LIGHT (VALUE)

Text abridged and adapted from *Art and Visual Perception* by Rudolph Arnheim (1974)

Light

To human beings as to all diurnal animals, light is the prerequisite for most activities. Yet, since we mostly pay attention to objects and their actions, we do not realize the importance of light. We deal visually with human beings, buildings, or trees, not with the medium generating their images. Accordingly, even artists have been much more concerned with the creatures of light than with light itself. Under special cultural conditions, light enters the scene of art as an active agent, but only in our own time there have been artistic experiments dealing with nothing but the play of light itself.

The experience of light

Physicists tell us that the light that brightens the sky is sent through a dark universe to a dark earth from the sun. But to the eye, the sky is luminous by its own power and the sun is nothing but a bright characteristic of the sky, attached to it and perhaps generated by it. Since the sun appears as nothing but a shiny object, light must reach the sky from somewhere else. Instead of being an effect of the sunlight on all other objects, "day" seems a bright thing which arrives from the beyond and moves over the sky. In the same way the brightness[1] of objects on earth is seen basically as a property of their own rather than as a result of reflection.

It follows that darkness is seen either as the extinction of the inherent brightness of an object or as the effect of dark objects hiding bright ones. Night is not the negative result of withdrawn light, but the positive arrival of a dark cloak that replaces or covers the day. Some artists, such as Rembrandt or Goya, at least part of the time show the world as an inherently dark place, brightened here and there by light. They happen to support the findings of physicists.

Relative brightness

Another discrepancy between physical and perceptual facts is uncovered when we attempt to answer the question: How bright are things? It has often been observed that a handkerchief at midnight looks white, like a handkerchief at noon, although it may send less light to the eyes than a piece of charcoal under the midday sun. The brightness we see depends, in a complex manner, on the distribution of light in the total situation, on the optical and physiological processes in the observer's eyes and nervous system, and on the physical capacity of an object to absorb and reflect the light it receives.

This physical capacity is called **luminance** or **reflectance**. It is a constant property of any surface. Depending on the strength of the illumination, an object will reflect more or less light, but its luminance, i.e., the percentage of the light it throws back, remains the same. A piece of black velvet, which absorbs much of the light it receives, may under strong illumination send out as much light as a dimly lit piece of white silk, which reflects most of the energy.

Perceptually, there is no direct way of distinguishing between reflecting power and illumination, since the eye receives only the resulting intensity of light but no information

[1] As we mentioned in the text on "Color" and as can be seen throughout this text, Arnheim doesn't use the word "brightness" (or the adjective "bright") to mean brilliance (or brilliant), but as a synonym of lightness (or light). In technical art vocabulary, the measurement of lightness and darkness in color or tone is called "value."

about the proportion in which the two components contribute to this result. If a dark disk, suspended in a dimly lit room, is hit by a light in such a way that the disk is illuminated but not its environment, the disk will appear brightly colored or luminous. Brightness or luminosity will appear as the properties of the object itself. The observer cannot distinguish between the brightness of the object and that of the illumination.

The relative brightness of objects is perceived most reliably when the whole setting is subjected to equal illumination. Under such conditions, the nervous system can treat the illumination level as constant and credit each object simply with the brightness it exhibits on the total scale leading from the darkest to the brightest object in the setting. Remarkably enough, however, the mechanism works quite well even when the lighting is not homogenous but ranges, for example, from intense brightness near the light source to dark shadow. If we compare a white envelope on the window sill with one lying in the back of the room, we do not have to rely on knowledge or intellectual calculation to realize that they are both the same white. We see it directly and spontaneously because we see each envelope in relation to the brightness gradient of the whole setting.

Illumination

The term "illumination" is not self-explanatory. At first thought, it might seem as though illumination must be involved whenever we see anything, because unless light falls on an object it remains invisible. This, however, is physicists' reasoning. The artist can speak of illumination only if and when the word serves to name a phenomenon that is directly see by the eyes. Is there such a thing, and under what conditions is it observed?

An evenly lighted field shows no sign of receiving its brightness from somewhere else, and its luminosity appears as a property inherent in the thing itself. *Illumination is the perceivable imposition of a light gradient upon the object brightness and object color in a setting.* The superposition observed on the surface of illuminated things is a transparency effect. Such transparency can be obtained in painting by actual glazes[2] and superposition.

Around 1500, artists often used sheets of colored paper for their drawings as a ground of medium brightness, to which they added highlights by applying white ink, shadows by black hatching[3]. Painters often started with a monochromatic underpainting, which was used for the shadows and was then covered with transparent glazes of local color. This separation of illumination and object color reflected the perceptual split observed by the painter as she looked at things in the physical world; it also manifested a practical, object-oriented attitude, intent on distinguishing properties of the objects themselves from transitory effects momentarily imposed upon them.

Quite different attitude is expressed by painters of the nineteenth century who represented the whole of local brightness, local color, and brightness and color of the illumination through a single shade of pigment. This technique not only confirmed the purely visual sensation as the final reality; it also asserted philosophically that the being of things is not untouchably permanent. Accidentals are seen as participating in the essence of things just as much as their invariant properties. This pictorial procedure also defined the individual as being partly the creature of its environment, subject to influences that cannot simply be discarded like veils.

As in other instances of transparency, the illumination effect is brought about by the tendency toward simplest structure. When illumination is perceived as a superposition, the illuminated

[2] A **glaze** in painting is a thin, transparent coat of pigment. Traditionally, used in oil painting since the 1500s; now possible with synthetic paints, such as acrylic.

[3] **Hatching** is a technique used in drawing, engraving, etc., in which almost parallel lines are drawn closer or further apart to achieve an effect of shading from dark to light.

object is able to maintain a constant brightness and color, while shading and highlights are attributed to a light gradient, which has a simple structure of its own.

It should be noted that there is no obvious answer to the question how the object's brightness-color value is determined. When we think of an object, we realize that what the eyes actually receive is a gamut of shades. Is one of them designated as the "true" color of the object, perhaps because it is the most saturated, the least contaminated by grayness? Delacroix assumed the existence of such a true tone and noted that it is found next to the "luminous point," i.e. the highlight. But perhaps no such tone is actually present in the percept, and object brightness and object color are instead medium values, which serve as common denominators of the various shades.

Light creates space

All gradients have the power to create depth, and gradients of brightness are among the most efficient. This is true for spatial setting, such as interiors and landscapes, but also for single objects. When a white cone is placed with its vertex toward the observer and lighted evenly, the cone disappears and the observer can only see a flat white disk. The cone becomes visible when the light falls from only one side. Evidently a three-dimensional view can provide no structural simplification as long as the lighting is even. When lateral illumination is used, however, it introduces a gradient of shading, which results in a strong three-dimensional effect revealing the shape of the cone.

The increase in relief produced by lateral lighting is well known. Curved surfaces are obtained by accelerating brightness gradients, which correspond to the fact that the curvature of an object is almost flat where the line of sight strikes it at a right angle but increases ever more rapidly from the center toward the boundary (Fig. 1). By varying the steepness of the gradient, one can control the shape of the curvature perceived. A gradient changing at a constant rate produces the effect of an inclined plane by reflecting the physical fact that the angle of inclination is constant throughout the surface.

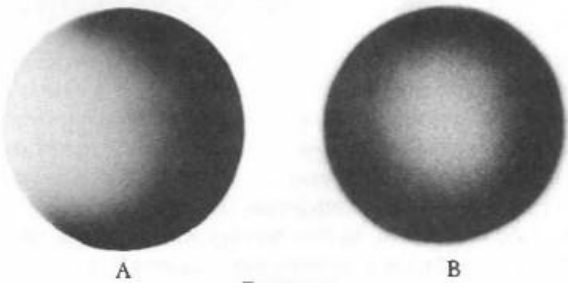

Fig. 1: Lateral illumination versus central illumination.

In Fig. 1, the gradient of *a* tends to create more compelling perceptual volume than that of *b* because in *b* the shading is as symmetrical as the spherical shape itself. Not much structural gain is obtained by perceiving such a symmetrical pattern as three-dimensional. Nor, in this case, does the object convey a strong impression of being lit by an outer light source. In Fig. 1*a*, by contrast, the gradient introduces an asymmetry, which can be detached from the object when the pattern is seen as a sphere struck obliquely by a light.

As we look at an object by itself, it is not always clear whether any brightness differences it shows in itself are due to illumination or to actual physical differences between white, black, and gray paint. When we look at Fig. 2, we probably see a white and a dark wing regardless of whether we see a flat pattern or a folded one, and the central edge as in front or in back. If one then takes an actual piece of folded white cardboard and places it on the table, with its central edge toward the viewer and the light

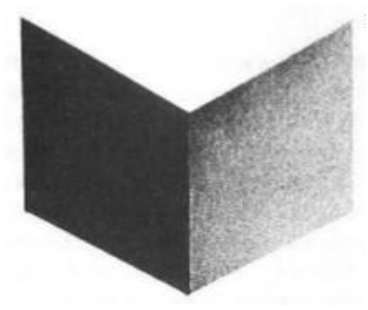
Fig. 2: A white and a dark wing.

falling from the right, the percept will correspond to the physical facts: one sees a white card, shaded on one side by being turned away from the light source.

Constancy of brightness is at work. However, if one closes one eye and forces the object to reverse so that it looks something like an open book with the central edge forming a distant groove, the situation changes radically. Now the left wind looks darkly colored, all the more dark because the light should strike it directly, and the rightwing is white, all the more bright because it should be in the shadow. Thus illumination effects are strongly influenced by the light distribution perceived in the total spatial setting.

In whole settings as well as in single objects steady gradients of brightness, like steady gradients of size, make for a continuous increase or decrease in depth. Since brightness of illumination means that a given surface is turned toward the light source whereas darkness means that it is turned away, the distribution of brightness helps to define the orientation of objects in space. We know that units of similar brightness are grouped together in perception. Thus a grouping by similarity of brightness indirectly produces a grouping by similarity of spatial orientation.

A judicious distribution of light serves to give unity and order not only to the shape of single objects, but equally to that of a whole setting. The totality of the objects appearing within the frame of a painting or on a stage can be treated as one or several large objects, of which all the smaller elements are parts. The strong lateral light used by painters such as Caravaggio simplifies and coordinates the spatial organization of the picture.

The neat analogy between brightness and spatial orientation is interfered with by cast shadows, because they may darken an area that would be bright otherwise, and by reflections that light up dark places. Differences in local brightness will also interact with the lighting scheme. We are again up against the problem that arises from the eye's inability to distinguish directly between reflecting power and strength of illumination.

In order to avoid the confusion between brightness produced by illumination and brightness due to the coloring of the object itself, the spatial distribution of light in the setting must be understandable to the eyes of the viewer. This is most easily achieved when no more than one light source is used. We have to beware of excessively dark shadows, because they will destroy shape not only by hiding relevant portions of the object but also by cutting across the continuity of the curvature with sharp boundary lines between brightness and darkness.

In recent years museums and art galleries have taken to murdering sculpture by illuminating it with focused spotlights to create a dramatic effect. Attached shadows maintain their character of a transparent film only when their borders are blurred gradients. The focused spotlight creates the same sharp contours as black lines and therefore slashes the continuity of the sculptural surface mercilessly and produces senseless arrangements of white and black shapes. Daylight, on the other hand, makes sculpture so beautifully visible because its diffuseness supplements the direct incidence of the sunlight and creates soft gradients.

To avoid harsh one-sidedness, lighting in art galleries or film studios or on the stage must combine light sources in an organized whole. Several lights may add up to an even illumination, or each of them may create a clearly self-contained gradient of brightness values. The overall result can convey visual order. But the light sources may also interfere with one another by partly increasing or reversing the others' effects. This will make the shape of objects as well as their spatial interrelations incomprehensible. If several light sources are to cooperate, the photographer endeavors to organize them in a hierarchy, giving one of them the leading part of the "motivating source" and clearly weaker supporting roles to the others.

Shadows

Shadows may be either attached or cast. **Attached shadows** lie directly on the same objects where they are created by the light source. **Cast shadows** are thrown from one object on another, or from one part on another of the same object. **Physically**, both kinds of shadow are of the same nature; they appear in those places of the setting where the light is scarce. **Perceptually**, they are quite different. The **attached shadow** is an integral part of the object, so much so that in practical experience it is generally not noted but simply serves to define volume. A **cast shadow**, on the other hand, is an imposition by one object on another, an interference with the integrity of the object receiving the shadow.

By means of a cast shadow a mountain may darken the villages in the valley with an image of its own shape. Thus, cast shadows equip objects with the uncanny power of sending out darkness. But this symbolism becomes artistically active only when the perceptual situation is made comprehensible to the eye. There are two things the eye must understand. First, the shadow does not belong to the object on which it is seen; and second, it does belong to another object, which it does not cover. Often the situation is understood intellectually but not visually.

Fig. 3: Tracing of central figures of *Night Watch* (1642) by Rembrandt.

For example, Fig. 3 indicates the outlines of the two main figures of Rembrandt's *Night Watch* (Fig. 4). On the uniform of the lieutenant we see the shadow of a hand. We can understand that it is cast by the gesticulating hand of the captain, but to the eyes the relation is not obvious. The shadow hand has no meaningful connection to the object on which it appears. It may look like an apparition from nowhere, because it acquires meaning only when related to the captain's hand. That hand is some distance away; it is not directly connected to the shadow, and, because of its foreshortening,[4] is quite different in shape. Only if (1) the viewer has a clear awareness, conveyed by the picture as a whole, of the direction from which the light is falling, and (2) the projection of the hand evokes its objective three-dimensional shape, can the hand and its shadow be truly correlated by the eyes. Of course, Fig. 3 is unfair to Rembrandt in focusing on two figures and showing one shadow in isolation from the impressive display of light of which it is a part (Fig. 4).

Fig. 4: Rembrandt: *Night Watch* (1642).

Nevertheless, shadow effects of this kind make visual comprehension quite difficult. Cast shadows have to be used with caution. In the simplest cases they are directly connected to the object from which they derive. Human thinking, perceptual as well as intellectual, seeks

[4] **Foreshortening** is basically a method developed by Renaissance painters to represent an object on a two-dimensional surface so that it appears to be projecting toward the viewer. See section "Foreshortening" in the text on "Form" for a more detailed explanation.

the causes of happenings as close to the place of their effects as possible. Throughout the world the shadow is considered the product of the object that casts it. Here again we find that darkness does not appear as absence of light but as a positive substance in its own right.

Considered a second self of a person, the shadow is identical with or related to the soul or vital power. To step on a person's shadow is a serious offense, and a person can be murdered by having her shadow stabbed with a knife. At a funeral, care must be taken to avoid having a living person's shadow caught by the lid of the coffin and thus buried with the corpse. Such beliefs must not be ignored as superstitions but accepted as indications of what the human eye spontaneously perceives. The sinister appearance of the ghostly darker self in the movies, on the stage, or in surrealist painting keeps exercising its visual spell .

Like attached shadows, cast shadows define space. A shadow cast across a surface defines it as plane and horizontal or perhaps as crooked and sloping; thus, it indirectly creates space around the object originating it. It operates like an additional object creating a ground by lying on it. In Fig. 5, the rectangle *a* lies flat on a frontal plane or at least creates no articulate space around itself. In *b* there is a clearer separation from the ground, partly because of the contrast created by the black bar and partly because the obliqueness of the small edge suggests depth. But on the whole, *b* shows much less three-dimensionality than *c* or *d*, for the reason that the rectangular pattern formed by the bar and its shadow is simple and stable and can hardly be further simplified by more depth. In *c* the three-dimensional version eliminates an oblique angle and allows the black bar to be seen as a complete rectangle. In *d* the shadow converges —an additional distortion, which makes straightening-out by depth even more compelling. In other words, the solid and its shadow function as one object, to which the rules for the spatial appearance of objects apply.

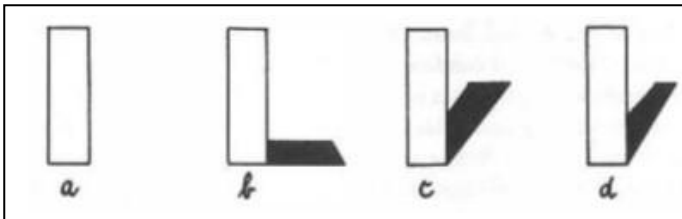

Fig. 5: Cast shadows and three-dimensional space.

The brightness patterns of shading may not only interfere with the brightness and darkness values of the object itself, but also with the clarity of its local colors and their interrelations. When painters began to create volume and space by means of illumination effect, this technique of chiaroscuro was soon found to disturb color composition. As long as shadows were conceived as applications of monochromatic darkness, they inevitably muddied and obscured the colors and so not only modified unattractively the saturation of the colors, but also dulled their identity. A blue coat shaded with black no longer looked truly blue and lost the simple homogeneity of its local color.

It is quite possible that Leonardo da Vinci, considered the father of chiaroscuro, was unable to complete some of his paintings because the desire to produce strong spatial relief by shading coincided in time with a new sensitivity to color organization. The unification of the two competing systems of pictorial form came gradually. Shadow was redefined as a modification of hue —a development that led from Titian by way of Rubens and Delacroix to Cézanne. "Light does not exist for the painter," wrote Cézanne. In the twentieth century, the color style of the Fauves often eliminated the problem by omitting all shading and by composing with saturated hues.

Painting without lighting

Early art everywhere represents objects by their outlines, local brightness and local color, and some cultures have retained this practice even at high levels of refinement. In the art work of young children, brightness values serve mostly to mark differences. Dark hair may contrast

with a bright face to make it more appealing. Light sources, such as the sun or a lamp, are often shown as sending out rays, but no indication is given that it is these rays which make objects visible. The same is true for early Egyptian painting.

On Greek vases figures are detached from the background by strong contrast, but these differences appear as the result of object brightness or darkness, not of illumination. Literary sources indicate that in the course of the centuries Greek painters learned the use of shadows, and the results of these discoveries can be seen in the Hellenistic wall pictures or the Egyptian mummy portraits around the second and first centuries B.C. Here the chiaroscuro was handled with a virtuosity not rediscovered until the late Renaissance.

As the need to convey the roundness of solids arises, shading is introduced, later complemented by brightness. In physical space these effects are produced by illumination. But the use of shading does not necessarily originate from the observation of nature, and certainly it is not always used in accordance with the rules of illumination. Instead, we can assume that after working for a while with the perceptually simpler means of line contour and homogeneously colored surfaces, the painter will discover the spatial virtues of unevenly distributed brightness. The perceptual effect of gradients becomes apparent to the eyes. Dark shading will make the surface recede toward the contours. Highlights will make it protrude.

These variations are used to create roundness or hollowness; they do not necessarily imply a relation to a light source. Often the distribution of "shadows" follows different principles. Shading may issue from the contour all around the pattern, and give way gradually to lighter values toward the center. In the symmetrical compositions of medieval painters the figures on the left often have their highlights on the left side, those on the right on the right side; or in the laterally foreshortened faces the larger half may always appear bright, the narrower dark. Thus, in adapting itself to the requirements of composition and shape, brightness is often distributed in a way that would be termed incorrect if judged by the laws of illumination.

The same is true when brightness differences are used to detach overlapping objects from each other. When a depth interval between objects of nearly identical brightness is to be shown, shading is often introduced. As Fig. 6 indicates, the brightness contrast obtained in this manner serves to enhance the overlapping, and there is no need to justify the result as an effect of illumination. In fact, a genuine pictorial conception of illumination can develop only after the formal properties of shading have been mastered. For example, in Eastern paintings and European tapestries the principle of Fig. 6 is applied to overlapping scales of rocks, buildings, and trees. To speak here simply of "shadows" is to overlook the main pictorial function of the device.

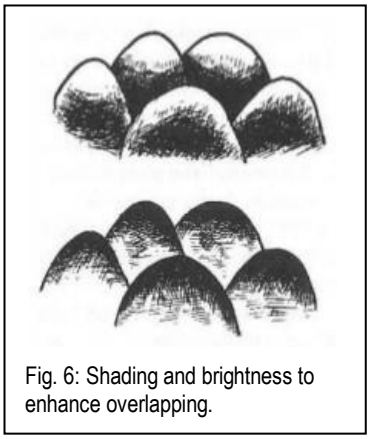

Fig. 6: Shading and brightness to enhance overlapping.

Fig. 7: Titian: Detail of *Noli Me Tangere* (c. 1514).

Such an interpretation of shading and contrast becomes particularly compelling when we find that even after the art of using illumination realistically has been acquired, some painters will use brightness values in a way that is not derived from the rules, and at times even contradicts them. For instance, in a detail (Fig. 7) of *Noli Me Tangere* (Fig. 8), Titian separated planes in space by gradual lightening or darkening of the further

plane where the two overlap. Particularly striking are the darkening of the buildings next to the sky and the brightening of the castle-like structure in the back, which is thereby set off against the roofs.

Cézanne sometimes also darkened the ground behind a light figure and rounded a cheek in a portrait by applying a gradient of darkness, which is an "abstract" use of the perceptual device rather than painting an effect of lighting. The use of the same technique by Filippino Lippi and Rembrandt show that Cézanne here was following a tradition. Somewhat later the cubists also used brightness gradients to show the mutual spatial independence of overlapping shapes.

Fig. 8: Titian: *Noli Me Tangere* (c. 1514).

The symbolism of light

During the early Renaissance, light was still used essentially as a means of modeling volume. The world is bright, objects are inherently luminous, and shadows are applied to convey roundness. A different conception is observable in the *Last Supper* (Fig. 9) by Leonardo da Vinci. Here the light falls as an active power from a given direction into a dark room, applying strokes of brightness to each figure, to the table top, and to the walls. The effect is used at the highest key in paintings by Caravaggio (e.g. *The Calling of Saint Matthew*) or La Tour (e.g. *The Magdalene with the Smoking Flame*), who prepare the eyes for the electric spotlights of the twentieth century. This sharply focused light animates space with directed motion. It sometimes fractures the unity of bodies by tracing the boundary lines of darkness across the surfaces. It stimulates the sense of sight by playfully disfiguring familiar shape and excites it by violent contrast.

Fig. 9: Leonardo da Vinci: *The Last Supper* (1495-1498).

The symbolism of light, which finds such moving pictorial expression in the work of Rembrandt, probably goes as far back as the history of humanity. As mentioned earlier, in perception darkness does not appear as the mere absence of light, but as an active counterprinciple. The dualism of the two antagonistic powers is found in the mythology and philosophy of many cultures —for example, China and Persia. Day and night become the visual image of the conflict between good and evil. The Bible identifies God, Christ, truth, virtue, and salvation with light, and godlessness, sin, and the Devil with darkness. The influential philosophy of Neoplatonism, based entirely on the metaphor of light, found its visual expression in the use of illumination by daylight and candles in the churches of the Middle Ages.

The religious symbolism of light was, of course, familiar to the painters of the Middle Ages. However, the gold grounds, halos, and geometric star patterns —symbolic representations of the divine light— appeared to the eye not as effects of lighting, but as shiny attributes; on the

other hand, the correctly observed light effects of the fifteenth and sixteenth centuries were essentially the products of curiosity, research, and sensory refinement. Rembrandt personifies the final confluence of the two sources. Divine light is no longer an ornament but the realistic experience of radiant energy, and the sensuous spectacle of highlights and shadows is transformed into a revelation.

Rembrandt

Rembrandt's pictures typically present a narrow, dark scene, into which the beam of light carries the animating message of a beyond, unknown and invisible in itself but perceivable through its powerful reflection. As the light falls from above, life on earth is no longer in the center of the world but at its dark bottom. The eyes are made to understand that the human habitat is nothing but a valley of shadows, humbly dependent on the true existence on the heights.

When the source of light is located inside the picture, the meaning changes. Now the life-giving energy establishes the center and the range of a narrow world. Nothing exists beyond the corners to which the rays reach. There is a *Holy Family* (Fig. 10) by Rembrandt in which the light seems to originate in the brilliantly lighted book from which Mary is reading, because the candle itself is hidden. The light of the Bible reveals the sleeping child in the cradle, and the listening Joseph is dwarfed by his own towering shadow, which is cast on the wall behind and above him.

Fig. 10: Rembrandt: *The Holy Family at Night* (1642-1648).

Fig.11: Rembrandt: *The Descent from the Cross* (1634).

In another painting (*Descent from the Cross*, Fig. 11) by Rembrandt, the light, again hidden, brightens the body of Christ, which is being taken down from the cross. The ceremony is performed in a dark world. But as the light falls from below, it heightens the limp body and imparts the majesty of life to the image of death. Thus the light source within the picture tells the story of the New Testament —that is, the story of the divine light transferred to the earth and ennobling it by its presence.

In Rembrandt's paintings, the objects receive light passively as the impact of an outer force, but at the same time they become light sources themselves, actively radiating energy. Having become enlightened, they hand on the message. The hiding of the candle is a means of eliminating the passive aspect of what is happening —the illuminated object becomes the primary source. In this way Rembrandt enables a book or a face to send out light without violating the requirements of a realistic style of painting. By this pictorial device he copes with the central mystery of the Gospel story, the light that has become matter.

How does Rembrandt obtain his glowing luminosity? As mentioned above, an object appears luminous not simply by virtue of its absolute brightness, but by surpassing the average brightness established for its location by the total field. Thus, the uncanny glow of rather dark objects comes about when they are placed in an even darker environment. Furthermore, luminosity results when brightness is not perceived as an effect of illumination. To this end, shadows must be eliminated or kept to a minimum. And the strongest light must appear within the confines of the object. Rembrandt frequently places a bright object in a dark field, keeps it almost free of shadow, and partially lights the objects around it.

Fig. 12: Rembrandt: *The Wedding of Samson* (1638).

Thus, in his *Wedding of Samson* (Fig. 12), Delilah is enthroned as a pyramid of light in front of a dark curtain, and the reflection of her splendor is seen on the table and the people around her. Similarly, in a *Toilet of Bathsheba* (Fig. 13) the body of the woman is singled out by a strong light, whereas the environment, including the two maids who minister to her, remains in the dark.

Fig. 13: Rembrandt: *The Toilet of Bathsheba* (1643).

Glow is also associated with a lack of surface texture. Objects appear opaque and solid by means of texture, which establishes the frontal surface. A glowing object does not stop the glance by such an outer shell. Its limits are not clearly defined for the eyes. Light seems to originate within the object at an indefinite distance from the observer. Rembrandt enhances luminosity by giving little detail to the areas of highest brightness. The indefiniteness of the outer surface gives his glowing objects a transfigured, immaterial quality.

In a more didactic sense, illumination tends to guide attention selectively, in accordance with the desired meaning. An object can be singled out without having to be large or colorful or situated in the center. Similarly, secondary features of the scene can be subdued at will. Light can be made to fall on, or be withheld from, any object. Rembrandt uses this means of interpretation constantly without being much concerned about a realistic justification of the effect. In the above mentioned *Descent from the Cross,* brilliant light falls on the fainting Mary, whereas the bystanders next to her remain relatively dark. Or we see Samson's hands brightly lighted as they explain a riddle to the wedding guests, while his face is kept in the dark because its contribution is secondary.

Other styles

In styles of painting that do not conceive of illumination, the expressive and symbolic character of brightness and darkness is rendered through properties adherent to the objects themselves. Death may appear as a figure clothed in black, or the whiteness of the lily may depict innocence. When illumination is represented, light and shadow tend to assume the task of producing these moods.

An instructive example can be found in Dürer's engraving[5] *Melencolia* (Fig. 14). Traditionally the melancholic was given a black face, because it was assumed that a darkening of the blood —the word "melancholy" means literally "black bile"— was responsible for a depressed state of mind. Dürer places his melancholy woman with her back against the light so that her face is in the shadow. In this way the darkness of her face is at least partially justified by the absence of light.

Fig. 14: Albrecht Dürer: *Melencolia I* (1471-1528).

For the realistic painter this method has the advantage of giving an object the degree of brightness that suits her purpose without interfering with its "objective" appearance. She can make a white thing dark without suggesting that it is dark in itself. The procedure is used constantly in Goya's etchings[6]. In the movies also, back lighting serves to give a figure the sinister quality of darkness. The uncanny sensation obtained in this manner occurs in part because the dark figure is not visible positively as a solid material body with observable surface texture, but only negatively as an obstacle to light, neither round nor tangible. It is as though a shadow were moving in space like a person.

When darkness is so deep that it provides a counterpoint of black nothingness, the observer receives the compelling impression of things emerging from a state of not being and likely to return to it. Instead of presenting a static world with a constant inventory, the artist shows life as a process of appearing and disappearing. The whole is only partly present, and so are most objects. One part of a figure may be visible while the rest is hidden in darkness. In the film *The Third Man* the mysterious protagonist stands unseen in a doorway. Only the tips of his shoes reflect a street light, and a cat discovers the invisible stranger and sniffs at what the audience cannot see. The frightening existence of things that are beyond the reach of our senses and yet exercise their power on us is represented by means of darkness.

Pictorial objects vanish not only into darkness but also into whiteness. In Far Eastern landscapes, most brilliantly in the "spattered ink" or *haboku* technique of the Japanese painter Sesshu, we see mountains emerge from a base hidden in fog. It would be quite misleading to say that in such instances "imagination completes" what the painter omitted. On the contrary, the meaning of the presentation depends precisely on the spectacle of objects emerging from nothingness to develop more and more articulate shape as they rise toward the peak. The heaviness of the mountain base is paradoxically replaced by the ethereal lightness of the white silk or paper, which acts as figure rather than ground but looks immaterial nevertheless. Thus the most gigantic formations on earth are made into apparitions.

Modern reinterpretations

Finally two modern reinterpretations of illumination in painting should be mentioned. The impressionists played down the difference between light and shadow and blurred the contours of objects. They also replaced the variety of realistic textures with the uniform surface quality

[5] **Engraving** is the process of making grooves (or markings) in a material to create an image from which prints can be made. It also refers to the print that is made by pressing paper on an inked wood or metal engraving.

[6] An **etching** is an *intaglio* printmaking process (i.e. a printmaking technique in which lines and areas to be printed are recessed below the plate surface). An image (or area) applied to a metal plate that has been coated to a resist, thus removing the resist from those sections, allowing them to be exposed to acid. The resultant grooves can be inked and printed. The finished print is also called an etching.

of small brushstrokes, which made the material differences between stone walls, trees, water, and sky vanish into uniformity. All these devices tend to replace the illumination of solid objects with a world of insubstantial luminosity. The effect is particularly strong in pointillism, the extreme form of the impressionist style. Here the pictorial unit is not the represented object. The picture consists of self contained dots, each of which possesses only one brightness and color value. This even more thoroughly excludes the concept of an external, governing light source. Instead, each dot is a light source of its own. The picture is like a panel of radiant bulbs, each one equally strong and independent of the others.

In a very different way, painters like Georges Braque went beyond illumination, not by creating a universe of light, but by translating the darkness of shadows back into a property of the object. Fig. 15 shows schematically an image of antagonism, in which black and white share as equal partners. We cannot tell whether we are seeing a black bottle hit by strong light from the right or a white bottle partly in shade. Instead we see a dematerialized, flat object, independent of any outside source, maintaining its precarious unity against the powerful contrast of the two extreme brightness values. The ancient interplay of the powers of light and darkness is made to seize the single object, in which the conflict between oneness and duality creates a high level of dramatic tension, the class of two opposites in an unconsummated union.

Fig. 15: Antagonism of black and white.

Light and shadow are no longer applied to the objects but constitute them. In the tracing (Fig. 16) after Braque's *Painter and Model* (Fig. 17), the dark self of the woman is thin, bounded by many concavities, actively presenting the profile of her face and stretching out her arm. The bright woman is large, rounded by convexities, and presenting a more static frontal position, with her arm hidden. In the man the dark self is dominant; his bright self is nothing but a broadening of the subordinate back contour. Both figures are tense, in themselves as well as in their relation to each other, with the antagonism of contrasting forces, which reflects a modern interpretation of the human community and the human mind.

Fig. 16: Tracing of *The Painter and His Model*.

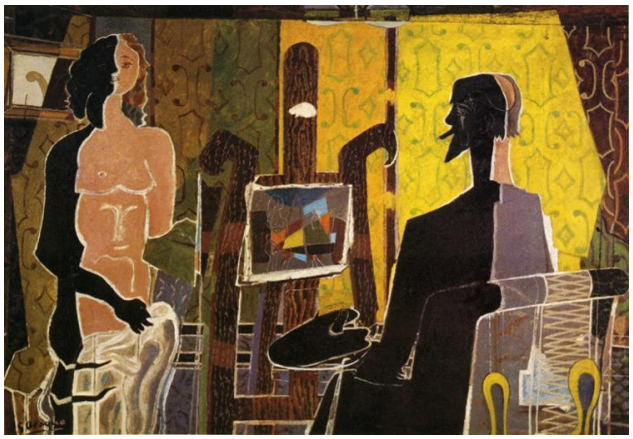

Fig. 17: Georges Braque: *The Painter and His Model* (1939).