

Experiential3D: Five Illusions Challenge Our Understanding of Visual Experience

Paul Linton, Columbia University



THE ITALIAN ACADEMY
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SEE THE ILLUSIONS AT DEMO NIGHT!



1. Visual Inference

Linton Un-Hollow Face Illusion

"Perceived Real-World Depth is Not Inverted in the Hollow Face Illusion"

What happens when we put objects in the hollow of the hollow face?

Physical Stimulus **Perceived Motion** **Perceived Depth**



Perceived motion consistent with the illusion, but visual experience of depth is **not** inverted

Linton Morphing Face Illusion



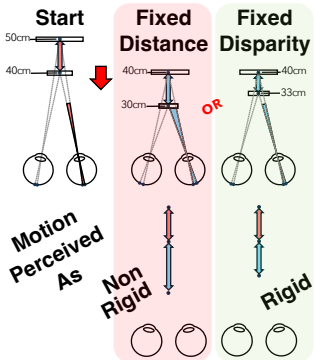
Changing **ordinal** depth of points is perceived

2. Visual Shape

Linton Stereo Illusion

"Perceived Stereo Depth Reflects Retinal Disparities, Not 3D Geometry"

What happens when we move two circles in depth whilst controlling for angular size?

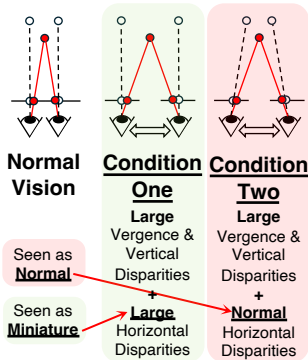


3. Visual Scale

Linton Scale Illusion

"Visual Scale is Governed by Accentuated 3D Shape from Horizontal Disparities"

What happens when we alter horizontal disparities vs. vergence + vertical disparities?



4. Size Constancy

Linton Size Constancy Illusion

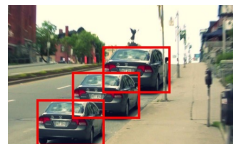
"Size Constancy Does Not Affect Perceived Angular Size"

What happens when we add frames to size constancy illusions?



Does size-constancy change the perceived x-axis width and y-axis height of objects?

If so, then frames put around the cars should be distorted by the same amount as cars



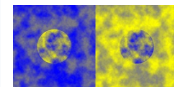
But cars look more distorted than frames. Impossible if due to perceived angular size

5. Color Constancy

Linton Color Constancy Illusion

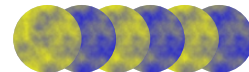
"Color Constancy Does Not Affect Perceptual Appearance"

What happens when we switch between two interpretations of the same stimulus?



Take image by Akiyoshi Kitaoka based on Anderson & Winawer (2005)

Switching back and forth we do **not** experience a perceptual flicker



Instead, **appearance** stays the same. All that changes is our **categorization**

