

# HIGHLIGHTS

## VISUAL PERCEPTION

### Now you see it...

Ambiguous figures are those that have two or more possible interpretations. When we look at them, our perception often varies spontaneously from one percept to the other. Recently, it was found that interrupting viewing by closing the viewer's eyes or blanking the screen at intervals can overcome the tendency of the percept to switch, leading to proposals of a 'perceptual memory' that is maintained when the stimulus disappears. Maier *et al.*, writing in *Current Biology*, have investigated the nature of this memory and propose that it might give us fresh insight into the mechanisms of perceptual organization.



A famous ambiguous figure drawn by cartoonist W. E. Hill in 1915. Entitled 'My wife and my mother-in-law', the drawing can be perceived as either an old woman or a young lady.

nization.

The authors presented subjects with interleaved series of stimuli in which one or more stimulus was ambiguous. They found that interrupted viewing led to a stable percept being maintained even if a different stimulus was seen during the interruptions; in fact, up to three ambiguous stimuli could be interleaved, and each would be stabilized so that perceptual switching occurred only occasionally.

Maier *et al.* hypothesize that a given state of perceptual organization — which causes a subject to see one percept of an ambiguous stimulus — can also act as a memory system. The perceptual organization is stored during the interruption of viewing, and it predisposes the subject to see the same percept when the stimulus reappears. What are the properties of this memory system? In terms of duration of storage and robustness to interference it seems to resemble other types of visual memory, but it reflects perceptual organization rather than sensory or categorical aspects of a stimulus.

To investigate this memory system further, the authors looked at perceptual switching, when a subject spontaneously stopped seeing one percept and started to see the other. They found that if the interleaved ambigu-

ous stimuli were similar — for example, ambiguous rotating spheres of different colours — a switch in percept for one would usually lead to a switch in percept for the other. This 'co-reversal' was also high if the rotation speed or diameter of the rotating spheres differed, or even if a rotating sphere was interleaved with a rotating pyramid of the same size and colour — but not if the axes of rotation were perpendicular to each other.

It seems likely that co-reversal results from some degree of perceptual transfer or 'similarity' between the interleaved figures. So some features, such as colour and size, seem to be less important than others, such as shape and axis of rotation, when it comes to determining visual similarity in this memory system. The authors propose that this paradigm might be used to gain further insight into perceptual organization and also to obtain measurements of 'implicit' similarity between stimuli that could shed light on how the brain analyses visual structure.

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#### References and links

**ORIGINAL RESEARCH PAPER** Maier, A. *et al.* Perception of temporally interleaved ambiguous patterns. *Curr. Biol.* **13**, 1076–1085 (2003)

**FURTHER READING** Blake, R. & Logothetis, N. K. Visual competition. *Nature Rev. Neurosci.* **3**, 13–21 (2002) | Leopold, D. A. *et al.* Stable perception of visually ambiguous patterns. *Nature Neurosci.* **5**, 606–609 (2002)