

The uncrowded window for object recognition

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It is now emerging that vision is usually limited not by object size, but by spacing. The visual system recognizes an object by detecting and then combining its features. When objects are closer together than the critical spacing, the visual system combines features from them all, producing a jumbled percept. We review the explosion of studies of this 'crowding' phenomenon — in grating discrimination, letter and face recognition, visual search, and reading — to reveal a universal principle: the 'Bouma law'. Critical spacing is equal for all objects. Furthermore, critical spacing at the cortex is independent of object position, and critical spacing at the visual field is proportional to object distance from fixation. The region where object spacing exceeds critical spacing is the uncrowded window. Observers cannot recognize objects that are outside this window. The uncrowded window limits how quickly people can read text and find an object in clutter.

Topic: object recognition

Preference: slight preference for poster over oral