

Welcome to Vowelworld: A new approach to the guidance of search in scenes.

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Consider search for big yellow grapefruits in the supermarket. Search for these targets will be guided by features of the target. Size, shape and color features will guide attention to round, yellow items. In addition, at least three scene-based properties guide search. 1) Scene Gist - The produce section is a good place to search for grapefruits; the meat counter is not. 2) Scene syntax – Grapefruits obey physical constraints like gravity and must be placed in displays where they will not fall or roll. 3) Scene semantics – Grapefruits are more likely to occur near lemons and oranges and not near cabbage and lettuce, even though both locations are physically possible. Scene guidance is hard to control parametrically using real scenes. Vowelworld is an artificial world that permits control of versions of scene guidance rules. Observers search for vowels in arrays of consonants on multicolored, checkered backgrounds. Background colors provide “gist guidance.” A’s are more likely to be in red regions; “I” in blue, etc. Chains of circles provide “syntactic guidance.” Vowels can be constrained to lie on or next to circles. Letter gradients provide “semantic guidance.” Vowels lie near their neighbors in the alphabet. U’s would be near S, T, & Vs. Observers searched for vowels with no rules, one rule, or all rules active in arrays of 100, 200, 300 or 400 letters. Errors and RTs fell as rules were added, with performance significantly better with all rules on than with all rules off. Each guiding cue contributes to search efficiency and a combination of all three rules appears more effective than simple multiplicative combination of individual contributions. Cue validity can be varied. For example, with 0.9 valid color cues, invalid colors produce higher errors (37vs14%) and RTs (9200vs7300msec). Similar results are obtained with other cues.