

A Study of **Sensory Experience**
in **Interior Design**
through the Analysis of
CMF and **FF&E** Approaches



POLITECNICO
MILANO 1863
DEPARTMENT OF DESIGN

Tutor. Anna Barbara

Assistant Tutor : Han kang Jin

Student. Rui Zhang
Matricola. 883325
Course. Interior Design

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As people's demands for living quality increase constantly, in our era, interior design has to meet more requirements than basic daily functions. To meet the needs for a pleasant sensory experience and psychological experience, such as aesthetic values, sense of belongingness and identity, has also become an important job in interior design. Conveying positive emotions through a sensorial experience can elevate the value of the interior space. The manipulation of color, material and finish does not only elevate the value of the space's functions for creating a comfortable and pleasant high-quality environment, but also build up a value for the perception of the living environment both on physical and psychological aspects, influencing the experiences related to five senses to people, as well as their emotions.

The design of color, material and finish in the interior space has become more and more important as the value of sensorial experience is paid more and more attention nowadays. In the design industry, it emerges some related professions such as CMF and FF&E design, particularly for living space like hotel, residence, club, spa, etc. FF&E design is more applied in interior design, it is a systematic design method with logical reasoning in dealing with the color, material, finish and style, etc.

The main content of this thesis is divided into three parts. The first part analyzes the influence of colors, materials, finishes on interior design. The second part introduces CMF design and FF&E design, besides a comparison about the commonalities and differences between these two approaches is carried out for analyzing and summarizing how to design the color, material and finish of the interior space. The third part, through the review and case study of a interior project I had participated in China, it illustrates how to control and realize the design quality of color, material and texture in interior design.

Keywords : Senses, Interior Sensory Experience, CMF Design, FF&E Design.

TOPIC BACKGROUND

As people's demand for the mental level of the living environment becomes stronger and stronger, the influence of colors, materials and finishes in interior design is becoming more and more important, but these elements are often not considered with enough attention by interior designers. Because of lacking of a professional systematic training, many interior designers are not qualified on the manipulations of colors, materials and finishes in design. To meet the demand of the market, it was emerging some professionals focus on the design of these elements for interior space.

FF&E (Furniture, Fixture, Equipment) Design is one of the professions which has been practised for decades, while there is not a related discipline in the university yet, it is hard to find any publication about FF&E Design. With my work experience in China as a FF&E Designer, knowing that FF&E design is a profession for creating the overall style and sensory experience, I would like to make a contribution to the theoretic development of this discipline through doing deep research on FF&E Design, analyzing and reorganizing the materials which are selected from the market.

During the research process, I have learnt that CMF (Color, Material, Finish) Design is very similar to FF&E Design, which originally took shape in industry design in Italy. It is another helpful approach for learning how to design the sensory experience for interior space. FF&E Design and CMF Design could complement each other to help the interior design achieve the attractive effect.

In order to provide professional support on the thesis, I completed a series of interviews with senior designers and professionals from well-known design companies both in China and abroad, and I have collected opinions from than 20 professionals on different perspective, to analyze my topic in order to summarize an useful guidelines for interior designers.

The Influence of Sensory Experience on Interior Space

“One of the reasons for architecture to exist at all is to house and organize human activities , to support and enhance daily life“.[1] And the essence of interior design , is the art and science of enhancing the interior of a building to achieve a healthier and more aesthetically pleasing environment for the people who use the space . This fact will continue to evolve as the social developing.[2]

“Conveying positive emotions through a sensorial experience can elevate the value of the interior design. Each individual is seeking for objects or environments to fulfill their emotional needs and intangible benefits like identity, status, belonging, aesthetic, etc.”[3]

Designing forms and spaces that affect touch, hearing, smell and visual quality is essential for interior design. These all require a close contact with people, or it requires people’s participation in some activities. Interior design through the light and color, sound and texture, space expansion and compression, could touch the senses and soul of people, giving life and spirit to the interior space. The interior design is born for servicing people. In the indoor activities, body interacts with the lose furniture, and its dimension and scale will affect the posture and position of the person, thus affecting their feelings. [4]

In this chapter, from Abraham Maslow’s theory of human needs, it analyzes what are the constantly evolving needs of people; it highlights the emotional requirement of people for interior design, trying to understand the impact of sensory experience in interior design by analyzing the perception of emotions in human. What’s more there is a further study on which are the elements of interior design that affect the human sensory experience and how do they work. Then it comes out with the conclusion that the human sensory experience has an important impact on interior design.



Diagram A

Experience Influence Human's Emotion Through Five Senses

[1] / [4] Karen A. Franck and R.Bianca Lepori, *Architecture from the inside out*, Wiley-Academy, 2007

[2] Wikipedia, *Interior design*

[3] Liliana Becerra, *The fundamental principles of CMF deisgn*, Frame Publishers, 2016



01 Maslow's Hierarchy of Needs (Photo credit: Wikipedia)

In 1943, Abraham Maslow wrote a paper called A Theory of Human Motivation in which he identified five human needs and ranked them in a hierarchy, and created the pyramid of human needs. In the following list the five human needs are:

Physiological

At the bottom are the things people need to survive such as food and water. These are physiological needs.

Safety

The second level includes safety needs, which are things that give us a sense of security in all aspects of our lives. They include health, family, a job and so on.

Love and Belonging

The third level of the hierarchy includes love and belonging needs. These are needs humans have related to relationships, family and friendships.

Esteem

The fourth level in the hierarchy is esteem needs, including self-esteem, confidence, respect of and by others, and personal achievement. Like the need for love and belonging, the need for esteem is very emotional and happens in both our conscious and subconscious minds.

Self-actualization

At the top of the hierarchy is the need for self-actualization, which refers to personal growth and realizing full human potential. It is this need that Maslow believed people are always striving to satisfy but few achieve. It is very subjective and highly personalized.

Analyzing according to Maslow's theory, the most basic needs of people at the bottom of the pyramid is physiological satisfaction. After survival, people will need a sense of security, such as the health, family and work. Pursue well-being in terms of food, clothing and dwelling. After be fulfilled with the physical well-being , people ask higher level of needs, such as love and belonging, identity, status, and respect for personality. In the mid-to-late 19th century, the middle class in industrial countries grew in size and prosperity, therefore they began to desire the domestic trappings of wealth to cement their new status. The top demand of human is Self-actualization, when it reached this stage , we could notice that people care more and more about individuation .

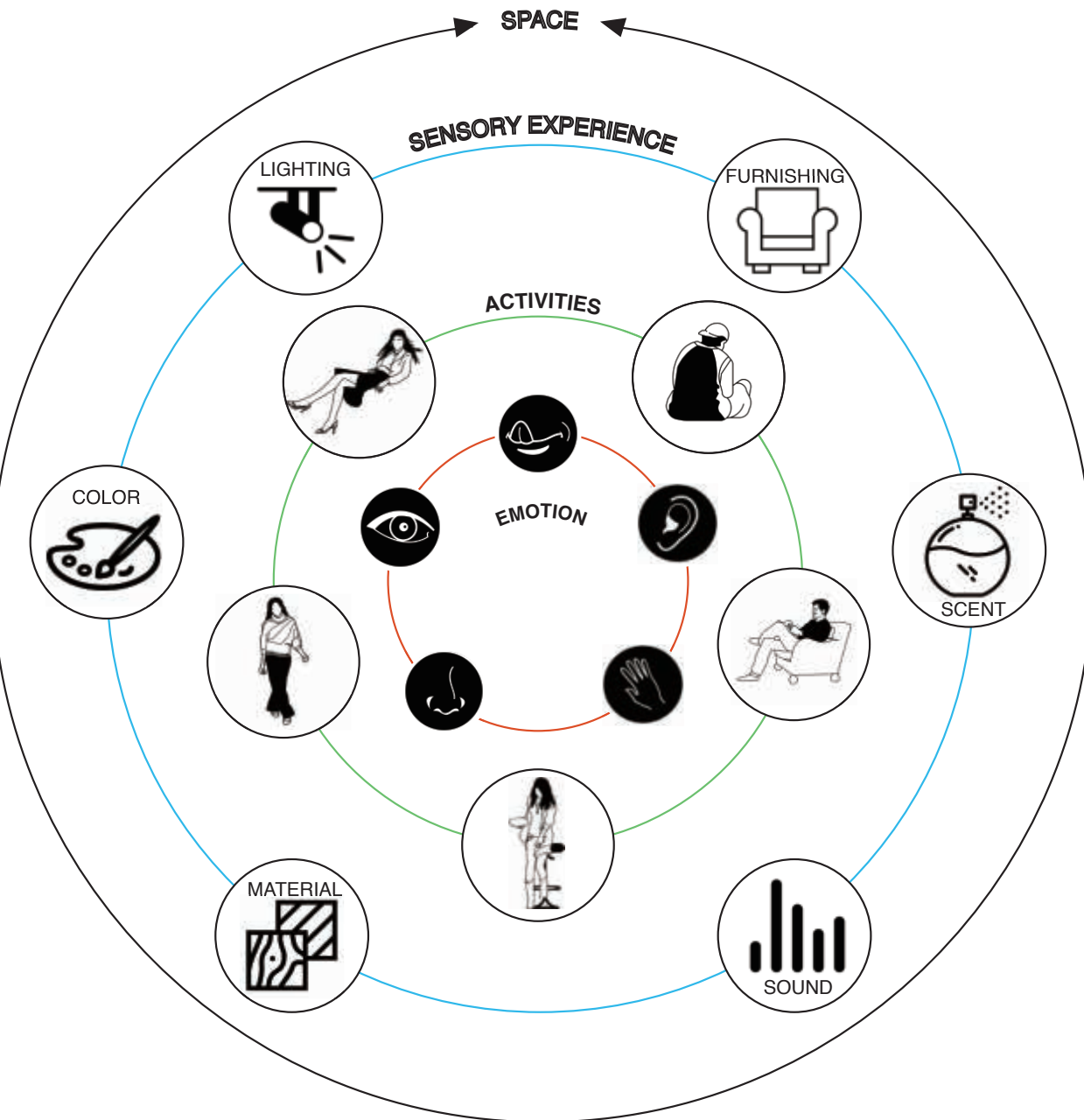


Diagram B

Space-Experience-Activities-Emotion

Beyond our perception, our senses play an integral role in our emotional processing, learning, and interpretation. During various elements of emoting, our sensory cortices can be activated at different levels.

What we hear, see, taste, smell, and touch can provide us with information on how to feel. In the other direction, what we feel can be heavily influenced by what our senses are taking in. [5] In this chapter, it will analyze how interior design influence the sensory experience and the emotion of people.

“When we move through space with a twist and turn of the head, mysteries gradually unfolding, fields of overlapping perspectives are charged with a range of light—from the steep shadows of bright sun to the translucence of dust. A range of smell, sound, and material—from hard stone and steel to the free billowing of silk—returns us to primordial experiences framing and penetrating our everyday lives.”[6]

[5] Rebecca Rago, *Emotion on the Brain, The neuroscience of emotion : From reaction to regulation*, posted on October 9, 2014

[6] Karen A. Franck and R.Bianca Lepori, *Architecture from the inside out Wiley-Academy, 2007*

VISION

02 Vision Image



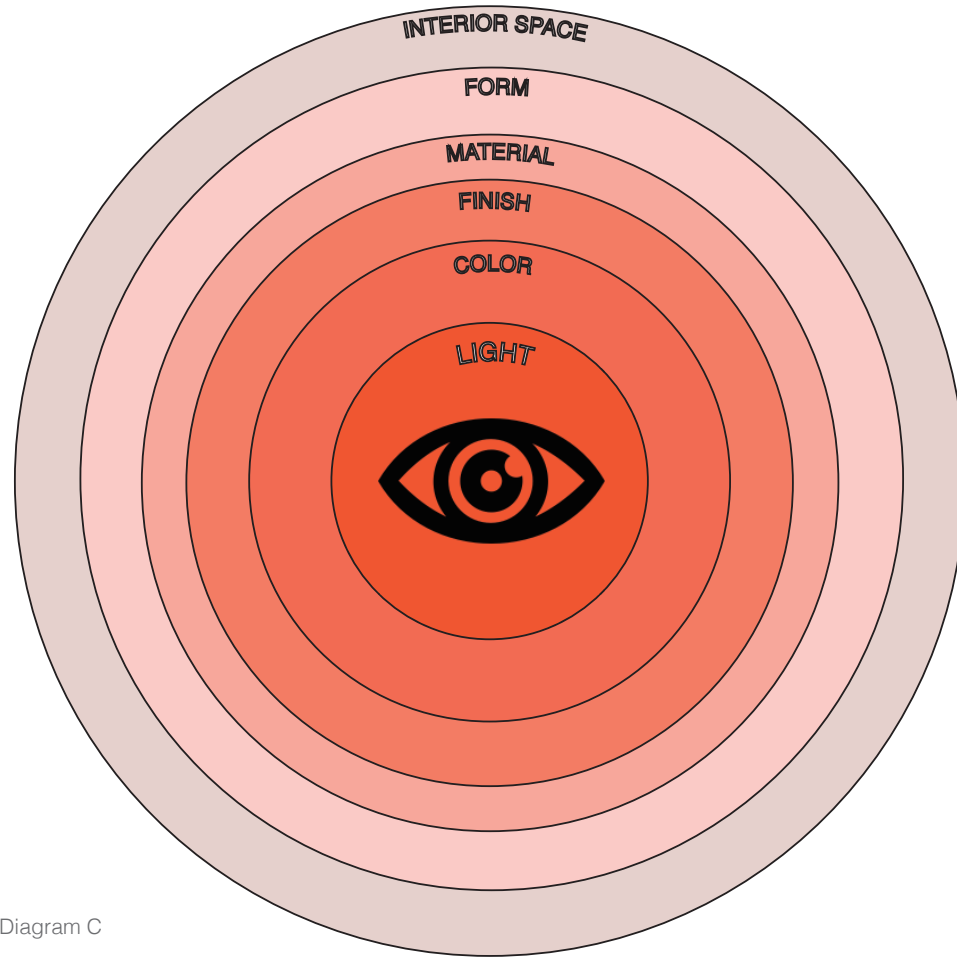


Diagram C

Vision Elements In Interior Design

In Interior design, visual languages are the overall composition of forms, lines, colors, materials and in general visual cues of space. All these visual elements related to aesthetic, and create the style, even iconic and instantly recognizable point. They reveal the point in time when objects were created and the available technologies that shaped them.[7]

[7] Liliana Becerra, *The fundamental principles of CMF design*, Frame Publishers, 2016

[8] BrainFacts/SfN, *Vision: It all Starts with Light*, 1 Apr 2012

To be able to see anything, eyes first need to process light. Vision begins with light passing through the cornea, which does about three-quarters of the focusing, and then the lens, which adjusts the focus. Both combine to produce a clear image of the visual world on a sheet of photoreceptors called the retina, which is part of the central nervous system but located at the back of the eye. [8]

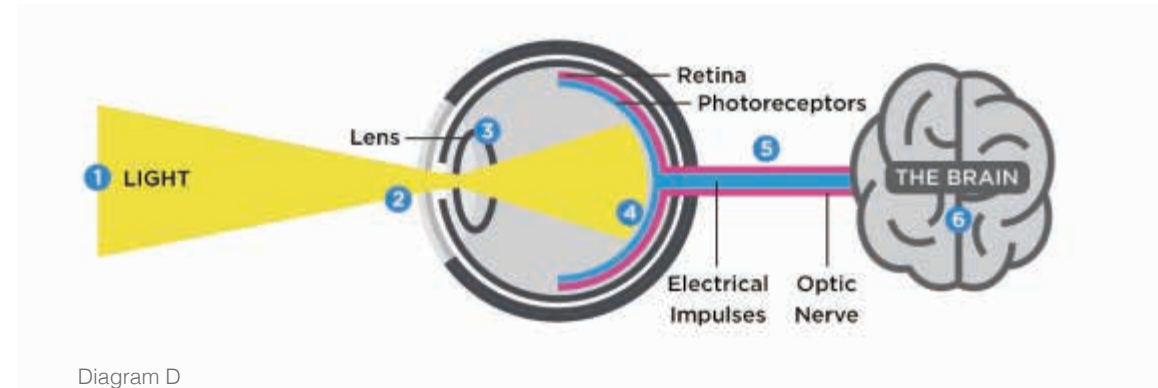
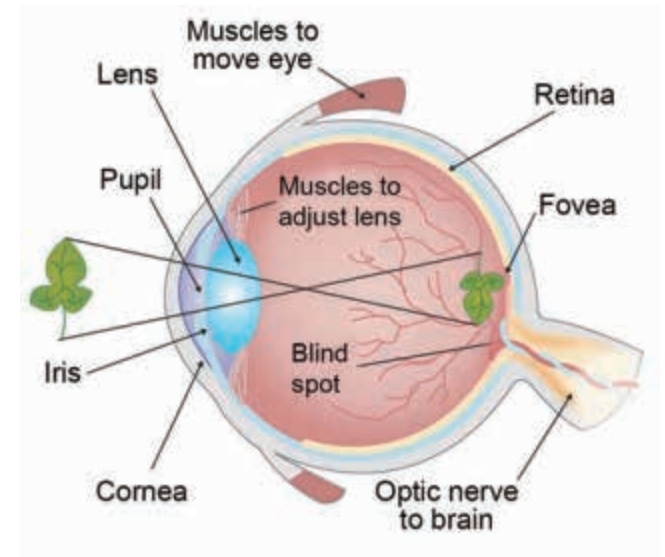


Diagram D

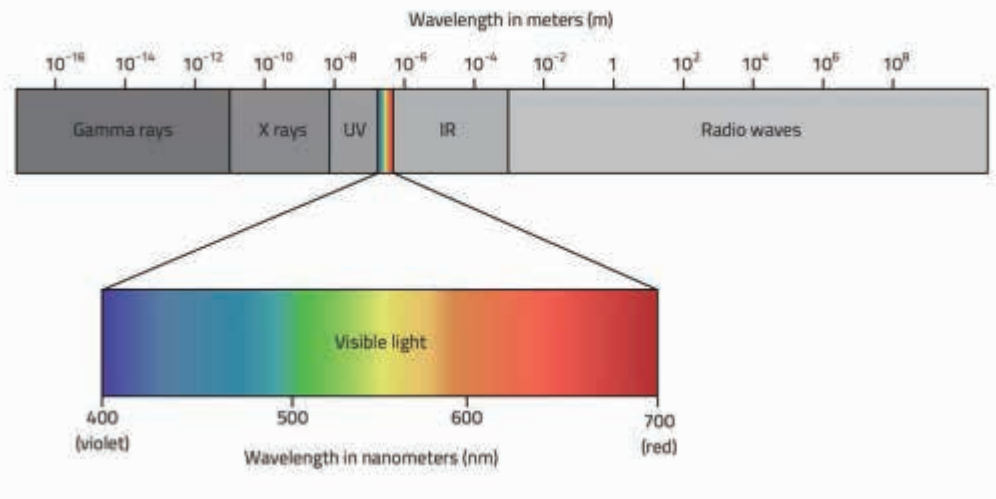
People See Things Through Light



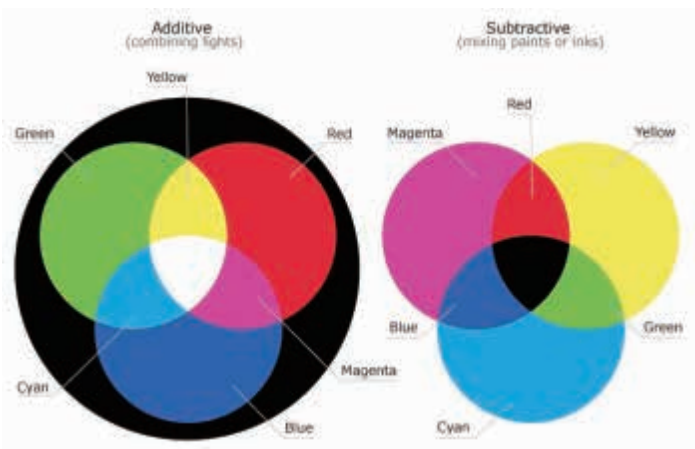
03 The Anatomy of The Human Eye

Light is Color

The physical difference between radio waves, infrared, visible light, Ultraviolet, and X-ray is wavelength. The visible light spectrum is the electromagnetic rays we can see such as violet, blue, green, red and yellow. A spectral color is the light of a specific wavelength and hue is the color perception. White light is made by mixing colors of red blue and yellow. Shortest range = purple and blues, Longest range = red. Sources for visible light rays included Natural and Artificial Light.[9]



04 The Visible Light Spectrum



05 Primary Color Models

[9] Brittani Anderson, *The Psychology of Color in an Interior Space*, Feb 17, 2014

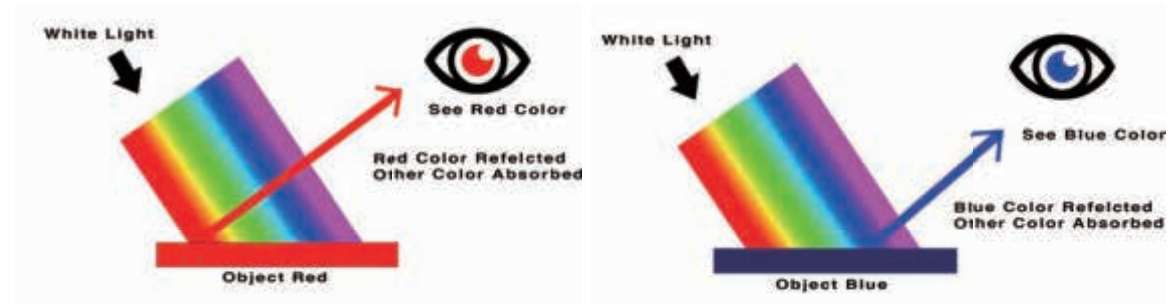


Diagram E

Light Is Color

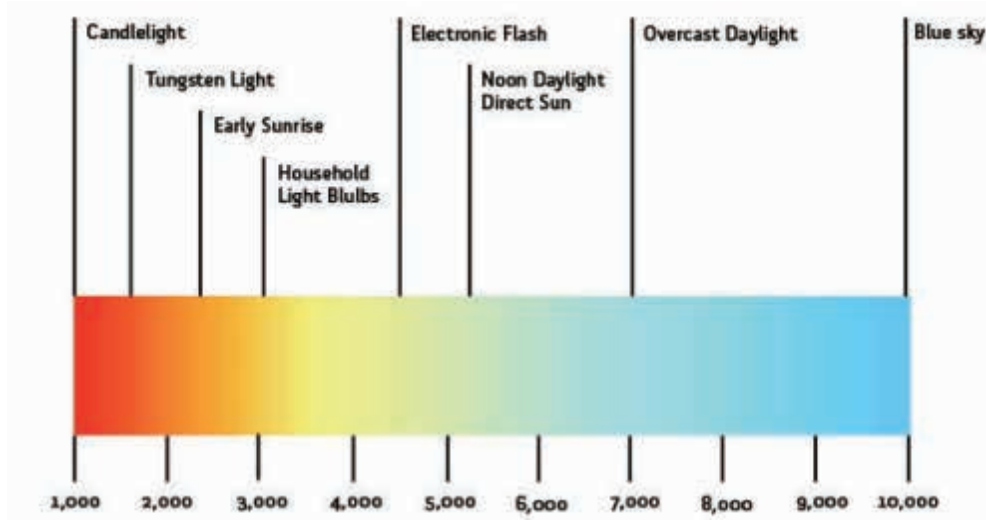
Lighting Effect

Light intensity, surface reflection and surrounding objects play a factor in how color is perceived. The interior space effects the perception of color directly through artificial lighting. The color rendering index (CRI) was developed to describe how well colors are rendered by artificial light sources compared with natural light. Color is perceived based upon the context of the space and should be considered when developing a color scheme. [10]

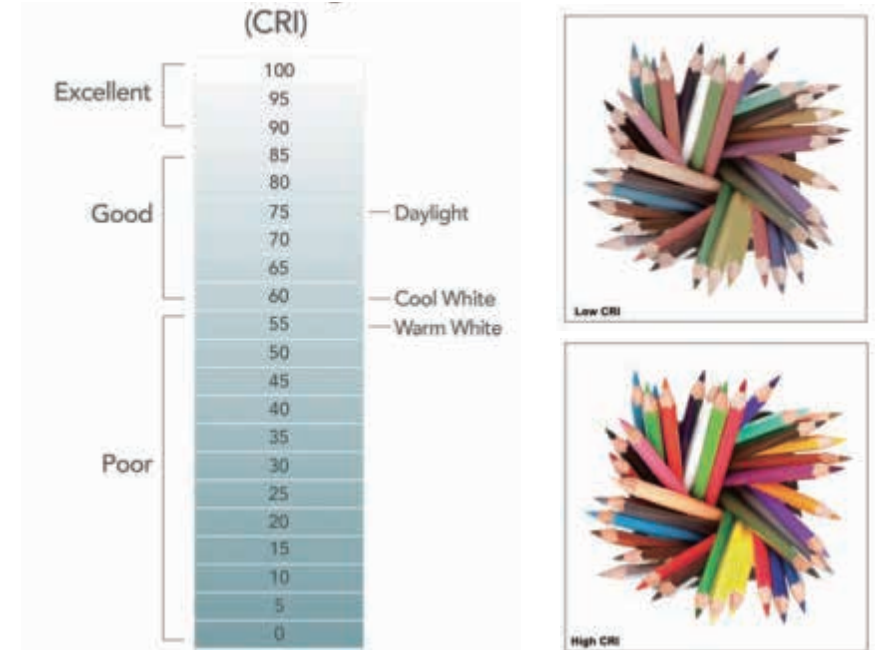
Different light sources affect how the colors of walls and other objects are seen. Specific hues of colors seen under natural sunlight may vary when seen under the light from an incandescent (tungsten) light-bulb: lighter colors may appear to be more orange or "brownish" and darker colors may appear even darker. Light and the color of an object can affect how one perceives its positioning. If light or shadow, or the color of the object, masks an object's true contour (outline of a figure) it can appear to be shaped differently from reality. Objects under a uniform light-source will promote better impression of three-dimensional shape. The color of an object may affect whether or not it seems to be in motion. In particular, the trajectories of objects under a light source whose intensity varies with space are more difficult to determine than identical objects under a uniform light source. This could possibly be interpreted as interference between motion and color perception, both of which are more difficult under variable lighting.[11]

[10] Brittani Anderson, *The Psychology of Color in an Interior Space*, Feb 17, 2014

[11] wikipedia.org/wiki, *Color Psychology*, 2015

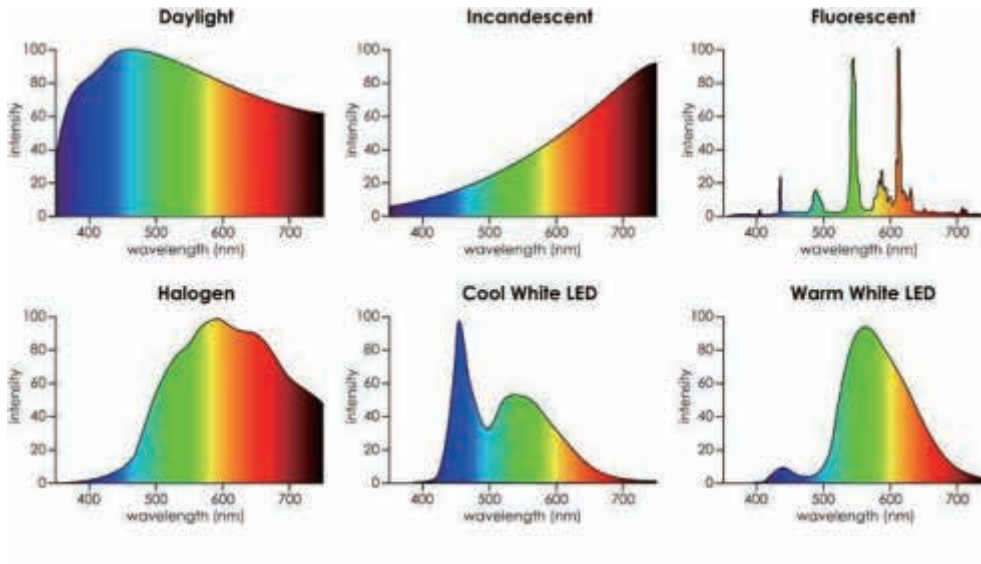


06 Color Temperature expressed on the Kelvin Scale (K), is the color appearance of the lamp itself and the light it produces.

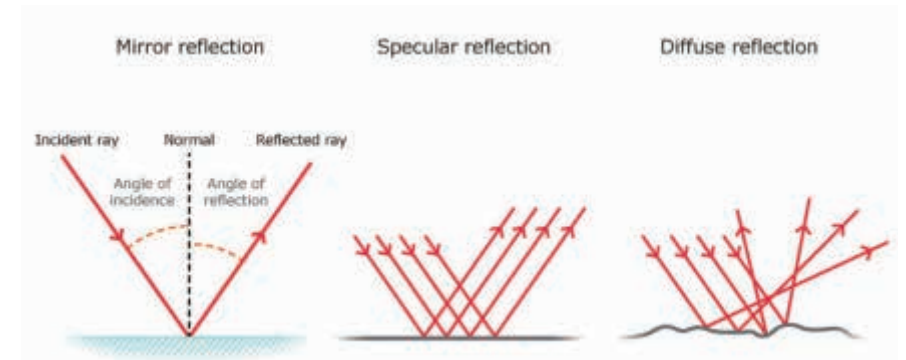


08 Color Rendering Index

09 Color Rendering Index

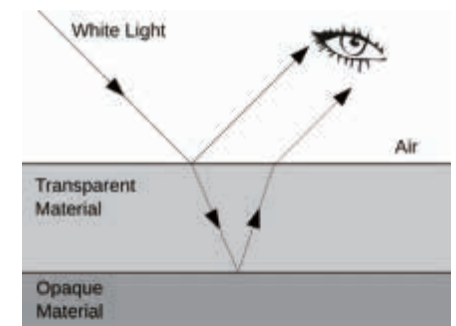


07 Different light sources are various in Color Temperature.



10 Light Reflection

11 Difference Between Reflection and Refraction



Psychological Requirements

Besides the objective requirements which result from the activities performed in a visual environment, attention must also be paid to the demands that stem from the users themselves. Many of these are concerned with the possibility of gaining better views of their surroundings. This applies to the need for information about time of day and weather, about what is going on in the rest of the building, and sometimes also the need for orientation within the environment. One special case is the utilisation of sunlight in atriums or through skylights and light wells. The latter do not necessarily offer a view outside but do provide information about the weather and the progress of time is maintained – a changing patch of sunlight can contribute to the feeling of life inside a building.

Another psychological need that has to be fulfilled is the creation of a clearly structured environment. This is especially important in areas that are potentially subjected to danger, i.e. where the structure of the space must be easily legible. In general, it can be said that a clearly structured environment contributes to our feeling of well-being in a visual environment. In reality this means accentuating the structure of the space, the materials applied and the most significant parts of the space, and above all the type and arrangement of the room limits that are to be illuminated and the information signs that are to be emphasized.

The last factor is the need for defined spatial zones; the expectation that you can recognize and distinguish between areas with different functions from the lighting they receive. This mainly concerns the lighting of functional areas that we accept as typical and which is in line with previous experience, e.g. the application of higher colour temperatures and uniform, diffuse lighting in working spaces, but warmer, directed light in prestigious spaces. The need for clearly defined private areas also falls in this category; lighting can be applied especially effectively in the conversation areas or waiting zones within larger spaces to create a feeling of privacy.

Besides the requirements that arise from how a space is used and the needs of the users, lighting design also has to address the requirements of architecture and atmosphere. Along with this basic information about the project, the structures and qualities of the building itself are important. Quantitative lighting design also requires information about the dimensions of the spaces to be lit, the type of ceiling and the reflectance of the room surfaces. Other factors to be taken into consideration are the materials applied, colour scheme and planned furnishings. [12]

[12] Rüdiger Ganslandt & Harald Hofmann, *Handbook of Lighting Design, E Edition 1992*

Light and Emotion

In the 7th century William Shakespeare wrote "A sad tale's best for winter". However, he was not the first who understood the power of light on our psyche. 2000 years ago Hippocrates, the father of modern medicine, already acknowledged that the absence of light, particularly in winter, can produce diseases. Since then, the impact of light on mood and the use of bright light as a treatment-option for affective disorders have been studied extensively by scientists (for a review see Terman & Terman 2005). [13]

The winter morning with a snow through the leaves of trees with a light sun ray, a smoky road with a car beam light, a sunray through the roof of house, a blur image through the glass on a rainy day, the rainbow in the sky are some of the natural examples where the natural light plays its role and the mood change according to that. The mood and emotions can be created with the help of lighting for a stage performance. The intensity, the colour, the angle of the light and the pattern of the lighting design changes the mood and emotion of the spectator apart from the visibility happening through these factors. [14]

Light can affect people's emotions. For instance, bright light can heighten emotions. Blue light can make us feel more energetic, but it becomes a problem at bedtime. Exposure to blue light from smartphones and laptops in the hours before bedtime suppresses our bodies' production of the sleep-inducing hormone melatonin, which can make it hard for us to drift off to sleep. Natural light could make people happier, and may help reduce symptoms of depression. Light can even affect our appetite. Studies have found that light affects how much we eat, how fast we eat, what kinds of food we're in the mood for, and even our perception of flavor. [15]

[13] Changiz Mohiyeddini, Michael Eysenck, Stephanie Bauer. *Handbook of psychology of emotions*. Nova Science Publishers, 2013.

[14] Murali Basa, *Role of Lighting in creating mood and emotion*, academia.edu

[15] Mental Floss, *6 Ways Light Can Affect Your Emotions*.



12 Dan Flavin, Installation in Villa Panza Varese, 1976.

Once past the door that divides this area from the rest of the exhibition, an astonishing adventure begins in which the spectator is at the mercy of red, yellow, blue, green, white and purple lights that together create something unique that recalls unconscious and intense feelings, to be discovered step by step. The body and mind are flooded with light and color, which is then perceived in an almost unthinkable concreteness, in a magical and intense journey that is not expected.



13 Olafur Eliasson, The Weather Project art installation, Modern Tate, London, 2004
Danish-Icelandic artist Olafur Eliasson's large-scale art installations play with the elements and the senses, and hope to inspire action too. The sunset feeling lighting make people feel relax and lying on the floor.



14-15 Olafur Eliasson, Your Rainbow Panorama, Aarhus, Denmark, 2011.
You will look upon the city Aarhus through coloured glass. Suspended between the city and the sky, this viewing platform insists on your sensory engagement.

Color influences perceptions that are not obvious, such as the taste of food. Colors can also enhance the effectiveness of placebos. For example, red or orange pills are generally used as stimulants. Color can indeed influence a person; however, it is important to remember that these effects differ between people. Color affects individuals differently based upon their gender, age, culture and other biological factors . [16]

For instance, red color "The most physical color in the spectrum." Associated with the heart and blood, the color red has been proven to cause the raise of heart rate and energy level. In interiors, red is used to make a bold statement. It is often used in restaurants to increase appetite or in logos associated with food. In residential design, a red wall might create a warm cozy feeling that makes you want to sit around the Survey Association Fire, passion, power, love, energy, angry, sexy, lust, blood. While Western cultures view red as a representation of love , warning and anger, Eastern cultures see red as a representation of prosperity, beauty and good fortune, especially China.[17]

Color is a powerful design tool in interior space, color could create a mood within a space that tells a story and leaves an emotional impact on each individual. Designer could provok a psychological sensation through the use of different hues, reflecting specific culture and identity of the space, making the room feel either more calm, cheerful, comfortable, stressful, or dramatic. Color combination influence people's perception of the space, make a tiny room seem larger or smaller.

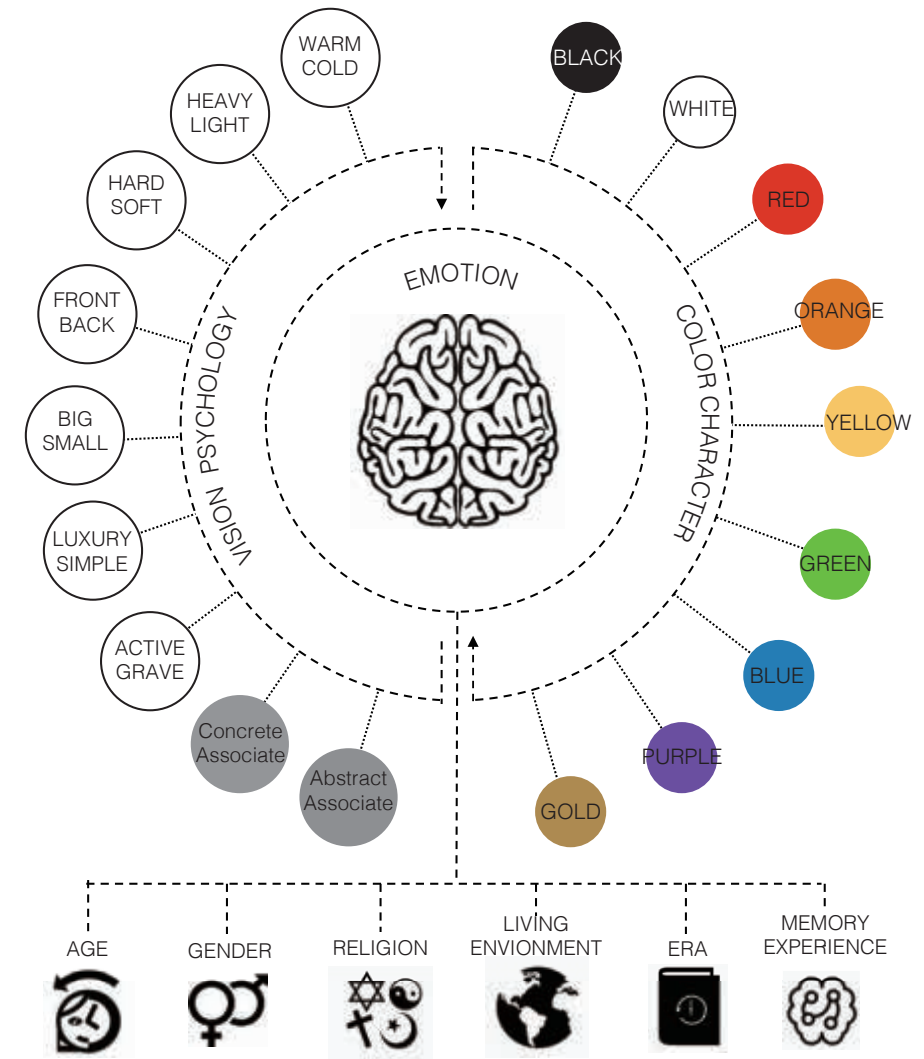
[16] wikipedia, *Color psychology*, 2015

[17] *Independent Study, The Psychology of Color in an Interior Space*, Feb17, 2014



16 The "rose of temperaments" (Temperamenten-Rose)
 Compiled by Goethe and Schiller in 1798/9. The diagram matches twelve colors to human occupations or their character traits, grouped in the four temperaments: choleric (red/orange/yellow): tyrants, heroes, adventurers sanguine (yellow/green/cyan) hedonists, lovers, poets phlegmatic (cyan/blue/violet): public speakers, historians melancholic (violet/magenta/red): philosophers, pedants, rulers

Diagram F Color And Emotion



BLACK Danger Death Mystery Elegance Authority Submission Power	WHITE Purity Clarity Creativity Cleanliness Innocence Youth Neutrality	RED Fertility Seduction Sexuality Anger Aggression Appetite Passion Love	ORANGE Energy Adventure Vitality Friendship Warmth Confidence	YELLOW Vitality Friendship Creativity Confidence Optimism	GREEN Nourishment Luck Abundance Wealth Hope Prosperity Positivity Nature	BLUE Cool Trustworthy Reliable Corporate Calm Relaxing Generic Neutral	PURPLE Luxury Status Royalty Nobility Church Romance Spirituality Imagination	GOLD Prestige Luxury Tradition Prosperity Triumph Energy Sun Power



17 Dior flagship Taipei101, By Peter Marino,2012



18 Hugo Boss store in Glyfada, Design by Hollin & Radoske, 2015



Color Abstract

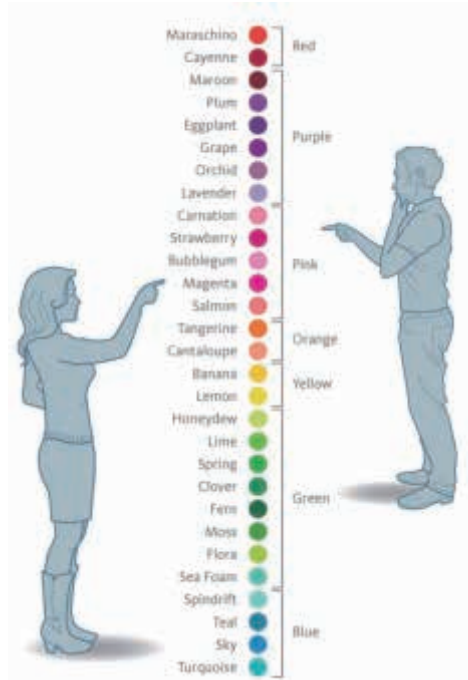


Color Abstract

A study that came out of Brooklyn College led by Israel Abramov found that women tend to be more adept at discriminating among colors than men. The study also found that women and men "saw" and ascribed differing shades/hues of color even when shown the same objects. Researchers believe that this is because males need a longer light wavelength than females to see and perceive the same shade of color. Longer wavelengths are linked with warmer tones like red, orange and yellow. Men are likely to see all warm colors a little "redder" or warmer than women do; however, they also perceive fewer differences generally.

17-18 Different Gender have various color preference. Many fashion brand consider about the gender factor as a crucial tool to attract their customers. For instance, Boss retail store always use the neutral color with blue, green etc., while Dior use red and purple for female customers.

19 Women could percept more colors than men.



20-21 Color influences perception of the taste. The store design and Packaging of Starbucks use the brown color to evoke the taste of the coffee



Color Abstract



20 Starbucks-Coffee-Packaging, 2018



21 Starbucks-Reserve-Roastery-Milan-Italy, 2018

22 The Psychology of color red in an interior space



Red, the most physical color in the spectrum, associated with the heart and blood, the color red has been proven to raise the heart rate and energy level.

In interiors, red is always used to make in restaurants to increase appetite or in logos associated with food. In residential design, a red wall might create a warm cozy feeling, or create an oriental stylish.

Red Survey Association
Fire, passion, power, love, energy, angry, sexy, lust, blood

Presence & Distribution

The effect that a material produces in space is related to its dimension and color intensity. For example, a brass button decorated on furniture, a brass plate used on the wall, and a space completely wrapped in brass space, the effect will be different. From small to large, a material changes his role from an object to a subject. In the interior design, different combinations of colors and proportions give the space different styles and feelings. [18]

Some designs use very few colors and materials to express the simplicity of space; some designs use different materials to make the rhythm of light in the same color ; some designs use a variety of color contrasts and material changes to create rich effects. Any design method is irrelevant, but it directly affects people's perception and experience of space. In the interior design, the combination of colors and materials can make people feel calm and relaxed, or excitement and pleasure.

Figure23. Ladurée is the French pastry brand famous for the delicious macarons. India Mahdavi use the contract accent color cover the wall and furniture, the space emit a sense of sweet , pleasant and light-hearted.

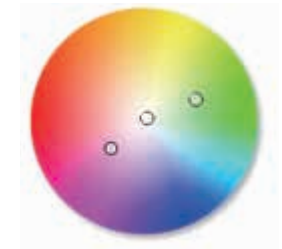
Figure24. In contrast to Martin Creed's installation, and in response to David Shrigley's ironic, sometimes unsettling works, India Mahdavi has created a soothing, monochrome interior,soaked the place in an audacious Hollywood pink to modernise the archetype of the brasserie.

Figure25. Set on the undiscovered island of Vieques with 30-acres of beachfront property, Guests can escape to this beautiful island for **adventure and leisure**. The accent color like the dimond in the sand, as color points contrast with the neutral ambient colors. Create a **unbending feeling**. Which stimulate people's vision time by time .

[18] Karen A. Franck and R.Bianca Lepori , *Architecture from the inside out* , Wiley-Academy,2007



23 Ladurée's latest shop in Geneva, Design by India Mahdavi, 2017



24 Mourad mazouz restaurant in London, Design by India Mahdavi, 2016



25 W Hotel Retreat & Spa on Vieques Island Design by Patricia Urquiola, 2011



26 Villa, Belgium, Design by Oliver Dwek, 2018



27 S-Apartment, Paris, Design by Oliver Dwek, 2017



Color Abstract



26-27 Oliver Dwek is one of the architecture famous for the Neutral color performance. Figure 14 is a villa surrounded by nature landscape. Inside the house, Oliver Dwek use nature color and material with soft texture, to create the relax atmosphere. Figure 15 is apartment located in the city, and the color design inspired by the city color, Oliver Dwek finish the wood in black color with texture, use leather, metal, black polished ceramics to demonstrate the feeling of urbanism.

Color Material Finish & Emotion

The eye and light are in direct relation with each other. Since color only exists in the brain, it is the eye's job to receive the reflected light waves and transmit the wavelengths to the cerebral cortex. Color comes from light. The use of colors in interior spaces is like the translation of abstract color schemes, theories and meanings into real materials, surfaces, experience. Lighting interact with materials, the reflection of its surface and surrounding objects play a factor in how color is perceived. The interior space effects the perception of color directly through artificial lighting. [19]

"Some qualities may be described by nouns like the types of material used—concrete, bronze, wood, steel, and glass. But these may have been modified in order to create particular sensations: the concrete polished and the bronze tarnished, the glass etched or bent and plaster shaped and smoothed." [20]

Materials and finishes have an evocative nature. Each person has a preconceived idea about a certain material's functional and perceived value. For instance, minerals like diamonds, crystal, glass and precious metals such as gold, platinum and titanium are at the top of the list when it comes to high real and perceived value. And a number of contemporary finishes try to emulate visual characteristics of original precious minerals and metals in order to evoke a feeling of high end. [21] When we want to create a rich and luxurious feeling for the interior space, we will consider gold and crystal, however due to the budget constraints we rarely use real gold, so we choose gold coldr finish to represent luxury. There are many materials that can express the look of gold, such as gold leaf, brass, gold painting or gold lacquer. Their reflections on light is completely different, and different finishes of a material will produce different effects, such as brass, polishing and brushing present completely different results under the light.

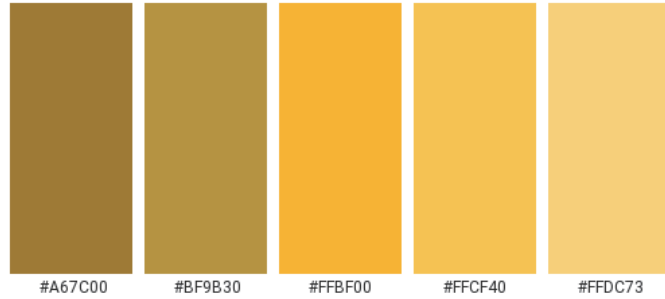
[19] Independent Study, *The Psychology of Color in an Interior Space*, Feb17 2014

[20] Karen A. Franck and R.Bianca Lepori, *Architecture from the inside out*, Wiley-Academy, 2007

[21] Liliana Becerra, *The fundamental principles of CMF deisgn*, Frame Publishers, 2016

COLOR

Gold Character
 Prestige
 Luxury
 Tradition
 Prosperity
 Triumph
 Extravagance
 Energy
 Sun Power



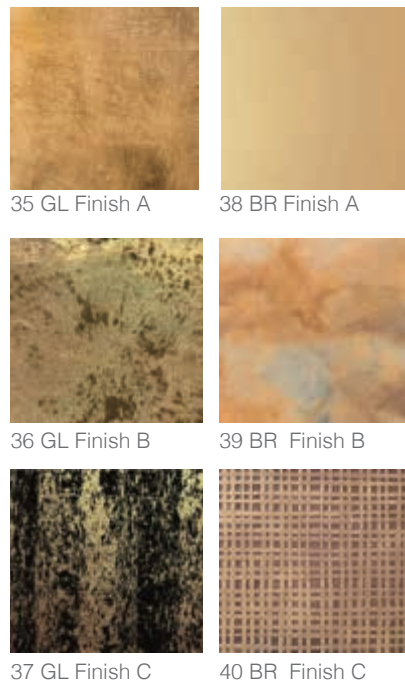
28. 24 Karat Gold Color Scheme

MATERIAL

29-34 Material Examples In Gold Color



FINISH



35-40 Example of Finish Treatment

Materials and finishes have an evocative nature. For instance, Gold evoke a feeling of high end. In the interior design, always use Gold color materials to create the luxury space instead of real gold. Like Gold leaf, Brass, Painting etc. Different finishes will display the effect more precisely. Such as figure 35 is more traditional and elegant, while figure 37 create more natural and artist feeling. And figure 38 create more reflection, figure 39 looks soft and natural even it is metal.



41



41-42 Fondazione Prada Milano, Design by Rem Koolhaas' firm, 2015

To add emphasis to this older structure, OMA carefully clad the building's entire exterior in 24-karat gold leaf. "It was actually a last-minute inspiration, to give value to a seemingly mundane and simple element," said Koolhaas. But we discovered that gold is actually a cheap cladding material compared to traditional claddings like marble and even paint. " To me the most exciting and now visible effect of it is how the gold and the reflected light of gold contaminates the whole environment," he added. As the light changes the effect of this small intervention is really noticeable through the complex."



43-44 Dolce & Gabbana, Gold Restaurant, Milan, 2011

Gold as the unparalleled symbol of money and luxury is not the theme here, according to their official web description gold is here to emphasize upbeat and sunny color, translating into taste for beauty and sensual pleasure. The Gold color was achieved with metal in polish finishing, the reflection to the environment under changing light create a gorgeous effect.

Form and Material

Shape may change the effects certain materials generate, modifying their characters. A curved iron bar is softer than a straight one, a wooden beam cut at a 90 degree angle seems harder than a trunk-like one. Glass can look like water or solid crystal depending on its shape. Shapes speak their own symbolic language. Diverse materials support different shapes and qualities in order to express better the intention of design.[22]

The design of the form in interior space, could not be separated from the color material and finish. Depending on the features of materials, certain manufacturing process can be more suitable than others and offer a specific range of possibilities for the creation of form, surface finish or color. Therefore it is crucial to explore and to understand each material's own aesthetic and functional manufacturing potential. [23]

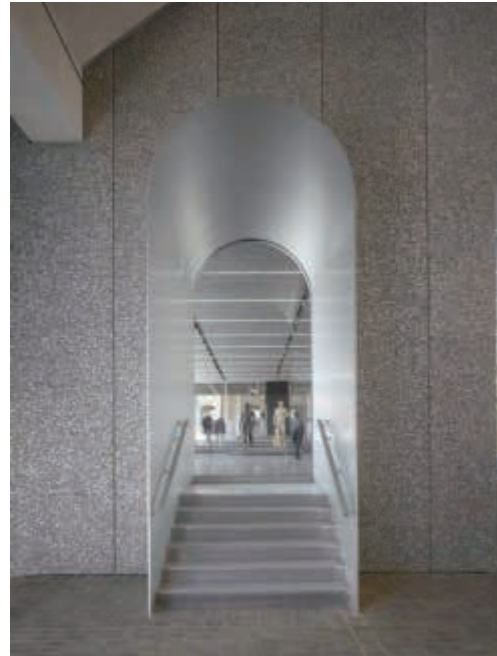
Before working on the forms, we never come up with a clear shape, but try to figure out how to make it or how to finish it, the way we create a surface is the way we create the form. The effect that we can achieve when molding a curved surface with metal, wood, marble and glass is different, and even the same shape, with different materials and color performance will bring people to different perceptible experience.

[22] Karen A. Franck and R.Bianca Lepori, *Architecture from the inside out*, Wiley-Academy, 2007

[23] Liliana Becerra, *The fundamental principles of CMF design*, Frame Publishers, 2016



45 The arijiju residence Kenya
By Nicholas Plewman Architects, 2016



46 Fondazione Prada Milan
Design By Koolhaas' firm, 2015



47 Arbor Restaurant Hong Kong
Design By Yabu Pushelberg, 2018



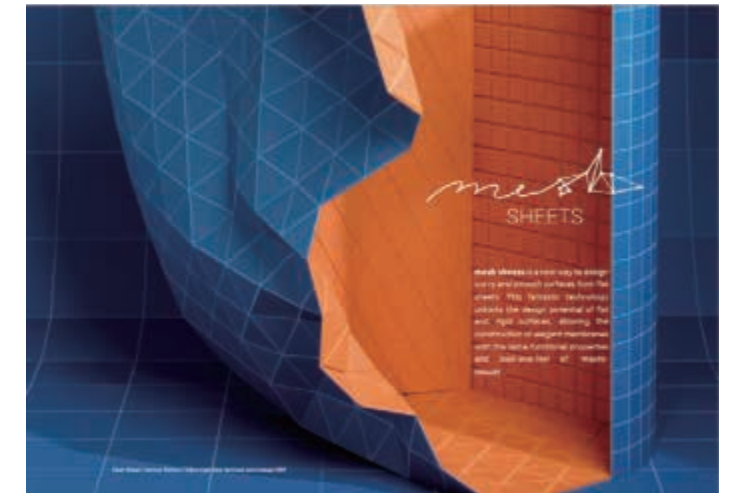
48 Five Palm Jumeirah Dubai
Design By Yabu Pushelberg, 2017

Figure [45] use the brick and earth build the arch corridor, it displayed the traditional architecture structure, emit a rough, ancient feeling, make the people feel relax and close to nature.

Figure [46] emonstrate a industry feeling with metal to achhive a arch shape, the finish of the mateal is soft and it create a modern technology return to the ancient style. simple, elegant, luxury and delicate.

Figure [47] creating simple elegant curve line finished by pure white painting, looks clean and cozy .

Figure [48] is the Luxury hotel designed by Yabu Pushelberg they use the wood to cover the arch hole, create a soft warm elegant corridor, the form combine with the material and craft perfectly.



49 Wood-Skin material, Design by Andrea Tellatin, 2013

Nowadays, new technology and materials makes the design more easier to achieve a special effect. With these mesh sheets, it is possible to create organic and flexuous shapes out of any material. Both strong or light 3D effect within a rectangular frame module, also in the new quiet acoustic version.

TACTILE

50 Tactile Image



Our sense of touch is completely and integrally connected to how we feel and how we communicate. This is probably why we call our emotions feelings. There is a direct correlation between touch and our emotions. Through touch, we gather information about our surroundings and get bonded with spaces or other people, we gain feelings, and build a sense of trust.[24]

When we enter a space, our activities are accompanied by a series of touch. We feel the curve of the door handle when we are opening the door, the smoothness of marble when we are walking on the floor, the grain of wood when we touch the table, the softness of the sofa and texture of the textile when we are sitting down, the heat of a cup of coffee, etc.. Through touch, we experience the hardness, smoothness, temperature, texture, and shape of an object in the interior space. [25] We communicate with the space through touch, feel the identity of the space, and then the brain will judge and affect our emotions.

“Studies on touch preference over the years have generally yielded the same results: Certain textures can call up specific emotional states - the sense of calm coziness, for example, that comes from stroking the fur of a cat, or wrapping yourself up in a fleecy blanket. We like things that are soft or smooth; we dislike things that are jagged or sharp; depending on what we're feeling, we experience a mild sense of pleasure or displeasure. Research has shown that these preferences can have measurable effects, influencing our moods and how we relate to others.[26]

[24] Toknowinfo , *Our sense of Touch and Our Emotions*, Owlotion, November 3, 2017

[25] Beatrice Lerma, Claudia De Giorgi, Cristina Allione, *Design and materials. Sensory perception_sustainability_project* , FrancoAngeli ,2013

[26] Cari Romm , *The people who store their emotions in their fingertips*, May 22. 2016



51 Room Mate Giulia, Milan, Design By Patricia Urquiola, 2016



52 Das Stue Hotel, Berlin, Design By Patricia Urquiola, 2013



53 Celosia Screen, Patricia Urquiola design for Mutina, 2018



54 Gentry Sofa Design By Patricia Urquiola for Moroso, 2011



55 Earthquake 5.9 Collection Reuses Materials, Design by Patricia Urquiola, 2013

The Spanish designer Patricia Urquiola brightens up the international architecture and design scene with her unique work. She skilfully combines styles, patterns and materials. Her floral décor and sensuous haptics take us by surprise, stimulates the curiosity. Her creations always inspire people to touch.

OLFACTORY



In interior design practice, smell seldom receives attention. However, smell has a strong association with feeling and it influences people's activities. The sense of smell is closely linked with memory, probably more than any other sense. Odors lend character to objects and places, making them distinctive, easier to identify and remember. The design of the interior space is to create a wonderful experience, leaving a impressive memory. Therefore the design of the smell becomes very important. [27]

According to Dawn C. Buse, Ph.D., clinical psychologist in the Department of Neurology at Montefiore Medical Center, "the first time that we experience a particular scent, we associate it with events, people, and emotions of the time."

Since ancient times, there have been three main designs for odors. One is to remove unpleasant odors, such as the stench of garbage and excrement. The application of chemical materials in modern interior design leads to the volatilization of toxic gases, which seriously affects people's health, and the elimination these harmful effects. Eliminating the pungent smell is drawing more and more attention from people. Another scent design is to bring an special odors into the space to create an atmosphere, such as religious incense to create mystery, and spa aroma to have a relax. Another is the treatment of physical and mental illness through odors, Officina di Santa Maria Novella in 1221, established in Florence by Dominican friars. Cultivation of medicinal herbs to treat the sick and dying, and modern aromatherapy are increasingly and widely publicized and accepted. [28]

The successful case of using the olfactory strategy to build a brand image is a Starbucks. Starbucks shop can spread a coffee scent the day before the opening, which can't be dispersed in people's minds for a long time.

In ancient China, people used aroma wood to make furniture. For example, camphor wood is a traditional rare and precious wood that exudes a special rich aroma that lasts for years. In the contemporary era, an interesting case is the store of Shang Xia Brand designed by Kengo Kuma in Beijing China Traders Center. Pu'er tea bricks are built into the wall, exuding a special fragrance.

"Nonetheless I grew up in a traditional Japanese house, I used to sleep on the tatami mat, I used to seat on stones, enveloped in the smell of tatami, the smell of the clay wall, and I fell them as parts of my body. That kind of deep experience reflects my design. "Kengo Kuma talk about the materials and architecture design, during an interview by Andrea Crudeli, in Jun 3, 2016 .

[27] By anonymous author, *Fifth Sense, Psychology And Smell*

[28] Anna Barbara, Anthony Perliss, *Invisible Architecture: Experiencing Places Through the Sense of Smell*, Skira, Milan, 2006



57 58



57-58 Listening to incense, Kyara, the most valued kind of aromatic wood



61

61-63 Shangxia Beijing store, Design by Kengo Kuma, 2012

The brick wall made of Pu'er tea, and the air is filled with a faint aroma of tea, which is a unique impressive experience for the retail space.



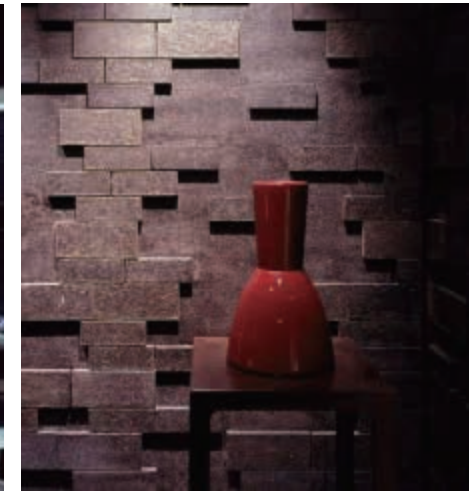
59 west elm Naturalist Homescent Collection-Canvas



60 Aroma Diffuser SD Series - SCENT-E
Acrylic panel touch screen, simple and stylish. Connected to HVAC or fresh air fan coil unit, or can be used independently for wall mounting. Easy to install, easy to implement, suitable for different space environments.

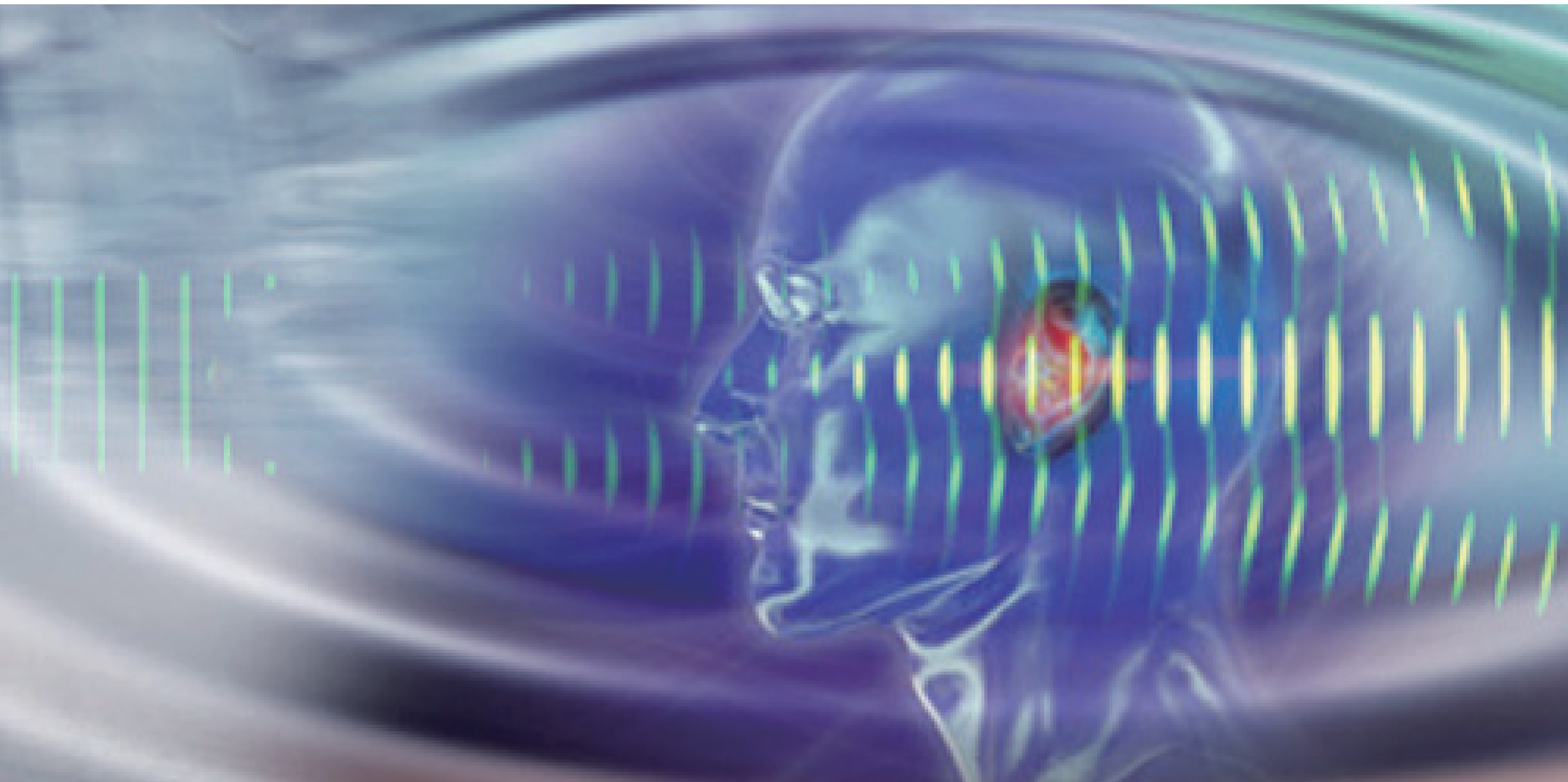


62 63



HEARING

Hearing image



It has been known since long time ago that there are powerful connections between sound, music, emotion, and memory. The acoustics is both an art and science for interior design .

Interior acoustics is about the airborne sound inside rooms, it studies how it propagates and interacts with the room's surfaces and objects. But it's also about our perception of the room's acoustic properties.

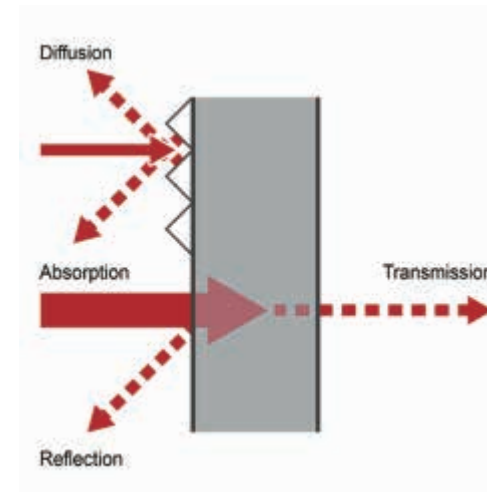
Three things can happen with the incoming sound energy: Reflection. A Hard Surface, Such As Concrete, Glass Or Wood, Acts As A Mirror For The Sound Wave And Thus Reflects It. Absorption. A Sound Wave Can Propagate Into A Porous Material Where It Is Transformed Into Heat By Viscous Friction. Scattering. The Sound Wave Is Reflected In An Unordered, Almost Random, Way. [29]

In interior space, there are two kinds of sound, one is the unwanted noise, the other is a décor elements like music or Indoor water fountains, the sound of trickling water and Soft music could create very calm and relax atmosphere.[30]

The selection of proper materials in interior design is very important for designing an enjoyable acoustic environment. For example, design of a restaurant, if it is too quiet the customers will feel uneasy worrying that the next table can hear everything they're saying, if it is too noisy, customers will irk diners who can't hear each other over their hors d'oeuvres. To design an elegant dining space, we could avoid using too many hard materials, in order to reduce the reflection, besides playing nice background music can be an option too.

[29] Praveen Mishra „Importance of INTERIOR ACOUSTICS for Architect and Interior Designer AUG 8, 2015

[30] General, Interior Design: Focusing On The 5 Senses , August 29, 2013



64 Reflection, sound absorption and sound insulation

Sound may be absorbed, transmitted or reflected. When a room boundary, such as a roof, floor or a wall, is hit by a sound wave, some of the sound energy will be reflected, some is absorbed within the material and some is transmitted through it, as illustrated by the figure .The proportion which is reflected, absorbed or transmitted depends on the shape of the material or the construction hit by the sound wave, and the frequency of the sound. Based on this, three acoustical parameters can be defined.

65



65-67 SNOWSOUND FIBER TEXTILES
Caimi Brand, Italy Acoustic Material

The patented Snowsound Fiber technology is based on soft interwoven polyester acoustic fibers that are inherently fire-resistant. The interaction between Snowsound Fiber and air allows controlling reverberation while adjusting the environment's acoustics with precision taking advantage of installation modes, product's surface and distance from the wall. This reduces the annoying acoustic reverberation improving quality both of life and of work. The choice of different Snowsound Fiber materials and the installation modes allow a selective absorption at precise ranges (low, medium, high) or a more uniform absorption at all frequencies.

Snowsound Fiber materials have been tested according to UNI EN ISO 354. Snowsound Fiber's behavior varies based on the selected material and the installation mode and can reach "A class for sound absorption".

66



67



68

68-71 Under Restaurant, Norway, By Snotetta, 2019

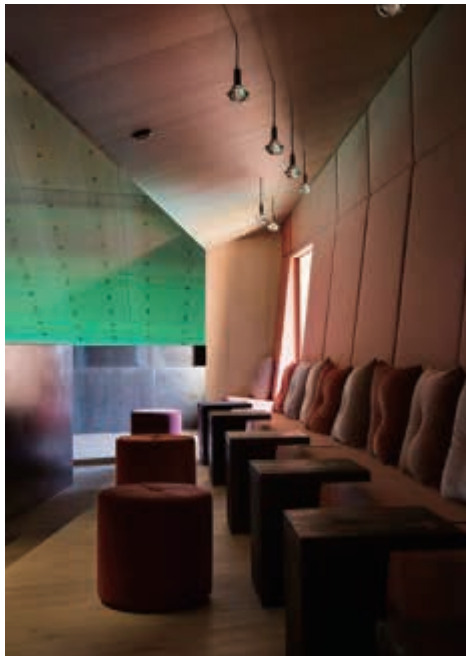
The Under Restaurant located at Norway's southern coast, is an underwater restaurant. If the weather is bad, it's very rough. To create a safe cozy dining environment have to treat the sound well.

In the main dining room, terrazzo flooring is paired with deep blue and green hued acoustic panels, the fabric lining, natural materials like oak, good acoustics and lighting all together created a nice atmosphere.



69

70 71



We all know that people's five senses are connected and mutually influential. they send the signal to the brain and help it to make decision that affect people's emotions and memories. At the same time, emotions and memories can also affect people's five senses experience.

In the development of interior design, people usually pay more attention to the expression of vision, and often ignore the experience of other senses. While the design of the interior space is not only for people to see, but more importantly for people to use and experience. Whether it is for living, entertainment or consumption, the body interacts and communicates with people and objects of the space. Through watching, touching, listening, smelling, etc., people encounters a series of feelings, such as feeling relax or nervous, feeling excited or calm, etc..

As people's requirements for life quality are getting higher and higher, nowadays interior design does not only demand to satisfy the function but also require to fulfill people's emotional needs. By analyzing the important influences of color, materials, styling, etc. on people's senses and emotions, based on targeting and function in the design process, interior designer should first consider their target, that is to say for who to create what kind of atmosphere, what sensory experience could satisfy the needs of function and emotion. Then in order to achieve this purpose, there will be corresponding solutions, color design, material selection, spatial forms and so on.

In general, in the interior design process, we must balance the five-sense experience and functional facts, and master the emotional elements such as colors, materials, lighting, etc., and integrate function, aesthetic, and sensory experiences into the interior space.

**DESIGN
FOR
HUMAN BODIES**



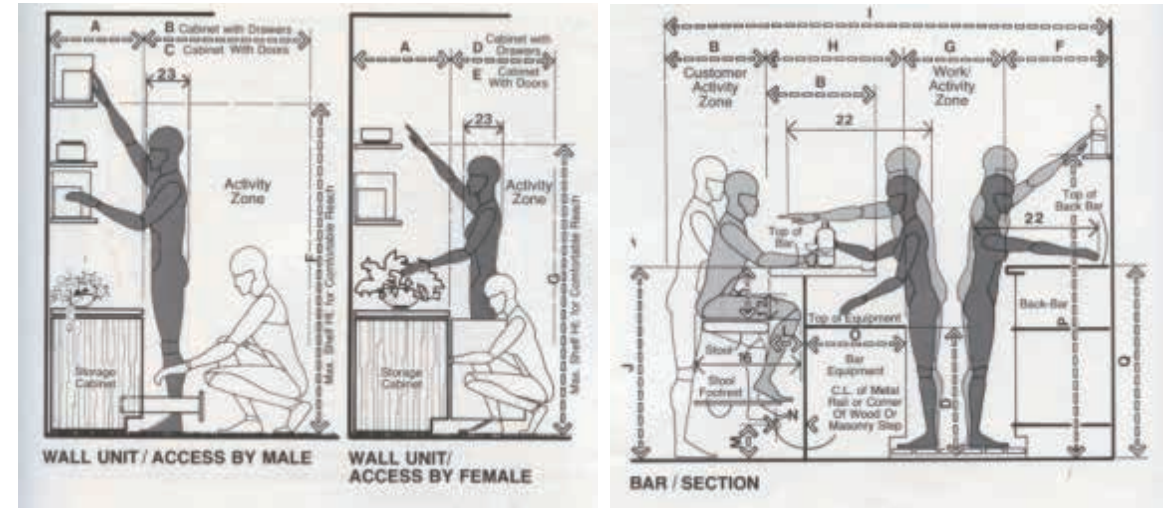
72 Vitruvian Man, Oliver Burston

“Design responds to body’s positions, gestures, and belongings, in doing so, welcomes its presence . The body, in turn, enjoys engaging with its surroundings- touching them, hearing them, moving parts of them”[31]

People's activities are closely connected with finishing materials, movable furniture, carpets, textile, living accessories, electrical equipments, etc. in interior space. For instance, we are walking on the floor, sitting on the sofa and watching TV, sitting in a chair to eat, sleeping in bed, writing or working on a desk, storing clothes in a cabinet, every object gives memories or stories to us. No matter a painting or a vase, it plays a specific role in the space. These elements directly affect people's quality of life and emotions.

For example, the height and hardness of a seat will affect the physical and mental state of the user. If the seat is higher and harder, the user feels more excited and tense. [32] If the seat is lower and softer, the user feels easier and more relaxed. Such as the height of the bar chair normally is around 750 MM height, the person almost stand when they use the stool, it is more encouraging to people to go to dance. While the height of the dining chair is about 450 MM, which is convenient for dining. The height of sofa or lounge chair will be lower, some even lower than the regular size, such as outdoor recliners, sometimes is less than 300MM height. Ergonomics and emotion effect both are the key factors to be considered for designing a particular space, and creating a special mood for the different activities.

[31] Karen A. Franck and R.Bianca Lepori, *Architecture from the inside out*, Wiley-Academy,2007
 [32] Susumu Masuda, *The anatomical chart of homes*, Ekusunareji, 2009.



73 Image from Human Dimension & Interior Space, A Source Book of Design Reference Standards. By Julius Panero AIA ASIO and Martin Zelnick, AIA ASIO, 1979
 As research, there are lots of books and publication about the ergonomics, mainly for designing objects for maximum efficiency, comfort and safety. But lack of the relationship between position and emotion of people.

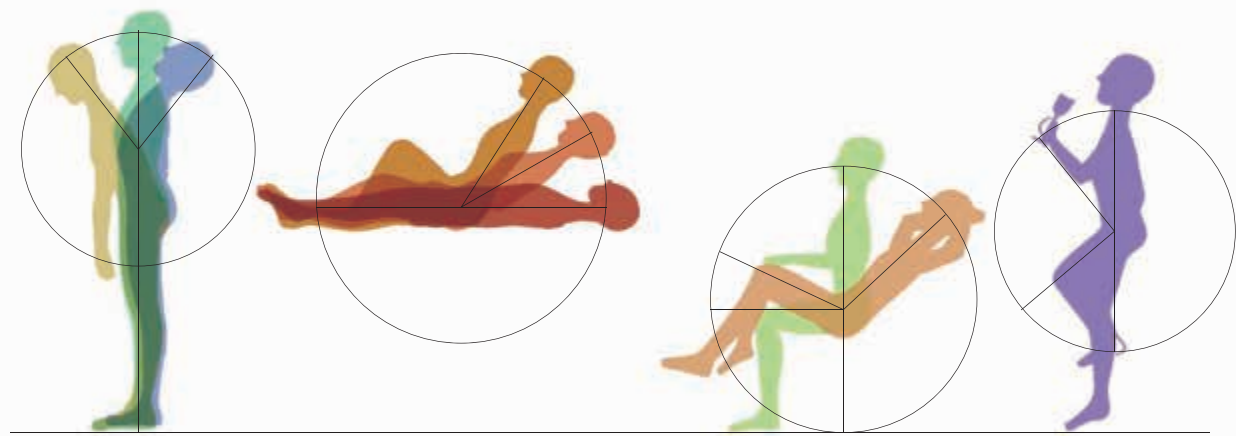


Diagram G Position Influence Human's Emotion



74 People standing in front of the bar, sitting on the bar stools feeling excitement and happy even during late night.



75 People lying on the low soft sofa, feeling very relax and cozy, someone nearly fall asleep.

Human activities also include moving and operating of objects. The weight and volume of the objects will affect the experience and emotion of the user. For example, designing a restaurant, when people use the dining chair, they have to move it. If the design of the dining chair is very cumbersome, it will be uncomfortable when it is lifted up and seated, and it will affect the mood of eating.

In one word, interior design works for people's living activities. The elements which influence most people's experience and feeling are those objects with which users have interaction, such as loose furniture, floor coverings, etc. In addition to the ergonomics consideration during design process, it is necessary to specify the dimension and scale in various space, to create different atmosphere and the sensory experience. People interact with these objects, change their posture and position of the body, therefore to have different feelings which also affect their mood. The scale and the dimension of the furnitures can not be simply generalized.

Furnitures for a serious and solemn atmosphere and the ones for a relaxed and casual atmosphere would appear totally different.

How to Design a High Quality Sensory Experience in Interior Space ?

Based on the first chapter's research and analysis, it is clear that elements such as color, material, finish, etc. have an important influence on the sensory experience of people, which closely impact people's emotional experience. Therefore, the design of these elements is paid more and more importance. In the design industry, it has already emerged relevant professions. Among them, the CMF design approach and FF&E approach are two of the most interesting ones. CMF design emerged in industrial design field in 1980s, it focuses on the color, material and finish design. Along time, it has been developed into an independent profession, providing color, material and finishes solutions not only for industrial design, but also for other field such as fashion, interior and architectural design. FF&E design is a profession derived from the hotel interior design, master all the aesthetic elements and the contents that influence peoples' sensory experience.

This chapter will focus the research of the professional and design methods of CMF and FF&E design, in addition, will compare and analyze these two professions in search for a proper way for creating pleasant living environment with interior design.

CMF Design

Color
Material
Finish

76 CMF Design Image from Design Group Italia CMF LAB



76

What is CMF ?

Color, Material and Finish design is an emerging professional discipline which focuses on designing and specifying colors materials and finishes to support both functional and emotional attributes of products .It is an integral process that runs in parallel with the physical and technical design of products. In some industries, it is considered a fundamental part of the industrial design process itself. Identifying the most adequate materials and finishing technologies to ensure the best possible product performance is at the core of CMF design.[33]

77 Clino Trini Castelli

CMF Design was coined by Clino Trini Castelli in 1980 for a strategic project carried out for the American Herman Miller company.



CMF Design was coined by Clino Trini Castelli in 1980 for a strategic project carried out for the American Herman Miller company, Clino Trini Castelli was one of the most innovative Italian designers of his generation. [34]

The demand for CMF design expertise has increased in recent years partly because consumer product manufactures becoming aware of the great potential in diversifying their product portfolio at a relatively low cost, while still maintaining a similar or the same product shape, functionality or tooling .In this case, CMF design works as a key avenue to create a sense of novelty and higher value propositions within an existing line of products. From a marketing perspective, CMF design is a valuable tool when it comes to positioning products, collections and categories according to market tiers and consumer segmentations; as it allows for the creation of emotional connections, added value and the fulfilment of certain human aspirations such as beauty and belonging.[35]

In the field of interior design and interior architecture the main focus is on large-scale environmental solutions and installations where materials and finish choices are expected to last longer and to create bold visual and environmental impact. This is a professional discipline with its own line of design principles, requirements and regulations.

[33] / [35] Liliana Becerra, *The fundamental principles of CMF design*, Frame Publishers, 2016

[34] Online Article: *A master of anticipation* Author: Giampiero Bosoni, 13 September 2016



78 This is the first book that outlines the key principles of this emerging discipline. The Author Liliana Becerra is an independent design strategist, professor, writer and curator based in Los Angeles, CA, United States.

There are different professional areas to master within the field of CMF design. All of them are complementary to each other and there is no definite boundary between them. They are color design, color development, material design and material development, Surface and finish design, Strategy and development, Trend forecasting, Storytelling and marketing. [36]

Surface design is also considered an important part of CMF design, it focuses on the design of structures, patterns and graphics, which are then applied to products' surfaces. These include a broad range of natural and synthetic laminates, paper, textiles, carpets and upholstery utilized for home furnishings, apparel, wall coverings, floor coverings and decorative papers—mostly present within in the hospitality and the interior design industry. [37]

Nowadays, CMF designers participate in various projects such as product design, interior design, and architecture, branding, fashion. Like CMF Lab of Design group Italia and Japanese CMF design company Feel Good Creation.

[36] / [37] / [38] Liliana Becerra, *The fundamental principles of CMF design*, Frame Publishers, 2016

CMF design should be conducted in parallel with interior design and development so that it can support and enhance physical aspects such as scale, form and functionality. [38]

As the book of Liliana Becerra who is a CMF design professional described, CMF creation include 6 steps :

1

Information Gathering :

the first step consists of gathering as much information as possible about the (product) project to be designed. To help have a insight related to functional and targeting, and project location context.

2

Establishing a Narrative :

Storytelling is a compelling way to communicate the design in order to engage clients and ultimate consumers, through key visual elements and concrete messages. Use the power of Trend tracking, creating personas and Mood Boards.

3

Creating A CMF Strategy :

Carefully considers how users relate to (products) interior space, through a series of touch points: from the first interaction to the long-term usability. The CMF Indicator is a thinking tool that created to guide CMF projects through the palettes and their corresponding design strategy .In this stage will consider about the Functional Attributes, Emotional Attributes and Neutral Attributes(Tactility and comfort) for the space.

4

Understanding Part Break Up :

Material selection should be done at the beginning of the (product) interior design process and not in isolation. Consider about the Permanent Versus Flexible Elements, Establishing First, Second and Third Read, Scale and Proportion.

5

Creating CMF Palettes :

Make a physical collection of samples or tangible representations of color material and finish corresponding the each of the space area (product part).

6

CMF Development :

The development phase is where the real possibilities of design and innovation are tested, approved and finally included into new mass (production runs) construction. In this step will Creating Technical CMF Specifications, Briefing and Working With Suppliers.



79 Example of Step 1 (Described in Liliana Becerra's book: The fundamental principles of CMF design, Frame Publishers, 2016)
Photo and backpack contents by cyclist Dice Yamaguchi
One way to gether information about a product is to ask consumers who already use it to empty their backpack and describe the contents' benefits.

80 Example of Step 2 (Described in Liliana Becerra's book: The fundamental principles of CMF design, Frame Publishers, 2016)
A collection of different images, objects, materials, textures and key words, selected to create and communicate an engaging narrative.



81

82



81-82 Example of Step 3 from Design Group Italia CMF Lab

The brief was to improve the communication of the daily, weekly and various other diary lines, and to emphasize the new shape of the packaging band. This was achieved by introducing unusual new colours for the spine and using the same colour as the cover of the diary for the front of the packaging band: black on black, red on red, and so on.

83 Example of Step 4 (Described in Liliana Becerra's book: The fundamental principles of CMF design, Frame Publishers, 2016) The Giro Reverb urban riding helmet was taken apart to visualize its materials and part break up.



83

84-86 Example of Step 4 (Described in Liliana Becerra's book: The fundamental principles of CMF design, Frame Publishers, 2016) These photos show, from top to bottom, the first, second and third visual design elements of the Audi A8.



84



85



86



87 Example of Step 5 (Described in Liliana Becerra's book: The fundamental principles of CMF design, Frame Publishers, 2016) Detail of a CMF palette targeting a collection of airplane seat covers, showcasing different materials with their corresponding samples and numbered specifications. Project by Studio Liliana Becerra Inc. for Zodiac Aerospace.



88 Example of Step 6 (Described in Liliana Becerra's book: The fundamental principles of CMF design, Frame Publishers, 2016) A professional is revising colour and finish samples provided by a paint supplier, based on a target sample request.

How to adapt CMF design in Interior design ?

A Case study from Design Group Italia CMF Lab

Step 1 : Concept

We with the client together to identify what is the correct looking feel for this project before starting design, to communicate with the client also to be a guide line, we start with the mood board to show the direction of the project, a concept, a full strategy, It involve color harmony, lighting, atmosphere, materials, experience in the space, for example, we select furniture objects and art works, books, objects here and there, these physical content, also in term of time, vintage things, new objects, to think by a surrounding space with art and culture, you can build the DNA for the space, with a storytelling.



89 Example of Step 1 (Described by Design Group Italia)
Color Harmony direction : Neutral color with accent color here and there.



90 Example of Step 1 (Described by Design Group Italia)
Story telling : mood board with people , furniture, books, fireplace, etc. , design the experience based on the physical context. To imagine the future atmosphere to be created.



91 Example of Step 2 (Described by Design Group Italia)
The inspiration mood board



92 Example of Step 2 (Described by Design Group Italia)
Matter color palette



93 Example of Step 2 (Described by Design Group Italia)
Color harmony from warm to cold

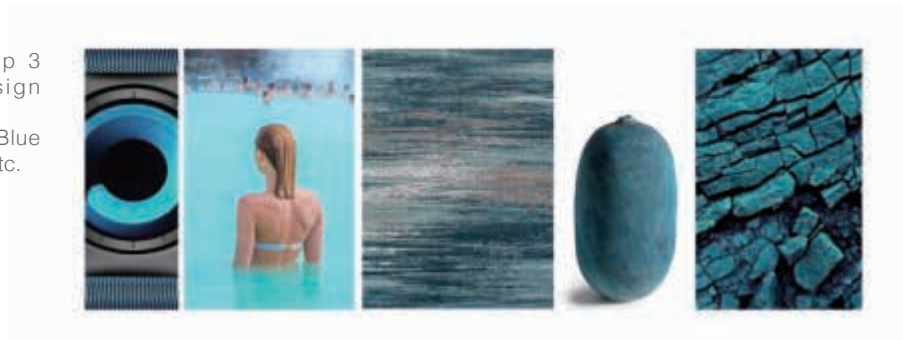
Step 2 : Moodboard

Then we start the project design with matter color palette, which the color picked form the surrounding of the project, which we inspired by this color palette, then we develop it to harmonious colors, the warm tones, the cold tones, all in the same area we have to manage there, all of these works basically on the mood boards, which bring together real materials, people, interior design, this is a inspiration, like a sensation.

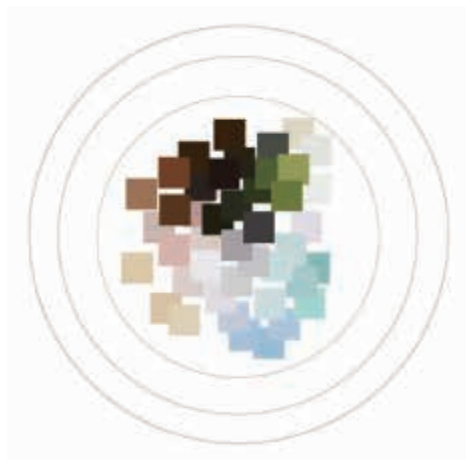
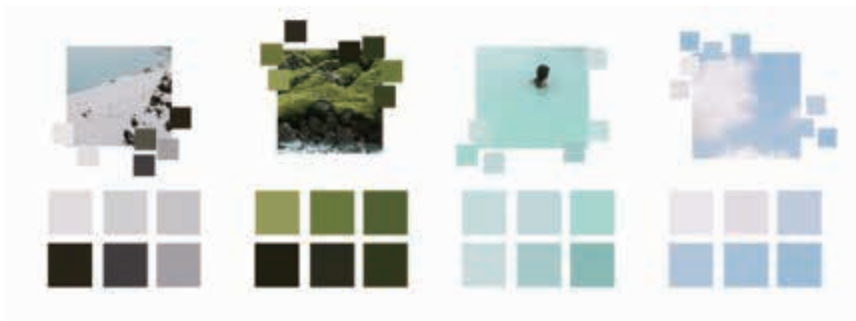
Step 3 : color palette

Then next phase, we developing actual color collection, we take inspiration images almost like picked it to define what are the colors make themselves. For instance, a color swatch. Then we map this onto a color table, then we reposition these colors, make a perfect balance. We have identity colors in the center the neutral color, the harmonious colors and accent colors.

94 Example of Step 3 (Described by Design Group Italia)
Inspiration images : Blue color swatch, carpet, etc.



95 Example of Step 3 (Described by Design Group Italia)
Color picked from the matter. The identity color from the landscape : the blue water and the green moos, the neutral colors are harmouny colors, the accent colors to have a contrast and make the space feel more rich



96 Example of Step 3 (Described by Design Group Italia)
There are identity colors, accent colors, harmouny colors. Reposition these colors, make a perfect balance



97 Example of Step 4 (Described by Design Group Italia)
For the restaurant area, use rich color form the palette to create a happy dining atmosphere

Step 4 : Interior Development

Then we integrate into the interior design, everything in the space should come from our color palette, then we go separate areas in different color identity, which we could use to choose materials, finishes, lighting, and so on. For instance, the suite will be more neutral and relax, the restaurant will be darker with more color, more rich atmosphere. Show everything in the rendering.



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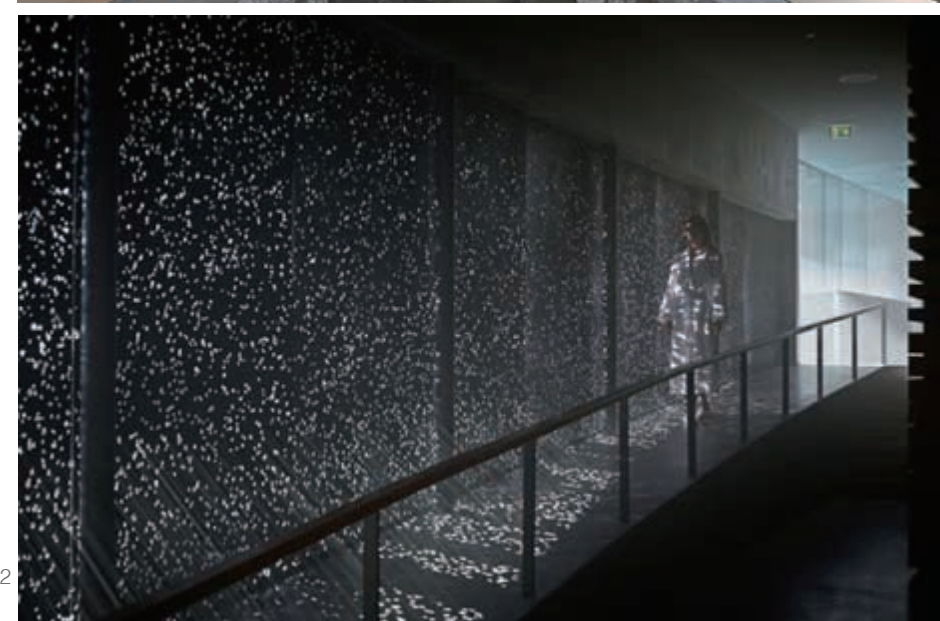
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103-107 Photos of Blue Lagoon Iceland Resort . From Design Group Italia
 Working in close, multidisciplinary collaboration throughout the project, They designed the experience, the interiors with the collaboration of Basalt Architects. They also took care of the overall design strategy, style direction, branding, graphic design and signage and product design, partnering with B&B Italia, Axor, iGuzzini, EFLA and Liska.

FF&E Design

Furniture
Fixture
Equipment

108 FF&E Design presentation By CCD for Courtyard by Marriott Zhengzhou Airport



What is FF&E Design ?

“FF&E” is a term that derives from the field of hotel design and is an abbreviation for furniture, fixture, and equipment. But the contents included in the FF&E design are more extensive, involving all aesthetic elements in interior space. [39] “FF&E Design” was first coined in the design of luxury hotels. In the hotel interior design, “FF&E Design” is highly valued. In order to meet the fast-growing market demand and ensure the design quality, the hotel interior design company specialized profession within the team. And gradually developed FF&E design system, then it emerged FF&E design professionals.

The first luxury hotel design company Hirsch Bedner Associates (HBA founded in the United States in 1965), some design companies are also developed with FF&E design profession such as Wilson associate (US), David Collins Studio (UK), Martin Brudnizki Design Studio Limited (UK), LTW (Singapore), and so on. Through direct or indirect investigations, I found that although they all hold this profession of FF&E, the specific division of labor between each company is slightly different.

[39] Leo , interview material No.13 , March 2019



109 Logo of Hirsch Bedner Associates, one of the first companies to market themselves as a hospitality design firm.

Since there is no historical documentary, it is difficult to verify the specific time and inventor of the FF&E profession. Also in the process of communication, companies develop their own characteristics according to their own team situation and competences. The FF&E design presented in this article is based on a set of design methods from HBA, the world's first international firm focused on luxury hotel design.

I have learnt FF&E design from Dome design consultants (DDC), The founder of DDC Wilson Tang has learned FF&E design from Jean Phillip Heitz, a French-American designer who worked as a project designer at the HBA in 1987-1990. Through interview , I found that the FF&E design system adopt in DDC was transmitted from HBA. The scope of DDC's projects also expands from luxury hotels to high-end restaurants, spas, clubs, and high-end residences.

From the interview materials, I investigate the definition and application of “FF&E design” by different design companies from different counties. This section will analyze FF&E design system and analyze how to design the sensory experience for interior space.

2018 Hospitality Giants

Our semiannual Giants business trend reports examine results over time but tend to focus on the previous 12 months. Before we begin that trip down short-term memory lane for Interior Design's Hospitality Giants, let's do something different: Pay tribute to just how big a business hospitality has become for design firms in general.

Ranking	Fees	Market	Growth
---------	------	--------	--------

Ranking

#	Firm
1	Hirsch Bedner Associates (HBA)
2	Gensler
3	Wilson Associates
4	Rockwell Group
5	Yang & Associates Group
6	Populous
7	Leo A Daly
8	Dalton Steelman Arias & Anderson (A Steelman Partners Affiliate)
9	HOK
10	ForrestPerkins Perkins Eastman

110. 2018 Hospitality Giants by Interior Design.

FF&E is the English abbreviation for Furniture, Fixture, Equipment, which usually refers to a facility that is not permanently connected to the structure of building. These facilities have a high degree of depreciation to a certain extent and take a significant part of the company's budget. These facilities are embodied in the interior part, the furniture facilities and the materials of the objects carried, etc. It is the part that most directly affects the interior design and style of the hotel.

FF&E include carpet flooring, wall coverings, loose furniture, textiles, decorative lighting, artwork and potted plant, etc. [40]

Technically FF&E stands for "Furniture, Fixtures, and Equipment." But as an FF&E designer, it means so much more. It includes, but isn't limited to, any piece of furniture, soft seating or case goods, carpeting, decorative lighting, and art and accessories. It's about layering. Having an ability to create a feeling through textures, fabrics, and lighting while understanding how they will impact a space and people's interaction with them. FF&E design and interior design is all connected rather than being separated they're intertwined to complement one another. [41]

FF&E (furniture, fixtures & equipment) has a major role in the whole design course of a project. There is a vast difference between an FF&E interior designer and a decorator or stylist. FF&E designer responsible for all moveable entities placed within a property. Such as decorative walls and ceiling fixtures which although fixed, still fall under the FF&E sector as a decorative item. FF&E is a comprehensive sector within the interior design process. [42]

"FF&E is a term derived from the hotel design industry, but it has been misinterpreted by many design companies. The general design company thinks that FF&E is same as soft decoration. In fact, FF&E contains all the materials and aesthetic elements of space design. [43]

[40] Wu Ye ,Research and design of FF&E in the interior design of star hotels Shanghai, Tong ji University, Spring 2007

[41] Fiona , FF&E Designer in Munge Studio, HOW WOULD YOU DEFINE FF&E? www.studiomunge.com

[42] By Tania Hoppe, Senior Interior Designer of GAJ,Decorator Or FF&E Interior Designer? <http://www.godwinaustenjohnson.com/blog/decorator-or-ffe-interior-designer/>

[43] Leo , interview material No.13 , March 2019



111 Weekly Material Mood by Studio David Thlstrup, 2016

FF&E

Finishing Materials + Furniture Fixture Equipment



112 BoConcept's Style Guide: Dusty Rose Mood Board for Interior Design Inspiration. 2018

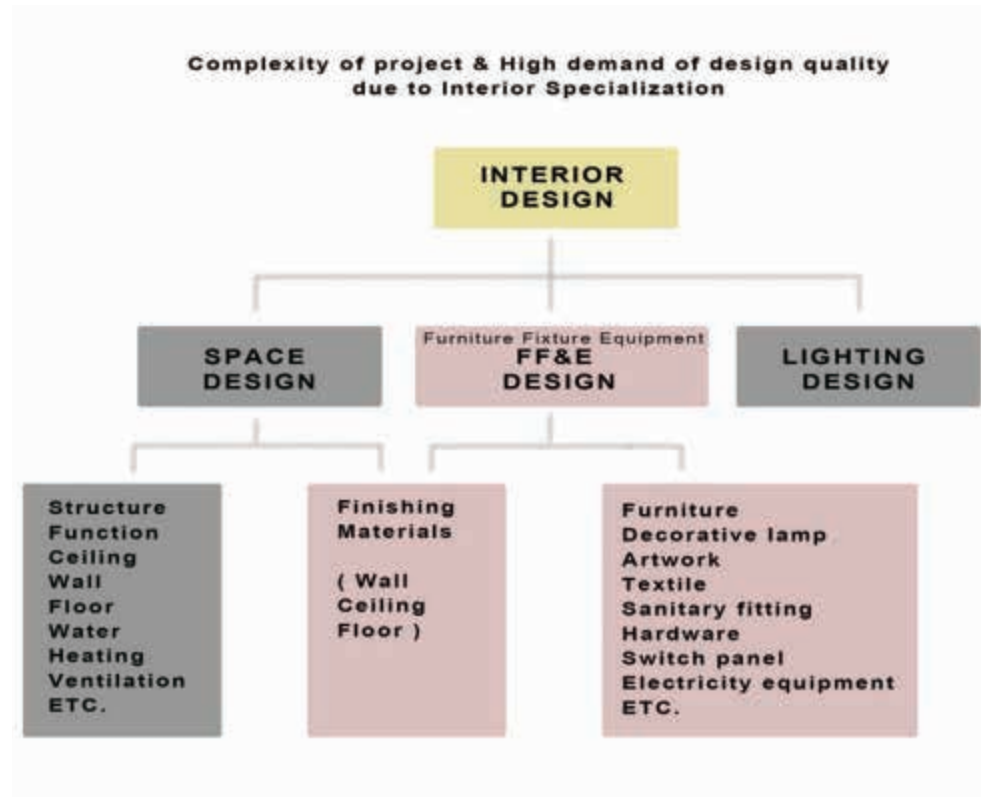


Diagram H What Is FF&E ?

According to the research and interviews, the scope of “FF&E Design” is more than the literal definition furniture, fixture, equipment. Actually the core content of FF&E design are finishing, furnishing, accessories, so if we call it “FFA” will be more clear. Except space design, all the rest of interior is belonging to “FF&E Design”

Finishing materials, furniture, artwork etc. these elements are close to people, they display color, texture of the space, play a crucial role on reflecting the style, aesthetic of the interior space, create sensory experience and produce particular atmosphere.

What Role does FF&E take in Interior Design Process ?

"All the famous Hotel design companies take FF&E design very seriously. Such as HBA , every project will be charged by a special FF&E designer . Since FF&E is one of the important elements of the hotel quality, it play a key role on hotel star level evaluation. FF&E design is becoming more and more important for hotel design , it reflects the brand culture , management level and local culture."[44]

"The general idea of HBA is that FF&E design is the director of the project. After a hotel is completed, all the parts you can see are FF&E, like furniture, lamps, curtains, carpets, and artworks. I think FF&E is the soul of hotel design."[45]

"In interior design, FF&E could make the space more charming, but it is neglected by interior designer. FF&E brings more living experience through the texture, color and close connection with people, such as the touch of the body and the visual experience. Interior design through FF&E can express style, design ideas and human emotions."[46]

"FF&E Design “essentially requires interior designers to save time for space planning and structural issues, but focusing on how to create a good atmosphere. It is to help you to grasp the quality of a project more accurately, to help you communicate with customers, and to make it easier for team in all sections to reach a consensus. It is a design method with strong logic.”[47]

"The concept of space come out following the existence of architecture. With the existence of FF&E, this space becomes a residence for people. It runs through people’s daily life, the way of decoration, style and function of furnishings, even the color and texture reflect the user’s unique thoughts, tastes, preferences, and behavioral habits. "FF&E" is the reflection of peoples’ soul."[48]

[44] Wu Ye ,*Research and design of FF&E in the interior design of star hotels Shanghai, Tong ji University, Spring 2007*

[45] Leo , *interview material No.13 , March 2019*

[46] Wilson Tang ,*interview material No.08 , March 2019*

[47] Liu Jin , *interview material No.15 , March 2019*

[48] Liu Qian , *interview material No.18, March 2019*

The key point of “FF&E Design” is universal consideration for the interior space arranging from whole to the details, paying attention on the art atmosphere of the space, generating unique feeling and experience to the people. Based on the rational use of the space and full paly of functions, it satisfies people’s emotional needs with the detail quality and aesthetic elements. FF&E Design was emerged from luxury hotel design, then this approach is spread into high-end residence, prototype room, high-ranking restaurant, club, Spa etc., to fulfill the high demand of living environment for people, it is an important guarantee of interior design quality.

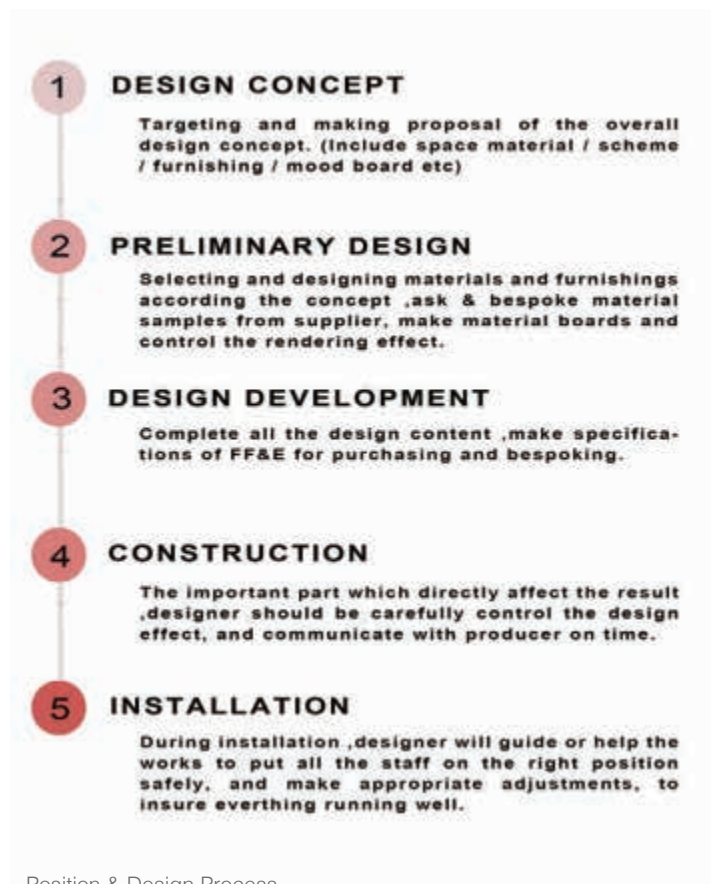


Diagram I Position & Design Process

"In LTW, FF&E design determines the direction of the whole project, because the design concept is the main work of FF&E designers, and it is also the time to reflect the designer's profession level. Good FF&E designers could penetrate the needs of client and integrate that into the project's design. Pinpoint the target and endow interior design with soul." [49]

"In my team, FF&E started from the overall design concept. The concept was developed through communication between our design team and the client, combined with market targeting. It is including the style, a story telling, color scheme and so on. In each design phase, FF&E and the space designer perform their duties with maintaining close communication. FF&E designers mainly focus on color, material, furnishing design. In addition to the finishing material of the space, it also includes furniture decorative lamp and other details that penetrate into the interior design." [50]

"FF&E is an important part of interior design. Its work is also involved from the beginning of the project, together with the space designer to complete the various stages of work. The design phase includes The Design Concept, The Preliminary Design, The Design Developing, The Construction phase and The Installation stage." [51]

[49] Li Xin yuan , interview material No.07, March 2019

[50] Wilson Tang ,interview material No.08 , March 2019

[51] Yang Dan , interview material No.11 , March 2019

Design Concept: "FF&E designers make concept proposal based on the project targeting, style, budget and other factors, which was provided by the project director and the client. The concept including local cultural characteristics, element extraction, color scheme, material application, decoration intent, and the overall interior atmosphere, space experience, lighting effects, etc. Explaining these elements with images and mood board as a tool, designers communicate with client to determine the direction of further design. Space designers focus on spatial analysis, floor planning, and flow in order to solve functional problems."[52]

113-114 Concept Design presentation example. Aman Club + Villas, Ma Qiao, Shang Hai -By Kerry Hill -2014. 82 is for Chinese restaurant, 83 is for drawing room.



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115-117 Preliminary Design presentation example. Shangri-LA Hotel Qin Huang Dao -By Hassel -2011. Pre-Function Area, 82 is Rendering, 83 is Material Board, 84 is Breakout Furniture concept proposal.

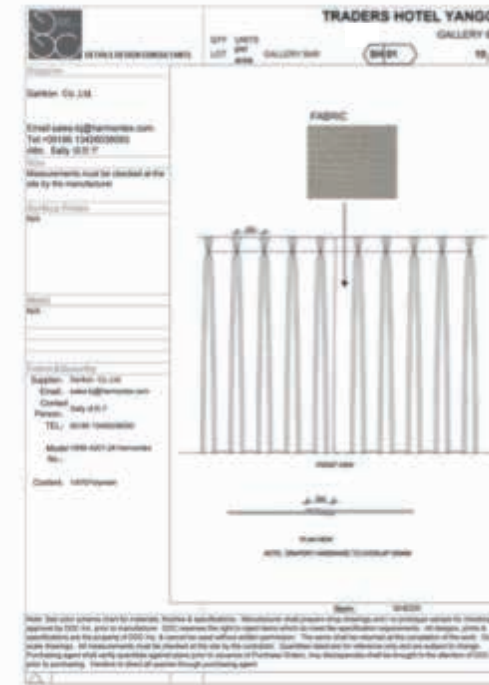
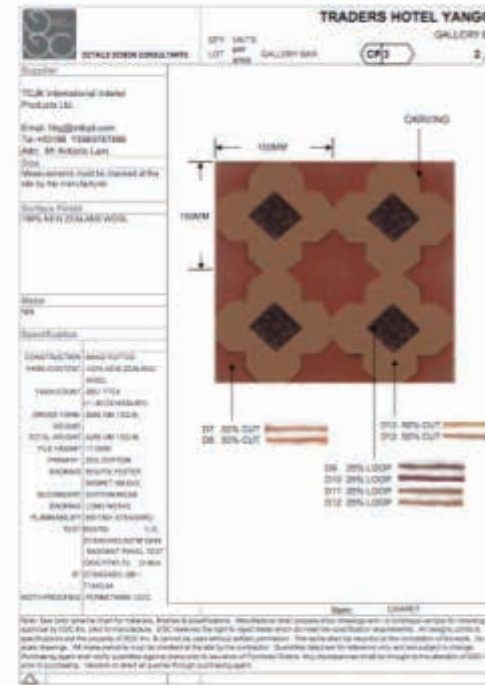


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Preliminary Design: "During this stage, according to the agreed design concept, the space designer begins to develop layout, the form of the ceiling, floor and wall, and to consider what kind of material could support the form. FF&E designers perform specific material selection, design the color and finish, furnishing selection and design, then integrate into the space design illustrated in the rendering. The overall effect shown by the rendering is basically same as the final appearance of the project."[53]

Design Developing: "This phase will complete all the design with details. The spatial design is reflected in the construction drawing, and the FF&E design is reflected in the FF&E specification. Because the construction documents involve many factors such as cost, product technic, construction time, final effect, etc., FF&E specification must be precisely described. According to the final drawing, FF&E designers have to communicate with space designer closely, making sure all the FF&E selections' dimension, material, quantity perfectly match the space design. "[54]

118-123 FF&E specification example. Traders Hotel Yangon, By DDC, 2011



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FINISHING MATERIALS SPECIFICATION

GALLERY BAR
TRADERS HOTEL YANGON
MYANMAR
Project#D110302
OCT.12.2011

ITEM NO.	ITEM	QUANTITY
001	GF101a	2
002	GF101b	2
003	GF102	8
004	GF103a	2
005	DWG103a	
006	GF103b	2
007	DWG103b	
008	GF104a	1
009	GF106	4
010	DWG106	
011	GF106	4
012	GF107	2
013	DWG107	
014	GF108	2
015	GF109	36
016	DWG109	
017	GF110	8
018	GF111	10
019	GF112	2
020	DWG112	
021	GF113	1
022	GF114	Open
023	GF115	Picture Lamp
024	GF116	Open
025	GF117	Open
026	GF118	Side Table
027	GL101	Pendant

118

119

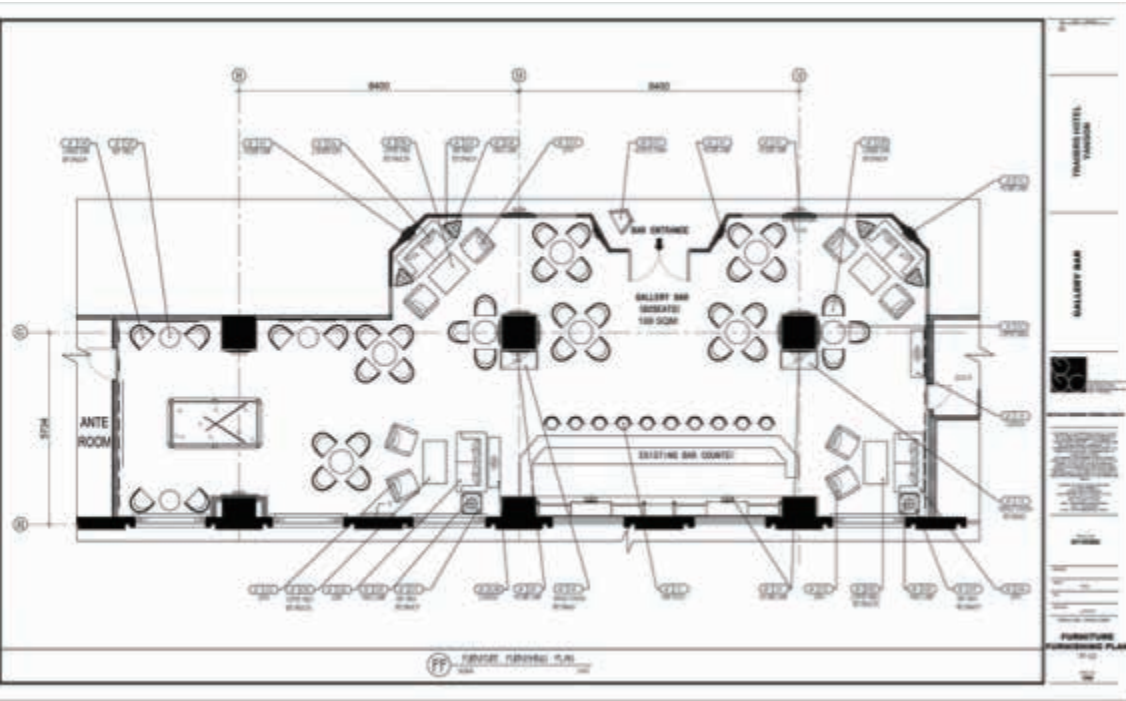
FURNITURE & LIGHT FIXTURE SPECIFICATION

GALLERY BAR
TRADERS HOTEL YANGON
MYANMAR
Project#D110302
OCT.12.2011

PAGE NO.	ITEM NO.	ITEM	QUANTITY
001	GF101a	2 Seater Sofa	2
002	GF101b	2 Seater Sofa	2
003	GF102	Sofa	8
004	GF103a	Coffee Table	2
005	DWG103a	Coffee Table Drawing	
006	GF103b	Coffee Table	2
007	DWG103b	Coffee Table Drawing	
008	GF104a	Console	1
009	GF106	Side Table Drawing	4
010	DWG106	Side Table	
011	GF106	Table Lamp	4
012	GF107	Side Table	2
013	DWG107	Side Table Drawing	
014	GF108	Table Lamp	2
015	GF109	Lounge Chair	36
016	DWG109	Lounge Chair Drawing	
017	GF110	Coffee Table	8
018	GF111	Bar Stool	10
019	GF112	Service Station	2
020	DWG112	Service Station Drawing	
021	GF113	Console	1
022	GF114	Open	
023	GF115	Picture Lamp	20
024	GF116	Open	
025	GF117	Open	
026	GF118	Side Table	9
027	GL101	Pendant	5

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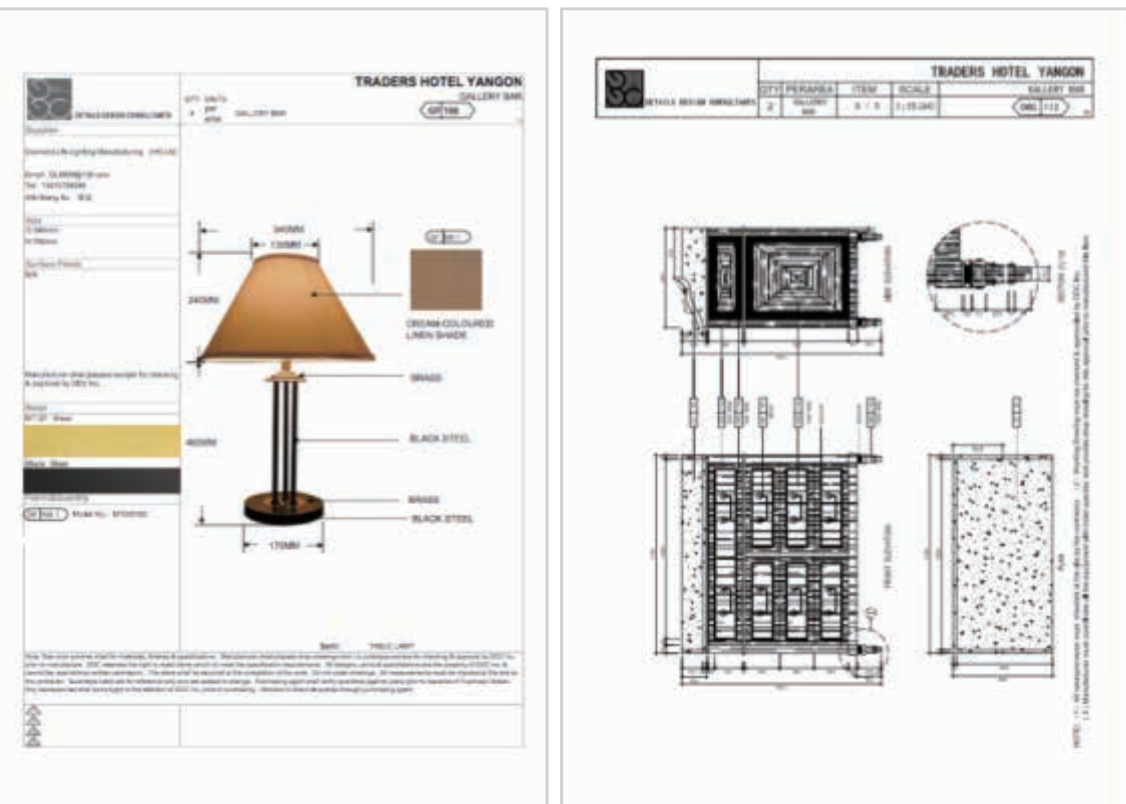
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Construction & Installation: "FF&E designers need to check technical drawings with bespoke manufacturers, and to follow the product process, making sure the design of color, materials, shape, details to be realized. Supervising the manufacturers, checking dimension on site before producing, assuring the fixture of furniture and lighting on proper structures are also job of this stage. Checking on site with the space designer and making adjustments until every object is put on site and working well, then the project would be completed."[55]

125 126



127 Example for Bespoke furniture technical drawing comments to the manufactory. Before product, it need several times communication through drawings with manufactory, until every detail was confirmed by designer.

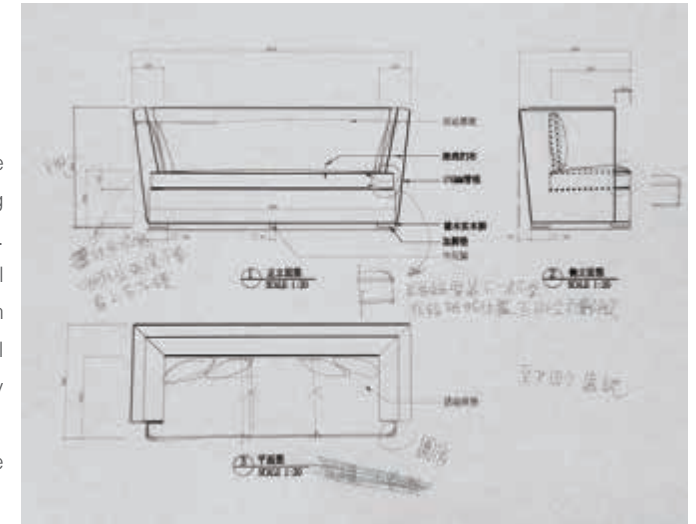
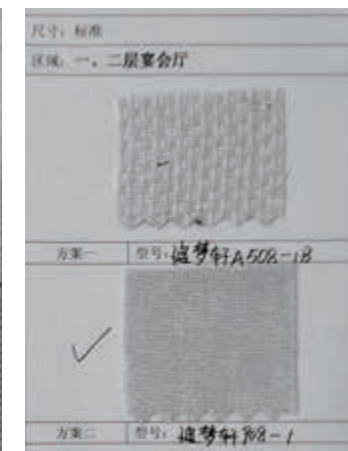


Image is from (DDC)Dome Design Consultrant Ltd. 2014



128 Example of material sample confirmation. Before product, the supplier need to send the materials samples to designer, after confirmed by the designer, the production could be start. To control the design effect.

129 Customed Carpet sample by supplier, from DDC, 2013
 Designer need to check Model testing from the manufactory and give comments, after the model is confirmed, it could be produced.

From the perspective of hotel interior design services, the general design work is divided into five phases: Planning, Design concepts, Design development, Interior design documents, Construction and installation. Some interior design services also include tendering contracts, which include carpets, fabrics, and decorations. Accessories, furniture and fixtures (lamps, decorative lighting, etc.), art work and crafts. It also includes design execution, which may be construction and installation, or it may include branded services specifically for hotel management.

During planning stage, considerations contain:

Location: site area, facade, environment, corridor requirements

Scale: number of rooms, facility range, space distribution

Intensive: concentration of buildings, architectural design, flow

Operation: customer requirements standard, service arrangements

Considering the market and site factors, as well as the client's requirements and operation methods, the planning stage should make a specific analysis of the space and put forward corresponding requirements. For example, public areas require spacious feeling, design open space could fulfill this function and provide flexibility; ballrooms and conference halls demand no columns; consider outdoor landscape elements; requirement of room standard decorations and compact units with modular area, etc.. [56]

[56] Wu Ye, *Research and design of FF&E in the interior design of star hotels, Shanghai, Tong ji University, Spring 2007*

"FF&E Design" is an important factor in determining interior design quality and budget control. No matter for hotel or other types of projects, FF&E design runs through the entire design process from beginning to the end. It is necessary to work with alongside the space designers, to complete the whole project, ensuring that high standards are met from space to detail. Especially in the concept design stage, FF&E design dominates the whole project. It is a media helping the designer communicate and persuade the client and guide the direction of the whole project development. Implementing the concept is an important guarantee for design quality.

To be noticed, when I say "FF&E design dominates the project in concept stage", FF&E refers to design content instead of FF&E designer. The figure who is taking a leading role in project usually is the project manager, usually depending on a professional capability on deep comprehending the need of client, precise targeting, thorough understanding of the trend and the project identity, excellent taste and discriminability, good at extracting culture elements, ability to use storytelling as a string to link all the elements with a clear logic, and skills to persuade clients. The design concept in FF&E design system is a systematic logical design thinking. The ability to master the design concept actually reflect the overall capability of a designer. An excellent FF&E designer can make a marvelous design concept and give a soul to the interior design.

In the concept stage, the concrete design has not start yet, while the concept is the essence of the interior design. After the design concept is confirmed by the client, the subsequent stages are implementing it into concrete, in order to realize the wonderful points in the concept into the various elements of a real interior design project. From space to decoration, from materials to lighting, every detail is guided by the concept to ensure that the final effect is consistent with what was originally expected.

What is the key point of FF&E design ?

As part of the interior design, FF&E is reflected in the detailed design and the parts which has most intimate contact with people. In the FF&E design process, several design elements in interior design should be considered: **space and function, scale and balance, color and texture, lighting and decorative lamps.** [57]



[57] Wu Ye, *Research and design of FF&E in the interior design of star hotels, Shanghai, Tong ji University, Spring 2007*

130-132 Brickell House Design by Yabu Pushelberg, 2014

The Huge glass window with grid pattern is a identity element, to be applied in the interior decoration, such as the marble floor, the huge screen etc.



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[58] Wu Ye, *Research and design of FF&E in the interior design of star hotels, Shanghai, Tong ji University, Spring 2007*

After communicating with architect, client, other consultants, while the planning direction of the space is clear, space designer start to draw the function layout and flow. In addition to understand the function, FF&E designers need to capture the unique elements of space, which may become the point of concept design and interior decoration. For example, in a lobby with a huge vertical space and plenty of natural light, design a window with two or more floors height and the curtain hangs until touch flooring. The emphasis on the proportion of the window is to combine the character of the space for creating a special experience. Different function and unique space elements will bring inspiration to interior design. The consideration of the FF&E scope should base on combining the spatial features and satisfying functions. For instance, in a long corridor space, it is necessary to alleviate the boring feeling caused by narrow long space, through changing materials and wall decorations, as well as lighting levels. In the fitness center, it includes a wide range of facilities and activities, such as swimming pool, gymnastics room, spa, and tennis court, etc.. The design of these areas should consider the distinction of specific facilities (dry area, wet area, children's area, etc.), finishing materials (materials selected for walls and floors, should be easy to maintain, some areas need wear resistance, warmth, elastic, impact resistance, etc. And other technical requirements (insulation requirements, installation of lighting and accessories, etc.) For meeting rooms and multi-function room, there are special requirements for sound environment and lighting effects. It is necessary to select appropriate acoustics materials, to use carpet covering the floor, to consider the flexibility to meet various usage patterns. [58]

“Using different volumes of objects makes the space design full of features and fun. If all things are the same scale, the result is boring, can be imagined. Exaggerating or shrinking the proportion is one clever decorative technique.” This is a description of the interior scale design by well-known British designer Kelly Hoppen . For interior design, proportional design is one of the important ways to express the feeling of space and specific style, such as spectacular or exquisite. The scale of elements such as decorative lamps, artworks, carpets, plants, etc. to the space and people are important factors to consider for FF&E design . If it is much larger than the proportion of the human body, there will be a grand feeling. In interior design, symmetry is a crucial design factor. It is one of the important solutions to achieve the uniform effect of interior space through furniture, decoration, finishing material design.[59] In addition, the design of FF&E should not only consider the aesthetics of the proportion of the space, but also the ergonomics to meet the functionality and comfort.[60]

[59] / [60] Wu Ye, *Research and design of FF&E in the interior design of star hotels, Shanghai, Tong ji University, Spring 2007*



133 Bulgari Hotel Shanghai Design by Antonio Citterio Patricia Viel, 2018
The scale of the the greeting desk, the sofa, side table, floor lamp vary from big to small , the contrast of the scale is an impressive image for the visitors.
The Portait on the dark wall with light color ,responding to the sofa on the other side,to create a balance feeling.



134 Bulgari Hotel Shanghai Design by Antonio Citterio Patricia Viel, 2018
The square element on the window , the cabinet, the bar counter, the lounge chairs, the carpet pattern are changing scale from big to medium to small, that create a rich visual effect, the floor lamp gives the space a sense of balance, avoid making the bar looks too prominent

The first chapter has analyzed the important influence of color materials on sensory experience. In FF&E design, color and material are the key elements to reflect style characteristics, local culture, spatial character and brand identity.

The color in the interior space is reflected by the materials. The contrast of different colors with same material and the contrast of different materials in the same color, or mixing up two methods, all could bring rich effects to the space, giving people different feelings and experiences.

The contrast of colors and materials under the lighting can create a rich space experience, and different artistic atmosphere. The texture of leather, polished metal and brushed metal under the light is different from the normal situation. The color of the material is also varied under different lighting. The same material will show different colors under 2000K and 3000k lighting, giving people different feelings. As Dan flavin's icon work , the use of neon lighting could color the space .

The texture of the finishing materials and textiles will determine the temperament of the interior space. For example, linen will create a sense of nature and leisure, silk will have a delicate and noble feeling, leather can create a rustic atmosphere, Vishnu wool knitted color rugs, khaki Palladian linen and Elephant-like cotton fabric are Indian-style.[61]

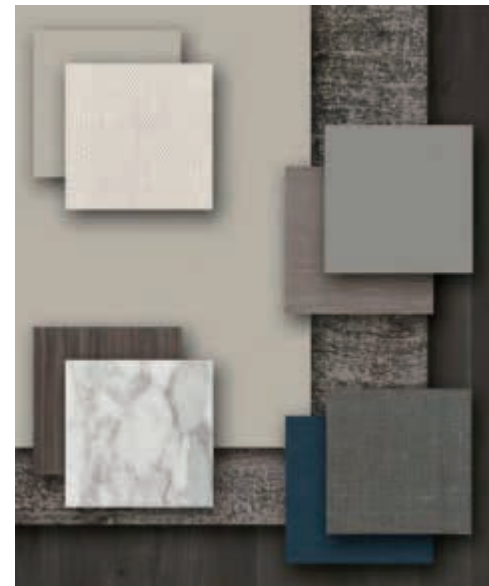
[61] Wu Ye, *Research and design of FF&E in the interior design of star hotels, Shanghai, Tong ji University, Spring 2007*



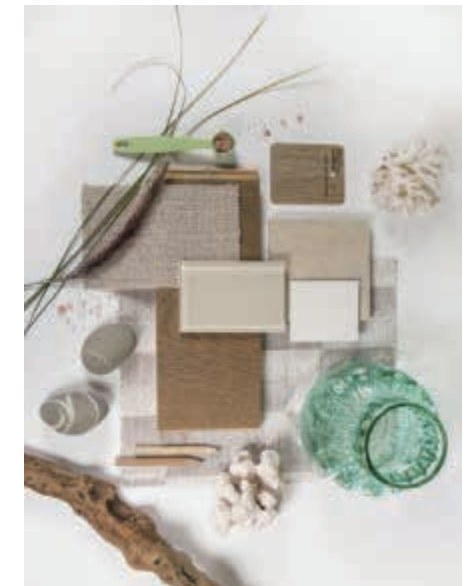
135 The red color, silk with oriental pattern display a Japanese Style.



136 The Sisal carpet and hemp textile with flowers and stripe pattern Exudes the flavor of the country side.



137 Neutral gray colors in different tones, delicate texture and finishes , marble , luxury and elegant.



138 Neutral stripes and loose patterns, light and dark colors, natural wood, black and white create a seaside resort feeling.

Lighting is the most glamorous design in interior design. Systematic lighting is typically done by interior designers and professional lighting consultants. In the overall design concept, the style and the indoor environment to should be created according to the function of different spaces, following the principle of lighting design, in order to create the corresponding artistic atmosphere. [62]

Richard Kelly summed up three main lighting design techniques: Ambient Luminescence, Focal Glow, and Play of brilliants. FF&E's design combined with responsive lighting techniques can produce rich or intense visual effects. For example, the natural granite stone wall surface can be highlighted by the light washing of the wall washing, which creates a natural and casual atmosphere.

Natural light is important in most space for human activities. such as the benefits of hotel rooms, often influenced by natural daylight and outdoor scenery. For the treatment of indoor light, it is necessary to ensure sufficient natural lighting, but also to pay attention to privacy, the use of light-transparent curtains or window screens can filter the glare of the daylight to achieve a soft effect.[63]

Decorative lighting consists of two parts, one is the light source, and the other is the material, structure and accessories of the decorative light itself, such as crystal chandelier, wire-wound ball floor lamp, shell wall lamp and so on. The lighting effect of the decorative lighting on the rendering of the space and the artistic beauty and texture of the luminaire are all important factors in the overall style and design of the FF&E expression.[64]

[62] [63] [64] Wu Ye, *Research and design of FF&E in the interior design of star hotels, Shanghai, Tong ji University, Spring 2007*



139 Barovier e Toso Showroo Murano, Metis Lighting design Associato Calvi Brambilla Architetti 2018. The Colorful Murano glass accessories displayed on the shelf with the high CRI lighting from the back, to rendering the right color and the crystal texture .

140 W Dubai The Palm Hotel, Installation chandelier Design by Ludmila Žilková of Lasvit brand, 2019

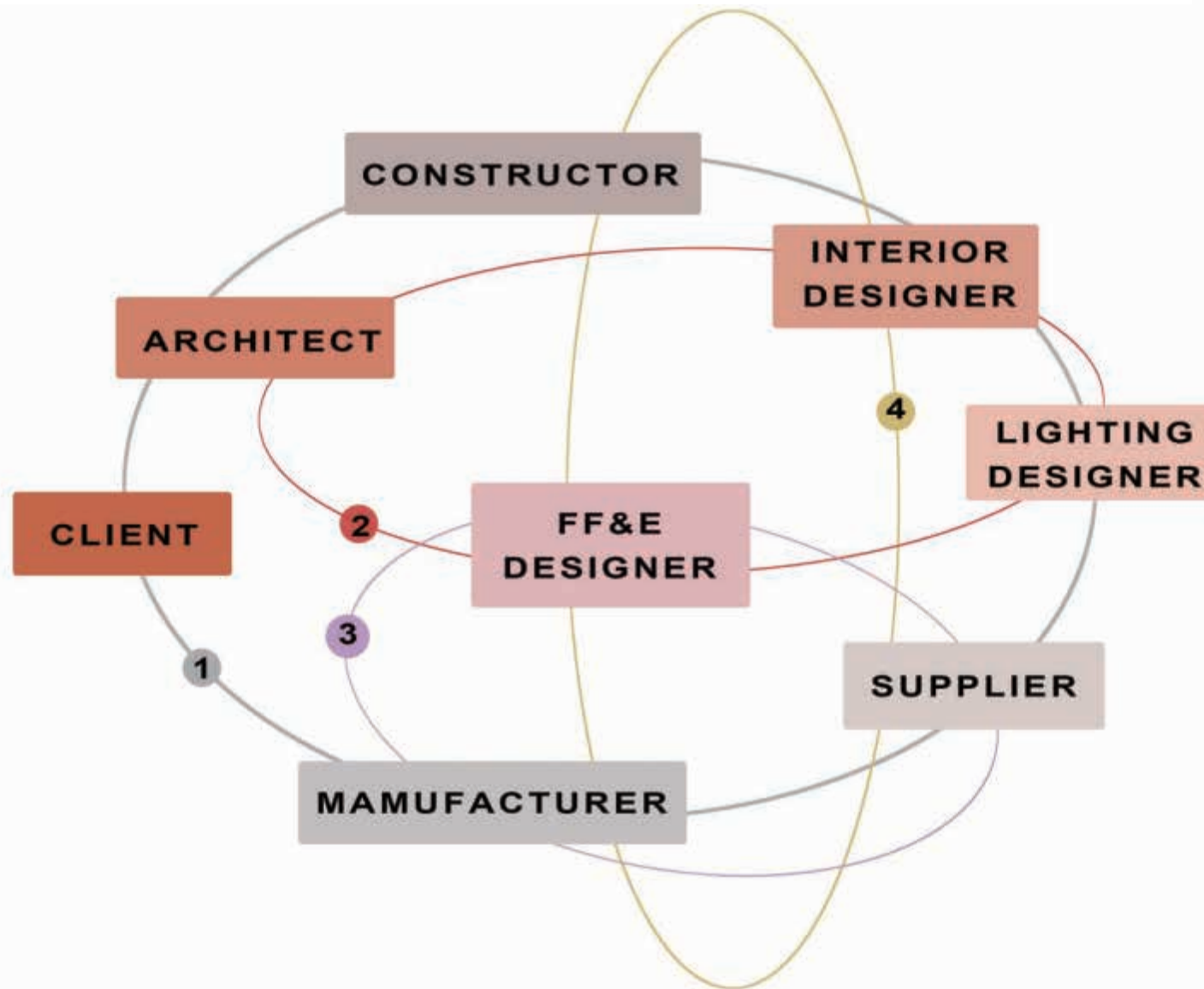
Walking through the spaces of the brand new W Dubai – The Palm hotel is a bit of a game, one where you look for the hidden design cues. The spirit of W is imbued into the hotel's very DNA, including the shape of sound which had inspired the new lighting installation called The Soundwave. The 30-meter long construction consists of 1213 glass pieces. Each piece has its own precisely stated place and meaning.

Many lasvit work are not only lighting or decoration, which more like a soul of an space



141 Doha Qatar Airways Premium Passenger Lounges, Design by Antonio Citterio Patricia Viel associate with Metis lighting design, 2014

The waterscape with lighting rendering, the reflection on the wall plays danymic pattern, enrich the huge empty wall, and create a comfortable elegant rest environment.



- 1 All the Sectors sevice for a Client
- 2 All the Sectors Cooperate in Design
- 3 Supplier and Manufactor support FF&E Design Process
- 4 Factors influence FF&E Design quality During Construction stage

"The quality of design are related with many factors, such as project positioning, construction cost, design scheme, post stage construction, project cycle and control ability of design manager. A project consists of architecture, interior design, decoration, electric machinery and structure and other qualitative aspects also affect the positioning of decoration. Therefore, there are many factors that can affect the presentation of decoration." [65]

"First of all, it is related with the personal accomplishment of the FF&E designers, the professional level and understanding of interior design. Second, the follow-up of the designer in the construction process, the timeliness and accuracy of audit proofing of the drawing, construction level of the coordination unit and the technology are the key factors. Finally, the site and on-site adjustment are also very important, which will affect the decoration quality and effect." [66]

"It is necessary to understand the client's inner needs and do a balance between the design effect and the budget. In addition, the supplier will influence the designer as well, the new collection they bring to the designers could give inspiration to the design, sometimes the supplier help designer to bespoke some special piece, that could be converted to new products of the brand." [67]

In conclusion, FF&E design quality are influenced by many factors, cooperate work and communication are crucial for the job. First the client who invest a project, and organize the team (Architect, Interior design, Lighting Design, Constructor, Manufacturer, etc.) the budget and demand of the client will directly influence the design. Secondly, FF&E designer, Interior designer, Achitect and Lighting designer are always collaborate and influence each other's work, particularly for an new project. Thirdly, the supplier and manufacture will supply the samples and products information to the FF&E designer, it is a big support for the FF&E Design, FF&E designer and Supplier will influence each other. Last but not the least, during construction stage, FF&E designer need to communicate with Interior designer, constructor, manufactor, supplier time by time, these factors will affect the final result directly.

[65] Liu Qian , interview material No.18, March 2019
 [66] Yang Dan , interview material No.11 , March 2019
 [67] Anna Barbara, interview material No.04, June 2019

The basic necessities of life include: clothing, food, dwelling, and traveling. The quality of life is reflected in all aspects comprehensively. The various design professions that serve people's life, no matter industry design, fashion design, interior design, architecture design, influence each other all the time. According to the productivity, the influence of economy, politics, culture, people's awareness, the design industry is constantly developing to meet people's changing needs of life quality.

The CMF design profession originally appeared in the field of industry design, and expanded into the interior design industry. It is a professional discipline with its over line of design principles, requirements and regulations. CMF designers need the support of space design background, have to collaborate with the architect or interior designer to achieve the ultimate results.

The FF&E design is a professional segmentation from the hotel interior design field. Based on the understanding of the space, it is focusing on the interior style, aesthetics elements and sensory experience of interior design. The content of FF&E design is more extensive and complex, and a well-rounded FF&E design professional have to be versatile in interior design, product design, art, textile design, lighting design, etc.

Through the interview, I realized that some design companies had to subdivide the FF&E professional since it is difficult to find a well-rounded FF&E designer. For example, LTW (Beijing)divided FF&E into material design and decorator. The decorator is in charge of design concept and furnishing design, while the material designer mainly help space designer to design finishing materials and make specifications. Within AB concept (Hong Kong), the design concept is dominated by the project designer, and the material designer and furniture designer assist the project designer to complete the detailed design. The focus of this paper is not on the way of professional refinement and division of labor, but how to enhance the design of the sensory experience in the living environment to elevate the value of interior design.

FF&E design and CMF design share many similarities. They are design thinking methods that focus on people's feelings and emotional needs. They have their own advantages because of the diverse backgrounds of the professionals. In interior design, we can learn the essence of these two professions and apply it to specific design practices according to the type of project and the characteristics of the team.

How to select the Materials?

Material design has a crucial impact on the final effect of a interior design project. In addition to the emotional attributes, functional attributes and neutral attributes, the cost and processing technology must be considered, making sure the design is realizable. [68]

First of all, we must ensure that the materials we design are available from the market or can be obtained through special customization. In order to facilitate the designers to select materials, instead of searching in the huge market, many design companies will have their own material collections, storage and display a variety of commonly used physical material samples from suppliers to support studying and designing materials. Since it is not easy to find the right material, color or finish in the limited samples, the designer needs to communicate with the supplier and the processing manufacturer time by time to confirm cost, manufacturing technique, time, etc. Request or customize specific materials, sometimes requiring many experimental proofs to achieve the desired results. [69]

In the interior design, as the lighting has an important influence on the performance of materials, it is necessary to consider the light environment environment, compare the physical material samples under different light sources, and finally work out the best solution.

[68] Liliana Becerra , *The fundamental principles of CMF deisgn* , Frame Publishers, 2016

[69] Yang Dan , *interview material No.11* , March 2019



142 Material Library of Dome Design consultants Ltd. Beijing , China



143 Material Library of LTW Designworks Pte Ltd. Beijing China



144 Materioteca Polimi



145 Material ConneXion New York

Except the company material collections, there are material libraries that serve the public, such as the Materioteca of Politecnico di Milano and the Material ConneXion from the United States.

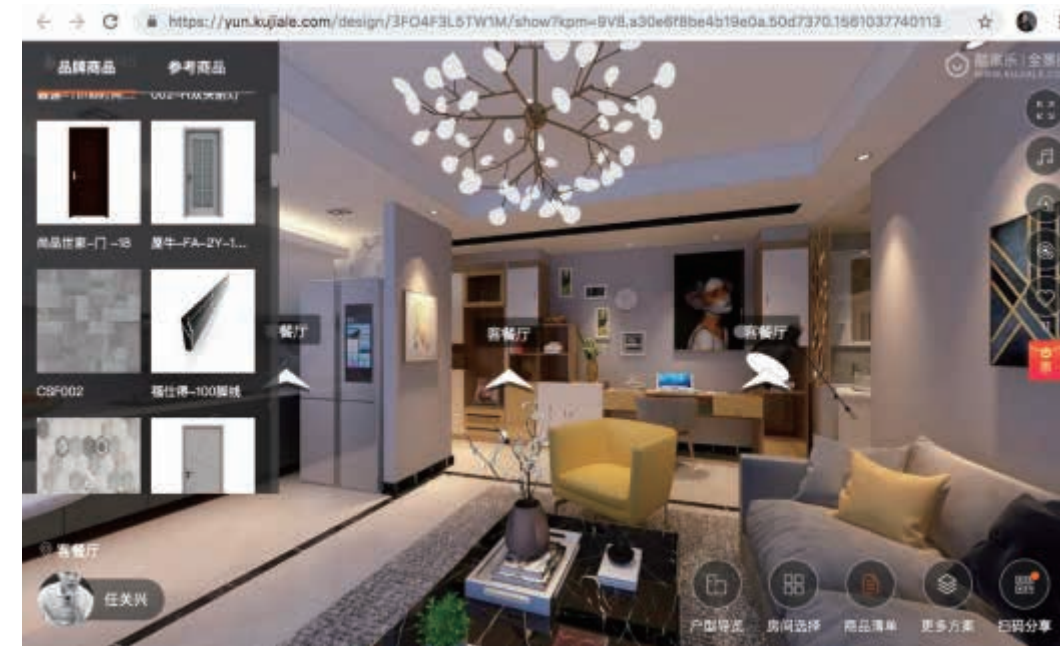
MATERIOTECA Materioteca , a documentation structure created within the Chemistry, Material and Chemical Engineering Department "Giulio Natta" (CMIC) of the Politecnico di Milano in 1999 , is a service present in the Durando Campus Library from 2014 . Materioteca is an educational archive of materials that includes more than 5000 samples of materials . The collection of samples , classified and cataloged according to criteria useful to the project , considering both the engineering properties that the expressive - sensory characterization. The collection is constantly enriched and updated through contacts with national and international manufacturers .

Material ConneXion is a single destination that completely revolutionizes the way designers interact with materials , They partner with the most innovative brands in the world , and their team of scientists works across industries, to provide the knowledge and expertise their clients need to make educated material and design decisions . They are equipped to advise on all aspects of a project ,from ideation ,to manufacturing , to final project . In short , they are disrupting the design industry , from conceptualization to implementation. They have branches in Bangkok, Bilbao, Daegu, Skövde, Tokyo and Beijing.

Nowadays, thanks to the developed Internet, there are more and more Digital Material Library, that we could find image or video resources with laptop or smart phone anytime and anywhere.

One of the most famous one is Pinterest, it is a social media web and mobile application company. It operates a software system designed to enable discovery of information on the World Wide Web using images and, on a smaller scale, GIFs and videos. The site was founded by Ben Silbermann, Paul Sciarra, and Evan Sharp. Pinterest has reached 291 million monthly active users as of May 2019.

145-2 Pinterest Application



145-3 www.kujiale.com/

Kujiale is an online information and design platform that offers information and reviews on businesses related to home decoration and furnishing. It was launched by Hang Chen and is operated from Hangzhou, China. 2011, and in 2013, the first version of the software was finished.

Kujiale is a home design platform powered by its superb cloud rendering technology, featuring excellent user-platform interaction aided by VR, AR, and AI technologies. They wish to enable its customers with the experience of "what you see is what you get". The platform is capable of generating home design plans within 5 minutes, home improvement renderings under 10 seconds, and perfected VR project allowing its users 360-degree real-time viewing experience for space the platform designed for them.

Fast forward to today, and the Kujiale boasts nearly 70% of China's interior design market.

Case Study Of FF&E Design
in Interior design project

146 Facade Rendering of Wu Tong Restaurant , Beijing, 2016



Wu tong Wish restaurant is a high-end innovative Chinese restaurant in Beijing, China. The client often travels overseas and is successful investor. He invested the first restaurant due to his passion on gourmet. Which located In high-end residential blocks, the per capita consumption is around 100 euro. There is a garden service for events like wedding ceremony and other activities, since the opening of the first restaurant, a group of loyal high-end customers, include many celebrities.

The client hopes to develop Wu Tong Wish to a chain brand. In early 2016, They rent a old building in the most prosperous center of Beijing, the Workers Stadium, and wanted to establish their brand identity through this new store, with a ambition to build a new landmark for this area, to attract more high-end customers.



147 The First Wu Tong Restaurant in Beijing, China. Photo by NM Design Ltd.

148 149



148-149 The original building of the new restaurant in Beijing Workers' Stadium
Photo by NM Design

3.1.2.1 Research

In the early stage, we communicated with the client many times to understand their inner needs and the culture of their brand. We visited the site to understand the original building and surrounding conditions, we did measurement and analysis on site as well.

The project is located in the Beijing Workers' Stadium, its southwest adjacent to the road connected with the east entrance of the Workers Stadium, northeast nearby the river. The scenery is very beautiful, surrounded by trees, and with convenient transportation, it's a quiet place in a noisy neighborhood. There is a high-class Chinese restaurant behind it. The competitive brands also helping attract certain customers.

Original building is Middle East style, it was lavishly decorated and used to be a high-level clubhouse. The building covers around 500 square meters, three floors with a basement, the top terrace and the open ground nearby the river on first floor can also be used. The original building has three fire stairs, two of which are exposed outside of the building. One main entrance with an elevator, two logistics exits.

3.1.2.2 Planning

The client plans to open three different restaurants in the same building, on the first floor is Chinese restaurant, on the second floor is Sushi, the third floor and the terrace is Italian restaurant with bar. They found Michelin chiefs from Italy and Japan. The lawn across the river was planned to hold weddings and other activities. The client hoped that these three restaurants can reflect the culture and quality of Wu tong, but it also makes people feel that they are three different restaurants. All three restaurants are open from noon, the bar in Italian restaurant will open until the early morning. In the design, we should consider how to highlight the brand identity and different catering culture at the same time, to ensure the integrity of the building's facade, it is also necessary to ensure that each restaurant operates independently, have their own special entrance.

3.1.2.3 Contract

Since this is the first time to cooperate with client, it is not easy to fix the contract. After many exchanges the client have more confidence in our team, and they finally moved by our concept proposal, and signed the contract with us. Our design tasks include renovation of the building, the interior space design, FF&E design, branding consultants. Due to the smooth development of the design process, the client trust us more and more, finally handed over the construction and FF&E purchase to our team.

Through communication with client and analysis of the first Wu tong store, we find the identity of Wu tong: the contrast of Eastern and Western culture, the elegant artistic atmosphere, the natural experience, that dining in the glass house and surrounded by the garden, a semi solid wall separated the noises and Wutong's courtyard, to create a quiet and private feeling to fulfill the emotion needs of high-end customers.

Combining the surrounding environment, the original building conditions, and the positioning requirements of the client, before starting the specific design, we considered the future atmosphere required by the target consumers for each restaurant. Though images, including identity definition, design language, sensory experience include color, materials, lighting atmosphere, space feeling, furnishing, service details, etc.. To create several mood boards to concatenate all the element into a complete design concept with a story telling, to guiding the entire design through a clear main line. It is the strategy. All the design will follow it.

The space designers planed and drew the preliminary functional plan and flows. Each of the three restaurants has its own entrance and gate. The original structure is mainly preserved and the façade is deconstructed to ensure the integrity of each angle. The conceptual design of the interior space combines their respective catering cultures to position and strategize each restaurant separately.

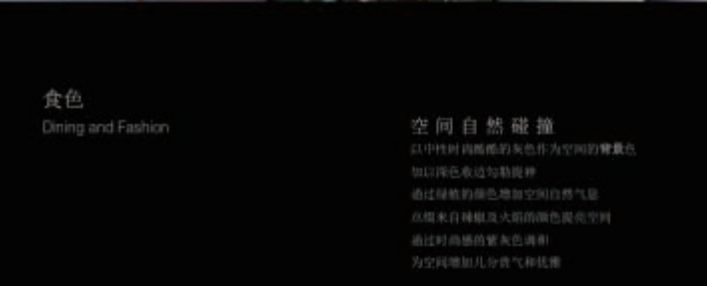
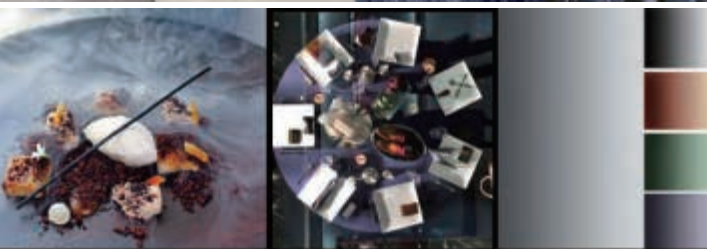
In this Chapter, I will take the Chinese restaurant as an example to demonstrate the interior design process, to analyze how did we design the sensory experience in this project.



150



151



空间自然碰撞
 以中性时尚而雅的美色作为空间的背景色
 加以深色表达勾勒线条
 通过绿植的颜色增加空间自然气息
 在暖米白桦根及大肌面颜色奠定空间
 通过时尚感暗灰色调和
 为空间增加几分贵气神秘感

150-151 We integrate the fashionable and advanced temperament of Wutong brand into the spicy culture of Hunan cuisine, to reflect fashion and passion. we get inspiration from extreme sports, such as sports cars, rock climbing, and flames, and extract oblique lines from them as design elements of the space decoration and furniture details.

152 Abstract colors from dishes and fashion art. Use different shades of neutral gray as the ambient color, dark color to highlight the details, the green color of the plants, increase the natural feeling, and the color of pepper and flame as the accent color to enrich the vision effect.

Combined with fashion trends, these colors are presented in specific materials, such as gray concrete, rough stone, natural materials in warm color such as rammed earth, wood, and dark metal mesh, rust iron panel and so on.

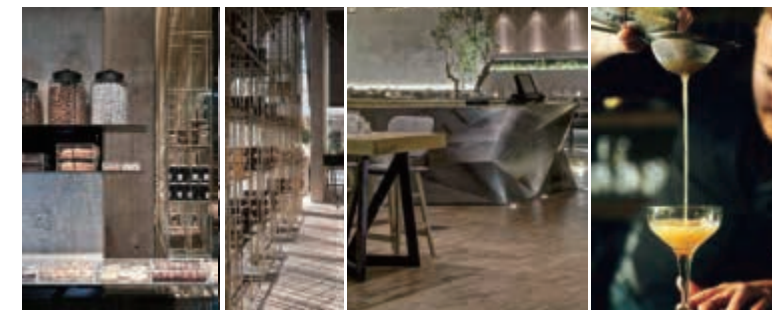
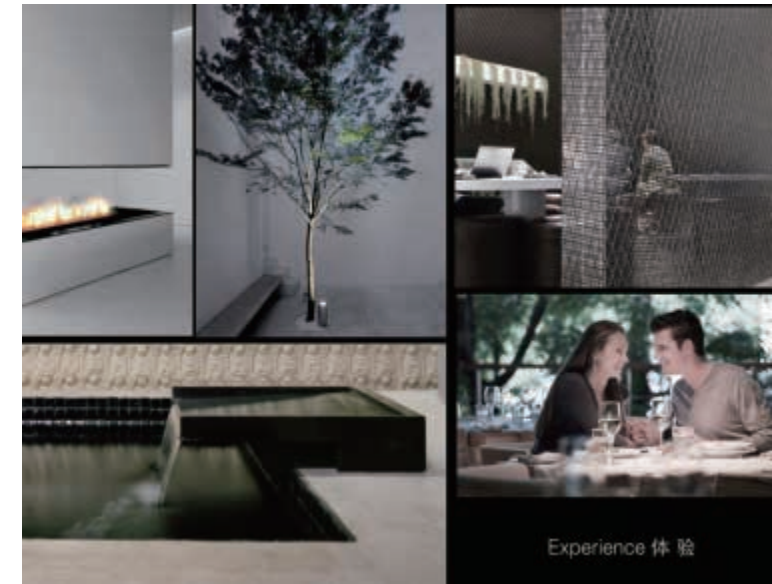


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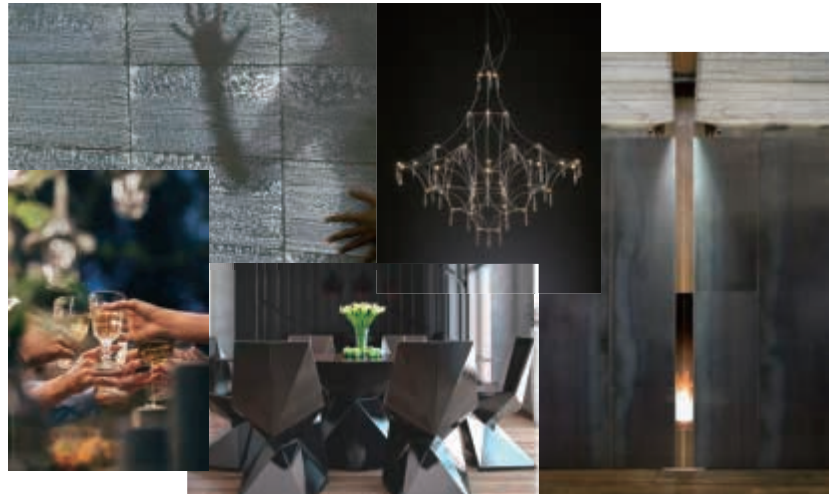
自然与人工 碰撞 粗糙与精细对比

154-155 We Design the Experience and show the atmosphere we want to create through images. When the guest enter the space, first they saw a big fireplace and waterscape, to feel the passion and nature identity of the restaurant. They could dining surrounding by plants in the quiet elegant interior space. There will be some screen made by metal mesh, to ensure the privacy and open space feeling. According to the client's demand, there will be a counter to service dessert and fresh juice, the merchandising display will integrate into the space, where the guests could enjoy the performance.

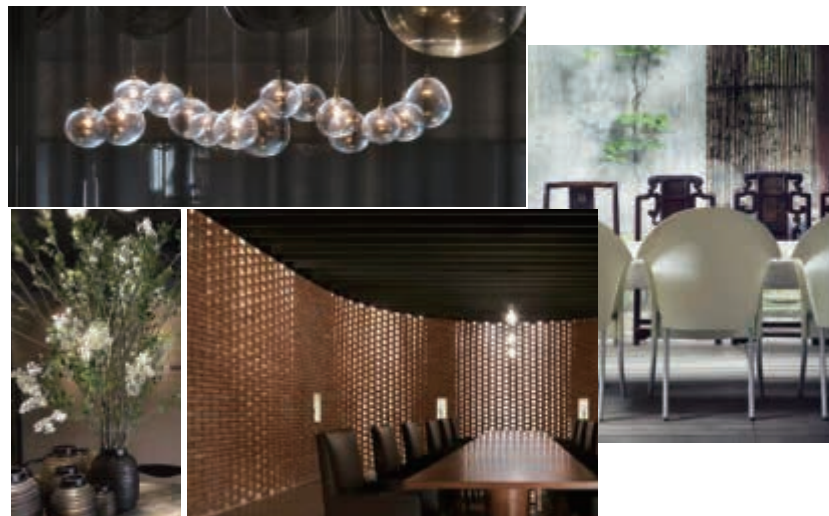
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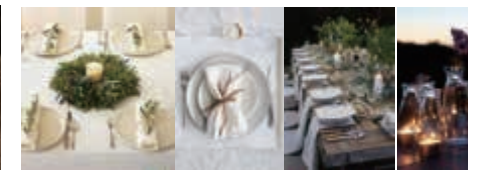
156-157

The furniture and decoration will reflect the brand identity , which have the oblique line language, and the oriental classical one contrast with western modern one . The lighting will create an elegant quiet atmosphere . The Floriculture is displayed a natural feeling as well.

158-159

We also consider about the details of service, to highlight the identity of the brand. For instance the tableware show in figure126 , the events table display in figure 127, and the uniform of the waiter show in figure128. All these elements will emit a fashionable natural temperament, high quality and well designed.

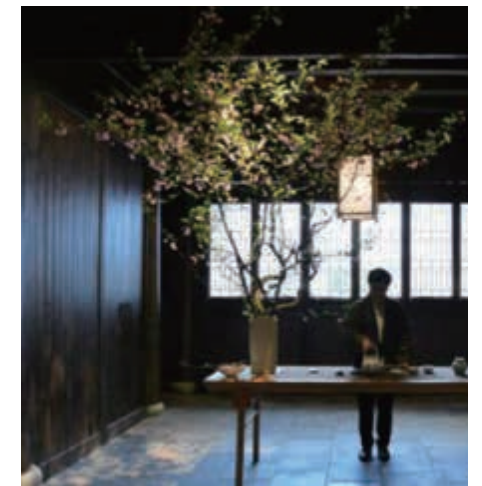
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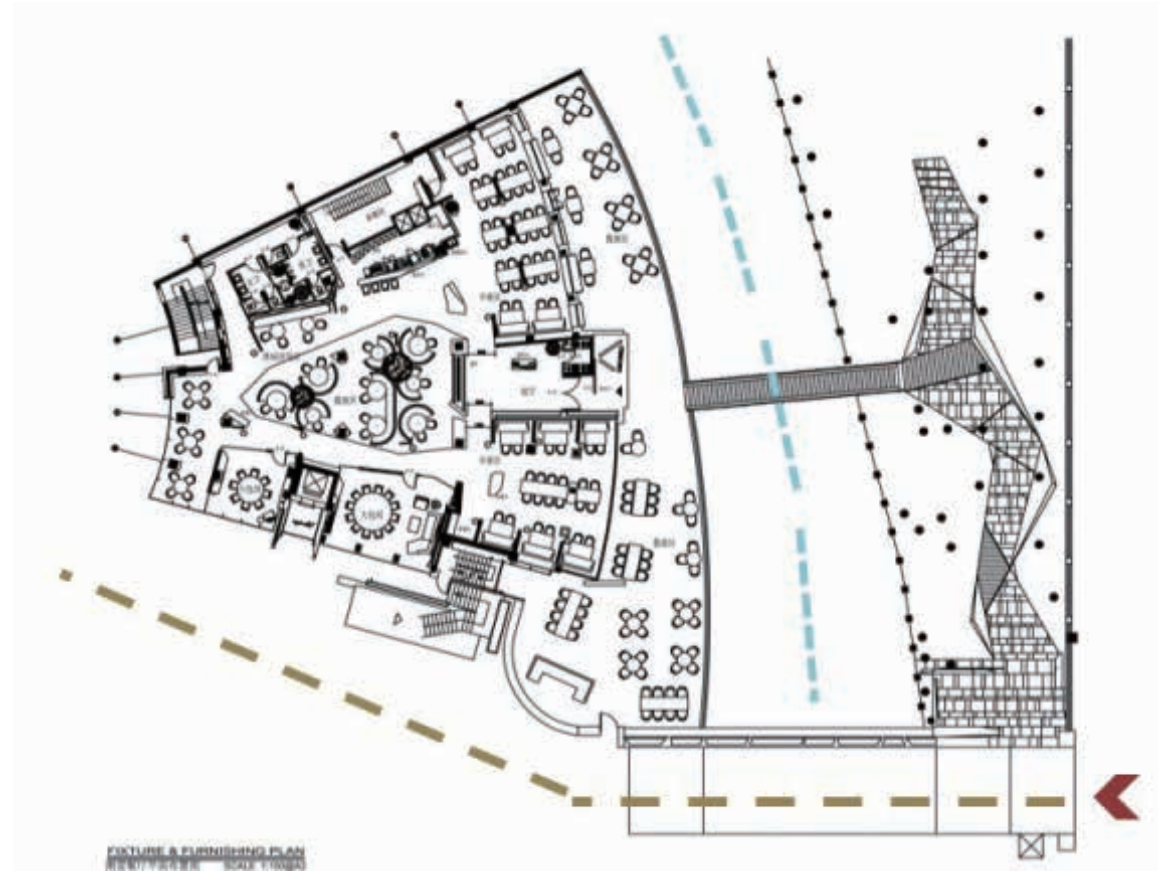
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The space planning according to the atmosphere we wanted to create, which are high-class, private, natural. We add a fence wall along the southwest street and covered the Chinese restaurant. We arrange the gate besides the entrance of the stadium, to create a feeling that the park is the private garden of the Chinese restaurant, the guests will pass through an alley and a bridge before enter the room. The platform besides the river will be the most popular dining place during nice weather. There are two VIP rooms and tree main semi open dining areas, and a bar counter supply fresh juices and cocktails.

After the concept design has been confirmed by the client. We moved to the specific design for the main areas, and presented through renderings and material boards. The space designer will develop the whole plan and design the main spaces which will show in rendering, including the form of the ceiling, the wall and the floor, and design the lighting cooperate with the profession lighting design firm. At the same time, FF&E designers select the right materials and finishes according the space and the concept, make materials boards, select and design the furniture, decorative lamp, artistic accessories and sanitary fixtures, etc. for each space. All the details are presented in the renderings should be designed follow the concept logic. To ensure the facticity of the renderings.



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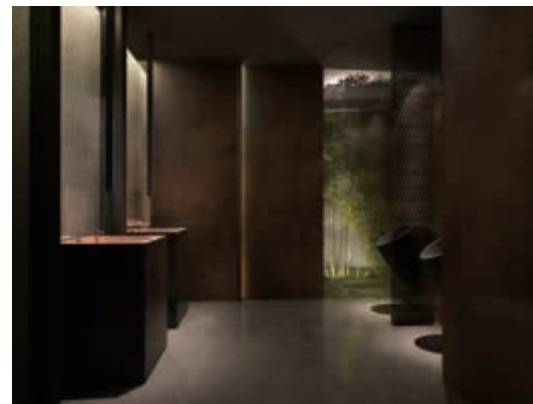
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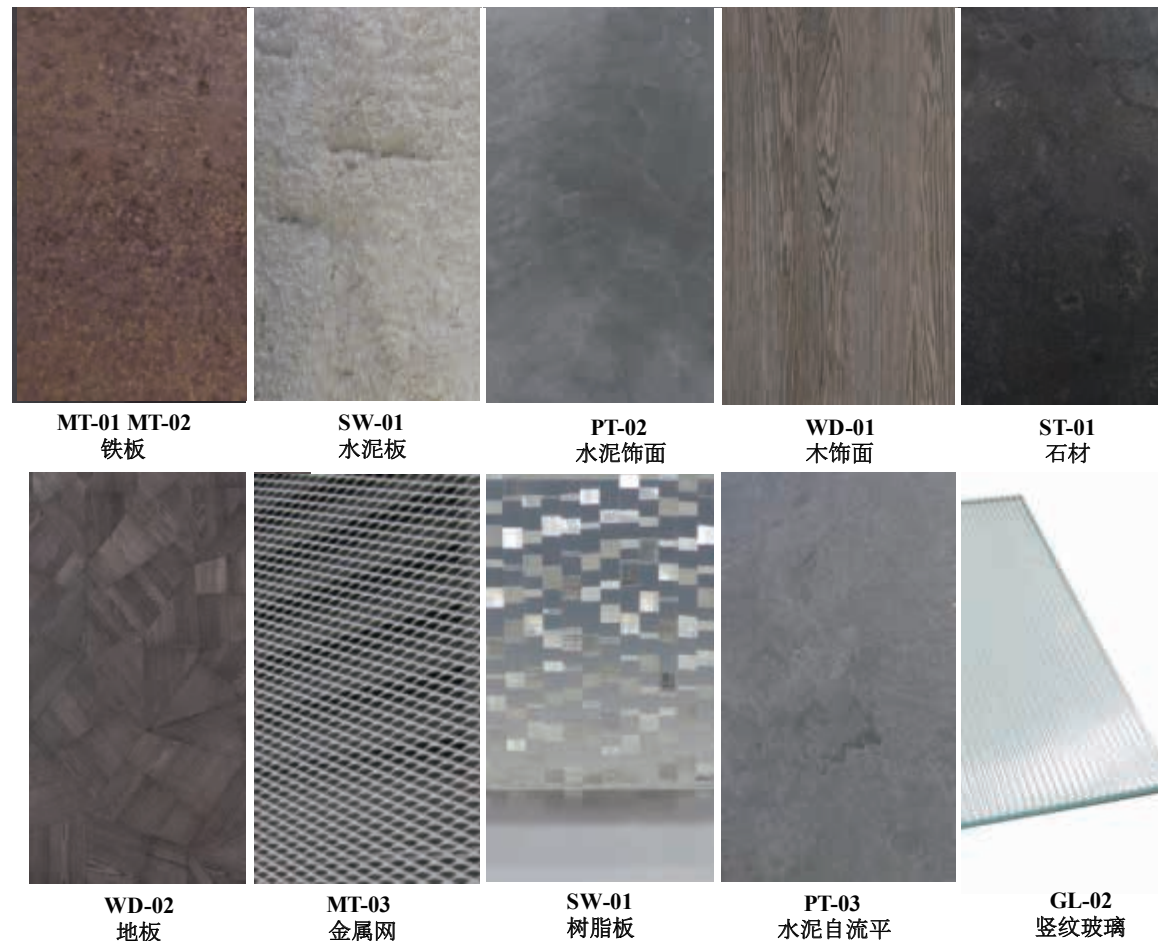
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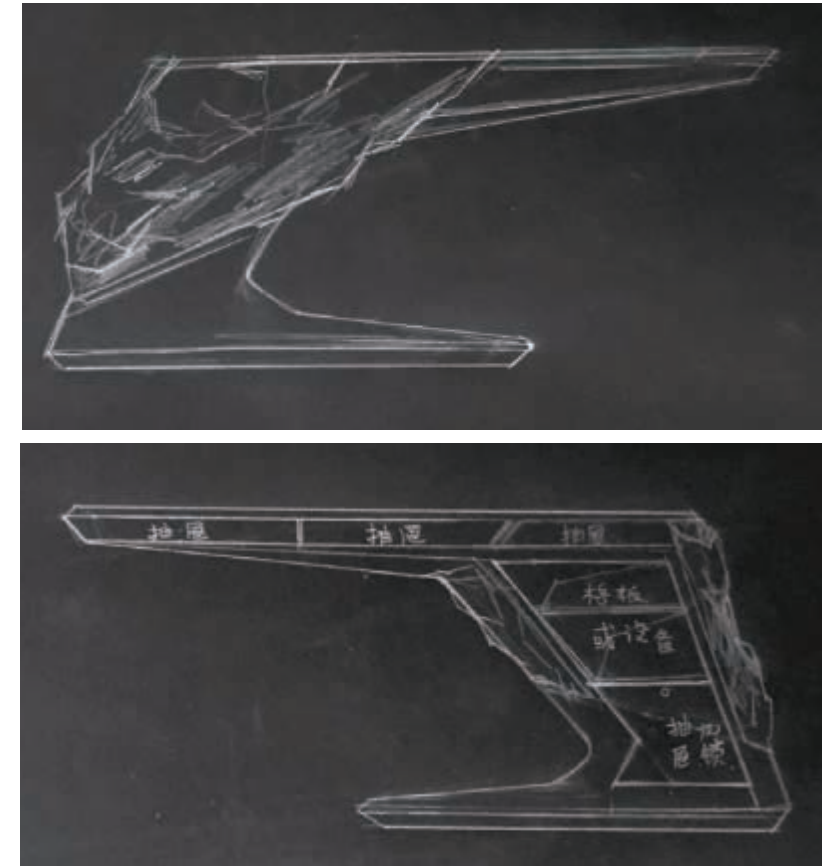


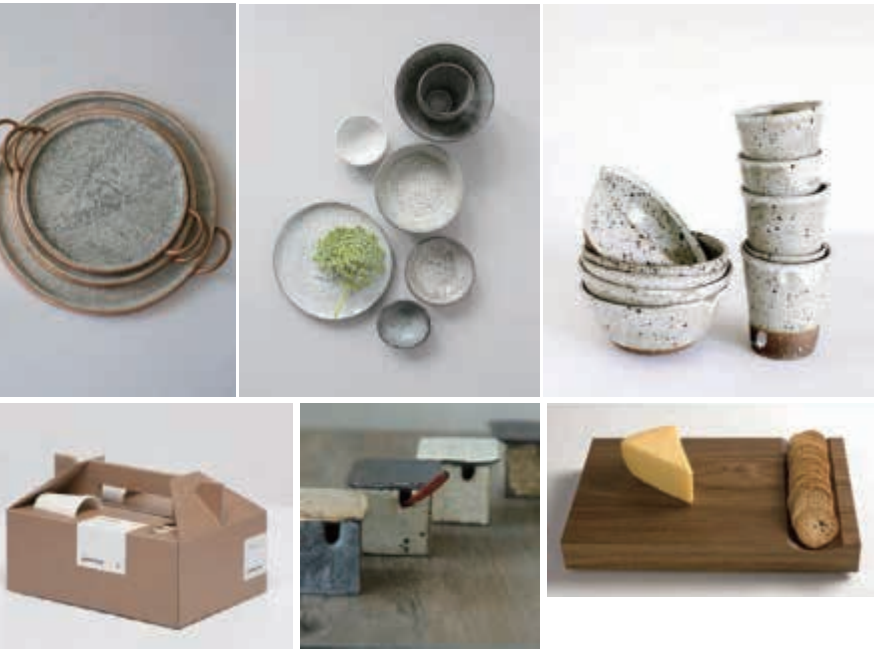
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After the renderings and material boards are confirmed by the client, it will enter the design development stage. The space designer will complete all the space and detail design follow this direction, which will be reflected in the construction drawing. The FF&E designer will complete all materials and furnishing design according to the final technique drawings. And make specifications, to demonstrate all the design information, which include item name, code, location, renderings or technical drawings, materials, finishes, dimensions, details, installation requirements, supplier contact details, etc. Ensure that all information is accurate and complete. As the convenience to purchase and bespoke.

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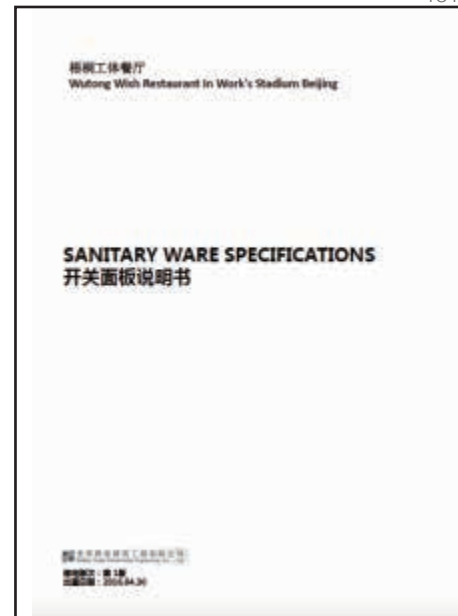
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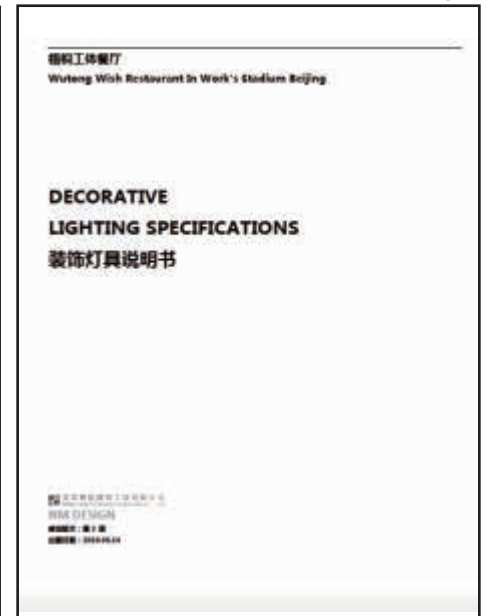
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北京市朝阳区东三环北路6号院C区21号楼分馆一层101室 Room 101, 1st Floor, Building 21, C Area, Upper East Side, 6 North Road of the 4th Gen Ring, Chaoyang District, Beijing 电话 Tel: +8610 5149 7718 传真 Fax: +8610 5139 3077 邮编 Zip: 10016							
项目名称 Project :	梧桐工体餐厅				出图日期 Issue Date :	2016.04.30	
项目编号 Job No :					区域 Location :		
家具编号 FurnitureCode	布料编号 FabricCode	描述 Description	品牌/型号/技术参数 Brand/ Model	图例 Image	实样 Sample		
XRF-10.2 XRF-14A.3	X01	餐椅布 卡座坐垫	品牌: 蒙藤林 型号: JA8010-11A 联系人: 王新 电话: 13301033366				
XRF-03.2 XRF-14A.2 XRF-14B.2 XRF-14C.2 XRF-14D.2 XRF-14 E.2	X02	餐椅布 卡座靠垫	品牌: 益隆 型号: C768 52 79 联系人: 杜娜 电话: 15010340930				
XRF-14A.1 XRF-14E.1	X03	卡座硬包 背板 座板	品牌: 益隆 型号: C768 07 14 联系人: 杜娜 电话: 15010340930				
XRF-03.1 XRF-05.1 XRF-14B.1 XRF-14C.1 XRF-14D.1	X04	卡座硬包 背板 座板	品牌: 益隆 型号: C768 06 32 联系人: 杜娜 电话: 15010340930				
XRF-13A.1	X05	餐椅 A	品牌: Cotec 型号: 1099002706 联系人: 杜娜 电话: 15010340930				
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IRF-01G.1	X08	藤椅面料	品牌: 益隆 型号: Glory 8571-09 联系人: 杜娜 电话: 15010340930				

After the design phase is completed, we will follow up the construction and FF&E procurement, and conduct bidding and quotation. After the construction team and the bespoke manufacturer are determined, Start to construction. At this stage, space designers will supervise and solve problems on site time by time. The bespoke products require the FF&E designer to review the manufacturer's production drawings, confirm the material samples, and the prototypes. The procurement part needs to order in time and arrange the delivery time with the supplier. Due to the variety of furniture involved in the project, there are outdoor furniture, wooden furniture, metal processing, etc., we need communicate with many manufacturers at the same time. It is necessary to follow the processing in the factory, and problems should be adjusted in time. At the same time, we must carefully plan the time to ensure the quality and the delivery time.

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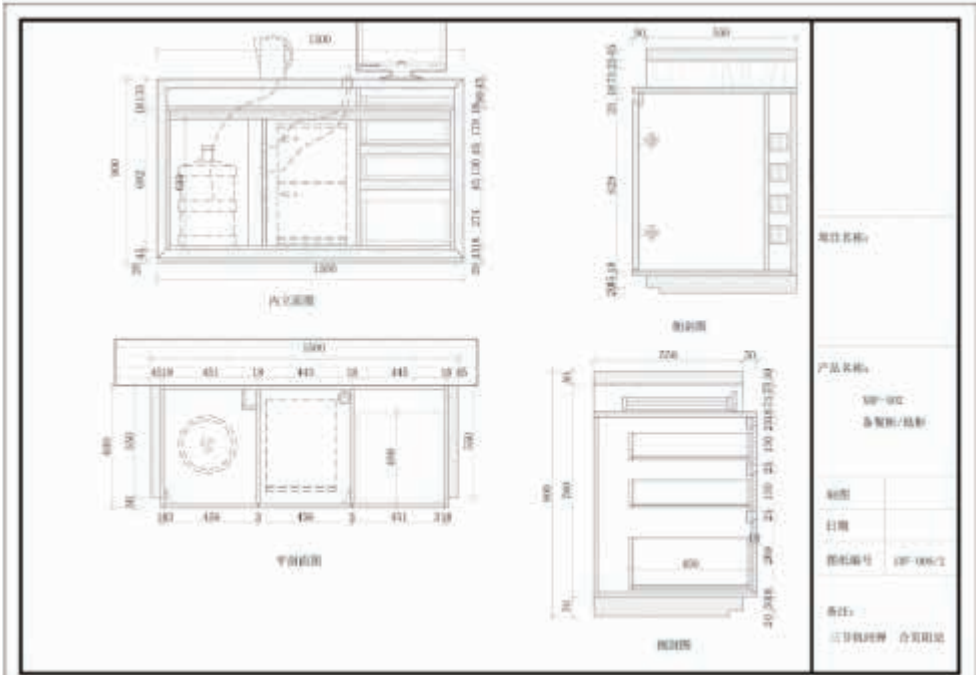
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客户编码	品名	图片	产品基本描述	产前样品	数量 (件)	交货期
IRF-012	鲸鱼椅		型号: C-002 材质: 碳纤维复合材料 颜色: 浅灰色, Dulux 00NN 20/000 Grimm's Gray 尺寸: 75(W)*110(D)*105(H) 厘米 重量: 9公斤	产前样品已确认, 已安排生产。	16	产前样品确认后60 天
IRF-012B	鲸鱼椅		型号: C-002 材质: 碳纤维复合材料 颜色: 浅灰色, Dulux 00NN 20/000 Grimm's Gray 尺寸: 75(W)*110(D)*105(H) 厘米 重量: 9公斤	产前样品已确认, 已安排生产。	12	产前样品确认后60 天
IRF-013	埃格椅		型号: C-011 材质: 碳纤维复合材料 颜色: 深灰色, PANTONE 18-0403 TPG Dark Gull Gray 尺寸: 73(W)*95(D)*87(H) 厘米 重量: 8公斤	产前样品已确认, 已安排生产。	18	产前样品确认后60 天
IRF-014	雅倩椅		型号: C-008 材质: 碳纤维复合材料 颜色: 浅灰色, Dulux 00NN 20/000 Grimm's Gray 尺寸: 35(W)*60(D)*88(H) 厘米 重量: 6公斤	产前样品已确认, 已安排生产。	26	产前样品确认后60 天
IRF-021A	溜迪椅		型号: C-009 材质: 碳纤维复合材料 颜色: 浅灰色, Dulux 00NN 20/000 Grimm's Gray 尺寸: 30(W)*95(D)*100(H) 厘米 重量: 6公斤	产前样品已确认, 已安排生产。	10	产前样品确认后60 天
XRF-019A	Basic Free Style		ID: C-025 Material: Carbon Color: Black Size: 57(W)*63.5(D)*82(H) cm/ Seat (H)43cm	09022016 确认使用此产品, 已安排产前样品, 还未生产。	37	产前样品确认后60 天
XRF-019B	Basic Free Style		ID: C-025 Material: Carbon Color: Black Size: 57(W)*63.5(D)*82(H) cm/ Seat (H)43cm	09022016 确认使用此产品, 已安排产前样品, 还未生产。	37	产前样品确认后60 天
合计:					156	

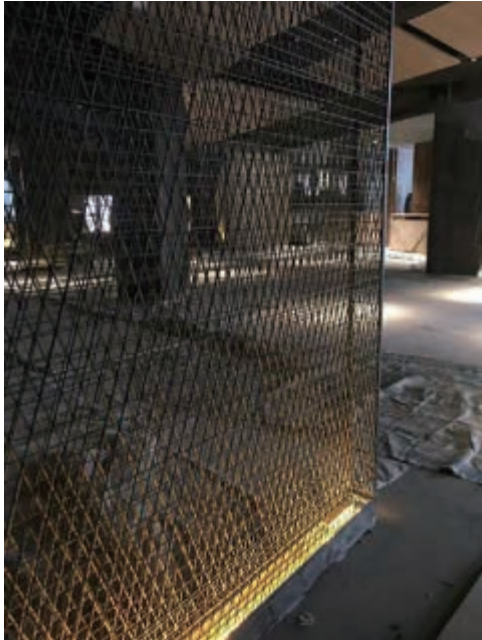
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正视图
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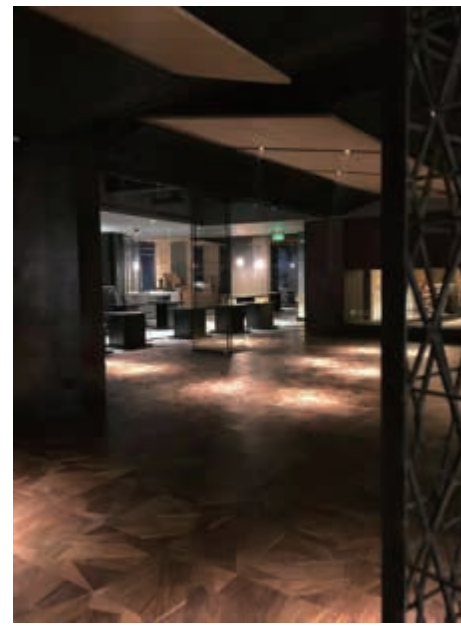
After the construction is completed, the furnishing products could be arranged on site to be installed. At this moment, we need to support and guide the installer and workers on site. After installation, we need to check everything, and adjust all the equipments. To make sure the space could run smoothly.



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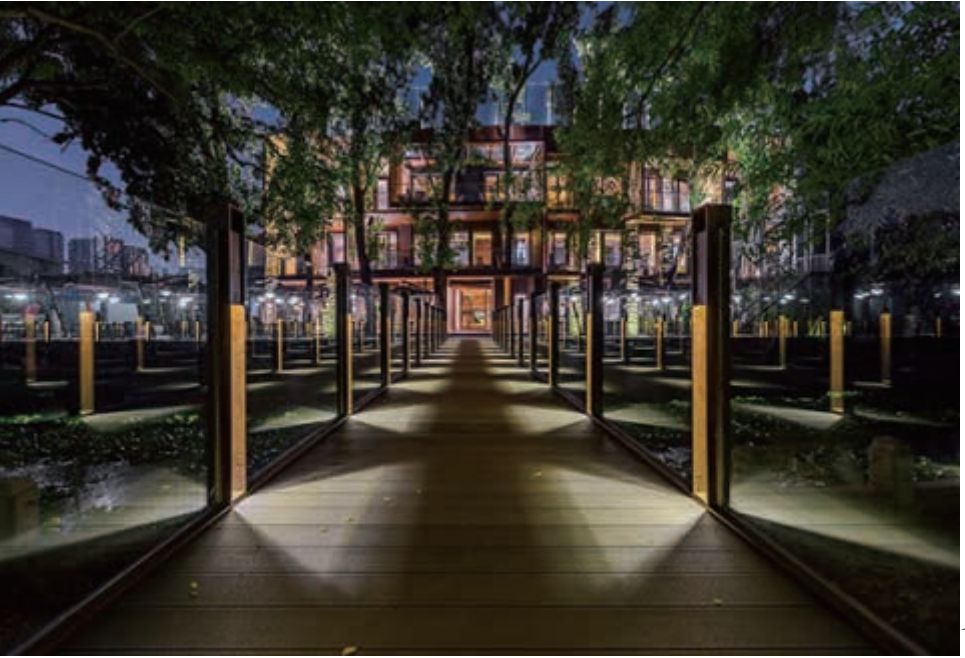
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The entire project from the initial negotiation to the final landing, it took almost one year, during the process we solved a lot of problems, and learnt a lot from this project. The communication with client during the early stage, the understanding of the brand culture, and the positioning of the project are very important. We are not only design the space, more importantly, we design the experiences for the customers in the space, and fulfill their emotion needs. We provide a strategy for the client to help them establish their brand identity and fulfill their inner requires. The integrity and systemicity of the concept helps us to communicate with the client efficiently. After reaching a consensus, everything must be developed and implemented according to the concept. The final result is basically same as the we expected, or even better.

As people's requirements for quality of life are getting higher and higher, their demand for living space design are not only focus on the functions and aesthetic values any more. Nowadays, the sensory experience which directly influence people's emotion are getting more and more attention. For instance, the color\material\ finish of the space, lighting effect, and objects that are close to the people, such as furniture, decorative lamp, artwork, sanitary fittings, handles, etc., they affect people's feeling through visual, tactile, auditory, olfactory and taste, and influence their emotion connected with the space.

Due to the increase demand of the market, design professionals which focusing on these elements were emerged. CMF(color, material, finish) Design, which was branched from industrial design, has been developed to a discipline since it was first proposed by Italian designer in the 1980's. Especially in the United States, Italy and Japan. The CMF major was set up, and the first book introducing CMF professional by Liliانا Becerra laid an important theoretical support for the development of the design industry. CMF professionals gradually extends to various fields of the design industry in the practice process, such as architecture, interior, fashion, etc. CMF designers not only provide customized services for the project, but also forecast the CMF trends, affecting the color, Material, finish development of the entire design industry.

FF&E Design is a design system developed from the star-rated hotel design field. It focuses on the sensory experience design of the interior space. It is literally interpreted as Furniture, Fixture and Equipment, while the FF&E design scope also contains the finishing material design. The core of the FF&E design system is to start from a overall design concept, from spatial planning and experience, to the style, the use of color, materials, and the details like furniture and accessories. That guide all the sectors in a project team, ensure that the design ultimately achieves the preconceived results. It is crucial to care about the sensory experience and detail from the start.

Although FF&E Design has a history of practice in the market for decades, it has not built a discipline in the education system yet, and even hard to find any related book. Due to the lack of standard rules and professional training, there are many problems in the development of the industry, such as miss understanding, the division of labor is chaotic, the professional designers are hard to find, etc. It is necessary to establish a corresponding discipline in colleges and universities to systematically sort out the majors. It will be useful to have some related profession publications in the market to help the industry standardize and promote the major developing smoothly.

Through the research and study of CMF Design and FF&E Design, the part that has always been neglected by the interior design will be strengthened, and the methods and experiences of controlling the aesthetic elements, detail quality and sensory experience in the interior space will be applied to the future design practice.

In China, nowadays the pace of social development is extremely fast, and the requirements for design efficiency and quality are higher and higher. In order to ensure the design effect while follow the speed of the development, professional specialization and teamwork have become an inevitable trend. FF&E Design has been proven by many industry-leading design firms as a scientific and effective method. If it will be promoted in the market, it will accelerate the development of China's interior design industry.

INTERVIEW DATA

NO.01

*Guest : Ma Binbin**Location : Beijing, China**Company : Wanda Group**Position : Senior Brand Planner**Working Age : 6 years**Interview Time : April 1th , 2019*

1. What factors should be considered in the process of brand planning?

First of all, in the brand planning need to consider the context of the company and the market, but also need to know the purpose of brand planning, to understand the needs of the company itself, is to improve the product line, brand strategy, or promote the brand, enhance brand awareness. The combination of these two factors will determine the direction of brand planning. In the analysis of market conditions, not only to collect relevant data, but also to use the big data system, accurately analyze industry data, analyze the strengths and weaknesses of competing products, analyze the psychological needs of consumers, and understand the influence of the product on which audience is the strongest.

2. What factors do you think a hotel or a brand affects the user's emotion and experience?

The brand experience is the interactive behavior process between the brand and the customer. It affects the user's psychological feelings and experience from five levels: feeling, emotion, thinking, action and relationship.

1). Feeling: The brand experience should give consumers a comprehensive sensory stimulation. If the consumer's vision, taste, smell, hearing, and touch are stimulated from time to time, then their feelings will be more profound. For example, the brand logo, the fragrance of the hotel lobby, the clothing of the hotel waiter, etc., are all the points of the feeling experience.

2). Emotion: At this level, emotional stimuli (activities, catalysts, and objects) are used to elicit a specific atmosphere to influence consumers' emotions. For example, the furnishings of the hotel lobby bar or guest rooms, the elegant color, the fascinating music, the warm service, all of which make every customer who enters the hotel to experience its elegance, quiet, harmony, comfort and warmth.

3). Thinking: The thinking experience requires consumers to participate and think, through some activities to influence their cognitive, encourage consumers to think about how this will change their lives. For example, the hotel organizes the Earth Hour event, cares for autistic children's activities, protects environmental activities and other corporate social responsibility activities, and promotes the guests to thinking.

4). Action: People's active participation will gain a deeper feeling. The brand experience is to increase people's physiological experience by attracting people to participate actively, making the brand become to a part of people's lives. For example, member interaction activities can enhance the liveness and stickiness of members. Such as open yoga classes, making moon cakes together, etc.

5). Relationship: The ultimate goal of the brand experience is to make the brand and the consumer form a relationship. To build relationships, you must have a deep understanding of consumers. First, insight their desires – through observing part of their lives, could learn their self-concept and identity; secondly, treat them as an individual rather than a group to understand how brands relate to consumers' self-concepts and lifestyles Finally, we must observe the values, beliefs, behaviors, interests, and possessions of the consumers.

3. In the brand planning process, how to complete the positioning and design of color, materials, furniture, etc. these elements which influence consumers' emotion?

Wanda Hotel Group is a company that integrates hotel design, hotel construction and hotel operation with full industrial chain services. When the brand department is planning a new brand or new products, our FF&E designers of Wanda Hotel Design Institute will responsible for the color, materials and furniture etc.

4. How do you understand and to meet the target group's psychological needs in brand planning?

First we need to clearly define what value of the product should provide to our target, and to understand the different needs of consumers for products from multiple perspectives:

1). Combine different variable data: geographic analysis, demographic, psychological research, behavioral research, and needs research data to define the meaningful and realizable target consumers group.

2), skillfully conduct consumer research: questionnaires, seminars, family visits, organize training camps, and understand the daily life of consumers.

3). To understand the other needs of consumers in addition to functional benefits of the product experience: unmet personal needs or psychological superiority that is not valued.

Guest : Andrea Manfredi

Location : Milan, Italy

Company : Polidesign

Position : Professor

*Reserch Field : furniture design,
exhibitions, interior décor and
entertainment design*

Interview Time : March 8th , 2019

1.What do you think is the most important in interior design?

The experience of the user is the most important factor , the consumer when entering the space for the first time ,every sense , the smell , the sight , the touch the hearing etc. they have a perception , these experience reminds in your mind , that is very important .

2.What related to the sensory experience in interior design ?

When you working in retail design , it is really important to use imprinting , the smell color , material ,lighting of the space are important . During evening, when you turn on the light, and decide some lighting give you a special atmosphere, this for my client will be "ok, it's evening time and I will be relax". The light could be thinking about relax.

Maybe can also start with music, if you use the multisensory, you can combine different action with only one button, you can push the button, you can change the music, the light, the smelling, there are some elements and air condition system could be immediately give you smell ,for you will be a really relax . Like the Spa.

The experience sometimes explains the identity of the space. Depend what level you want to work, and the quantity you want to achieve, and the different kind of space, if it is private or public space. For public space, you have to understand about what do people prefer. Need to study about sociology, psychology, also local culture etc.

3.How do you design this part in your team ?

For a new space, Lighting, Space, the finishing materials and details is one for me . You have to work all of them, or you can also work a specialize more with one. For example, in exhibition design , my studio used to do some exhibition and events , we often covered every window, obtained the dark and shadow ,we use only the lighting to define the space . If you use LGB light and change a little bit color you change the surface.

In my studio, we more focus on exhibition design, we don't divide the job to FF&E design or space design, but we also work with the color, the materials, lighting etc.

And it is important and fundamental for our design.

We start our work from some inspiration picture , could be art ,image, not really strong connected ,it is better to give something different to innovate. We start thinking from the form, after form we start to think about the color , then we think about this color come from which materials , that depend also the budget , if you want to achieve gold ,you could use gold , brass , painting etc. we consider every time the effect of the material on the five sense , and also need to go back to the form and the function , if the form is curve the choices maybe reduce from 10 to 3.

I am trying to train my collaborator with combine colors materials, some are really have talent about this ,some of them are no .

For furniture design in interior design, the color could not separated with the form , this is different from industry design , if you design a furniture could be flexible for different color to sell it to different people

Guest : Anna Barbara
Location : Milan, Italy
Company : Senselab, Politecnico di Milano
Position : Senselab Founder , Professor
Reserch Field : Sense
Interview Time : April ? th , 2019

1.What do you think is important for Architecture or Interior Design?

I think it is important to think, when we design, who are the inhabitants of the places we design.

2. What related to the sensory experience in Interior Design

When we stay in a place, we are into it with all our senses. The experience is a complete one. We cannot avoid to design using all senses as tools.

3.How do you design this part in your team ?

Mainly what we try to do is to design the sensory identity of a place, before to start designing the project itself. When the S.I.C. is designed everything will be related to it.

4. How to develop FF&E in your team?

It comes after designing the general layouts but it is important as the other parts of the projects. Usaully FF&E is related also to the S.I.C. and coherent to the concept. The we select furniture, finishes, materials, equipments inside percises material/boards. They are visual, but often physical.

5. Who/What do you think is related to the quality of FF&E design?

It is necessary to understand the client's inner needs and do a balance between the design effect and the budget. In addition, the supplier will influence the designer as well, the new collection they bring to the designers could give inspiration to the design, sometimes the supplier help designer to bespoke some special piece, that could be converted to new products of the brand.

Guest : Season Joe
Location : Bei Jing, China
Company : Wanda Hotel Design Institute
HPS
Position : Senior Interior Designer
Working Age : 15 Years
Interview Time : March 10th , 2019

1.What is FF&E Design ?

FF&E is abbreviated for Furniture, Fixture and Equipment. But in fact, it contains a wider range of contents, including finishing materials, color collocation, furniture, lamps, artwork, sanitary fixture, hardware fitting, etc.

2. How to develop FF&E in your team?

In HPS, a project is mainly completed by senior designer, assistant designer, project manager and FF&E designer. Decoration designers are usually sensitive to color, material property and professional in furniture proportion and detail. Generally, the female are more sensitive to this aspect. The design team needs to work in cooperation to complete the design work of all stages. FF&E has very important work contents from conceptual design, preliminary design, detailed design to the final construction follow-up. In Wanda Hotel Design Institute, FF&E is divided into furniture design, artwork consultant and material design. Guided by the director designer, all professions need to communicate and work together closely for passing the audit of president in design institute eventually.

3. What is the influence of FF&E on interior design?

If we use a metaphor to describe the relation between interior design and FF&E design, it is equivalent to the relation between people and clothes. Interior design shapes the human body, endowing people with temperament and nature by dressing up.

4. Who/What do you think is related to the quality of FF&E design?

Apart from client and brand positioning, cost constraints, communication and coordination of interior designer and decoration designer, and their abilities and accomplishment, controlling of the construction will affect the final quality.

Guest : Li Xinyuan
Location : Bei Jing, China
Company : LTW
Position : Senior Interior Designer
Working Age : More than 10 Years
Interview Time : March 12th , 2019

1. What is FF&E Design ?

I think they are all related to FF&E design except for space design and even some FF&E designs could do space design as well. FF&E calls for strong aesthetics and acute insight, which is usually cooperate with the space designer to complete the project in a team.

2. How to develop FF&E in your team?

Our company divides FF&E into two parts. One part is decoration, the job of decorator is to analyze the project and make mood board with intentional pictures at the beginning of the design process, and collocation and design furniture, decorative lamps, materials, to support and assist space designer finish space design. Another part is material engineer, involved in a later period, are mainly responsible for the arrangement, audit technique drawings and specification of all kinds of materials and household production, decorative lamp, art work, etc. Assist the decorator to finish all the FF&E detailing development.

3. What is the influence of FF&E on interior design?

A professional FF&E designer can master the direction of the overall design. Because the decoration designers are mainly responsible for the work in concept design and their value can be seen clearly in this phase. A good decoration designer is able to better understand the demand of the client, positioning precisely and endow the project with soul.

4. Who/What do you think is related to the quality of FF&E design?

The quality of FF&E is closely related with the aesthetics quality, profession experiences of the designer firstly. In addition, the proprietor are the important factors that determine the project quality. Finally, I think that an open and good design team with common goals is the most important factor to achieve good design quality.

Guest : Wilson Tong
Location : Hong Kong / Beijing, China
Company : Dome Design Consultants Ltd.
Position : DDC Founder
Senior Interior Designer
Working Age : More 20 Years
Interview Time : March 10th , 2019

1. What is FF&E Design ?

FF&E is an outstanding part in interior space, which can be easily overlooked. FF&E has close contact with people through material texture and color, such as physical touch and visual perception, thus bringing people more life experience. Interior design can express style, design thinking and human emotion through FF&E. I think FF&E can better reflect the quality of life. The design of FF&E not only takes into account of the aesthetics of form, but also conforms to ergonomics, functionality and comfort are more important.

2. How to develop FF&E in your team?

In my team, FF&E starts with the initial overall design concept, which is developed on the basis of communication between the design team and proprietor and market positioning, including the whole style, the story concept and color collocation. FF&E designer and space designer closely communicate with each other and fulfill their responsibilities in each design phase. FF&E designers mainly focus on color material design, and furnishing the space. From Finishing materials to furniture and decorative lamps are reflected in every detail of the interior design.

3. What is the influence of FF&E on interior design?

FF&E design is very important to interior design. Good FF&E design can bring the unique charm to space, raising the culture and art of the whole space to a high level.

4. Who/What do you think is related to the quality of FF&E design?

The quality of FF&E is first related to the proprietor, which can reflect the proprietor's preference and project quality to a certain extent. Second, it is affected by local market in public commercial place.

Guest : Wei Jinjing
Location : Shen Zhen / Beijing, China
Company : Autumn Landscape Design Ltd.
HSD
Position : ALD Founder
Senior Interior Designer
Working Age : More 10 Years
Interview Time : March 17th , 2019

1. How to develop FF&E in your team?

The business types of HSD and Spring and Autumn Landscape are basically the same, including boutique hotel, boutique commercial, catering, real estate exhibition area, prototype room, club. The working mode is always the same with no division of FF&E design and space design. The whole project is guided by the project director and others assist the project director to finish all the specific work. In my opinion , decoration should not be separated from space design. Everything that appears in space determines the atmosphere and concept of space and every detail should be handled and taken into account carefully.

If the project starts with our decoration when the project responsible person has comprehensive thinking. In other words, there is no distinction of time intervention and the implementation is according to the procedures. We also have decoration for others not the space design for ourselves. That is business behavior.

2. What is the influence of FF&E on interior design?

The final expression of the design is expressing the trends of self-concept and sense value of the space. Suppose we set a goal. The space, furniture and lamps will reflect the goal we have set before. The contents of FF&E play their own roles. Space design determines the space style while FF&E reflects the subtle emotions, which is closely related with mankind behavior. It can be said that space design is framework while FF&E is like clothes and makeup.

3. Why people pay more and more attention to the design of FF&E design ?

This is a basic principle. When people have money, they will pay attention to their second demand while their first demand is satisfied. In other words, their demand for aesthetic and emotional value becomes the most effective way to lead various industries move in advance when their basic necessities are satisfied. The pursuit of aesthetic and harmony between man and nature has become a common philosophical value.

Guest : Zhu Qinyue
Location : Shang Hai , China
Company : Nong Studio (Graduate from Polimi)
Position : Partner of Nong Studio
Young Talent Interior Designer
Working Age : 6 Years
Interview Time : March 21th , 2019

1. What is FF&E Design ?

Many designer misunderstand FF&E as soft decoration, this statement is actually not completely correct. Actually, FF&E is abbreviated for Furniture, Fixture and Equipment. Include finishing materials and furnishing staffs, it is more extensive than the concept of soft decoration (specially in Chinese market). In china soft decoration always put the end part of the interior design, while FF&E design start from the very beginning, integrated into the overall design concept.

2. How to develop FF&E in your team?

In our company, FF&E design play a crucial role during our interior design process . We will consider about it start from the concept design, and FF&E designer work with our space designer through all the design process. Also involved in the communication with the client during presentation.

3. What is the influence of FF&E on interior design?

I think the interior style at least 70% is reflected through FF&E, so it is crucial for the interior design. A modern-style interior can be embodied by some old furniture, and a European-style interior can also be designed with some oriental styles to reflect the sense of design and exoticism. The FF&E design is not entirely subordinate to the interior design, and sometimes we set the tone for the entire space based on a special collection of artwork .

4. Who/What do you think is related to the quality of FF&E design?

The most relevant aspect of FFE quality is the budget. Secondly, it is holistic. See if the owner want FF&E matching to the overall style. Sometimes the overall style will be ruined, because several piece of decoration do not meet the initial requirements. Another important factor is the brand.

Guest : Luo Linwei
Location : Shen Zhen , China
Company : Wanda Hotel Design Institute
Yang & Associates Group
Position : Senior FF&E Designer , Manager
Working Age : More than 15 Years
Interview Time : March 19th , 2019

1.What is FF&E Design ?

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Guest : Yang Dan
Location : Beijing , China
Company : Dome Design Consultants Ltd.
Position : Senior FF&E Designer , Manager
Working Age : More than 20 Years
Interview Time : March 12th , 2019

1.What is FF&E Design ?

FF&E is the abbreviation for Furniture, facility and Equipment. However, the contents of FF&E design it is involved in are far more than this. FF&E designer closely coordinates with space designer , from the tone of the space , colors, finishing materials , to the decorations and hardware fittings are all belong to the scope of FF&E.

FF&E scope is the key factor that can fully display the interior design. Good FF&E design are integrated with the space design, not abrupt, which plays a crucial role and adds brilliance to present splendor. At the same time, it can satisfy users' various demand, making it comfortable and humanized and bringing dual enjoyment of sensory experience.

2. What are the key points in FF&E design?

First of all, we need to know the background of the project, the target, function positioning, style intention and budget, thus accurately implementing the specific design work. Next, the selection of the furniture should conform to space or function requirement. Some times bespoke furniture could highlight the identity and culture of the space. We should choose different materials for furniture (wood, stone, metal, fabrics, etc.) according to environment demands. We should pay attention to color and material coordination as well as details. The decorative lamp, particularly the chandelier and wall lamp are mainly combined with space decoration, which should take into account of the size and security and choose the appropriate type according to the overall concept. Table lamp is in coordination with the furniture. The style and size are the key points. Artworks in line with space design highlight cultural characteristics, presenting their unique charms. The carpet needs to be designed according to space, highlight the style element, color and pattern in coordination with the craft.

3. How do you develop FF&E in your team?

FF&E is an important part of interior design. Its work is also involved from the beginning of the project, together with the space designer to complete the various stages of work. The design phase includes The Design Concept, The Preliminary Design , The Design Developing, The Construction phase and The Installation stage .

Design Concept : FF&E designers will make the concept proposal based on the project targeting, style , budget and other factors, that derived from the project director and the client. The concept including local cultural characteristics, element extraction, color scheme, material application, decoration intent, and the overall interior atmosphere, space experience, lighting effects, etc. Explain with images and mood board as a guide to communicate with client, to determine the direction of further design. Space designers focus on spatial analysis, floor planning, and flow, focusing on solving functional problems. **Preliminary Design:** During this stage, according to the design concept, the space designer begins to develop the layout, the form of the ceiling, floor and wall, and consider what kind of material could support the form. FF&E designers perform specific material selection, design the color and finish, furnishing selection and design, and integrated into the space design illustrated in the rendering. The overall effect shown by the rendering is basically same as the final appearance of the project.

Design Developing: This phase will complete all the design with details. The spatial design is reflected in the construction drawing, and the FF&E design is reflected in the FF&E specification. Because the construction documents involve many factors such as cost, product technic, construction time, final effect, etc., FF&E specification must be precisely described. According to the final drawing, communicate with space designer intimately, make sure all the FF&E selections' dimension , material , quantity perfectly match the space design.

Construction & Installation: FF&E designers need to check technical drawings with bespoke manufacturers, and following the product process, make sure the design of color, materials, shape, details to be realized. Supervise the manufacturers check dimension on site before producing, some furniture or decorative lamp need to fixed on the structure of the space,it should be prepared in advance etc., check on site with the space designer and make adjustments until every objects are put on site and working well , the project is completed.

4. Who do you think is related to the quality of FF&E design?

First of all, it is related with the personal accomplishment of the FF&E designers, the professional level and understanding of interior design. Second, the follow-up of the designer in the construction process, the timeliness and accuracy of audit proofing of the drawing, construction level of the coordination unit and the technology are the key factors. Finally, the site and on-site adjustment are also very important, which will affect the decoration quality and effect.

NO.11

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Guest : Diane NG

Location : Singapore

Company : Wanda Hotel Design Institute

LTW Singapore

Position : Manager, Senior FF&E Designer

Working Age : More than 20 Years

Interview Time : March 13th , 2019

1.What is FF&E Design ?

As the design Position describe Furniture fixtures and equipment. It simply means that in the design aspect anything that is movable not fixed Will be categorised and thought of during design process.

2. What are the key points in FF&E design ?

FF&E designer has the overall Control over the entire concept of the design, be it the colour Scheme, finishes, materials or any loose FF&E items, they Will have the control over the overall feel and touch to the complete look.

3. How does FF&E work in your team ?

FF&E designer can also assist space Designer in working together the concept and design development. They can tie the whole image of the branding as a one entity.

4. Who related to FF&E quality ?

The contract and design brief determines the different quality of the finished products of FF&E.

It sets to the budget, informative and How detailed it Will end up.

Guest : Leo
Location : Du Bai
Company : HBA
Position : Senior Designer
Working Age : More than 10 Years
Interview Time : March 13th , 2019

1. What is FF&E Design ?

FF&E is a term derived from hotel design industry, but it is misinterpreted by many design companies. Many design companies consider FF&E is same as furnishing. In fact, apart from decoration, FF&E includes finishing materials and aesthetic elements of the interior space.

In HBA, I'd rather not say whose status is higher, compare with space designer and FF&E designer (It is generally believed that FF&E designer is the project director, we think FF&E is more difficult because FF&E calls for high taste, years of experience and a lot of patience). What you can see in a hotel are all expressed by FF&E, including furniture, decorative lamp, curtain, carpet, artwork, etc. However, space design is the big background.

If you ask me about the definition of FF&E. I would say that FF&E is the soul of hotel design. Everything will become boring without FF&E.

2: What is the key points in FF&E design?

As far as I am concerned, the key point of FF&E is aesthetical elements.

The level of aesthetic elements depends on your knowledge. How can you easily write a good article without reading a lot of books? You need to be knowledgeable, studious, modest and open-minded. Of course, the most important thing is countless project experience, regardless of success or failure. Then you can be a good FF&E designer.

I think FF&E mainly includes two parts. The first part is to select the best material for the space and give the critical suggestions for space design particularly on aesthetic elements or propose the original design concept to make the space designer to develop their design according to the overall concept. This is the key point in the first part because space design is closely related to decoration.

The second part is the decoration part, including loose furniture, decorative lamp, curtain, carpet, artwork, etc. They key point is how FF&E designer seize the customers' heart through the design concept of the whole hotel, so that the design is in line with or even higher than the customers' expectation.

3. How do you develop FF&E in your team?

Hotel design was an admiring occupation before I joined in HBA. The design team in HBA has a clear labor division (I don't expound how they have labor division in each phase and the details.)

The hotel design industry had entered a rapid development phase before I joined in HBA. In other words, the market demand determines the development of our hotel design industry. At that time, our designers needed to undertake several hotel projects with great pressure. It was a normal thing for them to have overwork until midnight. It was not healthy for designers. But it is inevitable and the result of vicious competition in the market for the industry development.

4. Who do you think is related to the quality of FF&E design?

This problem has been mentioned previously. Apart from client and designer, the third party is also related. FF&E designer should try their best to control the quality as one link.

I think every industry is the same. There is only a very small number of excellent people standing at the top of the pyramid, who are radical and persistent. Most people become the ordinary radical and persistent and make few contributions to society.

Guest : Tao Rui
Location : Bei Jing , China
Company : Forise Holdings
Position : Director Designer
Working Age : More than 15 Years
Interview Time : March 17th , 2019

1. What is FF&E Design ?

FF&E is abbreviated for Furniture, Fixture and Equipment. We usually call it decoration after introduced into China from foreign hotel design, which is a profession specialized from interior design gradually. FF&E covers material, furniture, lamp, artwork, carpet, textile and other accessories. Some times also include lighting fixture, sanitary facilities, and hardware depend the requirement of the client and the project.

2: What is the key points in FF&E design?

It is the basic principle of working mode in close coordination with interior design. Each part of decoration is very important and the difficult points are the understanding of space and function , FF&E designer must be creative.

3. How to develop FF&E in your team?

The combination of FF&E design and interior design is mostly compatible and seldom independent because the design needs to closely follow and understand the spatial intention. Independent and professional full plan decoration can seldom make up for the market vacancy, which is closely related with background and relation.

4. Who do you think is related to the quality of FF&E design?

The guarantee of design quality is related with Party A's market position, construction cost and aesthetic quality of the designer. The combination of the these factors, the perfect proprietor and the competent designer are the two crucial influence factors.

Guest : Liu Jin
Location : Milano , Italy
Company : Interini Design
Position : Senior FF&E designer
Working Age : 6 Years
Interview Time : March 14th , 2019

1. What is FF&E Design ?

I don't attach importance to the definition to FF&E particularly because it is a branch of interior design itself. It is difficult to separate it independently and is included in the process of whole interior design. It can help you accurately grasp the project quality, which is not entirely groundless or directly starts from the design. Instead, it help you communicate with customers and facilitate to reach a consensus in various sections from mood and overall design concept. It is a logical design think method.

FF&E mainly refers to finishing material, movable furniture, decorative lamps, bathroom, kitchen, textile, ornament, art, etc.

2: What is the key points in FF&E design?

Many well-known interior designers are not famous for their layout or the form of the space, instead, they make people remember their Mood and the atmosphere of the space. At first, the emergency of hotel specialized FF&E from the interior design because they need to set up hotels, thus achieving a good effect rapidly. Now there is a trend that FF&E is not limited to hotel space, but also applied in prototype rooms and private residence. We need to understand the essence of the application of FF&E in interior design. It has its own value for its subdivision. It allows interior designers to spend more energy and time in achieving a good space atmosphere and giving full play to atmosphere through space concept ultimately without taking into account of the space plane and structure.

3. How to develop FF&E in your team?

It can be divided into two situations. First, Party A will bring the 3D rendering, technique drawing and expected result before construction after space design completed. It is relatively simple. It needs to be improved on the basis of space design. The second situation is start from the very beginning, the private customers who have no idea what they want. We need to communicate with them through concept and help them positioning and then give our proposal. The work flow include Concept -Mood-Design (product selection dimension,layout color material finish) -Production specification -Bespoke manufacture - Arrange on site.

4. What do you think is related to the quality of FF&E design?

It is firstly related to manufacturer technology and the proprietor's budget. But it ultimately depends on the designer. All the proprietor's want the excellent effect with economical budget, we designer need to make a balance. For example, the living room is the place for the reception of guests, which can reflect their taste and wealth. So we spend more money on the living room. The bedroom is a private place for rest. Therefore, it is very important to select an advanced mattress to achieve comfort. Other object could spend less and save money.

Guest : Ye Hui min

Location : Singapore

Company : Wilson Associate

Position : Senior FF&E designer

Working Age : More than 20 Years

Interview Time : March 26th , 2019

1. What is FF&E Design ?

FF&E is a term originally used in hotel field, abbreviated for Furniture, Fixture and Equipment. While FF&E design essence is focus on the aesthetic elements and detail quality of the interior space , the finishing materials, lose furniture, carpet, facilities, etc. that close to people's perception and experience, get a lot of attention for a high-end experience space such as luxury hotel.

2: What is the key points in FF&E design?

You should well understand the space and function, the lighting, the surrounding environment, to be considerate, all the influence elements and relationships in the interior space, even though specialized profession, every element are connect with each other , when we do the specific part also need to be overall thinking.

3. How to develop FF&E in your team?

In Wilson Associate, the concept design include space intention images and sketch, color scheme, materials application, furniture concept, etc. as an indicator to guide the overall design. Which charged by the project director, in the follow stages, FF&E designer will developing the FF&E part into concrete solutions, it is very complex and detailing work. Make material boards, specifications, technical drawings for bespoke furniture and lamps etc.

4. What do you think is related to the quality of FF&E design?

The client who pay for the project, organize the whole team, their management and requirement are important factors, and the design team professional degree, also the constructor and manufacture will influence , the key role is designer need to manage and control all the influence factors.

*Guest : Zhu Lin
 Location : America / Bei Jing , China
 Company : Wanda Hotel Institute
 Position : The Vice President in 2012
 Working Age : More than 30 Years
 Interview Time : March 26th , 2019*

1. What is FF&E Design ?

FF&E is abbreviated for Furniture, facility, Equipment. This literal definition only extracts the core content of decoration, but actually is involved with more wide ranges, including finishing materials to textiles, ornaments and artworks etc..

2. How to develop FF&E in your team?

The development of FF&E in the design is based on the design program and the requirements of client. In the aspect of function, there are space environment refinement, which has chemical reaction to people. FF&E designers need to cooperate closely with interior designers, communicate with them and know the project design connotation, development direction, style trend and some specific requirements, which is a complete process of team work.

FF&E has its own design logic, but it must obey the main principle of interior design, just the same with the production of any artistic work. The design of FF&E also calls for aspiration, originating from the designers' understanding and creativity of the project, which is independent and adds brilliance to each other. The design process calls for careful consideration and all the documents finished with the signature and confirmation by client. This is a work that needs meticulous attention, from selection, dimension, material, product requirement, etc.

3. What is the impact of FF&E on interior design?

FF&E design can be very important or unimportant to interior design, or even unnecessary. According to the positioning of interior design, the understanding for the project and Party A's requirements, one extreme is the attention to functional requirements with no emphasis on aesthetics and art influence. In this case, it will cause unexpected effect. Another extreme is to regard artistry and aesthetics as magic and over design and decoration are easy to cause environment problems. FF&E itself has a vital influence on the final effect of interior design regardless of the expression form of the designers.

4. Who do you think is related to the quality of FF&E design?

As far as I am concerned, it is closely related with Party A, the proprietor and interior designers' communication and coordination effect, FF&E designers' personality, knowledge structure, background and experience.

Guest : Liu Qian
Location : Bei Jing , China
Company : China TAIKANG Group
Position : Project Manager
Working Age : 10 Years
Interview Time : March 15th , 2019

1. What is FF&E Design ?

FF&E is the reflection of human soul. An empty place is endowed with the space concept with the existence of architecture. The existence of FF&E in space becomes the dwelling place for mankind, which runs through the people's daily life. Furnishing, modeling, function and even the color and texture reflect the users' thought, taste, preference and behavior.

2.What aspect do you care about in FF&E decoration as Party A?

We have been engaged in the hotel previously, focusing on design appearance, texture, color collocation, and relation between space design. These spaces are public places, which attaches importance to the creation of space atmosphere and focuses on the subordinate nature of decoration. Users are integrated into the environment as the experiencers. The uniqueness of environment itself is particularly important. Nowadays, people engaged in old-aged and medical projects care more about the necessities of space design. This crowd has unique demand for space environment and decoration. We should take into account of users' physical status, spiritual outlook and specific psychological demand.

We should first take into account of the physical status of the old people in the old-aged project. Apart from the function of sitting down and lying down, the furniture must be able to support their body, just like another pair of walking stick. The height, seat depth, support, stability, safety will deeply affect his use sense or even their physical status. This is the so-called appropriate aging design. The material meets the requirements of E0 grade environmental protection and B1 grade fire protection, and the high performance fabrics are of anti-fouling, anti-mildew, anti-bacteria, anti-cleaning, anti-corrosive and wear resistant performance.

We should fully take into account of the visual condition and color recognition of the elderly in the lighting design and decoration color collocation. Different colors play different roles in people's psychology and physiology.

The setting of the artwork is also of the same principle, which attaches great importance to psychological function of the color and the interaction between work and human. Artwork itself is the reflection of psychological activities, which is never subordinate to external space but the subjective product independent from objective things. There are two orientations of art therapy. One orientation is the psychological analysis oriented art therapy mode. In this mode, art becomes the nonlinguistic communication media, expressing the negative emotions for people's association and interpretation in their creation. The other orientation is the essence of art, which can improve people's insight for things and achieving the emotion purification effect through art creation and emotion conflict alleviation.

3.What is the impact of FF&E decoration on the whole project?

First, it plays a vital role in function division and line division. Although decoration cannot have obvious division of the space like the solid wall, but can be completed through the furniture combination, the implantation of artworks or objects, fixed and temporary staying area formed by setting of light, leisure or business or compound model, combination of static, or dynamic and other space and orientation of the next behavior, which enables people to enter a certain mode unconsciously, divide and connect time and space.

In addition, the environment atmosphere creation and people's feeling play a decisive role. Due to the existence of far, medium and near scenery in a space, decoration is undoubtedly the most leading role in space and has interaction with people. What kind of environment atmosphere it will form and what kind of psychological or physiological feeling will it bring to people? Is it quiet, lively, rough, tense, relaxed, entertaining or fragrant? These can all be realized through decoration.

4.What factors are related to FF&E design quality?

The quality of design are related with many factors, such as project positioning, construction cost, design scheme, post stage construction, project cycle and control ability of design manager. A project consists of architecture, interior design, decoration, electric machinery and structure and other qualitative aspects also affect the positioning of decoration. Therefore, there are many factors that can affect the presentation of decoration.

Guest : *Chen Xiao yun*
 Location : *Shen Zhen , China*
 Company : *Matrix Interior Design*
 Position : *Section Manager , Partner*
 Working Age : *More than 15 Years*
 Interview Time : *March 17th , 2019*

1. Please have a brief introduction of Matrix .

MATRIX INTERIOR DESIGN is one of the most well-known designing firm in China, awarded international award, with annual output value of 38 million US dollars, ranking the 34 place in the world and first place among residence.

2.What do you think is the most important influence of Decoration on interior design?

The popular trend is that space design is more and more concise and the decoration is absolutely necessary. Different space can present different effects due to different decorations. We can use an appropriate metaphor. The space is a picture. Space design is the mood and basic color of the picture while decoration is the detail of the picture. The picture will have no soul without the existence of decoration.

3.What are the main contents of matrix Decoration?

Furniture , Decorative Lamp , Carpet , Curtain , Painting , Accessories , Artwork

4.How to develop Decoration in your team?

Close cooperation. Decoration will be involved in the space design effect, providing the main line of the story and main space decoration. Space design plays a dominant role while decoration adds more brilliance to it. The main materials are selected by space design.

5.What factors are related to FF&E design quality?

Project construction cost, profession level of Party A, designers' follow-up. The construction cost provided by Party A determines their profession level. Of course, construction cost is closely related with the suppliers. As the saying goes, the higher the price, the better the quality of the merchandise is .

Guest : *Barbara del Curto*
 Location : *Milan, Italy*
 Company : *Politecnico di Milano*
 Position : *Full Professor ,CMF Designer*
 Research Field : *Design Materials*
 Interview Time : *March 14th , 2019*

1.Please have a brief introduction of your research .

I am doing research in material ,in material selection and in material color and finishing ,I am working with company ,because I think to do research you need also something from the company ,that help you to find the right way to the research .What I do is looking for the right material and doing the material selection and replacement of some materials .I work more related to product design ,for packaging , product , etc. sometimes need to change the material properties .

2.What is consideration about how to select the right materials for interior design ?

When I teaching the interior design courses , I teach the way to find the right materials , you have to check on the material library , this is the tools , and you also need to be creative , not only select the exit one , you need to design the color and finishing , the performance , you need to know the function, and where the material will be used , indoor ,outdoor , and the character of the space and the structure , curve or flat, etc.

3.What knowledge required to know the properties of the materials ?Is Chemistry necessary ?

It is not necessary to know chemistry , people come from other discipline also could learn material , for instance , designer doesn't learn chemistry , you could find someone to help you , you can work in the team . Many company have the material libraries to help designer find the right material , and politecnico have the Materioteca .

4.What is the basic property of a material ?

I think it depends on which is the application of the products , for example if you select the material for packaging , one of the important property is density , if you have to choose material for outside , it is very important the durability of the material , so there is not only one important property , I think you need to choose the materials depend on the context of the application , where , who , when .

Guest : Carlo Casagrande
Location : Milan , Italy
Company : Design Group Italia .DGI
Position : Designer
Research Field : Furniture ,Interior Design
Interview Time : March 29th , 2019

1.Please have a brief introduction of GDI work field .

Our work include Branding, Product, Space, Digital, and we have smart labs : the CMF Lab, Food Lab and Lighting Lab

2.How does CMF work for space in DGI ?

We develop color palette to color palette, then develop to material palette, then transfer into space.

1]-Concept :We with the client together to identify what is the correct looking feel for this project before starting design, to communicate with the client also to be a guide line, we start with the mood board to show the direction of the project, a concept, a full strategy, It involve color harmony, lighting, atmosphere, materials, experience in the space, for example, we select furniture objects and art works, books, objects here and there, these physical content, also in term of time, vintage things, new objects, to think by a surrounding space with art and culture, you can build the DNA for the space, with a storytelling.

2]-Moodboard : Then we start the project design with matter color palette, which the color picked form the surrounding of the project, which we inspired by this color palette, then we develop it to harmonious colors, the warm tones, the cold tones, all in the same area we have to manage there, all of these works basically on the mood boards, which bring together real materials, people, interior design, this is a inspiration, like a sensation.

3]-Color palette : Then next phase, we developing actual color collection, we take inspiration images almost like picked it to define what are the colors make themselves. For instance, a color swatch. Then we map this onto a color table, then we reposition these colors, make a perfect balance. We have identity colors in the center the neutral color, the harmonious colors and accent colors.

4]-Interior development : Then we integrate into the interior design, everything in the space should come form our color palette, then we go separate areas in different color identity, which we could used to choose materials, finishes, lighting, and so on. For instance, the suite will be more neutral and relax, the restaurant will be darker with more color, more rich atmosphere. Show everything in the rendering.

3.How do you cooperate with interior designer or architect?

It is depending the requirement of the client, we also do branding, interior design, furniture design, lighting design, we start from the concept, if cooperate with interior design team, we will work together from the strategy, and we will design the CMF based on the space design. The technical drawing and we also could do the rendering.

4.How long it takes you to design CMF for a interior project ?

Depending on the project, sometimes the positioning stage will take a long time, to make it clear. It depends on the client, if they don't clear their identity, we need to help them find it. At least a project design process more than four or five weeks.

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