PERCEPTION
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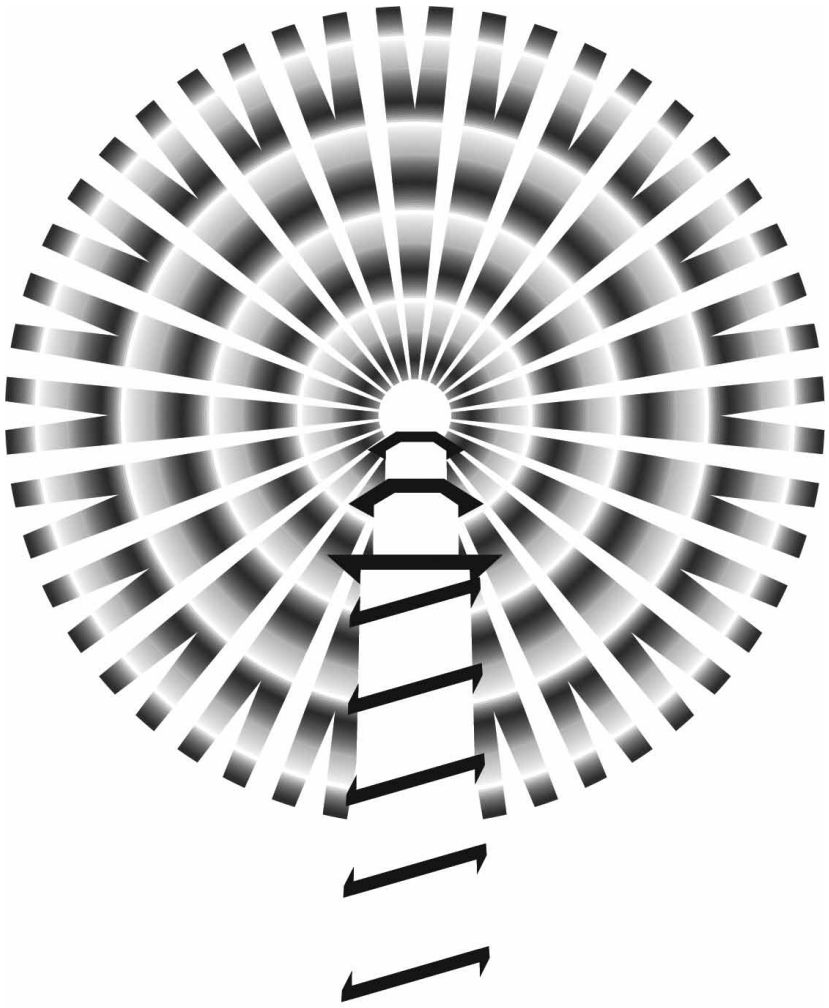

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Abstracts

dichoptic masking). Stage 2 incorporates steeply accelerating transduction (to fit the deep regions of monocular and binocular facilitation), and binocular summation and suppression (to fit the monocular and binocular masking). With all model parameters fixed from the discrimination thresholds, we examined the slopes of the psychometric functions. The monocular and binocular slopes were steep (Weibull $\beta \approx 3-4$) at very low mask contrasts and shallow ($\beta \approx 1.2$) at all higher contrasts, as predicted by all three models. The dichoptic slopes were steep ($\beta \approx 3-4$) at very low contrasts, and very steep ($\beta > 5.5$) at high contrasts (confirming Meese et al, loco cit.). A crucial new result was that intermediate dichoptic mask contrasts produced shallow slopes ($\beta \approx 2$). Only the two-stage model predicted the observed pattern of slope variation, so providing good empirical support for a two-stage process of binocular contrast transduction.
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◆ **Spatial and temporal recognition processes in reading**
D G Pelli, K Tillman (Department of Psychology and Neural Science, New York University, 6 Washington Place, New York, NY 10003, USA; e-mail: denis.pelli@nyu.edu)
Consider reading as serial object recognition, where each word is an object. Using RSVP, we measured the proportion of words correctly identified as a function of letter-to-letter spacing and word presentation rate. The results are separable in space and time, indicating that observers must isolate each letter in space and each word in time.

SURFACE AND SHAPE PERCEPTION

◆ **Amodal unification of surfaces with torsion requires visual approximation**
C Fantoni, W Gerbino, P J Kellman¶ (Department of Psychology and Brain Centre for Neuroscience, University of Trieste, via S Anastasio 12, I 34134 Trieste, Italy; ¶Department of Psychology, University of California at Los Angeles, 1285 Franz Hall, Los Angeles, CA 90025-1563, USA; e-mail: fantoni@psico.units.it)
We explored a new stereoscopic phenomenon, demonstrating that the perceived slant of untextured surfaces is constrained by occlusion geometry, beyond point-by-point matching. Displays were characterised by two vertically aligned rectangles, one frontoparallel and the other slanted about the vertical axis. Their relative slant was judged to be smaller when the two rectangles were perceived as a single object amodally unified behind a frontoparallel occluder, either luminance-specified (experiment 1) or illusory (experiment 2), than in the baseline condition in which two separate objects were perceived. Two hypotheses were considered: (i) visual approximation, when limiting cases of unification are met (eg when the smooth unification of non-coplanar surfaces and the minimisation of their deviation from coplanarity requires torsion) with image parts modified to allow for spatial unification; and (ii) occluder presence alone, when two regions have a common border, so that the near one inhibits the far one pulling the common border toward the depth level of the near region (Nakayama et al, 1989 *Perception* **18** 55–68). In experiment 3, we compared perceived slant of a rectangle, either joinable or not, with or without the occluder. Two sets of non-joinable displays were used in which spatial unification was disrupted even when the occluder was present, by means of junction's geometry or misalignment. Observers made a speeded judgment of whether the two rectangles flanking on either side of the occluder or gap had either 'positive' or 'negative' twist. Occluder presence alone reduced slant sensitivity (as well as classification speed), even when no interpolation could occur. When surfaces could be amodally unified, we found both a greater loss of slant sensitivity (with respect to baseline) and an inverse relation between the amount of loss in slant sensitivity and stereo-slant. Results indicate that visual approximation is effective when surface interpolation requires torsion, within a limited range of twist angle.
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◆ **Effects of temporal context on amodal completion, response times and magneto-encephalograph results**
G Plomp, L Liu, C van Leeuwen, A A Ioannides (Riken BSI, Laboratory for Perceptual Dynamics, 2-1 Hirosawa, Wako-shi, Saitama 351-0198, Japan; e-mail: gplomp@brain.riken.jp)
We investigated amodal completion of partly occluded figures with a same–different paradigm in which test pairs were preceded by sequences of two figures. The first of these could be congruent to a local or global completion of an occluded part in the second figure, or a mosaic interpretation of it. A superadditive facilitation of response times was obtained when the simple figure was congruent to an interpretation of the following occluded figure. This effect was obtained for local, global, as well as mosaic interpretations of the occluded figure, but only when the latter was presented briefly (50 ms). The results indicate that prior exposure primes possible interpretations in ongoing completion processes. In a follow-up experiment, we recorded and