

# Research on the Spatial Combination Form in the Interior Design of Office Space Taking the Phase IV of Alibaba Xixi Park as an Example

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## ABSTRACT

Since ancient times, space has been a formal element that has a direct connection with function. Different space combination forms must correspond to different functional requirements, and the space is divided into several types, such as office space, dining space, residential space and so on. This article will focus on how the combination forms in the office space meet the function while taking into account the beauty of the space form. The functional factors considered in space or architectural designs correspond to the conditions required for social development. People are not only pursuing functional forms, but also humanistic factors. For contemporary design, this comprehensive requirement is a challenge. This article will discuss the core and basic of contemporary design of office space combination forms from the overall concept of office space to the targeted analysis of the design of Phase IV of Alibaba Xixi Park and the cases involving the use methods.

**Keywords:** spatial combination form, office space, Phase IV of Alibaba Xixi Park, functional form, humanities

## I. INTRODUCTION

Office space, as the name implies, is a space where the office is located. Its design goal is to create an office space for employees that can improve efficiency and comfort, and reduce the fatigue of staff from color matching and light processing. This goal is the basis and primary goal of interior design of office space. Office space is usually divided into office area, meeting area and corridor. The design of all internal spaces involves streamline analysis and artificial efficiency, so as to facilitate the communication between staff and improve efficiency.

## II. CONCEPT OF OFFICE SPACE

Different types of space create different atmosphere and have different use requirements. Office space, as a form of space, also has a unique style to adapt to its unique functional requirements. The biggest feature of the office space is the publicity, which should take into account the use needs of the group. In the design process of office space, the designer will focus on the overall nature and needs of the company, namely, the staff group, as the basis of the design, rather than specifically considering the living experience of a resident in the residential design. Therefore, the communication and cooperation among groups should be considered, and the streamline element will be used.

Taking Google's office in Ireland as an example, the office is composed of four historic central buildings in the dock area, with 14 floors in total. Different floors have different themes. The working space is flexible and open, full of relaxed and pleasant atmosphere. Bold use of color makes the spark of youth. Although the colors are rich, it is orderly and not messy, and each color collision and collage has a certain design. Floors with different themes are marked with different colors and decorative materials, and they all echo the theme. [1] Google's work ethic is to let employees do challenging and enthusiastic things, full of positive emotions. This exactly corresponds to its energetic additional functions. In addition to the living space of restaurants and micro kitchens, there are game rooms, communication centers, fitness centers, technology stations, conference rooms and telephone booths, etc. All these functions are located in different floors and buildings, forming a balanced state. The most important area of each floor is the communication center, which is also one of the functional requirements expressed by an enterprise's emphasis on teamwork. The open space design maximizes the use of the whole office space. The informal meeting room configured by Google office in Ireland allows employees to have a place to chat after work. Whether its design results create greater productivity or not, its design is very popular and creates the happiest working environment for employees.

Taking Poly Voly's office space as an example, it is located in Poly International Plaza, Wuhan City, Hubei Province. The project was completed in September 2019, with a building area of 500m<sup>2</sup>. Conventional office space is easy to fall into the

deadlock of neglecting brand value in order to pursue cost (usually using cubicle-type station to pursue cost area). In the view of the design team of this project, it is difficult to break through the unsightly cage to seek comfort and brand value in this conventional design.



Fig. 1. Plane graph of Poly Voly Office

Poly Voly has an open office area. The corridor and the space are separated by transparent acrylic partition, which makes each space form an acrylic box. By dividing the appropriate space scale according to the

fine proportion, the balance between the office area and the rest area can be adjusted, so as to reduce the sense of distance and emit affinity.

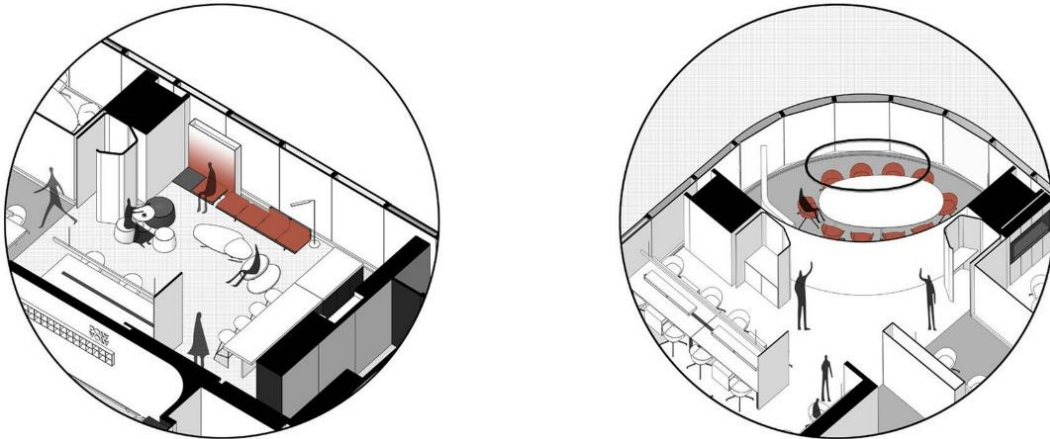


Fig. 2. Poly Voly node graph (left: bar / right: meeting room)

The wall of the meeting room is curved, corresponding to the curved chandelier in the ceiling. The meeting room is mainly composed of horizontal

and vertical lines. This simplicity also fulfills the basic demands of function.

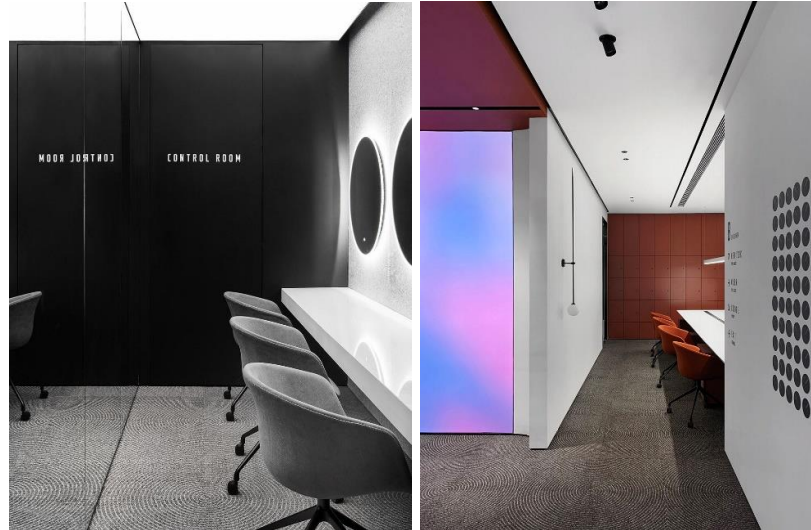


Fig. 3. Poly Voly powder room (Left: part of the office area / right: powder room).

Adjacent to the office area is a powder room. Due to the early consideration of the age and state of the space users, the medium gray is used in the control of color to create a stylish and stable space environment. In terms of spatial combination form, considering that the office space can accommodate a variety of combination forms, the design team strives to find unity in the opposition for various functional requirements. Each combination corresponds to the different functional space relations it carries.

### III. ANALYSIS ON THE FUNCTIONS OF PHASE IV OF ALIBABA XIXI PARK

A good office space design should be based on human psychology as the starting point and object of developing and mining design functions. Scientific and

reasonable functional layout and space planning are the primary conditions for creating a comfortable office environment [6]. The design of the office space of the Phase IV of Alibaba Xixi Park takes into account both functionality and humanity, so that the distance between the employee's work station and the ecological space is controlled within a minute of walking, which is beneficial to release stress for employees with pressure. In addition, the park has leisure sports space, and also has some other functional partitions. All employee workstations located on each floor are arranged by the window overlooking the green ecological space. This detail can effectively reduce the impact of artificial lighting on employee pressure. Neurological studies have shown that people's cognitive performance improves when they look at natural environments, effectively reducing stress.



Fig. 4. Green Ecological Space.

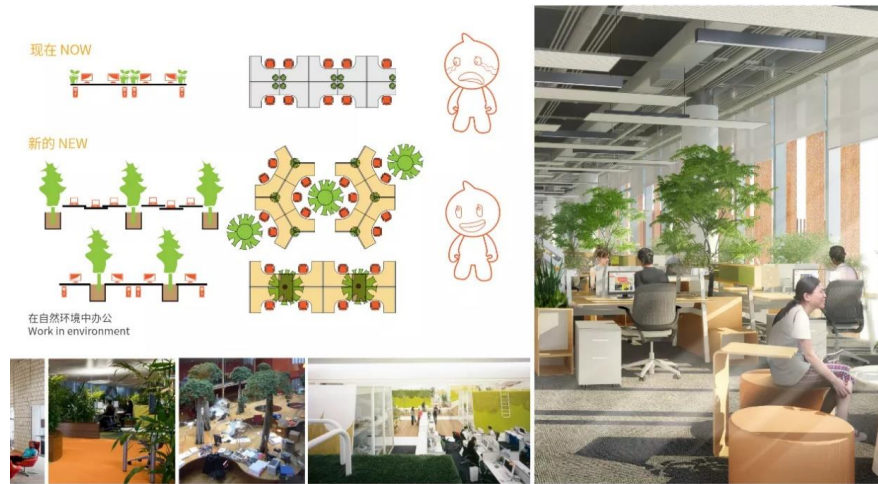


Fig. 5. Natural light in office area.

The design of any modeling can't be separated from the proportion. The harmony of proportion is very important in aesthetic and functional aspects. The length, width and height of the room are determined by the aesthetic requirements of the space based on the reasonable function, and the proportion can also reflect the master-slave relationship of each space in the interior of a building. In architecture, there are always certain restrictive relations on the element itself, among the elements or among the elements as a whole. If these relations are just right, it means that there is a good proportion relationship, so as to achieve harmony and

produce beautiful effect. [2] Through the existing research, it is not difficult to find out the average duration of every daily activity in the office space, in which the inbound and outbound personnel flow activities last the shortest time, and the office, entertainment, leisure and other activities will last a relatively long time. It is precisely because of this long-lasting activity that the office life of employees is enriched and the communication and exchange opportunities are increased, many short activities are derived.

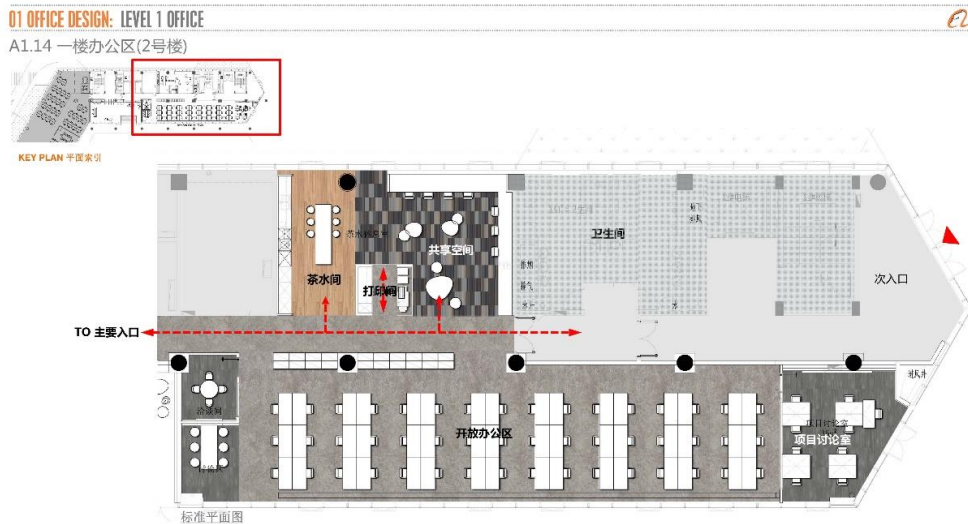


Fig. 6. Plan of office area on the first floor (Building 2).

From the floor plan, it can see the size relationship of each space directly. The space and color distribution ratio between the office area and the daily leisure area are very uniform. Viewing from the main entrance,

people will have a very comfortable sense of balance. Compared with the two regions, the level of daily leisure area is more abundant. Next, it will be analyzed from the perspective of spatial combination:



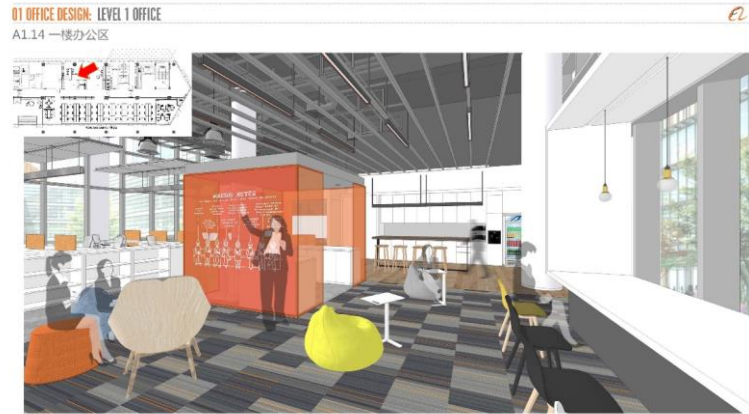


Fig. 7. Viewing from the shared space to the tea room.

The tea room and the shared space are in a common area. From the perspective of different pavements, the two spaces are effectively divided on the basis of keeping open. It is obvious that there is a strong contrast between the two spaces. If the volume of the two adjacent spaces is very different, when entering the

large space from the small space, the spirit of people can be inspired by the volume contrast. [2] Comparing the size of the shared space with the small size of the tea room, employees can be more relaxed and comfortable in this area.

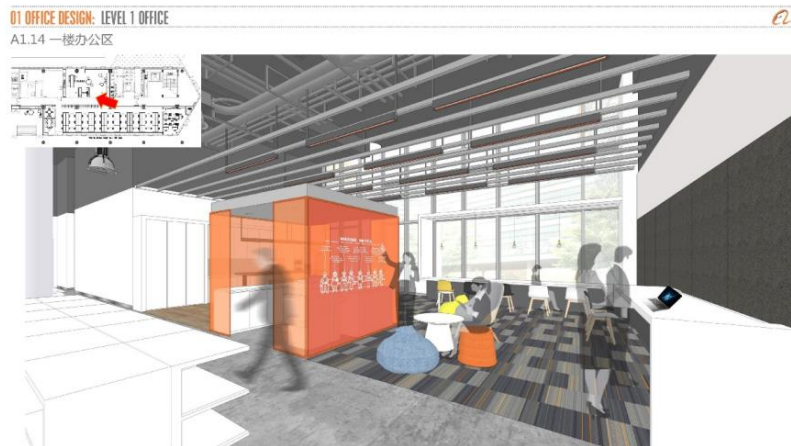


Fig. 8. Printing room.

The orange area in the shared space is a printing room, where the structure of a room in the room is used, and the "small" is also used to set off the "big". The jumping color and the gray stability of the shared area form a great contrast, which increases the sense of hierarchy and interest of the space. The wall on the right side of the printing room is a glass plate that can be used to write, which can be used to express employees' ideas here. This method effectively avoids the disadvantage that the structure of the room in the room may cause space waste. Although the overall distribution of toilet and elevator room is uniform, they also make different length contrast in the depth of entrance, which will not make the space of the second half look monotonous.

The connection and separation among spaces is also a very important factor in the design process. A complete interior space depends not only on the perfection of a single space, but also on the reasonable combination of each room. Taking the relationship between the tea room and the shared space as an example, these are two spaces with different functional requirements. However, they reflect the differences through different pavements. They are not divided by partitions or walls, but also connected. This kind of spatial relationship, which is not only different but also connected, is very common in modern design. It is not only beautiful, but also reduces the limitation of space vision narrowing.



Fig. 9. Design sketch of office area and shared area.

The same color is used in the office area and the shared area. From the perspective of different ceiling structures, there are great differences. The two spaces are also not separated by walls. In order to enlarge the "openness" of the open office space, when using the ground pavement of the same color, the material is

different, but it will not be abrupt. The two spaces are separated from with each other with low cabinet. This also has the effect of difference and connection, which makes different space areas of the whole floor follow the principle of unity of opposites.

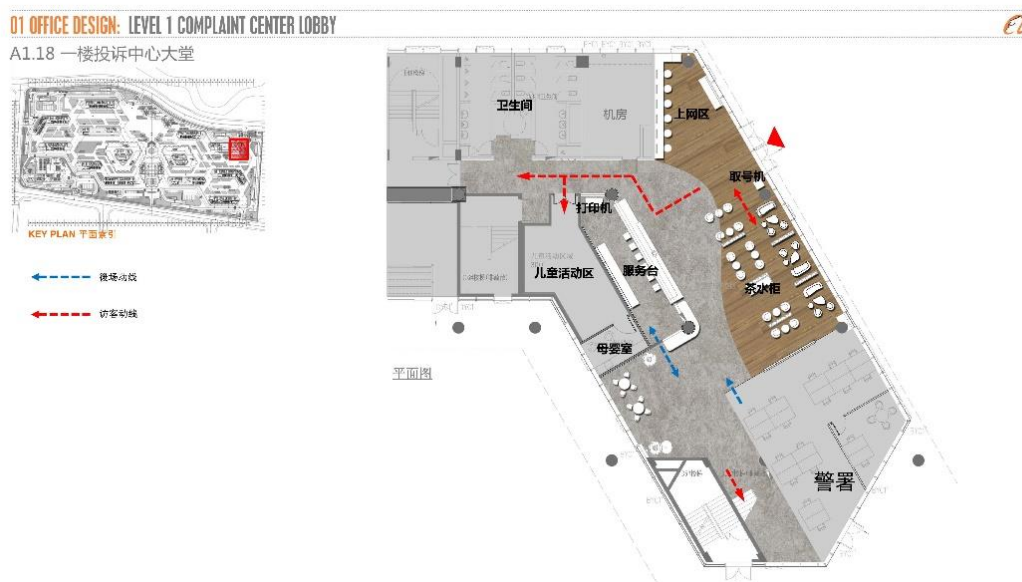


Fig. 10. Lobby plan of complaint centre.



Fig. 11. Design sketch of complaint centre.

The public space in the lobby of the complaint center is roughly divided into two areas: reception area and consultation area. The two large areas are also separated by no facade, and the different pavements reflect the different functional areas. In order to avoid the rigidity brought by the rash splicing between the two materials, the design team put the tables and chairs in the tea area on the boundary line, and blurring certain boundaries also reflected the fun of splicing.

In order to facilitate customers, special needs of customers are also considered in the design process, such as customers with children, relatives and friends accompanying customers, etc. Therefore, the designer has joined children's activity area, baby care room, Internet area and other leisure areas. This part mainly discusses the connection and separation among single family spaces. The area of children's activity area is 30 m<sup>2</sup>, and the baby care room is set in the children's activity area. The connection point between the two spaces is children and parents. Setting up a baby care

room in the children's activity area also takes into account certain common points. The opening children's activity area is embedded with a closed baby care room. From the difference of size comparison, it can make people have emotional mutations. When the door is closed, it is a safe and intimate baby care room. When the door is opened, people can see a lively and open children's paradise. This contrast also enriches the design level of the building and the feelings of customers. The walls of the children's activity area and the baby care room become the background walls of the reception desk. Such a design can make the functional areas of the whole interior space look different and unified. Although each functional area represents completely different requirements for use and seems to have no great relationship with each other, their mutual combination can create a complete interior space. And in a complete interior space, the form beauty and function requirements should exist on the unity of opposites.

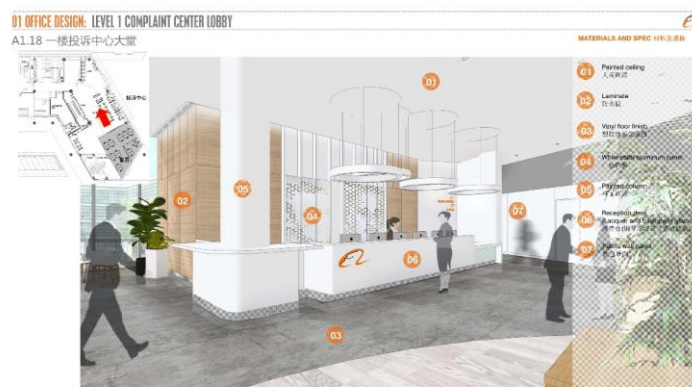


Fig. 12. The walls of children's activity area and baby care room, i.e. the background walls of reception area.

In the design of interior space, it is difficult to achieve a good spatial layout if the consideration of

indoor use function is ignored. [6] The so-called use demand is actually a functional demand set for space.

What users want it to do will have corresponding space forms presented in front of users. For the combination form of multiple spaces, different combination forms can be defined according to different functions.

Taking the space combination form of complaint center of Phase IV of Alibaba Xixi Park as an example, the complaint center is a non-open functional space, which receives customers from all walks of life and staff to solve problems for customers. Therefore, it is necessary to conduct a good diversion. The complaint center of Phase IV of Alibaba Xixi Park is a spatial combination form of connecting each independent space with the central lobby. Here, public hall is used as a distribution center to divert people to each independent area, or to gather different diversions to public hall. In general, if only one central hall is set up, it can even ensure that the use spaces are not traversed. People can enter any use space from the wide hall

without affecting other use spaces, which increases the flexibility of use and management. [2]

Taking the office area on the first floor of Building 2 in the Phase IV of Alibaba Xixi Park as an example, its combination form is nested and directly connected. This kind of form is very flexible, which can separate the space freely and flexibly in a large space. In this kind of combination form, there is no absolute dividing line between the spaces, so as to blur their independence and make each space connected. The reason why the office space uses this division and combination mode is that the most users are the employees and working teams who need to communicate frequently. This combination mode reduces the form of interleaving from the corridor or a central wide hall and forms an indirect face-to-face working mode.

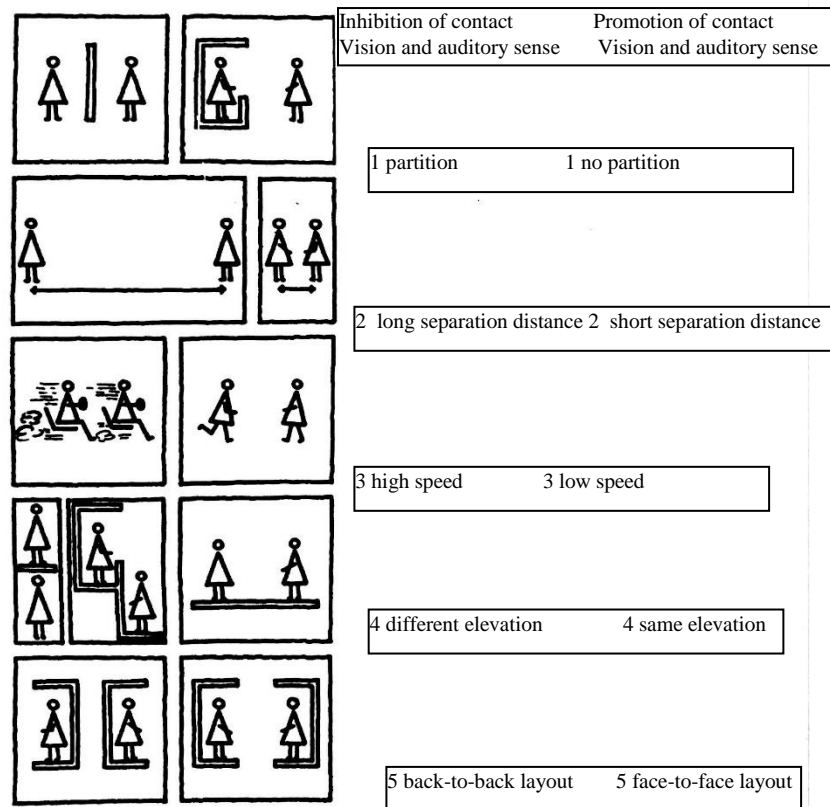


Fig. 13. Five ways of communication that can promote or hinder vision and voice (from communication and space).

Therefore, in order to promote communication and greatly improve work efficiency, what designers can do is to show the transitional charm from the combination form of independent space, which is shown as follows: the boundary among the spaces cannot be too rigid or even affect the connection among the spaces; it is necessary to maintain a good vision, that is, to be able

to observe the outside world in each independent space; the transition area is clear, but it makes people feel convenient and comfortable. [3] This design breaks the mechanism of old-style combinations and opens up the possibility of creating highly flexible and complex spatial combinations [2].



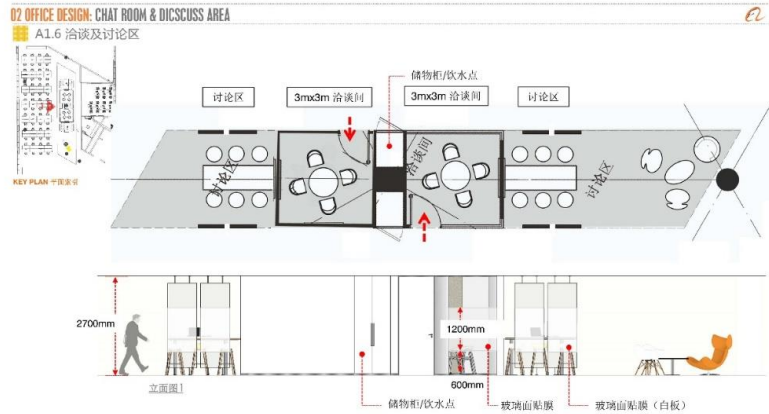


Fig. 14. Negotiation area in Phase IV of Alibaba Xixi Park (plan above, elevation below).

Space refers to human space, and human is the core of interior design. [6] When analyzing it from the perspective of human perception in space, the most intuitive thing is the height of space. Too low height will make people feel constrained and oppressed. Too high height will make people feel distance from space, and it is also easy to form too tight mentality. The negotiation area is a quiet and private area relative to the office space, which does not need to be done in very high height. Generally, 2600mm to 3000mm is very

suitable, which is similar to the residential space. The negotiation room belongs to a semi-private space, and the whole negotiation and exchange area belongs to a semi-public area. This clear structure strengthens the natural monitoring and helps to make a unanimous decision on issues of common concern [4]. This transition from the private to semi-private and then to public produces the hierarchical structure in the material space, which is easier to form a sense of security and a stronger sense of subordination.

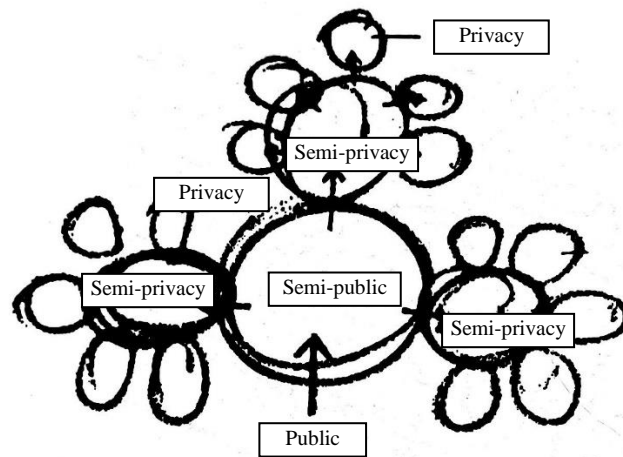


Fig. 15. From communication and space.

In all kinds of communication occasions, people's perception of proportion and scale is generated unconsciously. Distance can control or adjust the intensity of mutual relations, and also control the beginning and end of the conversation, which shows that the conversation needs a specific space. For the area of the negotiation room, it is a very necessary data to be considered. The 9m<sup>2</sup> square space is a suitable scale for meeting the requirement of being privacy.

Edward Twitchell Hall Jr. defined a social distance (1.3m-3.75m) as the daily conversation distance between friends, acquaintances, neighbors, colleagues, etc. in his book "The Hidden Dimension". The layout of the rest space composed of coffee table and armchair represents this social distance [5]. In daily life, people are good at feeling cordial and warm under the close measure. On the contrary, large space makes people feel cold and callous. Therefore, the combination and

scale of the negotiation area are considered in terms of human perception.

#### IV. THE FORM AND CHARACTERISTICS OF THE SPACE OF PHASE IV OF ALIBABA XIXI PARK

In modern interior design, the application of innovative materials is more and more extensive. The

types of materials are more and more diverse, and different materials can set off different atmosphere. Designers should fully show their own advantages of different materials in the design to create a better space effect. [7]

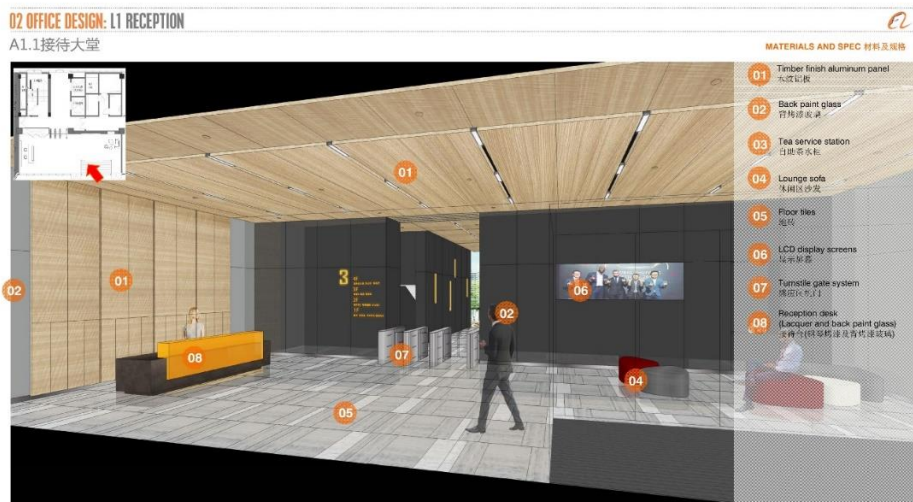


Fig. 16. Lobby of Phase IV of Alibaba Xixi Park.

The ceiling of the lobby and the background of the reception desk of Phase IV of Alibaba Xixi Park are made of wood grain aluminum plate. At present, in the design process, designers have widely used alloying metal. In terms of construction technology, most of them adopt lightweight and high-strength decorative materials such as cavity material or interlayer material, which show good decoration effect [7]. This material has the advantages of strong steel, good adhesion, high toughness, impact resistance, pollution resistance, etc. In addition, it has certain UV protection function, and color is also very durable and stable. At the same time, it has a long service life. It is a good choice for tooling design. And wood grain has a strong decorative effect naturally. Psychologically, it will make people feel comfortable and have a good sense of visual impact. The natural wood is easy to deform and shrink when encountering water, but the combination of wood grain form and aluminum plate perfectly solves this defect. In terms of installation process, most of them do not need to be cut on site and can be fixed directly on the keel, which is very convenient for maintenance.

Both sides of the background wall and the middle part of the reception desk are made of stoving varnish glass. Glass can expand people's visual effect in the interior space, and its transparent characteristics will increase the sense of space hierarchy. Because of its

high expressiveness, it is often used in image walls, countertops and reception desks of the company. It has the advantages of moisture-proof, non-discolouring and tasteless. Usually, the glass is toughened first and then painted. When the material is damaged by external force, the fragments will become small obtuse angle particles in honeycomb shape, which is not easy to cause harm to human body.

Floor tiles are used as the material of the floor. The floor tiles have the characteristics of wear resistance, pollution resistance and low water absorption, which is easy to clean. In addition to practical aspects, the use of ceramic tiles in the lobby can also make good use of the reflective characteristics of ceramic tiles in the wide visual space effect, increasing the sense of fluency.

In addition to the expression of materials, the characteristics of space form refers to the color. Color affects people's visual and psychological feelings. Different colors can lead people into different states. For example, fast food restaurants usually like to use orange. This color can arouse people's appetite and improve people's vitality. In the sense of color, orange is the warmest color. Kandinsky once said: "orange is red that approaches human through yellow." Red is passionate, and yellow is full of sunshine. As the neutralization, Orange is suitable to be put in a certain office space.

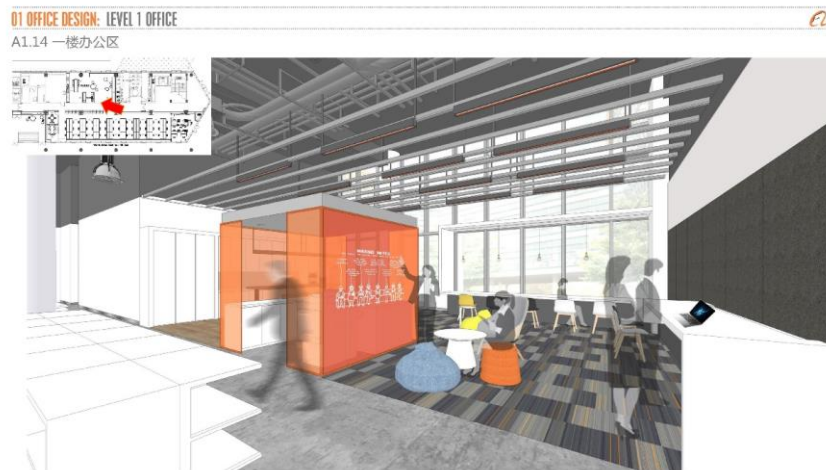


Fig. 17. Printing room.

The wall color (Orange) of the printing room can be used as the auxiliary color to wake up the fatigue and lead the vitality. Each enterprise has different corporate culture, and these cultures also have their corresponding main colors throughout the office space. As an e-commerce company, Alibaba's main color should be steady from the business point of view. Most of its employees use gray to show the serious working atmosphere. From the electronic point of view, the employees it recruits are young people full of vitality

and drive. Therefore, in this big unified facade of gray, it adds a small change of orange. The reason for the small change is that if too many colors with too high color lightness are used, it will lead to a clamor for the master and easily weaken the integrity of the space. The use of minor changes in auxiliary colors not only enriches the diversity and extensibility of space, but also serves as an important means of expression for the concept of spatial differentiation and softer functional zoning. [8]



Fig. 18. Viewing from the tea room to the office area.

In addition to the expression of color, it is also linked with light. Natural light is the most widely used light source in modern space. Modern office space advocates the design of open office space precisely because natural light can give office workers the most soft and comfortable feeling [8]. Because of the different angle, length and direction of illumination in a day, the orientation of lighting area is also a very important problem in the design process.

## V. CONCLUSION

With the rapid development of society, the design of office space is also increasingly diversified. Against this background, it is always necessary to design a more functional and formal space around a reasonable spatial combination form. To treat the interior design of different spaces, it should not only consider from the existing design methods, but also consider and research from the psychological and physical feelings of users

who develop with the society. In the process of design, it is required to see the relationship between function and society. The function factors answer the various requirements of social development, and their forms gradually conflict with each other, which leads to the negation of the old form of spatial combination, so as to promote the continuous progress and development of design.

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