How do honey bees collectively decide to build drone comb?

How do honeybees collectively “decide” when, where, and how much drone comb to build without a centralized leader assessing the needs and conditions of the colony? The amount of drone comb in the hive is tightly regulated. Too much drone comb and the colony may make a detrimentally large amount of resource-consuming drones that do not contribute to brood care or nest maintenance. Too little drone comb and the colony may produce a detrimentally small amount of drones, depriving the colony of valuable reproductive opportunities. The regulation of comb construction by many honey bees inside the hive exhibits all the characteristics of a complex adaptive system. Our current research project involves implementing, piloting, and designing experiments to investigate this question with the goal being to ultimately model the optimization process exhibited by this honey bee behavior.

Applicants with a wide background in social or biological sciences will be considered. Applicants must be highly motivated to learn about animal behavior and honeybees. Applicants should have taken OR will take the bee course offered spring semesters. Applicants must have some mornings they are free to work. Researchers will be expected to work 10-15 hours a week and must have the means to travel to the apiary in Mesa (either by car OR using a bike in conjunction with ASU’s intercampus shuttle – directions for either method will be provided). Tasks will include but are not limited to assisting a graduate student working with bees, helping construct experimental hive boxes in a wood shop, and using computer software to analyze photos. The student will also be strongly encouraged to attend weekly lab meetings. Students will learn about scientific investigation, insect biology, and how to keep bees (either as a hobby or professionally). Freshman, sophomores and juniors interested in working many semesters and summers are preferred.

If you are interested write a one page document stating your education background, academic goals, research interests as well as a brief description of any research or job experience. Send this document to Jon Jackson (joncolej@asu.edu) and Dr. Stephen Pratt (Stephen.Pratt@asu.edu).