Visual Foraging Behavior: When are the berries riper on the other side of the screen?

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Suppose you are picking raspberries in a field with many bushes, each holding some ripe berries. When do you move to the next bush? You will probably leave the current bush before picking the last ripe berries. The Marginal Value Theorem (MVT, Charnov, 1976) more specifically predicts that you will leave when the current rate of picking drops below the overall rate for the task. Many real world tasks from berry picking to satellite surveillance are foraging search tasks. We have devised a paradigm that creates rich environments for examining human decision making in foraging tasks. **Experiment 1**: Displays contained 20-30 reddish "berries"; 50% were “ripe”. Ripe berries differed from unripe in redness but were drawn from overlapping distributions (D’=2). Observers attempted to maximize ripe berries picked in 15 minutes. They could pick in one patch as long as desired and then move to the next. Ease of picking and travel time between patches varied. Observers picked the ripest berries first and moved when picking got harder. The results conformed well to MVT. **Experiment 2**: Patches varied from 20% to 80% ripe berries. Overall behavior still conformed to MVT but behavior in single patches did not. Observers stayed too long in lousy patches and left good ones too soon. Quitting rules based on a ripeness/redness threshold worked quite well. **Experiment 3** eliminated ripeness information. Patches varied from 20-80% ripe but all berries looked the same. Observers got feedback only after picking each berry. Overall behaviors still conformed to MVT but individual patch behavior followed probability matching. Observers picked 20% of the berries in 20% patches and 80% in 80% patches. Obvious quitting rules like moving after N bad berries or N bad berries in a row don’t work. MVT describes foraging behavior but does not explain human patch leaving rules.

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