**Study Guide**

# Perception
## The Art of Seeing


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# Introduction

Our working model for perception is the camera. We accept the idea that our eyes work much like a camera, that what we see is pretty much identical to the real world. In truth, this analogy gets in the way of understanding perception. ***Perception*** begins where the eye-as-camera analogy breaks down. It shows that when it comes to reality we are more the director than the camera. We don't so much "record" reality as we create it. The video uses a variety of visual "tricks" and distortions that teach how we construct reality.

***Perception*** invites viewers to participate in a series of perception experiments. During these experiments they learn:

- Frames (both physical and mental) shape our perceptions. In fact, the frame can be more important than its contents.
- Love can change to hatred in a surprisingly short time. Is the change in the people or in their perceptions?
- How everyday perceptual habits such as closure, proximity, and perceptual filtering influence our feelings and judgments.
- Why our need to group like objects together creates problems from prejudice to war. Try an experiment in creating fresh categories. Realize that we always censor what we see.

## Activities, Experiments, and Questions To Illustrate Perception is in the Eye of the Beholder

### 1. Size-Weight Illusion

The video speaks of our perceptual filter. Do not assume this filter involves only vision -- the same principle holds true for all our senses. Here's a way to demonstrate it's existence that does not depend entirely on vision:

Find three food containers of different sizes -- cereal boxes or cans will work. For cans, find one holding 8 ounces, one 16, and one 32. The key is that the three obviously be small, medium, and large. Fill each container with sand (or any other convenient medium) so all three weigh the same. Ask volunteers to pick up each package and guess its weight. Most will guess the smallest weighs the most, the largest the least.

One reason many make this error is expectations -- it's related to our inability to see typographical errors.

### 2. What If.....

The video asks you to discuss a "what if" involving a world where everyone is born with special glasses they never remove. You become the first person ever to realize the glasses are removable. Here are two more "what if" situations that help illustrate the nature of perception.

### What If #1

The world we perceive is limited by the abilities of our sensory apparatus. Among wavelengths we cannot detect without mechanical assistance are radar waves, electromagnetic waves, radio and TV waves. Imagine if our sensory apparatus changes overnight.

When we awake tomorrow morning, the wavelengths that we used to be able to detect -- wavelengths we "see", sound vibrations we "hear"-- are suddenly moved to the realm of the undetectable. Instead we perceive what yesterday was undetectable -- radio waves, ultraviolet light, etc. Imagine how this would change the world. You would hear radio stations without needing a radio, but you couldn't hear the person next to you speak. You could look at an object and see its temperature but be unable to distinguish red from green. You could detect a hot object rushing at your back but might run right into a telephone pole in your path.

Discuss how the world would change if our sensory tools flipped so that what was undetectable becomes detectable and what was visible becomes invisible.

Your discussion might be helped by realizing that something like this happens in the animal world. Dogs supposedly can hear sound waves people do not, bats make use of a radar-like sense that people can only marvel at, and fish respond to sound frequencies and smells that have no reality for humans. Much of what we consider strange or miraculous animal behavior is nothing more than a difference in styles of perception. The video illustrates this by referring to bulls and red capes.

## What If #2

Imagine you can travel back in time two thousand years. You find a primitive tribe of people and show them a movie — we won't sweat questions like where do you find the electricity. How would they react to the movie? What would they say "great, bring on the popcorn," or would they treat you like a god or perhaps head for the exits in fear?

### 3. If a tree falls in the forest....

You've heard the question, "If a tree falls in a forest and no one is there to hear it, does it make a sound?" The question is not one of philosophy, but of perception. Today we think of sound as vibration in the air created by a movement or vibration. But a vibration undetected is only a vibration, not a sound. A sound is created when an ear (or ear substitute) perceives the vibration and changes it into a sound. A sound happens between the ear and the brain, not "out there."

The same is true for vision. A variation on the tree question is 'what color is a rose in a perfectly dark room"? Color is a mental construction, it does not exist "out there." Objects reflect some wavelengths and absorb others, but color is created by perception.

We commonly say "the rose IS red," but we would be more accurate saying "I see red when I look at the rose." This "red" is not a thing that exists in the rose.

### 4. I know. I saw it with my own eyes.

Discuss what this experiment reveals about perception:

Many parents believe that their children misbehave more after eating high sugar foods. Yet repeated studies fail to measure any difference in behavior. In one study of the effects of sugar on behavior, ALL the children were given sugar free soft drinks. Half the parents were told the drink was sweetened with sugar. When asked to observe and rate their children's behavior, the parents who believed their kids had consumed sugar were much more likely to say their kids were misbehaving.

**5. Optical Illusion**

**Figure One**

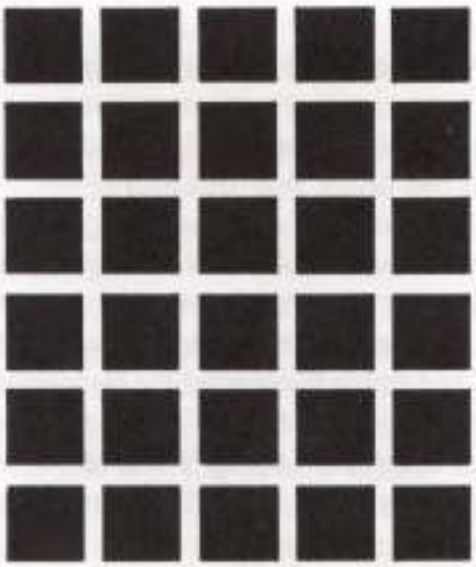


**Figure Two**

**Figure Three**

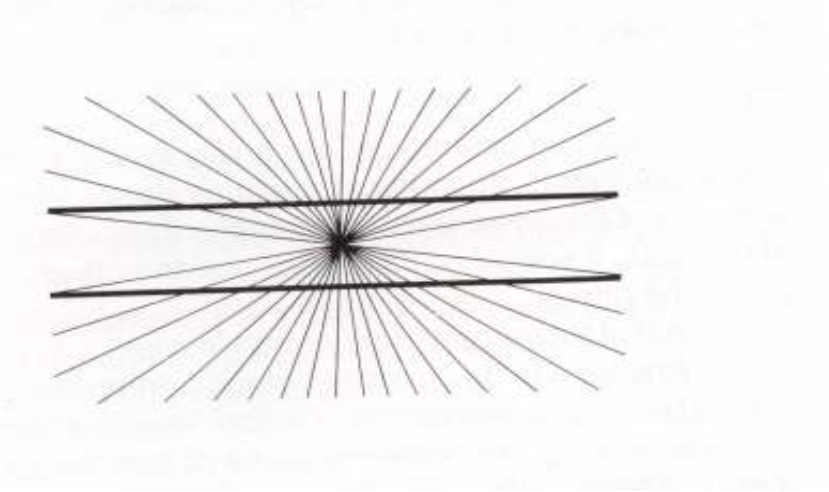
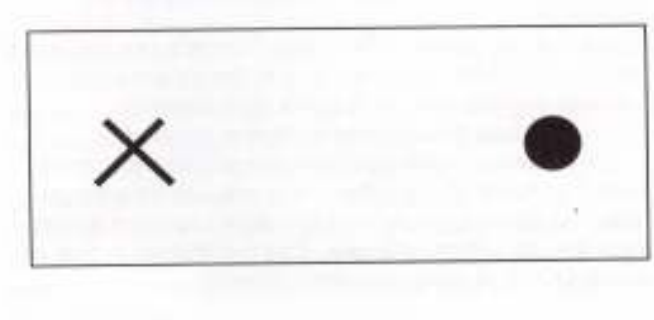


**Figure Four**



## Using the Optical Illusions

The figures on the facing page illustrate principles of perception that influence our everyday seeing — they are NOT merely clever tricks.

**Figure 1:**
Figure one is an example of our ability to see something that is not there. You should see gray dots at the intersections of the white lines. Strangely, if you stare at ONE of the dots, it seems to disappear and the others dots appear a bit darker.

Ask if those gray dots are an illusion.

Answers to this question should demonstrate an understanding of perception. Optical "illusions" are not illusions — they are demonstrations of how we perceive reality. The so-called "illusions" conform to the rules of perception in unexpected ways.

Is it an "illusion" that the sun sets at night and rises in the morning? Yes — the sun does not move up and down at all. But the "illusion" doesn't mean you're crazy when you enjoy a beautiful sunset.

**Figure 2:**
This image is shown in the video. Viewers can see either an old woman looking down and to the viewer's left or a younger woman looking over her right shoulder.

Ask how this drawing illustrates perception.

Answers to this question should show an awareness that many of our perceptions are equally ambiguous. The figure goes against our desire to place perceptions into one clear category. The real illusion is that an object DOES fit easily into one category.

**Figure 3:**
Ask if the horizontal lines are parallel or do they "bulge" in the center?

The most common answer will be they appear to bulge but are probably parallel. This is correct. Have students prove they are parallel by using a straight edge along the lines. After proving the lines parallel, look at it again. Does it still appear to bulge at the center? The answer is, yes. What does this tell you about perception?

The point is that merely knowing that an object (or person or situation) is not what it appears to be does not change perception. For example, we know that the moon does not change in size during the month. Yet it appears much larger when close to the horizon.

**Figure 4:**
The fact that the circle on the left vanishes briefly is NOT an optical illusion. The disappearing act is a demonstration of the blind spot we all have. There is a spot in the optic nerve that does not register images — a blind spot much like that experienced in an auto between the two rear view mirrors.

Yet we are not aware of this blind spot in everyday perception. One reason is that we use some images from the other eye to fill in. The other is that we create images to fill in what is missing. In other words, perception is an active, creative process rather than a mere camera-like recording. A camera has no blind spot, humans do. Every time you watch a movie or video you fill in lots of missing information. In fact, during a movie you spend about half the time watching a blank screen. You see movies only because your eye is slower than the projector. Film and movies are "illusions" that we create—they don't exist as movies "out there."

## 6. Proximity

The video explained a visual habit called the rule of proximity. We place into groups things that are closest together. We assume that things which are close to one another have more in common than those that are more distant. The video illustrates this idea with the image of the single dot and the "mob" of dots.

Ask students how this principle of perception might apply in the following:

Assumptions about people of the same generation: (We give names to generations and believe members share certain values and characteristics).

Assumption about people who share ethnic or racial backgrounds: (We tend to group them together much like the sheep in our video example.)

Assumptions about any minority group: (News stories and conversations are filled with lines such as "what women today want is..." or "gays think they..." or "conservatives are people who..." or "environmentalists want..." All these statements illustrate proximity.)

Guilt by association: (In spite of denials, we do judge people by their friends and associates.)

## 7. Closure

The video used typographical errors to illustrate the principle of closure. Closure means we tend to complete or "close" material presented to our senses. We see bits and pieces and fill in the rest from our experience to form a whole.

Closure helps explain why we see "what we expect to see" more often than what is really "out there." Discuss how closure applies in the following:

Art from sketches to movies. (Artists as well as propagandists realize that the most powerful image is

one which leaves room for the viewer to "fill in" or "close" the picture. What the viewer uses to fill in the incomplete picture is part of its power since it is automatically personal and meaningful.)

Politics. (A skilled politician uses many vague generalities in speeches. We believe politicians are "hard to nail down" or "change their viewpoints often." But this seeming weakness is what allows supporters to believe the message is aimed at them. Politicians gain support by allowing followers to "fill in the blanks" of general campaign promises.

Advertising. (TV commercials invite viewers to place themselves in the ad — to complete the picture—to participate in the lifestyle shown. Ads from twenty or more years ago were much more specific and about the product; today they are vague and about the customer.)

Problem solving. (Problem solving could be defined as seeking closure. We find it difficult to live with uncertainty, so we fill in what is missing to create at least the illusion of certainty.)

## 8. Perceptual Filtering

The video compares our perception to seeing through a "filter." Some perception is through a "clogged filter" that lets though almost nothing of the outside world. We label such perception as fantasy or hallucination. But we all see through a filter. Ask students to explain these statements:

Our sensory system is also a censory system.

Lie detectors don't detect lies. (A lie detector cannot measure the truth of a statement. It can measure if the person making the statement perceives it to be true.That means self-deception can "beat" a lie detector.)

## Using *Perception: The Art of Seeing*

The program suggests stopping to discuss key ideas. The program can be used without stopping, but we suggest taking advantage of the discussion options.

### 1. The Face/Vase and Rabbit/Duck Drawings

Viewers are asked to see BOTH the face and the face as well as the rabbit and the duck in two drawings. The point here is that these are not "illusions" or "optical tricks." They illustrate evade perception and point out that what we see is influenced by the brain as much as the eyeball.

We are able to see alternative interpretations of these drawings as we create our own perception. The drawings do not change, yet we perceive them differently. We perform the same creative act when we watch movies, look at art, or judge people.

### 2. The Mime and the Television

Viewers might be surprised to hear they have to "learn" how to watch movies and TV. This learning takes place before schooling yet is refined during a lifetime.

Students of primitive societies have shown movies to adults who have never seen a moving image only to find they do not understand the process of viewing.

Children need at least a year to understand the role of television as representational.

Some psychologists suggest that some adults never learn this distinction and suffer a lifelong confusion in which the world of television is more real than everyday life.

### 3.. Frames

Frames are extremely important to understanding perception. A frame is a surround, whether physical or cultural. The most obvious examples include the border around a painting, the curtains of a stage, the border of a snapshot, the lines in a comic strip, the edges of a movie or TV screen.

When contemporary artists take ordinary objects and place them in a museum they are changing the frame of the object in an attempt to change perception.

The cupid statue in a New York building lobby illustrates that a change in "frame" causes a change in perception. The fact that a statue or painting is rare and valuable causes us to look at it differently.

The concept of "context" is related to frames. Taking a statement "out of context" changes its frame and thus how others perceive its meaning.

In many cases perception is primary. A strong economy means little if people perceive it as weak and sell stocks. Economists will issue assurances that "our economy is strong and fundamentally sound. But if people act on their perception of weakness they will create the very weakness they perceive.

### 4. From Love to Divorce

The video asks viewers to discuss a change in a relationship from love to divorce. The point here is that a change in perception can change the relationship even though the people themselves change little or not at all.

## 5. Rainbow Effect Eyeglasses

The video asks to imagine yourself born into a world in which everyone wears special "rainbow effect" eyeglasses. No one has ever taken them off until you take the plunge. What would happen if you tried to convince people that their perceptions are "wrong"?

Of course, you would quickly be labeled crazy. The fate of a "perception pioneer" is often rejection and even persecution. New perceptions in religion, the arts, science, and culture are rare and often accompanied by turbulence and radical change.

Of course, we all "wear" a culture that functions much like a pair of permanent rainbow glasses.

**6. The Bullfighter Illusion**

The "sport" of bullfighting itself illustrates a social change in perception. Centuries ago the suggestion that bullfighting might be cruel to animals would fall on deaf ears. Today, many view the event as a barbaric holdover from the past. The perception that animals have "rights" is a perceptual change.

A common misperception is that bulls are "enraged" at a red cape. In reality, the bull is attracted to motion, not color. Ironically, the misrepresentation makes the "sport" seem more dangerous.

Bulls see the world differently than people. The assumption that other people (and creatures) view the world as we do often leads to misunderstanding.

**7. Category Creating and Proximity**

The video suggests grouping objects in the room into categories. The point of this exercise is to show that a change in grouping can create a change in perception.

We create categories based on nearness (proximity) and assume "sameness by association." In terms of perception, it's not so much "birds of a feather flock together" as it is "if they flock together we assume they are "birds of a feather."

## 8. Closure

One of our perceptual habits is to make sure the world fits our expectations. We quickly fill in the missing parts to meet our expectations. It's not so much that we believe what we see as we see what we believe.

Typographic errors are difficult to detect because we see what "should" be there instead of what is there.

The pictures of Margaret Thatcher have the eyes and mouth turned upside down. But viewers don't see the distortion when the images are both upside down. Why? They see what they "expect" to see.

We often use this perceptual shortcut in our judgment of personality. Someone who believes that redheads have a short temper will find enough behavior to complete the perception. A thousand calm, easy going red heads will probably not change the perception.

## 9. The Description Experiment

Viewers are asked to describe a common object without using the words "is" or "are." The purpose of this exercise is to stay for at least a minute or two in the world of the here-and -now, free of judgments or evaluations.

## 10. The Parable of the Ant

The ant is you and I. Like the ant, we make judgments based on experience. The ant's "lack of experience" is obvious to us, but no less real than our own. In many ways we understand the present only when it becomes the future, we understand "here" only when it becomes somewhere else.

The parable also points out that education is not so much a process of stuffing our heads with facts as it is learning where we are. The ant's journey is one of perceptual education—such is life.

## Bibliography

**Perception** by Irvin Rock (Scientific American Library, NY, 1984, 1995). A very readable text on the relatively new and controversial field of perception. Rock focuses not on the "hardware" of perception (eyes, wavelengths, light waves, reflections, etc.) but on the "software" (what happens as images are processed). Well illustrated and highly recommended.

**Can You Believe Your Eyes?** by J. Richard Block and Harold Yuker (Brunner/Mazel Publishers, NY, 1992). A fun and fascinating collection of visual puzzles, illusions, and challenges to your powers of perception.

**Thinking Visually: A Strategy Manual For Problem Solving** by Robert H. McKim (Dale Seymour Publications, Palo Alto, CA, 1980). This text for people in the visual professions (designers, architects, artists, etc.) is a wonderfully involving exploration of both how to see and how to solve problems.

**Seeing Is Believing: An Introduction to Visual Communication** by Arthur Asa Berger (Mayfield Publishing Company, Mountain View, CA, 1989). A college textbook (only 188 pages) for students in communication arts. The book attempts to "do something about what can be described as the 'visual illiteracy' of many of our students."

**Believing Is Seeing: Creating the Culture of Art** by Mary Anne Staniszewski (Penguin Books, NY, 1995). Staniszewski's provocative book deals with the cultural frames of art. She begins by observing that "Art" is a modern invention—no more than 200 years old.