

*Special Issue Introduction***Crowding: Including illusory conjunctions, surround suppression, and attention****Denis G. Pelli**Psychology and Neural Science, New York University,  
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This special issue of *Journal of Vision* is devoted to “Crowding,” a failure of object recognition. An object is “crowded” when clutter jumbles its appearance, making it impossible to identify.

Clutter impairs perception of objects. As every child knows, [Waldo](#) is hard to find. Long-range effects of non-overlapping distractors can alter the appearance of an object, making it unrecognizable. A century of thoughtful empirical work has focused on crowding as a peripheral impairment, but this focus has now broadened dramatically. Scientists in many fields have independently discovered and exploited crowding-like effects to tackle object recognition. Ophthalmologists noticed “crowding” in amblyopia and in peripheral acuity testing. Physiologists found “non-classical receptive fields” and “surround suppression” in single-unit recordings from cat and monkey, and psychophysicists found surround suppression in human vision. Psychologists discovered crowding effects with gratings, words, and faces. Cognitive scientists found the “illusory conjunctions” of features predicted by the Feature Integration Theory of attention.

How much of the difficulty of seeing in a cluttered environment — long searches, slow reading, illusory conjunctions, and surround suppression — can we attribute to inappropriate integration of features? The studies in this issue ask observers to identify, read, or search. They measure effects of context, including attention and first- and second-order similarity of the clutter to the target. They find that crowding, broadly construed, is rich ground. But who will strike gold? That is for you to discover as you read this diverse collection, which explores crowding and crowding-like phenomena in various ways to reveal the visual computations that recognize objects.

Keywords: crowding, surround suppression, clutter, reading, illusory conjunction, object recognition, feature integration

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