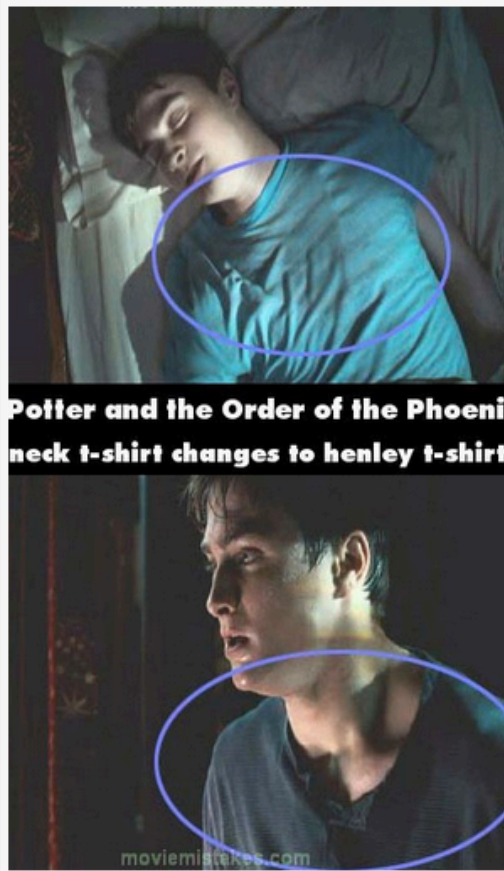


Study Pinpoints Why We Miss Subtle Visual Changes, And Why It Keeps Us Sane

Posted on April 1, 2014



Ever notice how Harry Potter's T-shirt changes from a crewneck to a henley shirt in the "Order of the Phoenix," or how in "Pretty Woman," Julia Roberts' croissant inexplicably morphs into a pancake? Don't worry if you missed those continuity bloopers. Vision scientists at UC Berkeley and MIT have discovered an upside to the brain mechanism that can blind us to subtle visual changes in the movies and in the real world.



Potter and the Order of the Phoenix
crewneck t-shirt changes to henley t-shirt

Continuity bloopers happen in lots of movies, and we rarely catch them. Scientists explain why that's a good thing

They've discovered a "continuity field" in which we visually merge together similar objects seen within a 15-second time frame, hence the previously mentioned jump from crewneck to henley goes largely unnoticed. Unlike in the movies, objects in the real world don't spontaneously change from, say, a croissant to a pancake in a matter of seconds, so the continuity field is stabilizing what we see over time.

"The continuity field smoothes what would otherwise be a jittery perception of object features over time," said David Whitney, associate professor of psychology at UC Berkeley and senior author of the study published March 30 in the journal, *Nature Neuroscience*.

34,641 science & technology articles

CATEGORIES

- Spotlight news
- Space & astronomy
- Physics
- Information processing
- Life sciences & technologies
- Materials & substances
- Energy & transport
- Geoscience & environment
- Economics & social
- Other news

OUR ARTICLES (see all)

Starbucks Launches Mobile Order & Pay in Portland 📱 (Today)

A Shock and Water Resistant Battery Case for iPhone 6 📱 (Yesterday)

What are gender differences in financial negotiations? (Yesterday)

GENERAL NEWS

Small engine packs a punch: lighter, quieter, more efficient 📱 (Today)

Computers that teach by example 📱 (Today)

Gut bacteria from a worm can degrade plastic (Today)

Astronomers detect atomic hydrogen emission in galaxies at record breaking distances (Today)

Finding infant Earths and potential life just got easier (Today)

What are gender differences in financial negotiations? (Yesterday)

Superconductivity without cooling 📱 (Yesterday)

City Digits project puts civic data in the hands of high school students 📱 (Yesterday)

FOLLOW US



"Essentially, it pulls together physically but not radically different objects to appear more similar to each other," Whitney added. "This is surprising because it means the visual system sacrifices accuracy for the sake of the continuous, stable perception of objects."

Conversely, without a continuity field, we may be hypersensitive to every visual fluctuation triggered by shadows, movement and myriad other factors. For example, faces and objects would appear to morph from moment to moment in an effect similar to being on hallucinogenic drugs, researchers said.

"The brain has learned that the real world usually doesn't change suddenly, and it applies that knowledge to make our visual experience more consistent from one moment to the next," said Jason Fischer, a postdoctoral fellow at MIT and lead author of the study, which he conducted while he was a Ph.D. student in Whitney's Lab at UC Berkeley.



This video demonstration shows white bars being adjusted to match the angles of the dark bars or "gratings"

To establish the existence of a continuity field, the researchers had study participants view a series of bars, or gratings, on a computer screen. The gratings appeared at random angles once every five seconds.

Participants were instructed to adjust the angle of a white bar so that it matched the angle of each grating they just viewed. They repeated this task with hundreds of gratings positioned at different angles. The researchers found that instead of precisely matching the orientation of the grating, participants averaged out the angle of the three most recently viewed gratings.

"Even though the sequence of images was random, participants' perception of any given image was biased strongly toward the past several images that came before it," said Fischer, who calls this phenomenon "perceptual serial dependence."

In another experiment, researchers set the gratings far apart on the computer screen, and found that the participants did not merge together the angles when the objects were far apart. This suggests that the objects must be close together for the continuity effect to work.

For a comedic example of how we might see things if there were no continuity field, watch the [commercial](#) for MIO squirt juice.

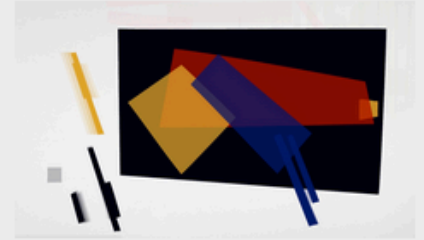
Source: UC Berkeley



RELATED TOPICS:

brain (473)

FEATURED VIDEO (see all)



Reimaging data in the Big Data age – an artistic interpretation 🌀

Julie Freeman is a visual artist, who is using data as an inspiration for original artwork. In the...

FEATURED IMAGE (see all)



Orion Spacecraft at the Launch Pad

With access doors at Space Launch Complex 37 opened on Nov. 24, 2014, the Orion spacecraft and Delta...