APPARENT INSIGHT LEARNING BY SOME COMMON GRACKLES BREEDING IN CENTRAL PARK, NEW YORK

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Thorpe (1956, p. 110) defined insight learning as the "production of a new adaptive response as a result of insight or as the solution of a problem by the sudden adaptive reorganization of experience." According to Welty (1982, p. 211) an individual "sees through" a problem. Most instances of tool-using by birds and other animals (for reviews, see Alcock, 1972; Boswall, 1977; Hall, 1963; Millikan and Bowman, 1967; Van Lawick-Goodall, 1970) are examples of insight learning. Two classic illustrations of tool-using by birds are the Mangrove Finch (*Camarhynchus heliobates*) which uses twigs or cactus spines to probe for insects (Curio and Kramer, 1964) and the Egyptian Vulture (*Neophron percnopterus*) of Africa which drops rocks on Ostrich (*Struthio camelus*) eggs before eating the nutrient-rich contents (Van Lawick-Goodall, 1968). The use of "materials" in altering the form or shape of an object for later use has been separated from strict tool-using (Alcock, 1972; Van Lawick-Goodall, 1970). However, material-using is still a form of insight learning because it displays problem-solving ability. Some examples mentioned by Boswall (1977) are the Song Thrush (*Turdus philomelos*) and some of the Old World pittas and bowerbirds (*Pitta versicolor* and *Scenopoeetes dentrirostris*) which break hard prey on stone anvils or other hard objects. In this paper I describe apparent insight learning by some Common Grackles (*Quiscalus quiscula*) breeding in Central Park, Manhattan. Each year grackle parents are faced with the problem of procuring enough food to successfully raise nestlings whose energy demands increase as they approach adult size. Stale bread and crackers are abundant around the American Museum of Natural History during the spring and summer, but the hard, dry nature of this food source makes it difficult to handle and transport in quantity. Some grackles have solved this problem by wetting the bread with water, which eases handling during mastication and transport. This enables them to exploit an abundant resource during the critical period of raising young.

During the week of 12 May-19 May 1982 I made a series of daily two hour observations of Common Grackles wetting stale bread, pizza crust, and crackers in small drainage pools and gutters on the museum roof. I observed two types of wetting behavior: 1) holding bread directly underneath running water from a drainage pipe, and 2) dropping recently collected bread from their bills into pools of water on the roof

or in gutters along the edge of the roof. Grackles not only fought for food but the right to deposit dry bread in drainage pools. I observed territorial displays, such as the "ruff-out," "bill-tilt," and "song," described by Stokes (1979). Thieves of the same species were observed pilfering recent deposits of foraging birds. Intervals between visits to the watering areas were very short. The quantity and regularity of these visits suggested that these birds were parents raising broods. I later confirmed this when I observed nestlings in Central Park being fed wet bread by parents.

Common Grackles using water to soften a food resource derive four benefits from such behavior: 1) exploitation of an abundant resource which was extremely difficult to exploit prior to wetting; 2) increased ease of handling efficiency; 3) partial breakdown of food by water; 4) water absorbed by the bread for growing nestlings.

I decided to follow up these observations over the next two years. Once again I found that Common Grackles returned to the same watering areas on the museum roof in springs of 1983 and 1984. These birds continued a learned tradition over a two-year period (and probably longer). Perhaps this wetting behavior first occurred when a parent dropped a piece of bread into water and noticed the difference in texture after retrieving it. Once this act was repeatedly performed and positively reinforced in the same individual, it could subsequently have spread to other grackles by observational learning. The extremely social nature of this species would certainly enhance the spread of this behavior in a local population. The continuation of wetting from season to season could be culturally transmitted from generation to generation in much the same way that dialects are maintained from year to year in local populations. Nestlings could have learned this method of feeding from their parents and in turn passed it to their offspring.

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