

# The Mind-Boggling Ames Window Illusion

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✓ Fact Checked

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## STORY AT-A-GLANCE

- › Optical illusions depend on your perception of the information your eyes gather and send to your brain. This teaches scientists how the eyes and brain work together
- › The Ames Window Illusion was created by a once-Harvard-lawyer-turned-painter, who collaborated on the System of Color Theory and ultimately developed an interest in the physics of how the human eye perceives color
- › The Ames window illusion may be a visual demonstration of a misconception many have about science, which is you only have to look at data to decide on the best theory. Yet, the circumstances from which the data are extracted may alter your perception
- › A photograph now known as “The Dress” published in 2015 caused division when some saw it as black and blue and others as gold and white. One explanation is the assumption you make about the lighting, which then changes the color of the dress
- › Some of the processes that control perception help explain motivated or biased reasoning people use to lessen mental discomfort. A similar concept may be behind the large-scale fear used to change the perception of reality and which has led to a “delusional fear of COVID-19”

Optical illusions depend on your perception of the information your eyes gather and send to your brain. This is the foundation of the Ames Window Illusion<sup>1</sup> illustrated in the video above. The illusion was named after Adelbert Ames Jr., who created it in 1947.<sup>2</sup>

Ames was born in 1880 in Massachusetts.<sup>3</sup> He earned his law degree at Harvard University and after working as a lawyer for four years, abandoned his career and began painting. He collaborated with his sister in developing the System of Color Theory, which led to an interest in the physics of how the human eye perceives color.

The Ames room was originally called the Ames Demonstrations in Perception, which was a full-size room that looked normal, but where people appeared to shrink.<sup>4</sup> From this he developed the Ames Window Illusion. While optical illusions may be fun, they also teach scientists how the eyes and brain work together.

Because we live in a three-dimensional world, the brain uses clues from what you see to discern depth and position. However, when you look at a two-dimensional image on paper or a computer screen, coloring and shading can fool the brain. In other words, the information that your eye gathers and sends to the brain creates a perception that does not match the true image.

For example, in the Ames room illusion, the room appears to be normally shaped from the viewer's perspective but has a shorter side and a taller side, which makes one person look much taller than the other, even though they are the same size.

Understanding visual perception and optical illusions are crucial to understanding how your perceptions of reality can be manipulated.

## **What Is the Ames Window Illusion?**

The word “illusion” originates from the Latin word “illusio,” or to mock or make fun of.<sup>5</sup> The illusion is predicated on the construction of a trapezoid that appears to look like a window. In the video above, Derek Muller, Ph.D., the creator of Veritasium<sup>6</sup> explains the science and builds a life-sized Ames window to demonstrate the illusion.

Inexplicably, as the trapezoid rotates 360 degrees, it appears to the eye that it oscillates from side to side. According to Ames, the key to the illusion is that all people living in civilized society are used to seeing things at 90-degree angles — doorways, tables, pictures, windows and walls. Researchers have named this the Carpenter Environment.

Yet, unless you're looking at something straight on, the image looks like a trapezoid of different shapes and sizes. Because the brain remembers these shapes and believes they must be right angles, it uses shading and lighting to perceive depth. In the video,<sup>7</sup> Muller references a research study<sup>8</sup> from 1957 during which the researchers tested a theory that children who lived in a society without 90-degree angles would be less susceptible to the Ames Window Illusion.

They discovered that only 17.5% of the children living in rural areas of South Africa saw the image oscillating and the rest saw it rotating. However, when looking at the image from 20 feet away using only one eye, there was no significant difference between the children living in urban and rural areas and nearly 90% of all the participants saw the image oscillating.

This appeared to indicate that there was more going on than the Carpenter Environment effect. Muller proposes that the Ames Window and de Heer Circle take advantage of an artistic effect called “anamorphosis.”<sup>9</sup>

As Muller explains, when the largest side of the trapezoid in the Ames window is closest to you, you perceive it as rotating exactly as you see it. However, when the larger side moves further away, it remains larger than the smaller side of the trapezoid, so the brain continues to perceive it as being closer to you.

## **Your Brain Constructs Reality**

Muller proposes that the Ames window illusion is a demonstration of a misconception about science.<sup>10</sup>

*“[It] is this idea that scientists propose competing theories, and then all you have to do is look at the data to decide which is the best theory. The truth is there are many circumstances in which the same data could come from very different external realities.*

*To use a classic example, does the sun go around the earth or does the earth rotate on its axis? The observation of the sun moving across the sky doesn't in*

*itself resolve that debate.”*

Integral to some optical illusions is the infinitesimal delay between reality and your perception of reality. While it may feel as if we live in the present, what your brain perceives happened approximately 120 milliseconds ago.<sup>11</sup>

The time-lapse is the time necessary for the light to hit the retina, be converted into an electrical signal and then processed in the brain. Adam Hantman is a neuroscientist at Howard Hughes Medical Institute who described the process to a reporter from Vox, saying:<sup>12</sup>

*“The dirty little secret about sensory systems is that they’re slow, they’re lagged, they’re not about what’s happening right now but what’s happening 50 milliseconds ago, or, in the case for vision, hundreds of milliseconds ago.”*

However, the brain does not rely on this minute loss of time to function. If it did, baseball players couldn't hit 80 mph baseballs and we'd all be less coordinated. Instead, the brain predicts what happens next based on experiences of what's happened in the past.<sup>13</sup>

Hantman explains that your experience of reality is not in real-time, but the information received helps to correct any errors in your brain's prediction of what would happen. In other words, your sight and hearing could be used as a course corrector when predictions go wrong.

## **What You See Is Influenced by Your Experience**

In 2015, a photograph now known as “The Dress” was posted on Tumblr.<sup>14</sup> It was a bad cell phone picture taken of a dress in the U.K. that caused division across the internet.<sup>15</sup> The issue was that some people saw the dress as blue and black, and others saw it as white and gold.

The image divided people into two camps, both of whom thought the other was wrong. According to The Guardian, Taylor Swift posted on Twitter: “I don't understand this odd

dress debate and I feel like it's a trick somehow. I'm confused and scared. PS it's OBVIOUSLY BLUE AND BLACK.”<sup>16</sup>

Two years later Pascal Wallisch, a neuroscientist at New York University, published a study<sup>17</sup> in the Journal of Vision, in which he stated that many had subjectively interpreted the difference in perception as to how the dress was illuminated.

In an online survey of 13,417 individuals, the data revealed that the assumption about illumination had more to do with an individual's underlying chronotype, or the difference between people who were classified as early risers or late risers.<sup>18</sup>

Specifically, Wallisch tested a theory<sup>19</sup> that people make different assumptions about the light illuminating the dress based on whether they were early or late risers. For example, is it daylight or an indoor light bulb? He believes factors influence an individual's perception of the light falling on an object, which then influences the perception of color.

The results of his survey<sup>20</sup> showed that people who are night owls were more likely to see a blue and black dress, whereas early risers were more likely to see a gold and white dress. He hypothesized that because early risers may spend more time in daylight, they're more familiar with that type of illumination and then more likely to assume that the dress is bathed in sunlight.

As Wallisch explained, “If you assume it's daylight, you will see it as white and gold, because if you subtract blue, yellow is left.”<sup>21</sup> Sam Schwarzkopf, a vision scientist at the University of Auckland, believes this is a compelling argument but there may still be other factors that influence an individual's perception of the color of the dress.

Wallisch believes that people will make assumptions based on what they see more of, which he noted in an article in Slate<sup>22</sup> was a lasting contribution to the science of advertising made by psychologist Robert Zajonc. It is one of the tools advertisers use to bring attention to their products and services. If you see an ad enough times, you may be more inclined to trust and purchase it.

## **The Same Process Is Foundational to Other Perceptions**

Muller believes the Ames illusion may have greater implications in life than just a trick of the eyes, saying:<sup>23</sup>

*“And I think we can extend this beyond science. I mean maybe the Ames illusions are a good metaphor for life. We feel as though we can directly perceive external reality like a person looking into an Ames Room, but the truth is there are an infinite number of different geometries that would all look the same.*

*You know these days, a lot of people are getting the same fundamental information but coming to very different conclusions about the state of reality. So I think in that context, it's important to remember that something as simple as a little rotating picture can fool our brains in fairly spectacular ways.”*

Scientists believe that some of the same basic processes that control your perceptions may help explain why we may be prone to motivated reasoning. According to Psychology Today motivated reasoning occurs “when biased reasoning leads to a particular conclusion or decision, a process that often occurs outside of conscious awareness.”<sup>24</sup>

Motivated reasoning may also be used to lessen the mental discomfort that people feel when they are face-to-face with contradictory information that may affect their mental health. Instead of reexamining and evaluating a contradiction, it's easier to dismiss it. For example, in the current climate, it's easier to go along to get along rather than question public health authorities and seek independent research that supports or contradicts the recommendations.

Researchers have also found that when the information is not clear, a reward can change perception.<sup>25</sup> One 2006 review of the literature<sup>26</sup> demonstrated that a person tended to report seeing an interpretation of a drawing based on an outcome that was favored by the researcher.

In each of the five studies reviewed, it appeared external motivation had an impact on the participants' choices. Another study<sup>27</sup> published by New York University in 2014

raised questions about why video evidence was not objectively evaluated. One researcher in the study, Emily Balcetis, an assistant professor in NYU's Department of Psychology, said in a press release:<sup>28</sup>

*"Our findings show that video evidence isn't evaluated objectively — in fact, it may even spur our existing biases. With the proliferation of surveillance footage and other video evidence, coupled with the legal system's blind faith in information we can see with their own eyes, we need to proceed with caution."*

## **Mass Delusional Fear Needed to Remove Freedom**

While optical illusions are fun and point out gaps in perception, a similar concept is being used to control behavior on a massive scale. Video and advertising have been used to engage the public in large-scale fear, which in turn changes your perception of reality. This 20-minute video created by After Skool and Academy of Ideas, explains the tactics used to seed and nurture mental illness on a grand scale.

In a December 22, 2020, article<sup>29</sup> in Evie Magazine, S.G. Cheah discusses what may in fact be the real problem at hand: mass insanity caused by "delusional fear of COVID-19." Cheah refers to lectures and articles by psychiatrist and medical-legal expert Dr. Mark McDonald,<sup>30</sup> who believes "the true public health crisis lies in the widespread fear which morphed and evolved into a form of mass delusional psychosis."

The psychology behind the COVID epidemic banked on being able to change a person's perception of the world and create enough fear that people would voluntarily give up their freedom, "Even when the statistics point to the extremely low fatality rate among children and young adults ... the young and the healthy are still terrorized by the chokehold of irrational fear when faced with the coronavirus."<sup>31</sup>

The alteration of perception contributed to [mass formation psychosis](#), which provides a coherent explanation of how so many people have fallen victim to the unbelievable lies and propaganda of the mainstream COVID-19 narrative. Yet, the application of mass formation psychosis is not new.

Mattias Desmet, professor of clinical psychology at the University of Ghent in Belgium, who has over 130 publications to his name,<sup>32</sup> has been studying it for many years, and the phenomenon dates back over a hundred years. As explained in the video, two examples are the American and European witch-hunts of the 16th and 17th centuries, during which thousands of women were killed as “scapegoats of societies gone mad.”<sup>33</sup>

Desmet’s book, “[The Psychology of Totalitarianism](#),” explains that mass formation has grown over the last 200 years. On a grand scale, mass formation leads to totalitarian thinking and, eventually, to totalitarian states. He details the four conditions needed to achieve mass formation on a large scale, which includes cognitive dissonance and psychological pain — factors that often leave people desperate for change and a way to escape:<sup>34</sup>

- Feelings of social isolation and being alone among a large number of people
- Feelings that your life is pointless and meaningless
- High levels of free-floating anxiety
- High levels of free-floating frustration and aggression

Desmet recommends the following four steps to break free from mass formation psychosis and enact favorable change one social circle at a time:<sup>35</sup>

- Continue to speak out
- Seek to connect with others of like mind
- Construct a narrative together of a new normal — not to be confused with the “new normal” the transhumanist, technocratic movements are trying to advance — showing people that there are other options to escape the old normal
- Always stick to the principles of nonviolent resistance

The last step is an important one, because if you use aggression of any form, even in the way you speak, it will only be used as justification by the masses that they were right to oppose you. Nonviolent resistance is the most efficient strategy as you try to resist and defy the mass formation psychosis around you.



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