

Module 1: "Introduction to Color"

Lecture 2: "Introduction Cond."

The Lecture Contains:

- ☰ Light effect in Architecture
- ☰ Light in 3-D work
- ☰ Color Pigment (Chemistry)
- ☰ Pigments and reflective media
- ☰ Color Sensation

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Light effect in Architecture



Plate9. A. Emotional Impact



Plate9. B. Stimulant light



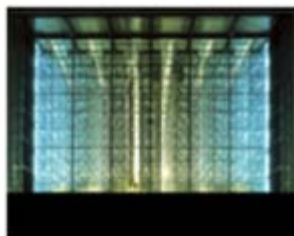
Plate9. C. Brightness in Contrast

Source: (http://www.rsltg.com/images/Light_in_Architecture.pdf)

Understanding 'light' and its effect in architecture (plates9) is one of most essential factors in the success of architecture. Effective application of light in indoor, outdoor (night), creating space, functional space, exterior functional zone, determining spatial border, architectural vernacular, visual clarity, emotional impact, stimulation, etc.



Plate9.a. Visual Clarity



b. Interior Space



c. Special Effect



d. Architectural Vernacular



Plate10. The YAS Hotel in Abu Dhabi

Source:[http://www.google.co.in/search?](http://www.google.co.in/search?hl=en&q=the%20yas%20hotel%20abu%20dhabi&bav=on.2.or.r_gc.r_pw..cf.osb&biw=1272&bih=577&um=1&ie=UTF-8&tbm=isch&source=og&sa=N&tab=wi&ei=62u8T7HrFMvNrQeU8oCkDQ)

[hl=en&q=the%20yas%20hotel%20abu%20dhabi&bav=on.2.or.r_gc.r_pw..cf.osb&biw=1272&bih=577&um=1&ie=UTF-8&tbm=isch&source=og&sa=N&tab=wi&ei=62u8T7HrFMvNrQeU8oCkDQ](http://www.google.co.in/search?hl=en&q=the%20yas%20hotel%20abu%20dhabi&bav=on.2.or.r_gc.r_pw..cf.osb&biw=1272&bih=577&um=1&ie=UTF-8&tbm=isch&source=og&sa=N&tab=wi&ei=62u8T7HrFMvNrQeU8oCkDQ) ; May 23, 2012)

The modern architecture is wisely applying the color-light for the enhancement of its effect around the world. People see the architectural constructions during the day under various natural lights and environment from the sun-rise till sun-set. The above architectural construction (Plate10) is a suitable example of such use of light that enhances the quality and appearance of the structure. However, the same may have different appearance in night under especial light effect. Therefore, such effect would enhance the quality of the structure further more with the help of especial effect. The above examples are illustrating the effect of lights in night and creating mystic effect of the building. Thus the building remains alive and visible from distance.

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Light in 3-D work

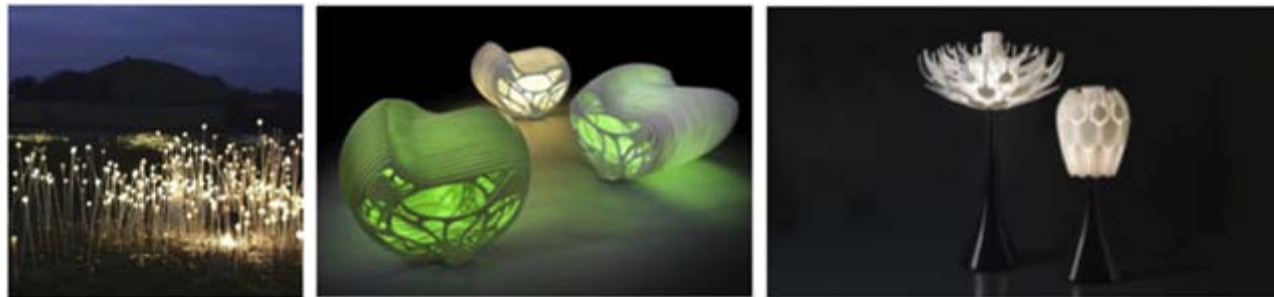


Plate11. 3D Light Sculpture

3D work has greatly benefited by the new technique. The effect of light has enhanced to a new dimension (Plate11). 3-D art has taken advantage of the light to create special effect and create mystic environment. During the day the land remains flooded with day light and in the night it may create totally different effect due to the mystic conditions of dark and illumination. The patches of illumination and dark areas would also create depth of field and an emotional feeling. Thus, the application of light in 3D art and design has created new possibilities.



Plate12. 3D Light Design

The above 3D designs (Plate12) have enriched the quality of work. Along with the application of lights the works have gone beyond the regular perception. The works are able to generate mystic quality in emotional realm.

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Color Pigment (Chemistry)

Color pigment is traditionally used in day to day objects to art and craft materials. Pigments are used for coloring various products such as- paint, ink, plastic, fabric, cosmetics, food and other materials. Most pigments that are used in manufacturing and the visual arts are dry colors, in fine powder form. The natural powder color organic or inorganic needs to be added with some form of binding glue. The glue has to be relatively neutral or colorless so that it does not change the hue of the color. Color pigment has a strong consumer market around the world which, "The global demand on pigments was roughly US\$ 20.5 billion in 2009, around 1.5-2% up from the previous year. It is predicted to increase in a stable growth rate in the coming years. The worldwide sales will increase to US\$ 24.5 billion in 2015, and reach US\$ 27.5 billion in 2018." (http://en.wikipedia.org/wiki/Pigment_on_20_Feb_2012)

Pigments and reflective media

Till now we discussed about the application of light-color in art and design. The application of light is a modern phenomenon compare to our exposure to color as in consumer products and in our daily life has created enormous influence in various ways. Since the beginning of mankind human beings are fascinated by color pigments. The applications of pigments have gone through enormous experiments and changes. We have tried to understand pigments scientifically and technically. Pigments are chemicals that selectively absorb and reflect different spectra of light. When a surface is painted with a pigment, light hitting the surface is reflected, minus some wavelengths. This subtraction of wavelengths produces the appearance of different colors. Most paints are a blend of several chemical pigments; with intend to produce a reflection of a given color.



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"Pigment manufacturers assume the source light will be white' or of roughly equal intensity across the spectrum. If the light is not a pure white source (as in the case of nearly all forms of artificial lighting); the resulting spectrum will appear a slightly different color. Red paint, viewed under blue light, may appear black. Red paint is red because it reflects only the red components of the spectrum. Blue light, containing none of these, will create no reflection from red paint, creating the appearance of black." Ref: (<http://en.wikipedia.org/wiki/Color> Feb. 20th 2012)

Therefore, the source of light and the color of reflected surface are correlated in term of its appearance.



Plate13. A. Tintoretto, *Miracle of the Slave* (c.1548)



13 B. Titian 1518 whose dynamic three-tier composition and color scheme Carmine Red Lake pigment, derived from the established him as the preminent painter north of Rome.

(Source: <http://en.wikipedia.org/wiki/Tintoretto> ; and http://www.google.co.in/search?hl=en&q=titian%20paintings%20venice&bav=on.2.or.r_gc_r_pw..cf.osb&biw=1280&bih=585&um=1&ie=UTF-8&tbn=isch&source=og&sa=N&tab=wi&ei=iOW5T6z3Qcm3rAfOtLWGCA ; Dated May 21, 2012)

The above paintings (Plates13A&B) are the typical examples of application of pigments. Traditionally colors are extracted from natural minerals (Ocher- earth colors) and organic substance. Flowers and fruits are commonly used for the extraction of indigenous color. Traditionally artist had to depend on natural colors that are available locally. It is found that the natural colors remain luminous much longer while the modern chemical pigments get discolored or faded much earlier.

Plate14. A. Lascaux, France (35000 BC)*¹14. B. Bhimbetka, India (30,000BC)*²

(Source: 14.A. http://www.google.co.in/#hl=en&site=&source=hp&q=cave+paintings+in+france&oq=cave+paintings+in+france&aq=f&aqi=g5g-K5&aql=&gs_l=hp.3..0l5j0i30l5.2073.12103.0.13022.21.15.3.3.3.0.704.3987.1j4j7j1j1j0j1.15.0...0.0.p560BWlgAzs&bav=on.2.or.r_gc.r_pw..cf.osb&fp=1&biw=1278&bih=578 ; May 21, 2012

14. B. http://en.wikipedia.org/wiki/Bhimbetka_rock_shelters ; May 21, 2012

The above Cave Paintings (Plates14A&B) are examples of application of color pigments from the earliest human habitats. Earth-colors (ochers) are applied on the rock surface that remained with the same luminosity even after thousands of years. Due to the local availability the choice of colors (ochers of yellow-red) remained limited. However, the limitation of color did not restrict human beings to create and communicate. Color is utilized to communicate human feeling and their aspirations. Before the development of linguistic expression color could help human being to communicate their feeling and convey message.

Plate15.A. Buddhist Goddess, Pancharaksha, c 1040 AD
Pala Dynasty Illustrated Manuscript15.B. Ajanta (Cave no. 17) Fresco Secco, India 4th-5th C AD
(Fresco Secco- Dry plaster fresco)

Source: 15.A http://www.banglapedia.org/httpdocs/HT/P_0039.HTM ; May 21, 2012

15.B. http://www.google.co.in/#hl=en&q=ajanta+cave+paintings+in+india&oq=Ajanta+cave+paintings+in+India&aq=0K&aqi=g-K1&aql=&gs_l=serp.1.0.0i30.11690.15425.0.17533.7.7.0.0.0.0.719.1778.1j2j3j6-1.7.0...0.0.1nec0ZCgsE4&bav=on.2.or.r_gc.r_pw..cf.osb&fp=559ed03a9971b3dd&biw=1278&bih=578 ; May 21, 2012

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Like other ancient art works, the traditional Buddhist Paintings (Plates15A&B) applied earth colors and organic colors. The traditional paintings in Indian Sub-continent like other places depended on natural mineral and organic colors. The brilliance of color remained same even after centuries. Traditional cultures used color symbolism and abstract metaphors to convey their philosophy and feelings.

Natural color such as ochers and iron oxides are being used from the prehistoric period. Pigments and paint grinding equipment believed to be between 350,000 and 400,000 years old. Until the Industrial Revolution the use of color remained limited to earth or mineral colors and organic colors found indigenously. Some colors were costly or impossible to mix with the range of pigments that were available. Blue or purple colors considered favourite to royalty because of their expensiveness. Pigments from unusual sources such as botanical materials, animal waste, insects, and molluscs were harvested and traded over long distances. Traditionally many of these colors were extracted from natural ingredients (fruits, vegetable, flowers, etc.). In most cases such colors extracts and the processes remained highly confidential. Most of these colors are sensitive to sunlight exposure. Colors bleach and fade under strong light exposure.



Plate 16.A. *The Café Terrace*, Van Gogh 1888



16.B. Piet Mondrian

Source: 16.A. http://en.wikipedia.org/wiki/Vincent_van_Gogh; May 21, 2012

16. B. http://en.wikipedia.org/wiki/Piet_Mondrian; May 21, 2012

The above modern paintings are examples of application of chemical pigments. The chemical color pigments have given wide range of color choices. The brightness of colors and luminosity has indeed helped us to create greater range of hues and combination of colors. Thus the chemical pigments have wide range of application from household consumer products to rituals to ceremonial events (Plate17). The colors have created interesting medium of visual communication in the applied field not just for decoration.



Plate17. Indian Rangoli (ceremonial design pattern)

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Color Sensation

Color sensation is understood based on human perception, cognition and interpretation by brain. It is perhaps the most intriguing area of human curiosity that can be hardly quantified. It is observed that the sensation may not be experienced the same way every time. The color may have different sensational experience due to different perception and interpretation by brain. It may be due to varied cultural, traditional, environmental conditions. And the same color may not react the same way to everybody due to various conditions. Hence it is quite difficult to quantify 'sensation'. Scientifically color perception may be explained through physiological examination; however the psychological experience may not be explained fully.



Plate18.A. A tribal hut, Indian



18.B. Buddha meeting his wife & son, Ajanta, India

Source: http://www.google.co.in/#hl=en&site=&source=hp&q=Ajanta+Cave+fresco&oq=Ajanta+Cave+fresco&aq=f&aqi=g-K1&aql=&gs_l=hp.3..0i30.3795.12450.0.13048.18.15.0.3.3.0.810.5143.3j2i4j1j1j2j2.15.0...0.0.-_qNEgDK4ww&bav=on.2.or.r_gc.r_pw..cf.osb&fp=1&biw=1278&bih=578; May 21, 2012

Tradition, culture, social values, etc are directly responsible in 'holding value'. Such values are the sources of human emotion. Color has especial reference to such value system (Plates18A&B). Color sensation largely depends upon human senses (visual, auditory, olfactory, touch and taste). Out of these sensual organs visual is one of the most powerful organs that evokes various emotional experiences. Yellow excites the intellect where as blue hues soothes the nerves and allows relaxing. Our feelings about color can also be deeply rooted our personal experience and cultural experience. For example, while the color white is used in many Western countries representing purity and innocence, it is seen as a symbol of mourning in many Eastern countries. Hence, color feeling or sensation has direct relationship with psychological implications.

