire them in some way. Both observations and questionnaires show that most visitors have a high level of engagement with the three spaces. Through questionnaire data statistics and interview results, people believe that they can feel friendly and welcome in the NHM's arrival space (Figure 7-12). These intangible feelings of visitors describe the welcoming experience in the arrival space, which is closely connected with their behaviour. In a welcoming space, visitors can feel enjoyment and highly engaged in it, even inspired by exhibitions or environments. Thus, there should be three basic positive interactions between visitors and arrival space: enjoyment, engagement, and enlightenment, called 3E in this research.

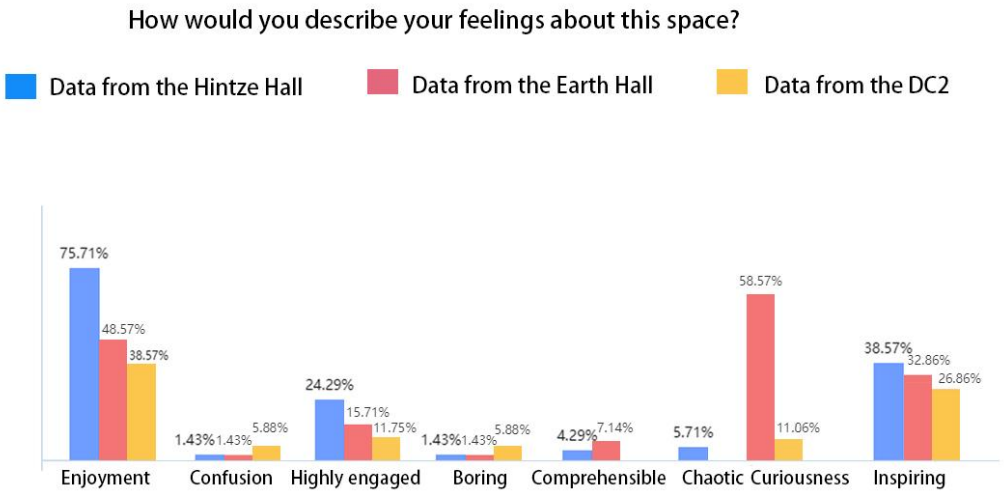


Figure 7-14 Top feelings of the visiting experience in the NHM survey (Author, 2019)

7.3.1.1 Enjoyment

A welcoming atmosphere should first allow the user to enjoy being in it. As a public social area in the city, the arrival space of the museum is an important place to create pleasant

emotions for people and activate the atmosphere of the city and museum. Sometimes the arrival space acts as a transportation hub and a central public space. It serves as a buffer area connecting different exhibition halls and temporarily relieves people's fatigue during the visit. It is difficult to judge whether visitors have a pleasant mood in the arrival space only through the survey. However, some of their behaviours can reflect whether they are tired. Museum fatigue is a significant barrier that affects people's mood when visiting. As mentioned earlier, its direct cause is the weakening of attention.

The prolonged concentration of visitors on the exhibits is the fundamental cause of physical fatigue. In a large area of arrival space, if the tour path is too long and there are too many walking steps, fatigue will be aggravated. Suppose there is a lack of rest space at the same time. In that case, visitors' physical exhaustion will not be alleviated in time, which will eventually lead to the loss of the willingness and motivation of visitors to continue the tour. On the other hand, when the same stimulus appears many times, visitors will feel bored. This is also the satiation mentioned in part 7.2.2. Some constant factors in the field of view, such as a certain smell or background with the same colour and light that has always appeared, cannot attract people's attention. Suppose the various morphological elements in adjacent areas always remain stable or the display contents are still very similar in the arrival space of a museum. In that case, people will also get bored in these repeated environments after visiting a few exhibits. They begin to neglect shows that do not interest them and end their visits prematurely, such as the many similar showcases on the Earth Hall's wall in the NHM. In addition, if the space is too closed, there is no communication with the outside environment, it is also easy to have psychological fatigue. Therefore, to create a welcoming atmosphere and keep visitors enjoyable, museum fatigue needs to be avoided in the first place.

7.3.1.2 Engagement

The visitor becomes the subject seeking and desiring, empowered in the space. Therefore, visitors should actively participate in the arrival space instead of being passive receivers. The idea of engagement here emphasises active behaviour, such as people's choice and use

of facilities in the space. Among these behaviours, the most easily captured and observed is reading, which is also the main activity that people take place in the arrival space.

When people visit the museum, they spend most of their time reading. Words, pictures, and even the visual viewing of three-dimensional objects can be seen as museum reading. If the visitors can retain the memory of the exhibition or exhibits, then their reading behaviour is considered effective. There is much explicit or implicit reading information in the arrival space, and the reading of the explanatory signs of the exhibits is the most important and easily observed behaviour for visitors in the museum experience. Through observation, it was found that all visitors with reading ability read some exhibit panels, but none of them read all the exhibit boards. People will spend time watching the exhibition's content that they love and will skip the part that they don't like without spending time on it. Research work also found that most reading behaviours occurred during the first 5 to 15 minutes of the visit. Later, as visitors consume their attention and patience, they will gradually shorten the reading time. This is one of the reasons why observations show that people are spending less and less time at the subsequent exhibits (Figure 7-9).

Moreover, as visitors visit the museum, they constantly ask questions about what they see and discuss, trying to deepen their understanding of what they see. Visitors' conversations related to the exhibition are related to the level of attention during the visit. The more concentrated, the more problems worth discussing in the exhibition will be discovered. And the conversation between visitors can deepen the attractiveness and sustainability of the exhibition-related content and even trigger their follow-up attention after the visit. The conversation behaviour of general visiting people is related to the nature of the visiting group. In the most common educational Q&A between parents and children, children will ask questions about exhibits or auxiliary devices seen in the exhibition, and parents will give answers according to the exhibition instructions and their own knowledge background. In this process, both parents and children are involved in learning and memory. Couples talk in low voices during the visit but almost throughout each exhibit. For tourist groups, their conversations were sometimes unrelated to the theme of the exhibition. Sometimes they extension the topic of the collection to explore some of the life experiences. The

people visiting alone has almost no conversation behaviour. It is important to note that the act of reading and communicating can also be affected by museum fatigue, which is a weakening of attention.

7.3.1.3 Enlightenment

Holl states the building is not confined to the fulfilment of merely the physical requirements but rather presupposes human life's spiritual and emotional contentment (Holl, 2016). At this point, he attributes a conductive role to architecture as creating spaces for sensory fulfilment (ibid). Users in this space could be inspired by more imagination. In other words, the ideal architectural space can enlighten its users. A good arrival space of the museum can allow people to enjoy the visiting experience and involve themselves in it and inspire people on this basis.

Before the museum opens to the public, architects need to sketch the atmosphere of the space they want to express in their minds first. According to the study of proprioception and its significance to sensory experience in Chapter 4, architects will create their self-consciousness based on the site's physical environment before the design. They will then use their experience to deepen their perception and understanding and consider using the architectural elements to embody the concept. In other words, the architect is conscious of the physical environment that provokes him to think and design (Holl, 2016). The physical environment offers an experiential realm by architects' living experience for the museum (Figure 7-15). Vistors understand the space and active the imagination through the architectural elements designed by architects.

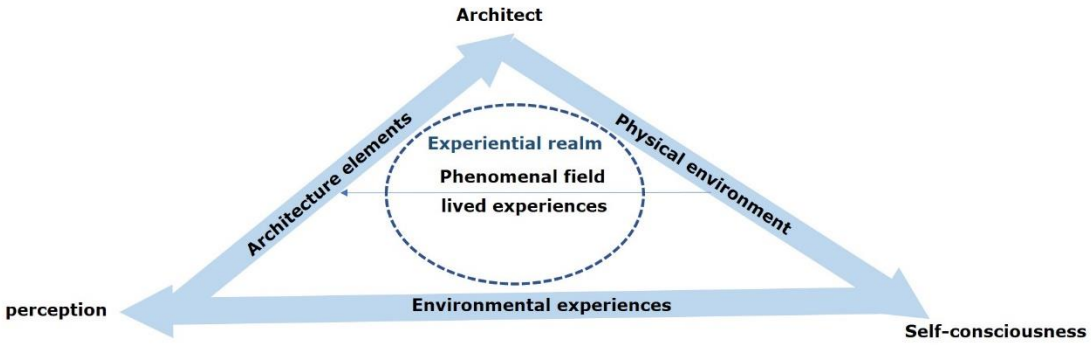


Figure 7-15 The architect's process of perceiving and designing space (Author, 2019)

Enlightenment can be seen as the highest level of interaction. The premise for inspiration is that the space environment or architectural elements trigger people's memories or discussions of life experiences or expectations for the future. This requires architects to create more vivid arrival spaces to promote richer behaviours of visitors. In general, the immersive space has a high degree of identification with the theme and is easy to arouse people's association. For example, the Earth Hall in the NHM creates a universal theme with lights, background sounds, murals, a sphere sculpture hanging in the centre, and the large escalator that brings people upstairs, sparking discussion on related topics. Also, details can be a source of inspiration. In the Hintze Hall, reliefs of various animals and plants on the staircase's handrails and the columns will also attract some visitors' attention. People will stop observing, touching and discussing, and even arguing with their peers about a different point of view.

The enlightenment is an ability to have attained spiritual knowledge or insight from the arrival space. Unlike enjoyment and engagement is the simple interaction between the body and the physical environment, enlightenment emphasises the effects between the body's mind and the environment. Merely observing the behaviour of visitors is more difficult to judge. It is necessary to rely on architects' reasonable space design to allow people to understand the information to be conveyed autonomously. This is also an important part that cannot be ignored in creating the arrival space in the museum.

7.3.1.4 Summary

The sensory experience is first integrated into the body through previous research and then continuously blended with the environment through the body and movement. The body's perception and impression of the world become a unified continuous existence experience. Thus, architectural space's perceptual experience is a kind of perception comprehensively obtained by various sensory organs, which results from the continuous interaction between the body and the environment.

The 3E reflects the different degrees of interaction between visitors and arrival space. People get joyful feelings through the cognition of space, which is the result of information interaction. Enjoying the environment, actively participating in it, and even being inspired by it results from multiple, deeper information interactions. The welcoming experience created in the arrival space is the experience process of the visitor's body's sense from enjoyment to enlightenment. The 3E is the positive feedback of people's behaviours on the various characteristics of the ASVE in the arrival space. Figure 7- 16 shows the details of the 3E and the various spatial aspects that they contain. Specific spatial characteristics create a particular atmosphere of space and body sense, defining the basic conditions for creating a welcoming experience. Based on these, the following will summarise the distinctive design principles to help architects turn the arrival space into a welcoming space.

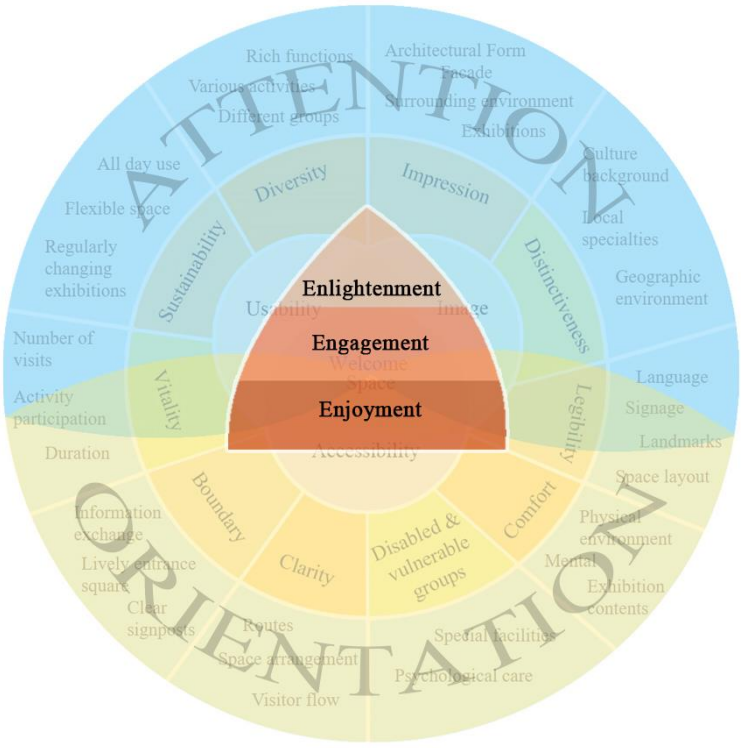


Figure 7- 16 The 3E interactions of the arrival space (Author, 2020)

7.3.2 Design principles of the welcoming experience

The concept of 3E is from the visitor's view. The architect also tried everything possible to cater to visitors. From the beginning of seeing the building facade in the distance, to feel the architectural scale when approaching, and the space experience when travelling, each step is carefully designed. The full range of sensory experience is included in the design. It's not so much the architect designed the museum as it is a process of the sensory challenge created with care. Its purpose is to fully inspire the various senses of the visitor to experience the space and exhibition actively. Previous research and analysis revealed the relationship between visitors' behaviour and their emotions in the arrival space. For example, the clear layout arrangement, diverse exhibitions, enough rest area, reasonable walking distance, and a comfortable physical environment, all these designs can help the museum to build a welcoming experience for its users.

The arrival space is between the city and the museum's internal exhibitions, which

guarantees the museum to attract visitors to the maximum. It is a place for visitors to complete psychological and behavioural transitions, and it is also an open space that can include diverse functions in the city. Therefore, its design should satisfy the design of public space, provide users with more opportunities to choose freely, and make the limited space more colourful, to make the museum more attractive in the city. In this part, three possible design principles towards more welcoming experiences of arrival space are proposed here.

7.3.2.1 Principle of continuity

The museum does not exist independently in the city, and its location is affected by the surrounding environment and humanities. It can be an essential means to continue the local historical context or be an emerging centre for regional development. Since the arrival space itself is a place connecting the inside and outside of the museum, it should first conform to the principle of spatial continuity. That is, it is able to guide the public to participate in the museum gradually. It requires the space's continuity in terms of location and vision and needs to have a sense of integrity and attraction in the visitors' consciousness. This requires designing a series of clues in the arrival space. These clues can make the museum theme in this process more prominent and clear. Usually, only when there are clear clues, the article will be organised well, and it will be easier for people to understand. The same is true for architectural space. The following points should be noted to make space continuity with different kinds of clues.

a) An attractive distance must be maintained between the two areas.

For the arrival space with a large area or the open-air type to guide people into the museum step by step, it is necessary to set up nodes that attract attention step by step. These nodes can be star exhibits, spaces of change, or eye-catching road signs. But of particular concern is the distance between each node and the path that connects them. As figure 7-17 shows, too long a visiting journey or a tortuous route that blocks the entrance of the next exhibition hall will lead to people's enthusiasm to continue visiting. On the contrary, too simple and

empty space is easy to cross quickly, but it isn't easy to attract attention and hardly make an impression. Especially for the open-air arrival space, the long distance from the exhibition hall entrance and the monotonous landscape will hinder people from entering and visiting.

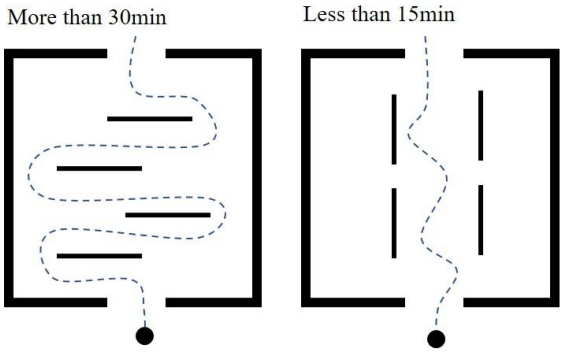


Figure 7-17 different visiting distances can affect visitor's enthusiasm (Author, 2020)

b) Use materials, landscaping, different areas and other design factors in transitioning.

The essence of the arrival space is to help visitors naturally transition from the city to the museum. In order to play a guiding role, some details of the design cannot be ignored. Different materials, landscape design, theme colours, background sounds, etc., can set off different space atmospheres and help visitors quickly identify the museum's exhibition theme. Especially in the transitional arrival space, the integration and response of the museum’s inside and outside are essential.

c) Use signs and landmarks appropriately to attract people's attention.

The reasonable use of signs can effectively help visitors improve the efficiency of visits, avoid wasting time finding routes and reduce people's anxiety and frustration caused by getting lost. The traditional two-dimensional signs in museums are in the form of text or pictures. This type of sign is commonly used, usually with eye-catching fonts, lights and bright colours to attract attention. Additionally, unique architectural structures or sculptures can also be used as landmarks to guide directions, such as continuous arches, large steps in the centre, noticeable central exhibits, etc.

7.3.2.2 Principle of diversity

Psychological research shows that people prefer complex, diverse stimulation (Bitgood, 2013). The wide-ranging and much stimulus information easy to arouse people's curiosity and interest. Diversity is the nature of cities (Jacobs, 2006). Specific to museums, diversity can also bring vitality to museums. Venturi's proposition is that designers should provide people with a variety of information(Venturi et al., 1977). The arrival space is a public area that allows everybody to join in; its diversity can meet different people's needs. The concept of diversity here mainly includes the following two aspects.

a) Distinctive space

The meaning of space is related to the depth of communication and the degree of connection with life events. People's perception of place includes spatial form and place characteristics. The grasp of spatial form produces direction, and the perception of place characteristics produces identity. Orientation makes people establish and perceive their own culture of existence, and identity makes people feel of belonging. Only the perceived arrival space can embody its meaning.

The architect should, according to the local characteristics and museum theme, design a distinctive public space. The museum can not only display treasures from around the world but also record local culture and history. In particular, community museums spread local characteristics and cultural heritage, which cannot be replicated elsewhere. In this case, the arrival space is more like a city's public activity centre, and its design should fully consider the local characteristics to help residents build self-confidence and pride.

Some museums are transformed from historic buildings, and their locations usually have both historical significance and landscape specificity. For example, some places are closely connected with the public's daily life (such as railway stations), and some are not in direct contact with the public. Still, their special images have become local landmarks (such as the power station's towering chimney). They have directly or indirectly entered the daily life of the local public. The Musée d' Orsay in Paris was transformed from an old train

station. The entrance retains the structure and space of the old railway station. In the Tate Modern Art Museum in London, a power station transformed, its 99-meter-high chimney and turbine room have been preserved. It is no longer a mysterious area that the public can only look at from a distance curiously. It has become a famous attraction that attracts millions of people every day.

b) Diversified spatial forms

The appropriate changes of space form, functions, content and size can produce a rich, wonderful space atmosphere. The use of partitions, windows, slopes, and changes of light and shadow in the space can make the walking visitors produce visual changes so that the static space becomes dynamic. In Finland, the Kiasma Contemporary Art Museum uses curved walls and undulating ramps and Finland's unique high-altitude natural light to create rich visual changes during the walk.

Moreover, using flexible and lightweight partitions instead of fixed partitions can create more possibilities for space variation. In the same space, the use of different walls can expand a single hall into a flexible space that can be changed according to the requirements of the display content and has multiple potential combinations. Gehry designed three different walls in the Frederick R Weisman Art Foundation at the University of Minnesota, namely permanent walls (external walls only), temporary walls and movable walls. These walls can expand a single large exhibition hall into a flexible space that can be changed according to different needs. Space itself should show individuality, which will inspire more creative works and arouse greater interest from the audience.

c) Rich functions

The diverse functions in the arrival space can also enrich the visitor experience. People can also walk in a souvenir shop and chat in the coffee shop while getting information at the service desk. These behaviours make the museum space more active. Well, diversity is not equal to unrestrained change; it feels too complicated and chaotic. It must rely on rational macro-control, make people have a more precise understanding of space order. Let visitors

enjoy the changeable spatial level and rich content under the condition of stability and comfort.

7.3.2.3 Principle of ambiguity

Arrival space should promote the movement of people, not keep them stuck in it. Therefore, it should get rid of the limitations of being completely static, independent, and strictly defined, making it easier to promote various behaviours. The boundary between arrival space and other spaces can be blurred. The ambiguity can also be translated into a kind of transparency, which can be explained by the degree of transparency. Such as the use of glass, railings with changing density in the boundary limitation can facilitate the penetration of the line of sight and make the space more layered. The principle of ambiguity is reflected in the fusion of physical boundaries and the multiple choices of people's behaviour. It is similar to the diversity uses contained in one space.

a) The blurring of physical boundaries

The arrival space's physical boundaries include the city's edge and the following exhibition halls' limitations. The arrival space with the open public activity space connects the space of the museum's urban environment. This kind of area can encourage people to travel from the outside to the inside of the museum. The museum is integrated into the entire city. The perspective of admiring the museum and the urban landscape is constantly changing when people walk around, inspiring their curiosity and freshness. Even those who do not visit the follow-up exhibition can experience the fun of walking through it.

The behaviour of visitors in the museum is random, so is their choice of the facilities in the space. Too many restrictions can make people feel restrained. The blurring of the boundary zone can make the space indefinite. Sometimes, the space created by the rising or sinking of the ground and light and shadow changes are much more blurred than the space divided by walls and partitions, and it is easier to promote the flow of space. Besides, the overlap of space will also create more activities and enrich people. For example, the rest seats near the exhibition area are often more popular than the seats in the dedicated rest hall because

people prefer to kill many birds with one stone. People prefer to be able to see the exhibition while taking a break.

b) Flexible functions

Flexible functions are currently the right way for museums to improve efficiency, which makes the function of space ambiguous and versatile. The same area can be used for different purposes at different periods, such as holding exhibitions during the day and parties or dinners at night. Therefore, the sustainability of its use needs to be considered in the arrival space design. For example, reserve a blank area for future flexible use; set up easy to load and unload wall and partition, convenient to change the regular space division, and maintain the space's freshness.

7.3.2.4 Summary

Behaviour comes from motivation, and motivation comes from need. Maslow's theory of human motivations identified a five-stage hierarchy of basic human needs. He identifies that various activities reflect and satisfy people's needs at different levels(Maslow 2013). Necessary activities meet people's basic physiological and safety needs, while the satisfaction of high-level needs depends on various spontaneous and social activities to achieve. Human behaviour is affected by two variables, need and environment. Therefore, the museum's arrival space design should focus on users' basic needs and then add a rich spatial experience to it to obtain a more affluent and diversified spatial atmosphere.

Through the three design principles of the welcoming experience, a positive arrival space should be well-connected, mixed-use, distinctive, ambiguity and sustainable. The natural transition and context connection between the museum hall and the outside world creates public activity areas and rich choices for residents' lives. The arrival space exists to help visitors communicate with the museum better. All these designs are rooted in the architect's respect for people's preferences and behaviours.

Conclusion

The dynamic nature of the architectural space of the museum is the behaviour of the flow. The premise of people's visiting behaviour is guided by clear direction and the intention caused by attention in the space. The visit objects and route in the museum act as a guide for environmental cognition and behaviour and reflect visitors' perception of the arrival space's environment. Therefore, the design of orientation and attention in the arrival space should be carefully considered. On the premise of meeting the basic needs of visitors, visitors should be reasonably guided to make them know where they are and where they want to move to be well integrated into the space activities.

The occurrence and continuation of visitors' behaviour in the arrival space is the communication and interaction of information between the body and the environment. The welcoming experience is the result of a positive interaction in the arrival space. After analysing the various behaviours caused by direction and attention, and combining with the previous survey data, three ways, called 3E(Enjoyment, Engagement and Enlightenment), of interaction between visitors and space can be summarised. 3E reflects the state of active communication between people and the arrival space from shallow to deep. Active communication and visit status is a direct reflection of the welcoming experience. Therefore, the design principles need to be based on people's behaviour and 3E interactions.

This research aims to help the museum show care for people by creating architectural spaces and letting the arrival space of the museum naturally integrate into the space field of the public's daily life. Then, allow visitors to establish an optimistic attitude towards life.

Chapter 8. Conclusion

This study aims to encourage more people to visit museums from the perspective of public space design. Due to the variety of museums and architectural forms, the first stop for

people arriving at a museum can be the plaza, lawn, courtyard, lobby and atrium. The area where visitors first arrive before entering the other galleries is known as the arrival space. The arrival space can be considered the face of the museum, and its design will determine whether the visitor will continue to visit. Therefore, the core research question is **how to create a welcoming experience in the arrival space?** The whole study takes the indoor arrival space of the museum as the main research object, conducts a field survey of the Natural History Museum in London through the Assessment System of Visting Experience (ASVE), and analyses and summarises the design factors and design strategies needed to create a welcoming experience.

To achieve the research question, it needs to solve five research objects:

6) What is the arrival space? (Answered by Chapter 2& 3)
7) How do people experience the arrival space? (Answered by Chapter 4)
8) How to describe the experience of the arrival space from the designers in theory? (Answered by Chapter 5)
9) How to evaluate the visiting experience of the arrival space by visitors? (Answered by Chapter 6)
10) What's the design strategy for architects when designing arrival spaces and other public spaces? (Answered by Chapter 7)

All of the research objects are answered by different chapters. This chapter is based on further thinking and a summary of the previous theoretical research and case analysis. First of all, the first part reviews the main content of each chapter and its logical connections. The second part expounds on the importance of welcoming experience in museums and other public buildings, with special emphasis on the practical value of the experimental method ASVE and design strategies based on it. The third part is the discussion of the research limitations and the exploration of future work.

8.1 Summary of Each Chapter

The publicness of the museum starts from the New Museology Movement in the late 20th century. Since then, both building styles and visitors' status have gradually changed. The characteristics of publicness: participation and inclusion, attracted attention. Participation emphasises the large number of people entering the museum, while inclusion focuses on the entry of multiple groups of people into the museum. As a public realm, the museum's publicness and exclusion controversy has become a hot topic until now. The museum could be a part of the community and be a small community as well, which shoulders the essential tasks of showing community publicness, maintaining harmonious neighbourhood relations, promoting regional exchanges and communications, and disseminating education and culture. The development of the museum has now become an integrated location of multiple functions, which includes the collection, research, exhibition, entertainment, education and so on. The study of the publicness of museums is based on their various public spaces. It is necessary to clarify each public space and its functions before the museum's publicness research.

In **Chapter Two**, the museum's public spaces are divided by the different functions according to the exhibition, traffic and communication, and ancillary service functions. Each type of space has its own characteristics and uses, and they complement each other in the museum. Among these, it can be found that all research about the museum's publicness is based on the premise that visitors need to enter the museum. The first public space where visitors arrive at the museum is therefore of particular importance. As museums come in a variety of architectural forms and create different types of space and functions, this study proposes the concept of **Arrival Space** based on this. Subsequent research will focus on the visitor's behaviour in the arrival space.

Arrival space as a part of the ancillary service area involves reception area, entertainment zone, lounge, entrance garden and plaza, etc. It is the public area of the museum that people first encounter and affects the formation of people's first impression of the museum. It is also the precondition for visitors to get into the museum's entrance. In **Chapter Three**, the

arrival space is not limited to the area of the entrance gate but also includes the surrounding environment outside the museum building that affects the behaviour of visitors. Thus, a clear definition has been proposed first based on the museum's building boundary and functions. Arrival space refers to the area that begins inside the boundary of museums and finishes before the exhibition halls inside the museum building. It contains a variety of functions for information introduction, entertainment, shopping, and temporary exhibitions, which is presented to visitors in different architectural forms. There are three typologies of arrival space by connecting the exhibition halls in museums: open-air, transitional, and indoor. The museum provides reasonable and positive services to people through different types of arrival spaces according to their particular regional characteristics, exhibition themes and functions. The final goal is to create a more pleasant and comfortable environment at the decision point, where the museum connects with the outside world to attract more visitors. Later, the arrival space's social values in function, place and emotion are analysed here.

No matter the physical or psychological significance of the arrival space, the visitor is the primary user of the arrival space. The generation and change of their visiting experience can't be ignored. The positive experience of visitors also reflects the social value of the arrival space. In **Chapter Four**, the concept of experience is widely used in psychology, philosophy and architecture, and is undoubtedly discussed and analysed. Based on these theoretical studies, it is concluded that the formation of human's experience includes the stages of perception, consciousness and memory. Then the characteristics of experience are obtained. Experience is an irreversible process of psychological change according to time by understanding and interacting with the surrounding information and environment. The end of this process is memory, which means once the experience is formed, it will be difficult to change. Hence, an environment or space that can create a positive experience is particularly important. Experience is the feedback of people's emotions and feelings, but these intangible things need to be analysed with the help of tangible objects.

Concentrate on the visiting experience of the museum's arrival space. The museum's space design can create a different atmosphere and express different information and context.

According to the various architectural spaces and forms, the conditions for atmosphere formation are listed separately. From the appearance and accessibility of the museum to the colour, lighting, details etc., of its internal space, all have played a role in creating the atmosphere of the arrival space to different degrees, thus influencing people's visiting experience.

Based on the above-listed conditions for creating a spatial atmosphere, what should designers design a positive arrival space of the museum and evaluate visitors welcome to this space? **Chapter Five** clarified how welcome could be in arrival space, and a new concept of welcoming space came into being, that is, arrival space with a welcoming experience. The idea of "welcome" in a museum is based on matching one's self-concept, and the museum image one perceives (as implied by the factors arriving in the space). There are various welcome and unwelcome factors in arrival space, which involve the architectural environment, staff service and other visitors and can influence a user's visiting experience. By analysing the influence of these factors on visitors and translating them into specific design issues, an assessment system of visiting experience (ASVE) based on architectural design is derived. Combin various influence elements in the arrival space.

The ASVE discusses the arrival space and its users from three aspects: Useability, Image and Accessibility. In the usability, arrival space's functions and their sustainability and users' engagements and vitality are analysed by specific questions. The architectural environment of the museum's impression, legibility, comfort, and distinction is the highlight in the image part. In addition, the design of boundary, connection and transition with other exhibition spaces, traffic clarity and some unique design for disabled and vulnerable groups as the field of accessibility of the arrival space need to be considered carefully as well. All the above will be implemented into specific questions, which will provide the design basis for the subsequent case study, such as questionnaire, interview, and observation.

In **Chapter Six**, a real case will be used to test the previous design of the Assessment System of Visiting Experience. The Natural History Museum (NHM) in London is a large

and famous museum with a long history. It has three types of arrival spaces: on Cromwell Road, Exhibition Road and Queen's Gate, built in different eras, from indoor arrival space to open-air arrival space. The investigation of the three areas separately in the same museum is more conducive to controlling variables and reducing interference factors caused by different environments. As a popular attraction, the Natural History Museum can always attract a large number of visitors, especially during the holiday season, which also provides a great guarantee and convenience for collecting data.

Moreover, the central exhibition theme of nature and history has long been a tremendous public popular topic, stimulating the interest of people of all ages, educational and cultural backgrounds. It makes the visitor groups more diverse. Based on the ASVE built in Chapter 4, the survey designed questions from the useability, image, and accessibility of these three aspects. Through the questionnaires, tracking, observations and interviews, the actions and behaviours of the visitors to the three arrival spaces (mainly indoor space) and the evaluation of their visiting experience are summarised.

The ideal situation of the visiting experience in the museum is to let visitors feel welcome. Therefore, it needs to consider the transition from visiting experience to a welcoming experience. **Chapter Seven** first analyses the findings in three arrival spaces of the NHM by the ASVE through the previous survey in chapter 6. The diversity of functions, the impressive image and the clear accessibility all attract more people to the arrival space as a public realm, thus creating a welcoming atmosphere for the public. Later some key and high-frequency actions of visitors are extracted by the Nvivo through the interviews, which results are similar to the observation and questionnaires. Based on these, orientation and attention are the two key factors that can affect visitors' behaviours in the arrival space.

The environment and situation that people are involved in determining their behaviours relate to the concept of Situated Cognition. During visiting museums, visitors continuously get information and respond to acceptance or rejection, reflecting their emotions. In this way, the intangible feelings can be described by tangible design elements during the visitor's situated cognition. Combining people's behaviour and emotional changes in the

cognitive process, when an arrival space can satisfy visitors' enjoyment, engagement, and enlightenment, these three underlying feelings can create a welcoming experience. Later, a design strategy to create a welcoming experience is built. This strategy is based on ASVE judgment, which more intuitively reflects the visitor's experience of arriving space through enjoyment, engagement and enlightenment. From a macro perspective, this design method is limited to the design of the arrival space in the museum and applicable to the design of other public spaces and buildings. Designers can take the specific design elements in ASVE as theoretical support and verify them in the design strategy.

8.2 Significance of the Welcoming Experience in the Arrival Space

Nowadays, museums have become a widely accepted public realm. Popular museums play a significant role in spreading and inheriting culture, enriching public life and stimulating social vitality. The arrival space proposed in this study refers to the transitional area that connects the museum galleries to the outside environment. In this space, visitors go after entering the museum boundaries and before visiting other galleries. It could be an outdoor plaza where crowds gather, a grand staircase connecting a grand entrance, a narrow passage leading to an exhibition hall, or a functional entrance hall. Diversified forms and functions make the arrival space have a low sense of existence compared with other public spaces in the museum. It is far less emphasis than galleries and circulation in the design and even included in the design of the traffic space sometimes. However, from the visitor's point of view, arrival space is the first stop for visitors to contact and understand the museum in the real environment and determine their first impressions of the museum. Therefore, to create a positive visiting experience for visitors, the design of the arrival space cannot be ignored.

Museums are committed to welcoming and engaging the general public, and arrival spaces should take advantage of their location to create a welcoming experience for the public. People's attention in space is influenced by both the objective environment and their personalities and preferences. Therefore, the study of visitor behaviour and space's design is essential to explore the attractiveness of arrival spaces to visitors. Different architectural spaces can create various spatial atmospheres, which influence people's behaviour and

perceptions in the space. From the mood and experience of the visitor to the atmosphere and design of the space are interlinked. This study explores the visitor's welcoming experience in the arrival space from the perspective of visitor behaviour and architectural design. It translates the intangible sensory experience into a physical assessment system and design strategy.

8.2.1 The theoretical value

First of all, this research clarifies the concept of arrival space by analysing the functions and forms of various public spaces in the museum and uses this as a specific research object. A museum differs from other types of public buildings. It is a place that can provide social and entertainment and spread culture and education. Its audience can be people of any race, any cultural background and any profession in society. Since the 18th century, there have been numerous researches on people's experience of visiting museum exhibition halls. However, this study narrowed the scope of the study to the arrival space and emphasised the influence of the entrance and its surrounding, especially the indoor arrival space, on visitor behaviour. The museum’s entrance is usually known as a gate, a wall or a square leading indoors, but the entrance to a museum is much more than that. In order to differentiate the conventional understanding of entrances, this study proposes the concept of arrival space for the first time. The arrival space’s design can take a variety of forms depending on the theme of the exhibition, the surroundings, and the needs of the visitors.

The arrival space emphasises the visitor's arrival behaviour more than the entrance space. It can include both the people’s state entering the museum and the behaviour of those who come to the area and do not enter due to lack of interest or other reasons or just pass by. The latter part of people doesn't enter the museum. Thus, the users of the arrival space are more diverse than the traditional perception of museum visitors, including both regular visitors and potential visitors who may leave at any time. The arrival space is not simply a border that separates the interior of the museum from the outside world, but a service space that includes the entrance and offers more functions to visitors. According to the research, the proper design can make the arrival space fully realise its potential and attraction, thus

transforming potential visitors in this area into regular visitors, which means that the museum can attract a wider range of visitors.

To better understand and study the arrival space, this article selects more than fifty museums of different styles and themes as small cases for analysis (Appendix IV). These museums are located in other countries in Asia, Europe and Africa. The diverse cultural background, exhibition themes and different construction years reflect the diversification of the museum's arrival space, as well as its importance as a face for welcoming visitors

The research starts with understanding the general concept of experience in the three fields of psychology, philosophy, and architecture to explore the visiting experience in the arrival space. Then, summarise the formation process of the visiting experience and the characteristics of the positive visit experience based on Merlean- Ponty's cognitive phenomenology theory. So as to analyse the importance of atmosphere as a medium between the visitor's body and the architectural space. People's visiting experience in the arriving space is an important indicator of whether the space is popular. With the deepening of research, creating a welcoming atmosphere is the basic condition related to the visiting experience. The welcoming atmosphere emphasises the visitor's feelings, hoping that people will experience value, respect and support in the space they arrive in and will then be motivated to continue their visit to the museum. There are always welcome and unwelcome factors in the arrival space; the architectural environment, staff services and other visitors all impact the atmosphere of a space. Among these factors, arrival space's usability, building and environment's image, visitors' accessibility have a close connection to creating a welcoming atmosphere. These theoretical analyses laid the foundation for establishing the Assessment System of Visiting Experience (ASVE).

Theoretically, the ASVE provides a new way of thinking and method for evaluating the visitor's experience in the museum. According to the literary analysis of many different types of museum cases, the ASVE is based on the user's perception of the space, which conforms to the basic conditions for creating an atmosphere of the space and generating physical experience in Chapter 3. It is an outline for evaluating the quality of use of the

arrival space and the basis for the survey design in the follow-up field case. Useability, image and accessibility are three main aspects of the assessment system. Underneath each aspect is several design questions associated with it. The ASVE is like a library of questions about visiting experience design. People visiting the museum is a multi-sensory experience process. These three aspects cover the user's subjective perception of the architectural space from sight, hearing, smell to the touch. This study lists several related questions based on the ASVE, which can make the architect self-reflection when designing and testing the user's true feelings of the space. The ASVE can be applied to the evaluation of any public space. Although different types of spaces emphasise providing services to users, these three aspects remain the same, and only their proportions have changed. The theory of ASVE is applied and verified in the case selected by the Natural History Museum of London in this study.

8.2.2 The practical value

The value of theoretical research needs to be reflected in practice. Natural History Museum of London (NHM) is a large and one of the UK's leading tourist attractions, attracting more than millions of visitors per year. Both its different styles of arrival spaces and its constant flow of visitors guarantee the survey's success. The study designed three targeted questionnaires based on the characteristics of the three arrival spaces in the framework of the ASVE and conducted observations and tracking in the two main indoor arrival spaces (arrival space on Cromwell Road and Exhibition Road).

Data collection lasted six months and was concentrated during the summer holidays in July and August and after the start of school in September 2019. The museum usually sees a peak in attendance during holidays, when tourists and families with children are the main visitors. During the summer months, there are also often long queues at the two main arrival spaces, particularly at the entrance to the Exhibition Road. The long queues attract attention and curiosity, but the excessively long waits also tend to make people lose patience and feel tired. When the queue is too long, NHM will put up signs about the waiting time at different points in the line to give visitors at the back an idea of how long they will have to

wait. Meanwhile, staff will be on hand to help alongside the queue. These outdoor moves reflect the museum's efforts to alleviate the negative problems of overcrowding and to welcome people in.

Due to the limitations of time, investigators and equipment, the questionnaires, interviews and trackings were all carried out in the indoor area of the three arrival spaces of the NHM. Visitors of different nationalities, ethnicities and ages were randomly selected to participate in the questionnaire. The majority of visitors were willing to participate and actively cooperate, with a few refusing to participate due to language barriers and limited time. Finally, 350 valid questionnaires (Questionnaires of Hintze Hall: 140, Questionnaires of Earth Hall: 120, Questionnaires of DC2: 90) were collected, 84 paths (42 paths in Hintze Hall and 42 paths in Earth Hall) were tracked, and five interviews (three visitors and two staff members from Natural History Museum London and Nottingham Natural History Museum). The survey design is all based on the ASVE, which explores three aspects of the useability, image and accessibility of the arrival spaces.

Through the data analysis of the three arrival spaces collected, the research found that no matter which arrival space covers diversified functions, impressive images, and a clear sense of direction, it is easy for visitors to feel a positive experience. Diversified functions allow for the full use of the space by engaging people from different backgrounds and enabling the arrival space to offer different services at different times so that space can be fully used. The impressive image can be a special exhibit or the atmosphere and shape of the entire building, which will attract people to stay for appreciation or take pictures. In addition, a clear layout, map or direction signs can help visitors arrange the following routes and avoid wasting visiting time due to getting lost. This allows people to focus their limited attention better on the exhibits rather than finding their way around. On this basis, it can be seen that the positive experience of visitors in the arrival space is mainly affected by the two factors of attention and orientation.

The design of the arrival space requires a reasonable design of the attention points and direction guidance in it. Visitors will have various visiting behaviours in it and interact with

these attention points and direction guidance. There are three positive interactions between visitors and the arrival space from the data collection: enjoyment, engagement and enlightenment, called 3E in this research. 3E can reflect the different degrees of welcome that visitors experience in the arrival space. While most visitors are interested in a welcoming experience that satisfies their enjoyment and participation in the arrival space, a more desirable welcoming experience is one that designers want visitors to enjoy and participate in and be inspired and have a lasting memory.

As a result, the ASVE provides theoretical criteria for evaluating the welcome design of an arrival space, while 3E provides a reference for the welcoming experience in an arrival space from the perspective of visitor emotion. Visitors' emotions and behaviours vary enormously from one individual to another. Therefore, the welcoming experience may seem like an intangible, abstract concept. This study translates the intangible concept into the tangible design criteria through a combination of theoretical and field research, guiding the design of future museum's arrival spaces.

8.2.3 Summary

In the new social form, people challenge traditions, criticise the past, and are more eager to get rid of the shackles of the environment. As a result, some cultural values are lost, and the inheritance of civilisation is interrupted. Especially in an increasingly anonymous online society, interpersonal relationships are becoming more isolating and utilitarian. Generally speaking, the museum can reflect the social progress and development process of the community. At the same time, as the historical witness of the changes in its natural and cultural environment, it has a deep and close relationship with the life and emotion of the local people. For example, the Guggenheim Museum Bilbao and New Art Exchange in Nottingham, which are all to improve the local image and help residents build pride and self-confidence to maintain the stability of the community and promote economic development. Only museums with welcoming experiences can have sustained appeal, inviting more people to enter the museum, thereby promoting various interactive behaviours.

The ultimate goal of creating a welcoming experience is to satisfy the users' psychological and physical expectations and make them feel a positive atmosphere, which is necessary for architectural design. Especially in the context of this year's pandemic of the COVID-19, people need to maintain social distance in public places to prevent the spread of the virus. Museums and other public buildings such as shopping malls, libraries, etc., had to be closed during the lockdown. The former lively and busy places have become deserted and quiet. For some open-air arrival spaces such as piazzas, gardens, lawns, etc., which are connected to entrances, a sensible design and careful arrangement can still create a welcoming atmosphere for pedestrians passing by. It is more necessary to rely on the creation of a welcoming experience to stimulate people's positive attitudes and enthusiasm for life and allow users to experience the double comfort of physical and psychological environments.

8.3 The Further Work: Applications of the Welcoming Experience in the City

Due to the limited research time, this study is only focused on the museum's arrival space. However, besides the museum, some other public culture and commercial institutions such as the library, community centre, shopping mall, park, and so on exist similar to welcoming their users. A good arrival space is to create a comfortable atmosphere and convey a concept of sustainable development. People have a welcoming experience because the place can meet their actions and habits. As a result, they feel enjoyment, can engage in the space, and understand or learn something from here, which follows the human perception process.

After the Industrial Revolution, with the progress of science and technology, the change of transportation mode and the acceleration of urbanisation, urban population and urban scale rapidly expanded. The speed exceeded people's expectations and exceeded people's ability to control development to a certain extent. Especially in contemporary times, architecture is increasingly associated with towns and cities. Overall, the architectural design that is relatively separate and independent from the urban public space cannot meet the requirements of contemporary urban design. This requires architects to grasp the ability

and skills to control architectural design at the urban level, coordinate the relationship between the building and the city, and improve the city's overall environment. More and more new and transformed buildings appear, along with more unique requirements for architecture displayed. As early as 20 years ago, architect Terry Farrell mentioned that architectural design's core issue has always been the relationship between urban design and architecture, the relationship between the priority of urban space and public space creation and subsequent architectural design (Farrell, 2002). The urban design guides architectural design in the overall shaping of the urban physical environment. Architectural design is also part of urban design. In particular, large public buildings exhibit the characteristics of openness, comprehensiveness, and integration with the city. The design process is no longer just a single optimisation choice but also an intervention in the overall urban environment.

The museum is an important type of public place that uses physical language to interpret human society's cultural history and natural evolution. It has played an important role in the city regardless of material form or social and cultural sense. Therefore, research on museums' architectural design profoundly impacts the exploration of urban public space. Additionally, how the museum attracts people, how people integrate into it, and how to be inspired in the museum are also issues that the city needs to consider when dealing with residents' relations.

The arrival space is the first gate to open the publics' hearts for the whole building, which bears the vital responsibility of creating an atmosphere. While the idea of a welcoming experience is not only referred to as the arrival space in museums but it can also be applied to every public part of the architecture. User's feelings of enjoyment, engagement and enlightenment are affected by the quality of a specific space. Space's quality can promote different kinds of behaviours, which follows the ASVE system. The positive interactions of the 3E can provide a reference of users' feelings and senses for the architect in the design process.

This study aims to enhance the atmosphere of the arrival spaces and create welcoming

experiences for people through architectural design. Indeed, a welcoming experience generally derives not from individual pieces of architecture, however well designed, but from explicit attention to the total of the place. Therefore, the design concept of creating the welcoming experience should be fully applied to the city's public realm. Whether it is a street, a square or a public building, they can be designed through the system established by ASVE from useability, image and accessibility, and through users 3E interactive standards to test.

Besides, in modern society, communication technologies have made the sense of place changed; the public realm can be found in virtual cyberspace as much as physically on the ground. The architectural design of the future may not only be limited to reality. In particular, sudden factors such as pandemics will force people to rely more on the Internet and the virtual world. Although the welcoming experience research is carried out through actual architectural design theory and survey, its evaluation system is still applicable to the virtual world. Regardless of whether it is a virtual or a real world, as long as it is a realm open to the public and encourages public participation, it is necessary to consider creating a welcome atmosphere. And this atmosphere can be created by referring to the research on welcoming experience in this thesis.

Pandemics, political struggles, religious conflicts, and other adverse factors have a huge impact on the daily life and perception of the public. Although the call for a harmonious and equal social environment has not weakened, social problems such as racial discrimination, cultural conflicts and the gap between the rich and the poor have been cropping up one after another. Everyone wants to be respected and responded to because of their unique interests. They crave the chance to be recognised by and connected to sympathetic communities around the world. The welcoming experience is an ideal image of the people in the future urban design. The museum's welcoming experience is designed to help build an easy entry bridge for visitors. Beyond the museum, the welcoming experience can exist in a wide range of cities. A welcoming experience is about providing its users with good functionality, an impressive image and easy accessibility, and providing them with better psychological construction after meeting the users' basic material needs.

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Appendix

Appendix I. Questionnaires

Questionnaire for Natural History Museum's Visitors 1



The purpose of this survey is to evaluate the experience of visitors attending the arrival space of the Natural History Museum. Thank you for taking the time to fill in this questionnaire; it should only take 2 minutes. Your answers will be treated with complete confidentiality and entirely anonymous. If you have any questions about this questionnaire, please contact the researcher of this application: Sifan Guo. Email: Sifan.guo@nottingham.ac.uk.

1. How do you agree with the following statements?[Matrix Single Choice]*

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Easy to find the entrance from the outside	○	○	○	○	○
Nice outdoor environment of the entrance	○	○	○	○	○
Clear signs	○	○	○	○	○
Good spaciousness of this hall	○	○	○	○	○
Enough rest benches to use	○	○	○	○	○
Clear spatial layout	○	○	○	○	○

2. What did you first notice in this space? [Single Choice]*

○The huge whale skeleton ○Alcoves on both sides

○Architectural space ○The painted roof panels

○The sculptures and reliefs of the walls and columns

○Darwin statue ○Others _____ *

3. What kinds of activities you have engaged in this hall today? [Multiple Choice]*

□Take photos □Eating/ drinking in a cafe

□Rest on the bench □Communicate the relevant topics/ contents of this museum with others

□Others _____* □Just pass by

□Watching exhibits in alcoves on both sides

4. Which element reminds you of the theme of NATURE in this hall most? [Single Choice]*



○Carvings on columns and walls



○Panting of the plants on the ceiling



○Exhibits of animals and plants

○Others* ○Do not feel be surrounding by the nature

5. How would you describe your feelings about this hall? [Multiple Choice]*

□Enjoyment □Comprehensible

□Confusion □Chaotic

□Highly engaged □Inspiring

□Boring

6. Do you feel this hall is a friendly and welcoming space for visitors? [Single Choice]*

○Yes, I like this place very much. ○Neither feels good nor bad. ○No, I have little feeling

7. What do you think to make the Hintze Hall a welcoming space? [Multiple Choice]*

□Impressive architecture visuals □Friendly and helpful staff

□Mixed functions □Others _____*

□Interesting exhibition contents

8. Please explain why the Hall does not feel welcoming [Multiple Choice]*

□Too many people make the space crowded □Have no interest in the theme of this hall

□Confuse about the exhibition contexts □Difficult to find the way to other exhibition halls

□Others _____*

9. Your age range: [Single Choice]*
○Under 18

○18-26

○27-39

○40-59

○Above 60

○Prefer not to say

Date Analysis of Questionnaire 1

Q1 How do you agree with the following statements?

Questions \ Options	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Easy to find the entrance from the outside	74(52.86%)	50(35.71%)	4(2.86%)	8(5.71%)	4(2.86%)
Nice outdoor environment of the entrance	70(50%)	56(40%)	12(8.57%)	0(0%)	2(1.43%)
Clear signs	62(44.29%)	58(41.43%)	10(7.14%)	6(4.29%)	4(2.86%)
Good spaciousness of this hall	100(71.43%)	40(28.57%)	0(0%)	0(0%)	0(0%)
Enough rest benches to use	28(20%)	44(31.43%)	38(27.14%)	20(14.29%)	10(7.14%)
Clear spatial layout	66(47.14%)	58(41.43%)	14(10%)	2(1.43%)	0(0%)

Q2 What did you first notice in this space?

Options	Number	Proportion
The huge whale skeleton	106	75.71%
Alcoves on both sides	6	4.29%
Architectural space	20	14.29%
The painted roof panels.	0	0%
The sculptures and reliefs of the walls and columns	4	2.86%
Darwin statue	4	2.86%
Others	0	0%
Total (Valid for completion)	140	

Q3 What kinds of activities you have engaged in this hall today? [Multiple Choice]

Options	Number	Proportion
Take photos	104	74.29%
Eating/ drinking in a cafe	22	15.71%
Rest on the bench	40	28.57%
Communicate the relevant topics/ contents of this museum with others	30	21.43%

Watching exhibits in alcoves on both sides	80	57.14%
Others	6	4.29%
Just pass by	4	2.86%
Total (Valid for completion)	286	

Q4 Which element reminds you of the theme of NATURE in this hall most?

Options	Number	Proportion
Carvings on columns and walls	24	17.14%
Panting of the plants on the ceiling	4	2.86%
Exhibits of animals and plants	110	78.57%
Others	0	0%
Do not feel be surrounding by the nature	2	1.43%
Total (Valid for completion)	140	

Q5 How would you describe your feelings about this hall? [Multiple Choice]

Options	Number	Proportion
Enjoyment	106	75.71%
Confusion	2	1.43%
Highly engaged	34	24.29%
Boring	2	1.43%
Comprehensible	6	4.29%
Chaotic	8	5.71%
Inspiring	54	38.57%
Total (Valid for completion)	212	

Q6 Do you feel this hall is a friendly and welcoming space for visitors?

Options	Number	Proportion

Yes, I like this place very much.	132	94.29%
Neither feels good nor bad.	8	5.71%
No, I have little feeling	0	0%
Total (Valid for completion)	140	

Q7 What do you think to make the Hintze Hall a welcoming space? [Multiple Choice]

Options	Number	Proportion
Impressive architecture visuals	96	72.73%
Mixed functions	28	21.21%
Interesting exhibition contents	54	40.91%
Friendly and helpful staff	20	15.15%
Others	0	0%
Total (Valid for completion)	198	

Q8 Please explain why the Hall does not feel welcoming
According to Q6, no one answered Q8.

Q9 Your age range:

Options	Number	Proportion
Under 18	6	4.29%
18-26	34	24.29%
27-39	36	25.71%
40-59	54	38.57%
Above 60	8	5.71%
Prefer not to say	2	1.43%
Total (Valid for completion)	140	

Questionnaire for Natural History Museum‘s Visitors 2

The purpose of this survey is to evaluate the experience of visitors attending the arrival space of the Natural History Museum. Thank you for taking the time to fill in this questionnaire; it should only take 1 minute. Your answers will be treated with complete confidentiality and entirely anonymous. If you have any questions about this questionnaire, please contact the researcher of this application: Sifan Guo. Email: Sifan.guo@nottingham.ac.uk.



1. Which element reminds you of the theme of our planet and solar system in this hall most? [Multiple Choice]*

□The celestial map on walls

□The sounds in this hall

□A dark environment with different colours' lights

□Giant metal-earth sculpture in the middle

□Exhibitions like rocks and minerals in circular alcoves in walls

□I can't feel this theme

□Others _____*

2. How could you know where to go next? [Multiple Choice]*

□Easy to find clear signs in this hall

□To use the map or audio guide

□To take the big escalator to the metal-earth sculpture

□To ask staff for directions

□No destination, just to follow the visitors' flow

□Others _____*

3. What attracted you to spend some time in this hall? [Multiple Choice]*

□Take photos

□Eating/ drinking in a cafe

□Communicate the relevant topics of this museum with others

□Watching exhibits on both sides

□Others _____*

□Just pass by

4. How would you describe your feelings about this hall? [Multiple Choice]*

□Enjoyment □Comprehensible □Boring

□Confusion □Curiousness □Highly Engaged

□Inspiring

5. How do you feel this hall is a friendly and welcoming space for visitors? [Multiple Choice]*

□Impressive space visuals

□Mixed functions (e.g. Easy to find cafe and shop)

□Attractive exhibits (e.g. Stegosaurus fossil skeleton)

□Mysterious escalator passing through a giant metallic globe

□I don't think it's welcoming

□Neither feels good nor bad

□Others _____*

6. Your age range: [Single Choice]*

○Under 18 ○18-26 ○27-39

○40-59 ○Above 60 ○Prefer not to say

Date Analysis of Questionnaire 2

Q1 Which element reminds you of the theme of our planet and solar system in this hall most? [Multiple Choice]

Options	Number	Proportion
The celestial map on walls	36	30%
The sounds in this hall	36	30%
A dark environment with different colours' lights	38	31.43%
Giant metal-earth sculpture in the middle	91	75.71%
Exhibitions like rocks and minerals in circular alcoves in walls	48	40%
I can't feel this theme	2	1.43%
Others	0	0%
Total (Valid for completion)	251	

Q2 How could you know where to go next? [Multiple Choice]

Options	Number	Proportion
Easy to find clear signs in this hall	39	32.86%
To use the map or audio guide	31	25.71%
To take the big escalator to the metal-earth sculpture	61	51.43%
To ask staff for directions	22	18.57%
No destination, just to follow the visitors' flow	26	21.43%
Others	2	1.43%
Total (Valid for completion)	181	

Q3 What attracted you to spend some time in this hall? [Multiple Choice]

Options	Number	Proportion
Take photos	103	85.71%
Eating/ drinking in a cafe	23	19.05%
Communicate the relevant topics of this museum with others	57	47.62%

Watching exhibits on both sides	86	71.43%
Others	6	4.76%
Just pass by	34	28.57%
Total (Valid for completion)	309	

Q4 How would you describe your feelings about this hall? [Multiple Choice]

Options	Number	Proportion
Enjoyment	58	48.57%
Confusion	2	1.43%
Highly Engaged	19	15.71%
Boring	2	1.43%
Comprehensible	9	7.14%
Curiousness	70	58.57%
Inspiring	39	32.86%
Total (Valid for completion)	199	

Q5 How do you feel this hall is a friendly and welcoming space for visitors? [Multiple Choice]

Options	Number	Proportion
Impressive space visuals	72	60%
Mixed functions (e.g., Easy to find cafe and shop)	15	12.86%
Attractive exhibits (e.g., Stegosaurus fossil skeleton)	67	55.71%
Mysterious escalator passing through a giant metallic globe	57	47.14%
I don't think it's welcoming	2	1.43%
Neither feels good nor bad	4	3.61%
Total (Valid for completion)	217	

Q6 Your age range:

Options	Number	Proportion
Under 18	9	7.14%
18-26	36	30%
27-39	43	35.71%
40-59	19	15.71%
Above 60	12	10%
Prefer not to say	1	1.43%
Total (Valid for completion)	120	

Questionnaire for Natural History Museum‘s Visitor3

The purpose of this survey is to evaluate the experience of visitors attending the arrival space of the Natural History Museum. Thank you for taking the time to fill in this questionnaire; it should only take 1 minute. Your answers will be treated with complete confidentiality and entirely anonymous. If you have any questions about this questionnaire, please contact the researcher of this application: Sifan Guo. Email: Sifan.guo@nottingham.ac.uk.



1. What activities you have taken in the area? [Multiple Choice]*

□Take photos

□Eating/ drinking in a cafe

□Rest on the bench

□Communicate the relevant topics of this museum with others

□Watching exhibits on the showcases

□Visiting the Courtyard

□Just pass by

2. How do you feel about this space? [Multiple Choice]*

□Easy to involve in

□Enjoyment

□Confused

□Boring

□Inspiring

□Curiousness

□Others

3. Do you feel this hall is a friendly and welcoming space for visitors? [Single Choice]*

○Yes, I like this place very much.

○Neither feels good nor bad.

○No, I have little feeling

4. How do you feel this hall is a friendly and welcoming space for visitors? [Multiple Choice]*

□Nice outside garden

□A good place to have a rest

□Impressive space visuals

□Others _____*

5. Please explain why this space does not feel welcoming? [Multiple Choice]*

□Little people and lack of vitality

□Confuse about this space

□No mixed functions and activities

□Can't understand the theme of this space

□Difficult to find the way to other exhibition halls

□Others _____*

6. Your age range: [Single Choice]*

○Under 18

○18-26

○27-39

○40-59

○Above 60

○Prefer not to say

Date Analysis of Questionnaire 3

Q1 What activities you have taken in the area? [Multiple Choice]

Options	Number	Proportion
Take photos	35	33.33%
Eating/ drinking in a cafe	5	4.76%
Rest on the bench	25	23.81%
Communicate the relevant topics of this museum with others	15	14.29%
Watching exhibits on the showcases	15	14.29%
Visiting the Courtyard	35	33.33%
Just pass by	5	4.76%
Total (Valid for completion)	135	

Q2 How do you feel about this space? [Multiple Choice]

Options	Number	Proportion
Easy to involve in	13	11.75%
Enjoyment	42	38.57%
Confused	6	5.88%
Boring	6	5.88%
Inspiring	29	26.86%
Curiousness	12	11.06%
Others	0	0%
Total (Valid for completion)	108	

Q3 Do you feel this hall is a friendly and welcoming space for visitors?

Options	Number	Proportion
Yes, I like this place very much.	87	96.83%
Neither feels good nor bad.	3	3.17%
No, I have little feeling	0	0%

Total (Valid for completion)	90	

Q4 How do you feel this hall is a friendly and welcoming space for visitors? [Multiple Choice]

Options	Number	Proportion
Nice outside garden	84	82.35%
Impressive space visuals	72	70.59%
A good place to have a rest	54	52.94%
Others	0	0%
Total (Valid for completion)	102	

Q5 Please explain why this space does not feel welcoming. [Multiple Choice]

According to Q3, no one answered Q5.

Q6 Your age range:

Options	Number	Proportion
Under 18	1	1.11%
18-26	30	33.33%
27-39	38	42.23%
40-59	17	18.89%
Above 60	4	4.44%
Prefer not to say	0	0%
Total (Valid for completion)	90	

Appendix II. Interviews

University of Nottingham
UK | CHINA | MALAYSIA

Date: ____ Interviewee._____

Interview Form

Thank you for taking the time to have the interview; it will take about 20 minutes. Your answers will be recorded during the interview.

My research is about exploring the visitors' welcoming experience in the museum's arrival space. The public museum has always been committed to how to better welcome visitors. In my research, I defined the **Arrival Space**, which refers to the area where people first come into contact with museum-related information after entering the border of the museum. This area is the face of the museum to welcome visitors. It is extremely important for the creation of the first impression. Its design will affect whether people are willing to continue visiting the museum. My research aims to find a design system that could create a welcoming experience in the arrival space for the public.

My questions are:

1. Do you think the arrival space (Wollaton Hall's entrance and its surroundings/ Natural History Museum's entrances and the halls they contact) is welcomed, and why?

2. What essential aspects should a good visiting experience contain?

3. How do you understand a welcoming experience and have you ever experienced it in a museum?

4. What do you think the role of the arrival space in the whole museum? Is it necessary for the museum? And are there any limitations or weakness about the arrival space of this museum?

Interviewee 1:

Dr Adam Smith, curator of the Natural History Museum, Nottingham

Place: Adam's office in the Wollaton Hall, Nottingham. Time: 21. 06. 2019

1. Do you think the arrival space of the Wollaton Hall is welcomed and is an inclusive museum?

Yes, I do, Wollaton Hall is a popular place in Nottingham. It with the deer park attracts many people and residents to come. You can see many people running and walking, doing excise in the deer park. The park and the building are free to open for all body and welcome everyone. I think the Wollaton Hall is an inclusive museum, and we try probably to make it to welcome all people to come in as we can. We have a target audience; they are families with young children. So, we ran many activities for them. And we also try to welcome people from all backgrounds. The aim is to make it (the Wollaton Hall) more accessible. It's quite important, because some people with language problems and vocabulary limitations may have barriers to involve. Although we have a target audience, it only means that we are focusing on this age group, but we also care everybody else can visit the museum and gallery. It's not meant to exclude anybody.

Most museums now are changed from the information age and are less about knowledge and more experience. One thing the museum can provide, but YouTube, Google, and Wikipedia cannot provide is the experience to see something and touch something in reality. All of the information you can easily get when you go to the library or search on the internet. I see all of the museum not as much as to give the knowledge and information for the people about the nature, but to give the experience to have the passionate about the nature. Thus, experts are not our target, because they are already enthusiastic about nature study. (The number of) Experts may not be as many as the young people to visit the museum, but they can make an enquiry to connect me to discuss some specific questions. Although the experts may be a one in a thousand chance of visiting, they are not our target, but we didn't exclude them.

2. What essential aspects that a good visiting experience should have?

One of the essential aspects is accessibility. We want more people to come into the museum, they need to be accessed. We have a lift for disabled people, to ensure they can visit the museum as others. And we have special days, special themes and events to have some activities. Some are regularly, some are just at special weekends. Some are indoor with the exhibitions; some are on the outside lawn. And we do have a lot of activities for children.

3. What do you think is the role of the arrival space in the whole museum? Is it necessary for the museum? And are there any limitations or weaknesses about the arrival space of this museum?

Yes, the arrival space is very important for museums. For the Wollaton Hall, I think its arrival space is the deer park with the entrance hall of the building. The role of the deer park is for the public to have activities, and it can connect the building and the exhibitions. Like I just mentioned, during the special event, like the dinosaurs' exhibition, we set many activities on the lawn and attracts many people to come, not only the children. Many people gathered in the deer park and attracted more people to come to see the exhibition. I understand that the arrival space you mentioned can make some connections with the exhibitions. Like people enjoyed the outside activities with the theme of dinosaurs and want to come into the Wollaton Hall to see the dinosaurs' exhibition. They will be very curious.

One limitation maybe not the limitation for the Wollaton Hall is it's the heritage building. It's also a natural history museum. When designing the exhibitions, we need to think about how to integrate the exhibition with the building. Well, heritage architecture has its own characters, so we need to build some connections with the buildings and exhibitions.

Interviewee 2:

Mr Dan Wormald, staff of the Department of Exhibitions Learning and Outreach of the Natural History Museum, London.

Place: Café next to the Earth Hall of the museum, London. Time: 09. 08. 2019

1. Do you think the arrival spaces/ entrances area of the Natural History Museum are welcomed,

and why?

Yes, the Natural History Museum has three public entrances, normally, we just open the entrance on the Exhibition Road, and during the busy seasons, like the summer holidays, we also open the gate on the Cromwell Road. There are very few times to open the entrance on the Queens' Gate, very rare occasions, like when having special events. This museum is a popular and hot place for people to come to London. You can see today is very busy. There is a long queue on Exhibition Road. A lot of families with children and summer camps come here. Sometimes we welcome dozens of tour groups every day.

The museum has become very comprehensive to welcome so many visitors, with cafes, restaurants and shops offering a wide range of options. Like the one we're in now, during non-dining hours, it's important that these seats allow people to have a rest. Because the Natural History Museum is a complex building, which includes many different themed galleries, visiting it is physically demanding. Our staff also stand in various parts of the museum, from the entrance to the exhibition halls to help people. Like showing them the way, interpreting exhibits and so on. Sometimes there are also activities for children. We are always keen to welcome people here and provide a good experience, indeed it is very popular indeed, as you can see from these visitors.

2. What essential aspects should a good visiting experience contain?

We hope people can enjoy the exhibitions and find their interests here. We need to ensure they can access each exhibition hall, we think about the connections and visiting routs. We try to guide visitors quickly to the places they want to go. We offer maps of every reception. And there are lifts for People with limited mobility. We can borrow wheelchairs and baby carriages. Museums try to provide a good experience for people in terms of services.

Also, the impressive exhibits will also make for an unforgettable experience, like the dinosaurs here and the blue whale in the Central Hall, even the nice buildings. All this can be a shocking experience that books cannot give.

3. What do you think is the role of the arrival space in the whole museum? Is it necessary for the museum? And are there any limitations or weaknesses about the arrival space of this museum?

It's very important, the entrance area always with receptions, toilets, bag checkpoint, cloakroom and so on. It provides many essential services to welcome visitors. Most museums need such a space. In addition, some advertising and publicity will be displayed here, such as our current wildlife photography exhibition, and you can see posters about these exhibitions as you queue outside. In the meantime, you'll be able to plan how you're going to organise your trip. I could say it's like a connection or a transition.

Sometimes too many people crammed into a hall can also detract from the experience. We, therefore, limit the number of people entering the building, for example in the Central Hall. We want every visitor who comes here to get a feel for the exhibition and to get something out of it. Our curators carefully design the exhibitions and, although they are permanent in the hall, we sometimes add temporary exhibits as well. The whale in the Central Hall is a recent year's replacement, and before her, it had been Dippy, a dinosaur fossil. The exhibits in the Wonderful Bays were also replaced at the same time. Suppose visitors have patiently visited each alcove carefully. In that case, they will find that these exhibits are trying to tell people about the impact of climate change on the natural world and the importance of protecting the environment. Unfortunately, few people will do this.

Interviewee 3:

The staff of the Natural History Museum, London.

Place: Standing on the north side of the stegosaurus fossil in the Earth Hall, London.

Time: 21. 06. 2019

1. What do visitors usually do in this hall, such as taking photos, viewing exhibits, etc.?

Here gets a lot of visitors every day. During the summer vacation, there are many tour groups

and families with children every day. The dinosaur can attract a lot of people, especially families with young people. People will gather here to take pictures of the dinosaur's fossil. And there are information boards to tell them what name of it and where it comes from. Many children like the big escalator very much. They will be full of curiosity. Most people marvel at this huge Earth, and children can't wait to take their parents to take the elevator to visit. Some people even start recording from entering the lobby until they board the escalator. The dinosaur and the big escalator really attract visitors and make deep impressions. In busy times, lots of people are easier to concentrate here. You can see the escalator pulls large numbers of people to the upper floors. The small stones in the holes in the walls on either side are also interesting. Many people like them and here is a variety of minerals with descriptions. The back door of this hall connects other galleries, and some simple descriptions on the wall will guide some visitors to these galleries.

2. What essential aspects should a good visiting experience contain?

The amazing exhibitions, good services, like these. The exhibitions like the dinosaur can surprise people. People often come up to me and ask for directions, many are particularly interested in the dinosaur gallery, others want to see the whales and I show them the way. The restaurant and souvenir shop next door are also very popular. I think these will give people a very good experience.

Interviewee 4:

The UK visitor (is waiting for his family) of the Natural History Museum, London.

Place: Standing on the south side of the Hintze Hall, near the entrance gate, London.

Time: 17. 08. 2019

1. Do you think this area (Hintze Hall) is welcomed, and why?

Yes, I think so. It is a good place. I always come here with my family (maybe once a month). My kid likes it here very much. He likes to see the dinosaurs and many other animal specimens.

My kids prefer to go straight to see the dinosaurs. We often take long periods of time here. Sometimes I would wait for them here like now. The scenery here is so amazing and impressive. Sometimes a large number of people gather here. The benches are often filled with people. There will even be a lot of people upstairs, but I hardly go up this staircase. I mainly come here with my children.

2. What essential aspects should a good visiting experience contain?

A good place with a nice environment, like here, the beautiful building, cool exhibitions, and so on. The building is very nice, sculptures and reliefs are also very fine. It's hard to get a cool building like this nowadays. And, if more place for rest will be better. I know behind here is a café, but I usually stay here to wait for my family and take a look at the exhibits here. Sometimes we want to avoid coming on the weekends because it can be so crowded that it can get chaotic. But it doesn't seem to bother my kid and it feels like he gets excited every time he comes here.

3. How do you understand a welcoming experience and have you ever experienced it in a museum?

I think visiting this museum is a welcoming experience. For my kid, he gets excited and loves it every time he comes here, and sometimes there are activities for children here that we attend and we have joined as members. He still comes home after each visit and talks to us about the interesting things he saw in the museum, which I think is a great experience.

Interviewee 5:

The overseas visitor (Turkey) with her family (2 young children) of the Natural History Museum, London.

Place: Sitting on the bench in the entrance hall of Cocoon, London.

Time: 17. 08. 2019

1. Do you think this area (the entrance hall of the Cocoon) is welcomed, and why?

Other places are full of people, it is very quiet, and there are seats to rest. It's very different from other places. It's very modern and fashionable. I'm not sure what this building means. It may be related to science. My son said it's like a spaceship parked here. (It's a cocoon, mentioned by the interviewer) Yes, it is rather like a cocoon. We looked through the window, and it should be an office, not too many exhibits here. There has a café, but not too many items. This museum is huge, we need to have a rest and continue visiting. The outside garden is nice, it's a good day. We just spent some time outside on the lawn before coming in. I'm not sure it's a popular place, but really a nice place for rest.

2. What essential aspects should a good visiting experience contain?

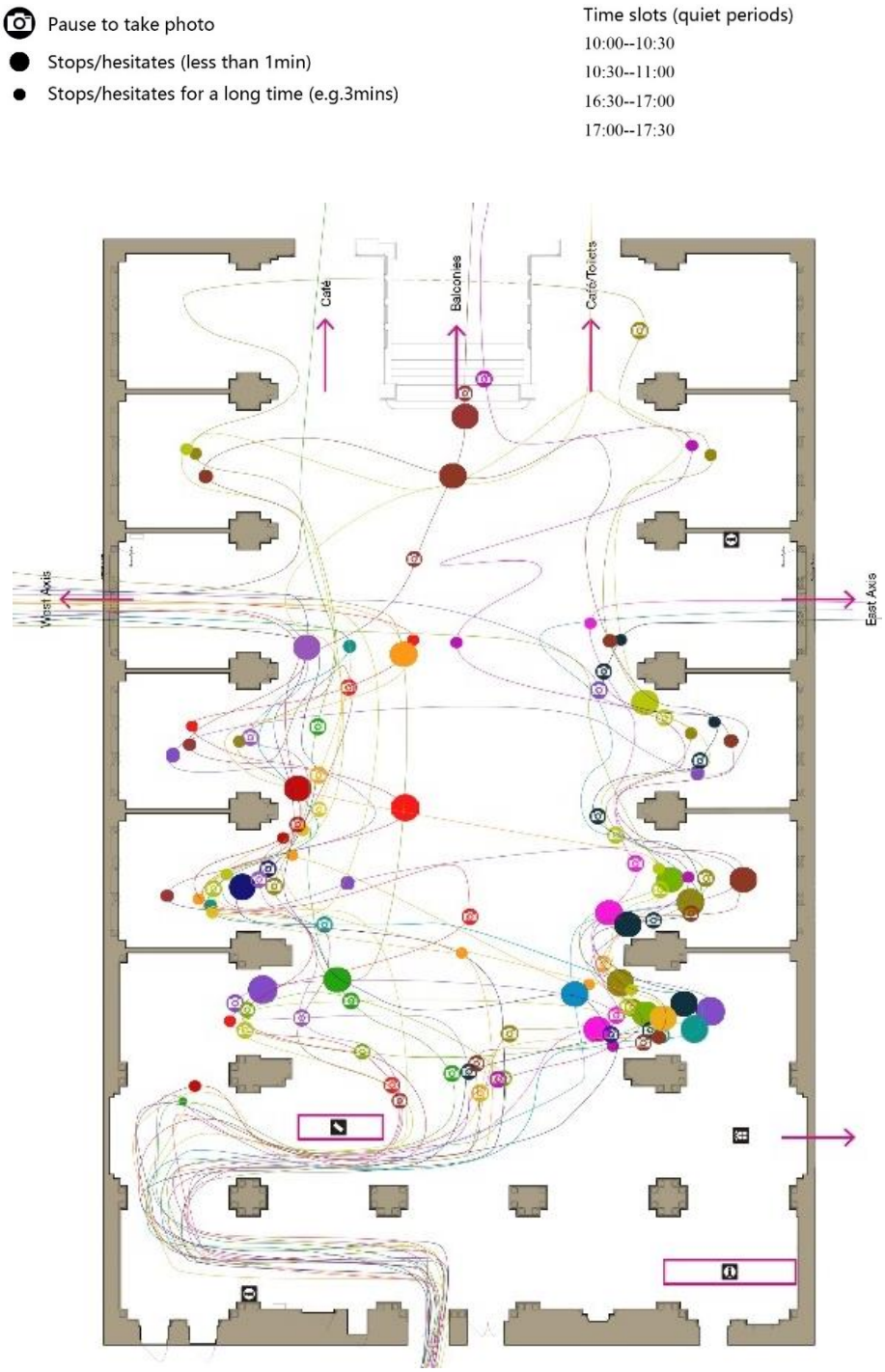
It should have a good environment, some activists, cool exhibitions and so on. And for me with young children, I think easy access to toilets, baby care room and restaurants are also important. (Do you know you can borrow the baby carriage at the reception? By the interviewer) oh, really? I didn't notice. But we basically take the baby carriage with us when we go out, which is useful.

3. How do you understand a welcoming experience and have you ever experienced it in a museum?

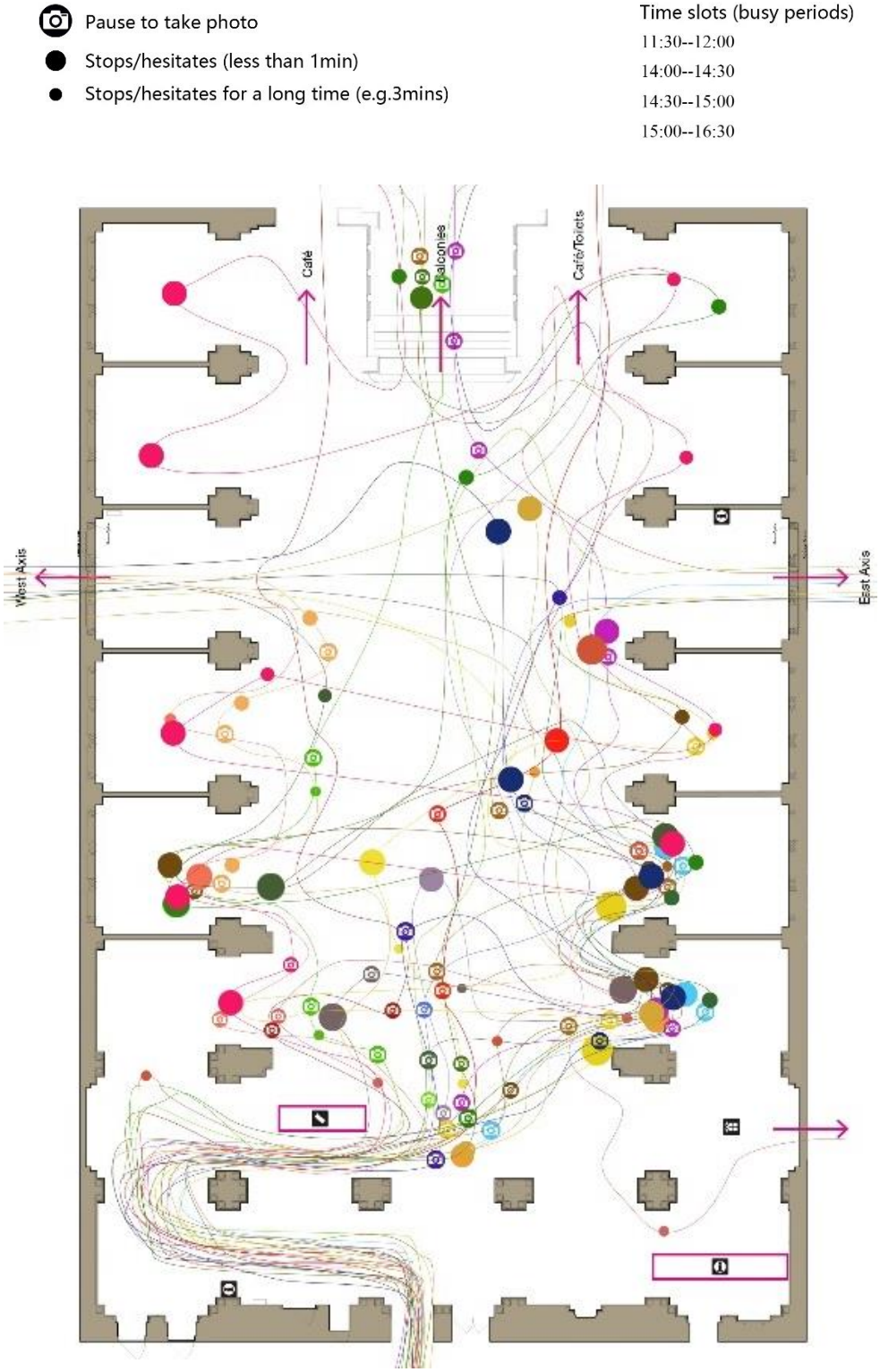
The experience of this museum is good. This is the first time we come here, very amazing. Many surprising exhibitions and a very big museum. The building is nice, there are quite different styles from here and the front (Hintze Hall). We'll have another look later.

Appendix III. Observations

Hintze Hall's movements records (20 visitors in the quiet periods)



Hintze Hall's movements records (22 visitors in the busy periods)



Earth Hall's movements records (20 visitors in the quiet periods)

Pause to take photo

Stops/hesitates (less than 1min)

Stops/hesitates for a long time (e.g.3mins)

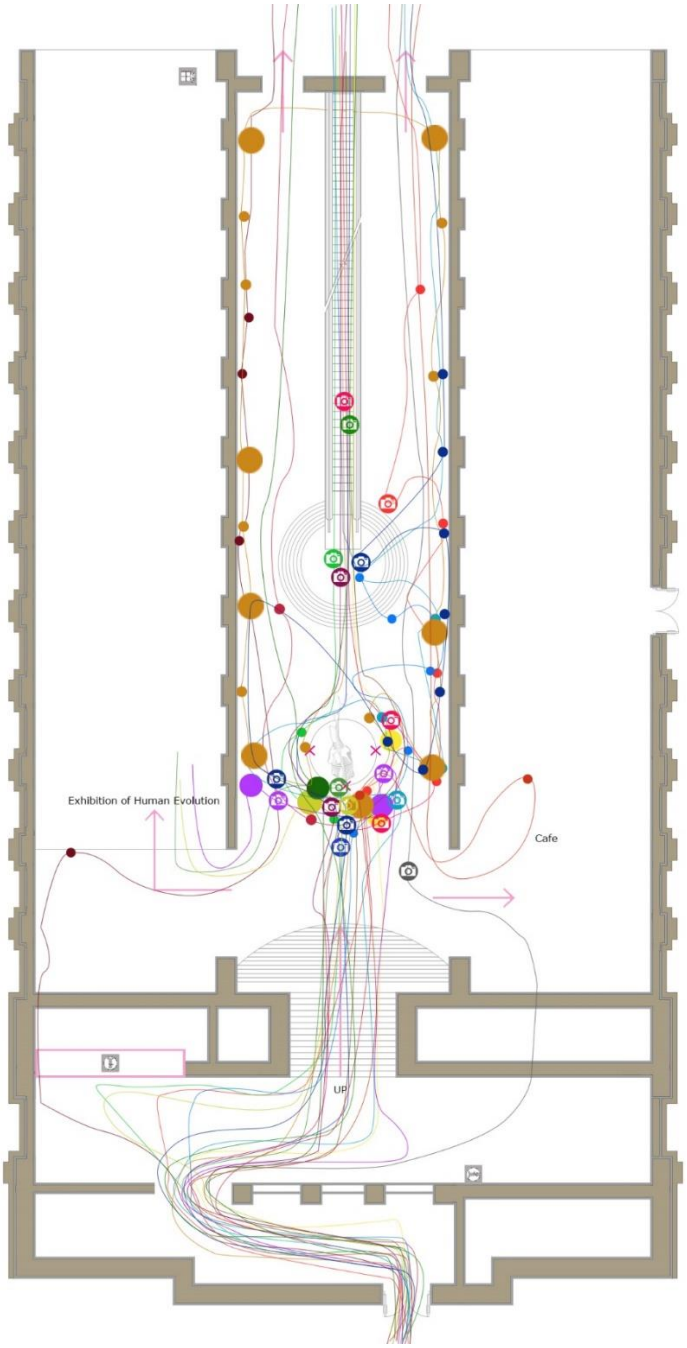
Time slots (quiet periods)

10:00--10:30

10:30--11:00

16:30--17:00

17:00--17:30



Earth Hall's movements records (22 visitors in the busy periods)

Pause to take photo

Stops/hesitates (less than 1min)

Stops/hesitates for a long time (e.g.3mins)

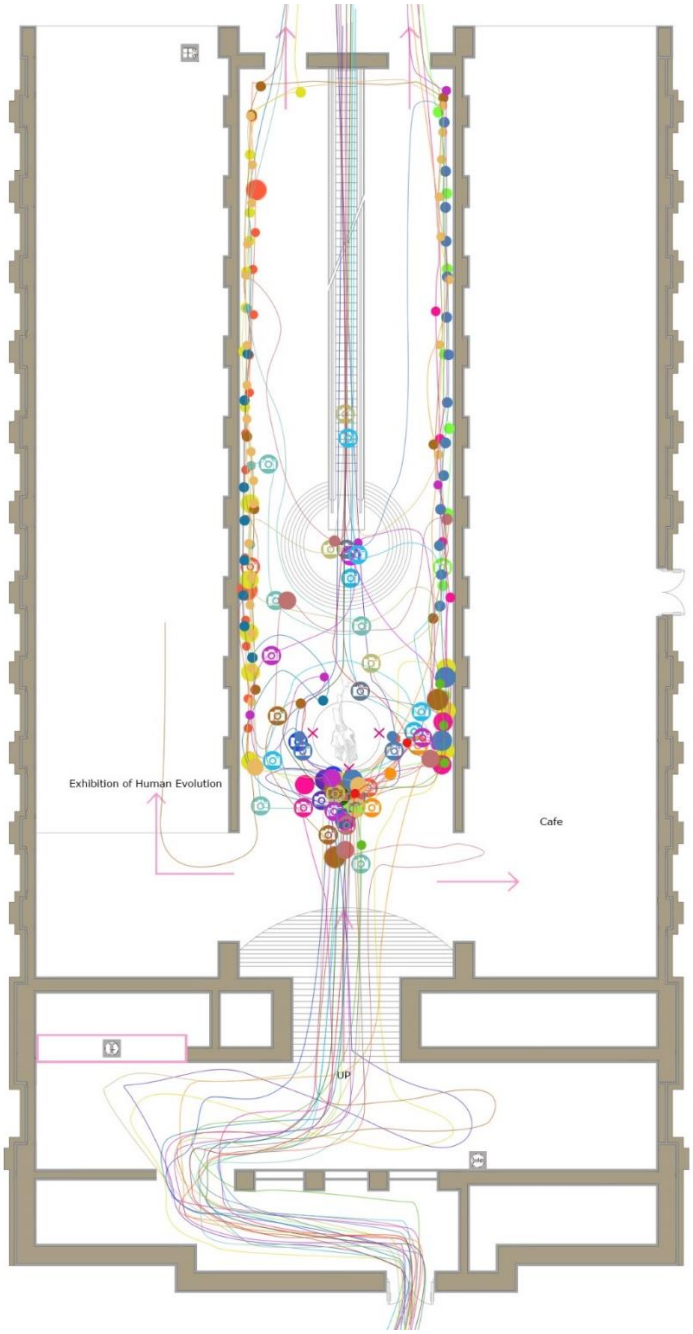
Time slots (busy periods)

11:30--12:00

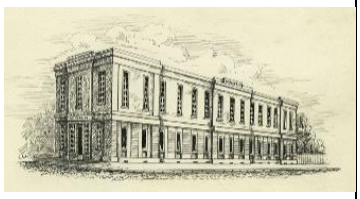
14:00--14:30

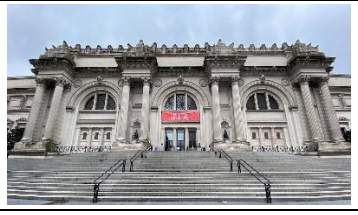
14:30--15:00

15:00--16:30

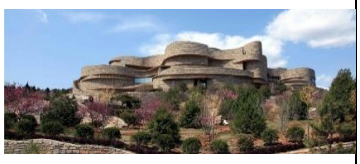


Appendix IV. List of museums

Time	Name	Image	Architects	Location
1655	Ole Worm's collection		Ole Worm	Copenhagen , Denmark
1666	Royal Armouries		_____	London, UK
1759	British Museum		Foster + Partners Architects (Queen Elizabeth II Great Court, 2000)	London, UK
1786	Peale's Philadelphia Museum		Charles Willson Peale	Philadelphia , USA
1793	Louvre Museum		I. M. Pei (Louvre Pyramid, 1989)	Paris, France
1829	Smithsonian American Art Museum and Renwick Gallery		Foster + Partners Architects (Robert and Arlene Kogod covered courtyard, 2007)	Washington, DC USA

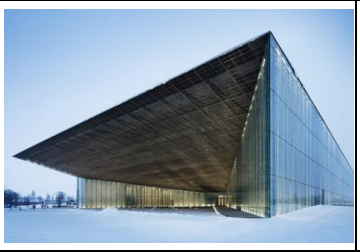
1851	Crystal Palace in the Great Exhibition		Joseph Paxton	London, UK
1852	Victoria and Albert Museum		Henry Cole	London, UK
1855	Oxford University Museum of Natural History		Benjamin Woodward, Thomas Newenham Deane	Oxford, UK
1857	Science Museum		Richard Allison	London, UK
1870	Metropolitan Museum of Art		Calvert Vaux, Richard Morris Hunt & Richard Howland Hunt	New York, USA
1884	Pitter River Museum		Thomas Manly Deane, Newenham Deane & Benjamin Woodward	Oxford, UK
1914	Royal Ontario Museum		Daniel Libeskind(The Crystal, 2007),	Ontario, Canada
1931	Kunstmuseum Basel		Christ & Gantenbein(New extension, 2016)	Basel, Switzerland

1976	Dixon Gallery and Gardens		_____	Tennessee, USA
1976	Staffin Dinosaur Museum		Dugald Ross	Staffin, UK
1977	Centre Pompidou		Richard Rogers, Su Rogers, Renzo Piano & Gianfranco Franchini	Paris, France
1984	Staatsgalerie Stuttgart		James Stirling	Stuttgart, Germany
1997	Guggenheim Museum Bilbao		Frank Gehry	Bilbao, Spain
1997	Suoga Eco-Museum of Long Horned Miao		_____	Guizhou, China
1998	Kiasma Museum of Contemporary Art		Steven Holl architects	Helsinki, Finland

2000	Tate Morden Museum		Herzog & de Meuron Architekten	London, UK
2001	Jewish Museum Berlin		Daniel Libeskind	Berlin, Germany
2006	Suzhou Museum		I. M. Pei	Jiangsu, China
2007	Kolumba Museum		Peter Zumthor	Cologne, Germany
2008	Tianjin Ji County Geological Museum		Tianjin University Research Institute	Tianjin, China
2008	New Art Exchange		Hawkins\Brown Architects	Nottingham, UK
2008	California Academy of Sciences		Renzo Piano	California, USA
2008	Museum of Islamic Art		I. M. Pei	Doha, Qatar

2008	Ozeaneum Stralsund		Behnisch Architekten	Stralsund, Germany
2009	Malmö Museum of Art		Tham & Videgård Arkitekter	Malmö, Sweden
2010	New Los Angeles Museum of the Holocaust		Belzberg Architects	Los Angeles, USA
2011	Natural History Museum of Utah		Ennead Architects	Utah, USA
2011	Dutch National Military Museum		Claus & Kaan Architects	Soesterberg, Netherlands
2011	Museum of Liverpool		3XN	Liverpool, UK
2011	Riverside Museum		Zaha Hadid Architects	Glasgow, UK

2012	Stedelijk Museum		Benthem Crouwel Architects	Amsterdam, Netherlands
2013	Jixi Museum		Atelier Li Xinggang	Anhui, China
2013	Perez Art Museum Miami		Herzog & de Meuron	Florida, USA
2013	Shuijingfang Museum		Jiakun Architects	Sichuan, China
2014	National 11th September Memorial & Museum		Michael Arad	New York, USA
2014	Sleuk Rith Institute		Zaha Hadid Architects	Phonm Penh, Cambodia
2014	Aspen Art Museum		Shigeru Ban	Aspen, Colorado
2014	MoMA (53W53)		Jean Nouvel (KPF)	New York, USA

2015	Shanghai Nature History Museum		Perkins+Will's	Shanghai, China
2015	Van Gogh Museum (New Entrance)		Kisho Kurokawa Architect & Associates	Amsterdam, Netherlands
2016	Estonian National Museum		DGT	Tartu, Estonia
2016	Shanghai Morden Art Museum		Atelier Deshaus	Shanghai, China
2017	Tirpitz Museum		BIG	Esbjerg, Denmark
2017	Zeitz Museum of Contemporary Art Africa		Heatherwick studio	Cape Town, South Africa
2018	V&A Dundee		Kengo Kuma	Dundee, UK
2018	Lodève Museum		PROJECTILES	Lodève, France