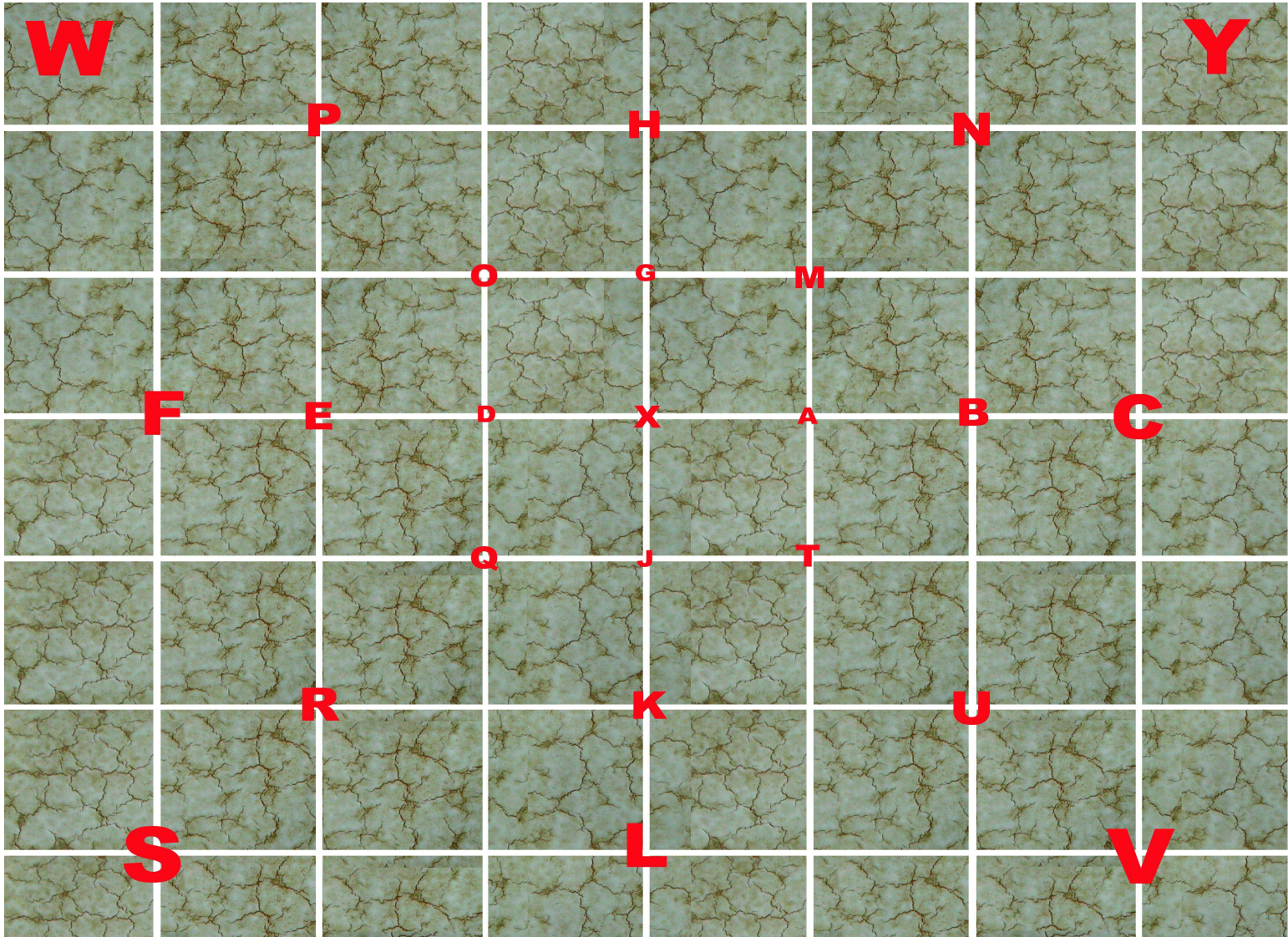# Staring Makes Objects in the Visual Periphery Vanish by Filling In the Pattern of their Surroundings

A Novel Approach to Determining the Sizes of Perceptive Fields

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Observation: Staring at the fixation point **X** without moving one's head makes the red letters vanish, while their spaces are filled in by the surrounding texture

When one patiently stares at a well-defined fixation point (with one or two eyes, and without moving one's head), objects in the visual periphery observed from the corner of one's eyes are perceived to *vanish*. The illusion results from a *filling-in* of the surrounding texture.

For instance, colored circular patches with diameters of up to 2, 5, 15, or 53° are perceived to vanish within 2…20 s at retinal excentricities of 3, 7, 20, or 53° respectively (with the last patch positioned completely outside of the field of binocular vision, i.e. close to the visual periphery). Even prominent light sources like the full moon can be perceived to vanish while one stares at a nearby star.

These vanished objects remain invisible while one blinks one's eyes, and even during passive and active rotation of the eyes up to 0.5 degrees. With larger rotations in *any* directions, however, the objects are perceived to immediately reappear.

Cross-eyed vision reveals that both the vanishing and the reappearance of the objects can occur in one eye only or in both eyes.

When the visual line is blocked by a white paper during the staring process, vivid afterimages of complementary colors are perceived at the very site of the vanished object, whereas the object itself remains invisible when the paper is removed.

We hypothesize that the maximum sizes of objects which can be made to vanish in the visual periphery by staring indicate the spatial extent of the *perceptive fields* (1). These are known to increase with their distance from the foveal region and to cause the decrease of resolution of motionless objects in the visual periphery (2).

References

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(2) H. Strasburger (2003): Indirektes Sehen. Hogrefe, Göttingen, p. 20