# Module 2

Lecture-1

## Understanding basic principles of perception including depth and its representation.

Initially let us take the reference of Gestalt law in order to have an understanding of the basic principles of visual perception. Gestalt is the German word for "form," and it is applied in Gestalt psychology. It means "unified whole" or “configuration." The essential idea of gestalt is that in perception the whole is different from the sum of its parts. Gestalt psychologists developed six laws that govern human perception:

These are the laws:

1. Proximity.
2. Good Continuation.
3. Closure.
4. Good form.
5. Figure/Ground.

In graphic design, it is very important to know gestalt theory because it allows us to predict how viewers respond to design. It does not only assure that our intention will be understood correctly by the viewers, but it also helps us to create a dynamic design.

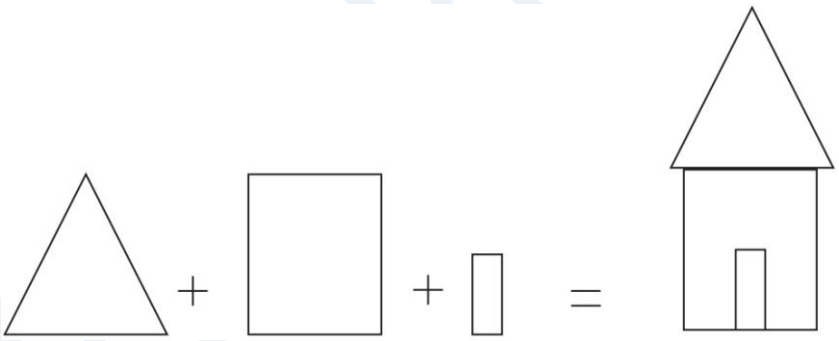


Fig.25 The whole is different from the sum of the parts

### Law of Proximity:

Elements that are closer together will be perceived as a coherent object. We see the first image in horizontal orientation because horizontal circles are closer than the vertical ones and in the second image we see the circles in a vertical orientation because vertical circles are closer to each other than the horizontal circles.

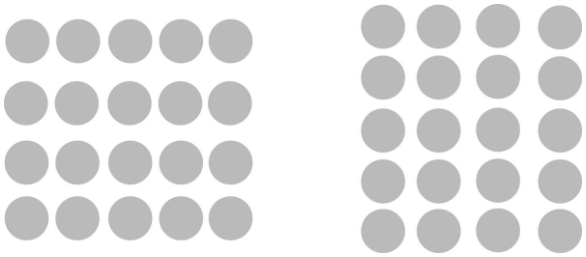


Fig.26: Law of Proximity: circles that are closer are grouped together into a unit.

Law of Similarity:

Elements that look similar will be perceived as part of the same form. In the image below our eyes perceive the squares and circles separately because they look similar so we perceive them as part of the same form.

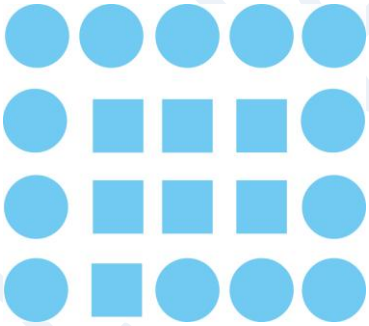


Fig.27: Law of Similarity: shapes that are similar are grouped together into a unit.

Law of Good Continuation:

Humans tend to continue contours whenever the elements of the pattern establish an implied direction.

Fig.28: Law of Good Continuation: the eye follows the circles and perceives a curve

## Law of Closure:

Humans tend to enclose a space by completing a contour and ignoring gaps in the figure. In the image below (Fig.29) we tend to enclose the empty space and visualize it as a triangle.

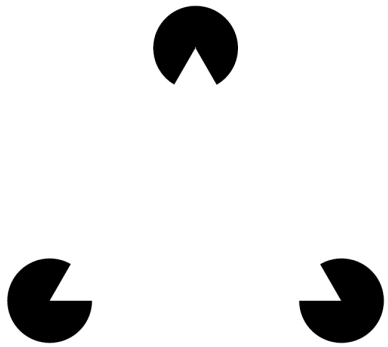


Fig.29: Law of Closure: this leads us to perceive a triangle through its edges are not explicitly shown.

## Law of Prägnanz (Good form):

A stimulus will be organized into a figure or form as good as possible. Here, good means a combination of simple forms. The above image (Fig.30) appears to the eye as a square overlapping a triangle or the triangle overlapping a square, not a combination of several complicated shapes which is not harmonious and balanced.

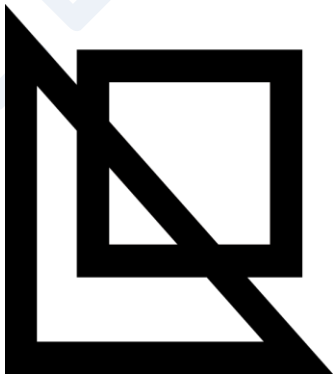


Fig.30: Law of Prägnanz (Good form)

Lecture-2

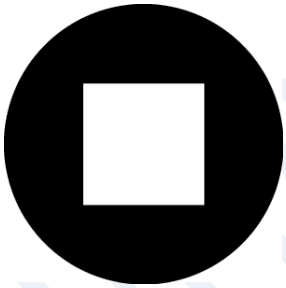
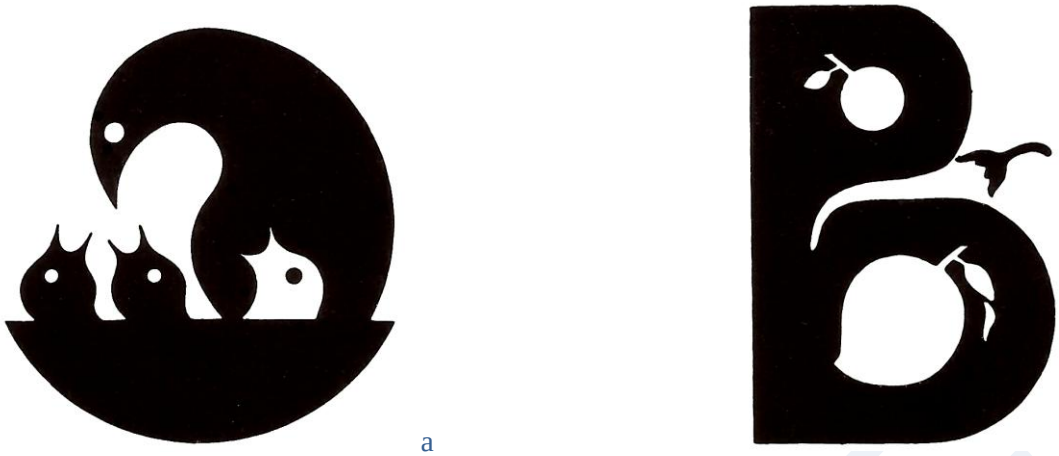


Fig.31: Law of Figure/Ground

Law of Figure/Ground and its semantic application:
A stimulus will be perceived as separate from its ground. . The above figure appears to the eye as a square inside a circle, or as a donut shaped circle with a square hole. Figure 31.

Figure/ground reversals create a delightful "surprise" in the viewer's eye that we have discussed in figure and ground relationship in previous lesson (Fig.15). Fig.32 demonstrates the cup plate and the fork used as figure and ground relations and how design elements can be used as meaningful manner in design solution of a particular context. Using minimum design elements to get optimum visual effects to make the design more meaningful. e.g. the first image a bird and chicks along with a nest, here, how beautifully and meaningfully depicting the essence of the subject in figure and ground relation, in the second image is a logo of a food product company showing fruits, mango, orange and a chilli in a positive space (white) and the first letter of the company B can be seen as negative space(black). It is very interesting to observe the relation of figure and ground and how meaningfully they are being created. (*Students may create various shapes of design drawing and layout of figure and ground relation for clear understanding of how to use design elements for a particular context in the classroom itself.*)



a b

c

Fig.32 a, b, c, Semantic application of figure and ground

Lecture-3

Introduction to Perception:

## Perception:

Perception is the preference of selection, organization, and interpretation of sensory input. It is the process of obtaining information about both the external and the internal environments, which results, via integration utilizing memory, in the conscious experience, recognition, and interpretation of objects, object relationships, and events Fig.33. The ability to perceive spatial relationships especially the distances between objects, in three dimensions fig.34.

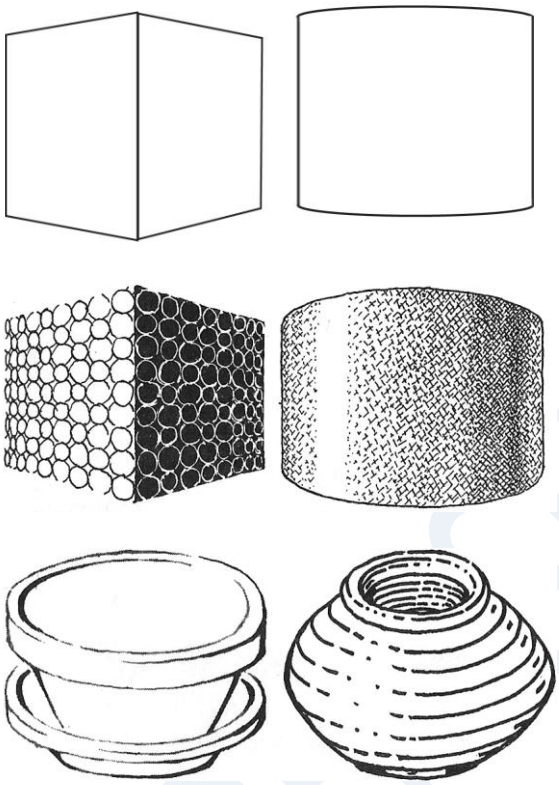


Fig.33: Depth and its representation.

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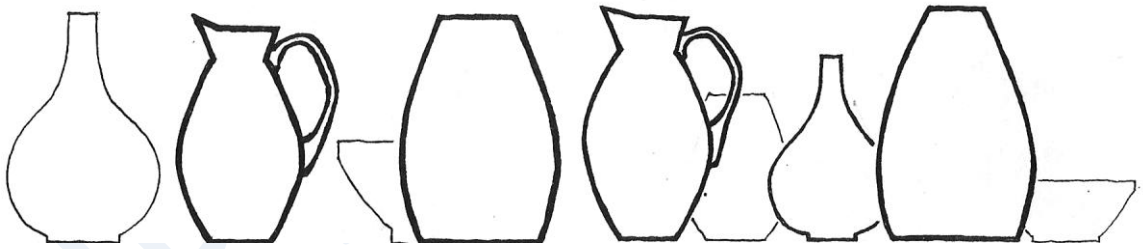


Fig.34: An object drawn with a thinner line is perceived as being further.

In the above objects you can see the use of thick and thin lines to create visual distances between the objects. Though objects are on the same plane the thick line gives the impression of being closer and the thin or faint line creates distances between objects. While perceiving visual perspective (near and far) sometimes it's very difficult to represent them visually in a simple manner. Therefore, trying this technique to reduce the difficulty of representing visual distances between objects.

## Depth Perception:

Depth perception is the ability to see the world in three dimensions and to perceive distance. Although this ability may seem simple, depth perception is remarkable when you consider that the images projected

on each retina are two-dimensional. From these flat images, we construct a vivid three-dimensional world.
To perceive depth, we depend on two main sources of information:

1. Binocular disparity
2. Monocular cues

## Binocular disparity:

Perhaps the most important perceptual cues of distance and depth depend on so-called binocular disparity. Because our eyes are spaced apart, the left and right retinas receive slightly different images. This difference in the left and right images is called binocular disparity. The brain integrates these two images into a single three-dimensional image, allowing us to perceive depth and distance. The phenomenon of binocular disparity functions primarily in near space because with objects at considerable distances from the viewer the angular difference between the two retinal images diminishes.

## Monocular cues:

Monocular cues are cues to depth that are effective when viewed with only one eye. Although there are many kinds of monocular cues, the most important are interposition, atmospheric perspective, texture gradient, linear perspective, size cues, height cues, and motion parallax.

## Interposition:

Probably the most important monocular cue is interposition, or overlap. When one object overlaps or partly blocks our view of another object, we judge the covered object as being farther away from us as see in Fig .24c.

## Atmospheric Perspective:

The air contains microscopic particles of dust and moisture that make distant objects look hazy or blurry. This effect is called atmospheric perspective, and we use it to judge distance.

## Texture Gradient:

A texture gradient arises whenever we view a surface from an angle, rather than directly from above. The texture becomes denser and less detailed as the surface recedes into the background, and this information helps us to judge depth.

Lecture-4

## Depth Perception through Linear or one point Perspective:

When we see object in distance from a particular angle, sometimes we see it as an illusion to know how we must know about perspective and its principles. There are three types of perspective generally we encountered with while looking at objects from distances apart from what we discussed earlier. These are one point perspective, two point perspective and three point perspective.

Linear or one point Perspective: Linear perspective refers to the fact that parallel lines, such as railroad tracks, appear to converge with distance, eventually reaching a vanishing point on the horizon. The more the lines converge, the farther away they appear. One vanishing point is typically used for roads, railway tracks, hallways, or buildings viewed so that the front is directly facing the viewer as shown in Fig.35. Any objects that are made up of lines either directly parallel with the viewer's line of sight or directly perpendicular (the railroad slats) can be represented with one-point perspective.

One-point perspective exists when the picture plane is parallel to two axes of a rectilinear plane — a plane which is composed entirely of linear elements that intersect only at right angles. If one axis is parallel with the picture plane, then all elements are either parallel to the ground plane or level (either horizontally or vertically) or perpendicular to it. All elements that are parallel to the ground plane are drawn as parallel lines. Elements that are perpendicular to the ground plane converge at a single point (a vanishing point) on the horizon. A typical example of one-point perspective is shown in Fig.35.

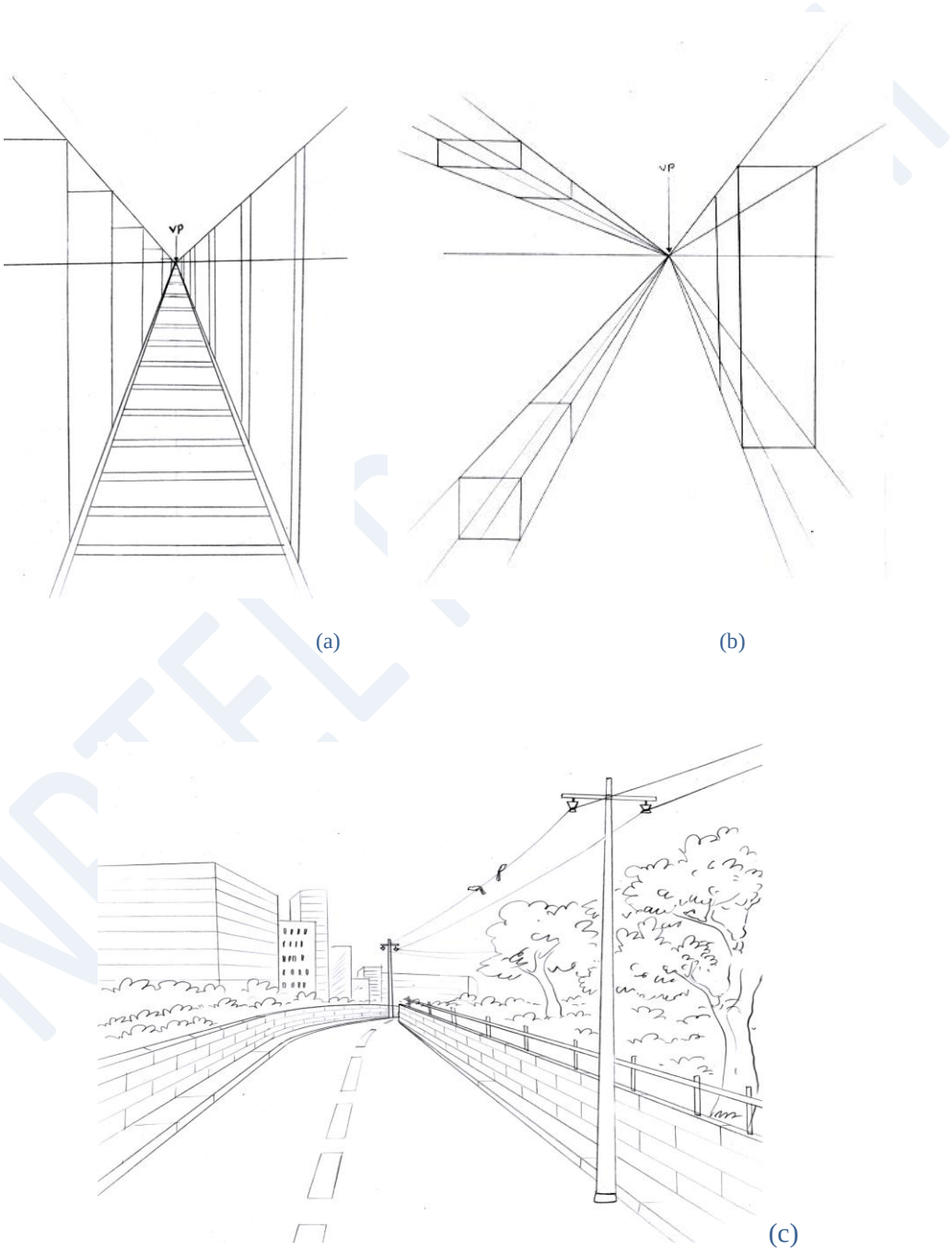



Fig. 35a, b and c: An example of linear or one point perspective

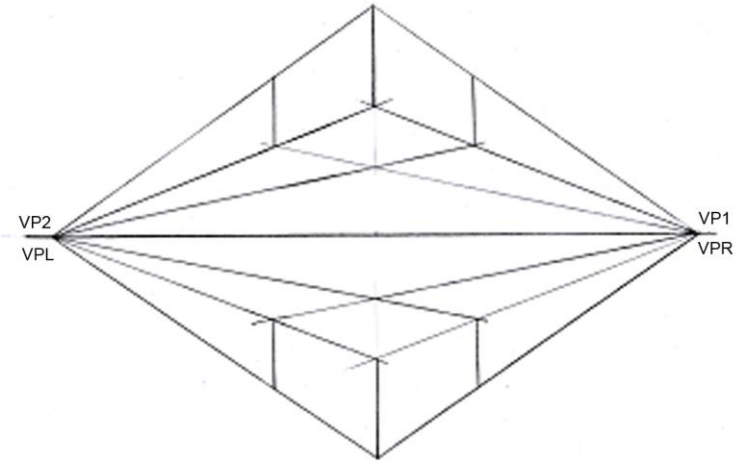
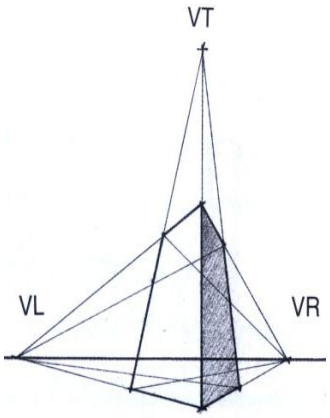



Fig.36(a): An example of two point perspective

## Two-point Perspective:

Two-point perspective can be used to draw the same objects as one-point perspective, rotated: looking at the corner of a house, or looking at two forked roads shrink into the distance. For example, one point represents one set of parallel lines; the other point represents the other. Looking at a house from the corner, this refers as station point. (SP) one wall would recede towards one vanishing point, while the other wall would recede towards the opposite vanishing point. Two vanishing points (it usually refers to VP1 (right) and VP2 (left)) or VR and VL generated from the same horizon and define the contour of a particular object.

Two-point perspective has two sets of parallel line to the horizon and these two sets gradually converse to a vanishing point in the horizon, which has been already referred as VP1 and VP2. See fig. 36(a).




Three-point perspective

Fig.36(b): An example of three point perspective

Three-point Perspective:

Three-point perspective is usually used for buildings seen from above (or below). In addition to the two vanishing points from before, one for each wall, there is a third to show how those walls recede into the ground. This third vanishing point will be below the ground. Looking up at a tall building is another common example of the third vanishing point. This time the third vanishing point is high in space.

Three-point perspective exists when the perspective is a view of a Cartesian plane where the picture plane is not parallel to any of the scene's three axes. Each of the three vanishing points corresponds with one of the three axes of the scene.

One-point, two-point, and three-point perspectives appear to embody different forms of calculated perspective. The methods required to generate these perspectives by hand are different. Mathematically, however, all of them are identical.

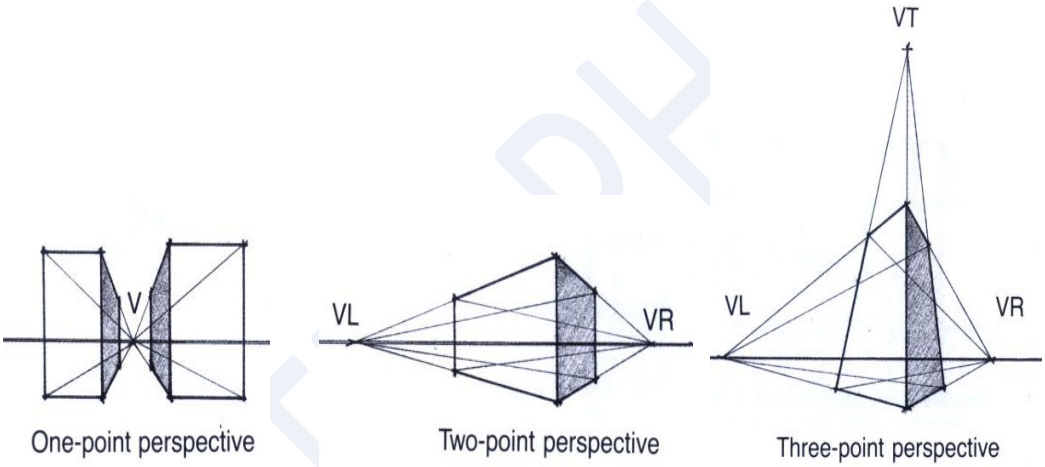



Fig.37: Description of Perspective

Three perspective angles for your clear visual understanding

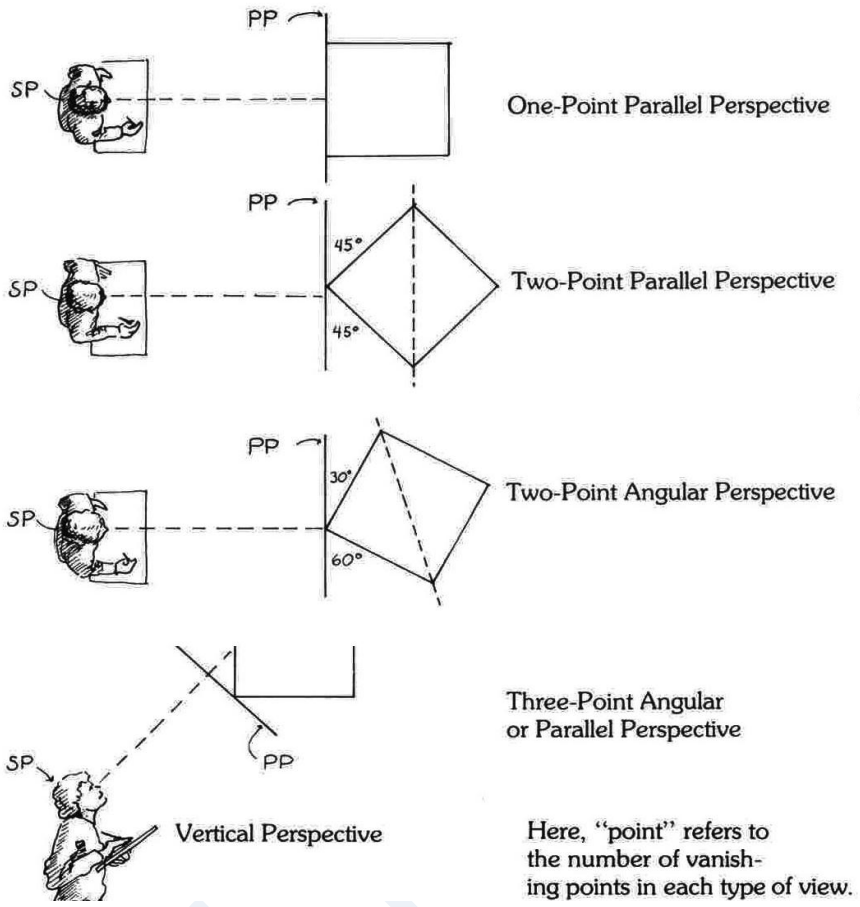



Fig.38: Visual Perspective

## Eye level:

The first image lies below the eye level, the second one lies in the eye level and the third one lies above the eye level. These are three basic eye levels we usually encounter while looking at any visual object around us.

*(Take any object and try to draw in various eye levels in order to understand the basic visual perception as shown in Fig.39.)*

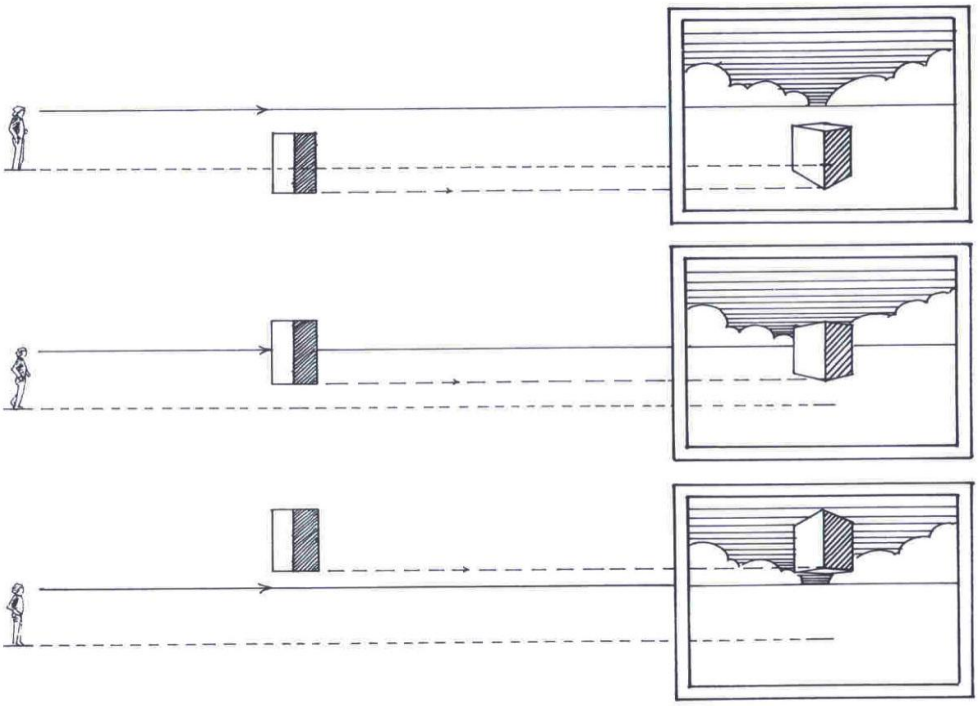


Fig.39: Various eye levels

# Question & Answer

Module 2

1. What is visual perception?
    - See lecture 1 Gestalts Law. Try to develop another set of illustration by catchy reference from lecture1.
2. What do you mean by figure and ground and its relation while doing a meaningful design layout?
    - See lecture 2 for easy understanding and try to develop a meaningful illustration.
3. What is perception and depth(visually)
    - Perception of depth as explained in lecture 3. Show by illustration as reference given in the lecture.
4. What is perspective? While developing a drawing how it helps us to attain the accuracy.
    - See lecture 4 and try to understand the method of doing perspective in term of an illustration.