

<Lesson 1>

Take a look at the object in the illustration below. What does it look like to you? To some people this might appear to be a rabbit facing to the right, while to others it may seem like a duck looking in the opposite direction. This illustration is an example of what is called an “optical illusion”, in other words it shows how our brains can interpret the same image in different ways. Illusions such as these have a variety of uses and are often seen around us in our daily lives.

To start, these types of illusions have traditionally been incorporated into various structural and architectural designs. For example, the *karesansui* (dry landscape) garden at the Zen temple Ryōanji in Kyoto illustrates this concept well. At first glance, its entire surface may appear perfectly flat, but if we look closer, we can see that it actually inclines towards the garden’s south-east corner. Also, the earthen wall on the west-side is slightly higher on its northern end. These features combine to create an optical illusion and to our eyes the surface actually appears to be deeper than it truly is. This same effect can also be seen in the Ponzo Illusion, in which the uppermost horizontal line closer appears to be longer than the line just below it, even though the two are exactly the same length.

Second, if we look at the image below we can see another example of an optical illusion. The interior of the house appears to have an extremely high ceiling though it is actually much lower than it looks. Our brains interpret the image in this way as a result of the Fick Illusion (Figure 2), in which the vertical line seems longer than the horizontal line, even though they are exactly the same length. This effect can be very useful in architecture, as it can cause us to think a room is much more spacious than it actually is.

Third, another valuable technique which has been used successfully in recent times is the creation of what appears to be a three-dimensional object on a two-dimensional surface. For example, in one particular train station people are often unable to find an elevator because it is located in a blind spot, so a sign that appears three-dimensional has been painted on the floor in order to help them find it more easily. The sign quickly catches people’s attention and has been extremely successful in helping reduce the number of people who have been become lost while trying to locate the elevator.

Last, they have been found to be useful in the field of transportation, in particular at intersections which don’t have traffic lights. Crosswalk markers which appear to be three-dimensional have been painted on some roads in an effort to prevent traffic accidents from occurring. From the viewpoint of approaching drivers, it looks like they are about to hit large concrete blocks which are in the road. These were created in hopes that the drivers will see them and slow down as they get nearer the crosswalk.

Optical illusions are just illusions. They cannot magically make a garden larger, nor can they truly make a ceiling higher. Over time, even if a crosswalk is painted to appear three-dimensional, it will eventually lose its effectiveness in preventing accidents as drivers who regularly see these markers will get used to them and come to understand that what they are seeing is just an illusion and they won’t slow down. That being said, even if we recognize such common limitations of these illusions, we should be able to find numerous other useful applications for optical illusions in society.