

**Social Learning: Psychological and Biological Perspectives.** Edited by Thomas R. Zentall and Bennet G. Galef, Jr. Hillsdale, New Jersey: Lawrence Erlbaum (1988). Pp. xi+357. Price \$45.000 hardback, \$24.95 paperback.

Learning in animals is still studied primarily in the laboratory, in individual animals exposed to unnatural conditions, which include in most cases social isolation during the experiment. One excusable reason for this is that it is easy to observe individual learning in these circumstances, while more natural and social behaviour is open to a greater variety of interpretations. Less excusable is the assumption, going back to Thorndike, that learning in animals is fundamentally asocial. Now that many other cherished beliefs of traditional learning theory in psychology have fallen to a greater awareness of ethological and ecological influences, it appropriate that the asociality assumption should be re-examined, and Zentall and Hogan have assembled what amounts to a survey of recent experimental evidence which challenges it.

Galef's introduction provides a rigorous and comprehensive classification of mechanisms of "local enhancement", "contagion" and so on, which are alternatives to more cognitive forms of imitation, and all chapters exhibit commendable methodological care. There is comparatively little theoretical analysis: but Boyd and Richerson present mathematical models which imply that only highly variable environments require individual learning, speculating that many species across a wide range of taxa inhabit environments where acquiring information from others is a superior strategy to those of exclusively individual learning or inherited control.

The experimental results suggest that the content of what is learned socially will follow fairly predictable channels. Most impressive is the data on avoidance. Young rhesus monkeys acquire an intense fear of snakes on seeing their parents react fearfully to them: experimental controls here involve carefully edited video tapes and suggest that snakes can be regarded as a prepared conditioned stimulus (by comparison with flowers) with the model's fear display a Pavlovian unconditioned stimulus (Mineka and Cook). Curio similarly regards a dummy Australian honeyeater as a good CS, for blackbirds, with the mobbing response of another bird (to a dummy owl on the other side of a screen) as a UCS. More surprisingly, redwinged blackbirds will learn in one trial to avoid an orange food hopper after merely observing another bird experience malaise after eating from it. Mason shows, with this technique, that complex reddish stimuli are better than simple green ones, but has not yet isolated the critical features of the social cues indicating malaise. Galef, Zentall, and Denny et al find relatively little evidence for any social learning in the laboratory rat, beyond good olfactory detection of what another rat has been eating (Galef), but Lefebvre and Palameta suggest that feral pigeons, being gregarious and opportunistic, use observational learning for action selection in foraging, their test being a paper-piercing response, with controls for 5 less demanding alternatives, such as learning of reward availability. Exploitation of fast-food remnants by London pigeons was noticeably rapid, and one notes that in Boyd and Richerson's theories social learning is discounted not, clearly, in changing environments per se, but only in cases where the social models encounter different contingencies from those which pertain for the imitator. Petronovich and Pepperberg discuss vocal learning in the white-crowned sparrow and an African Grey parrot respectively, agreeing that socially active tutors are more effective than tape-recordings or other less interesting sources, but saying little about the functional significance of avian vocal mimicry.

Rozin discusses socialization and human food preferences, which are obviously culturally determined, and also to some degree irrational and Pavlovian, toilet training providing, he suspects, the foundation for all later strong disgust. Both Mazur and Meltzoff

review their experimental work on imitation in human infants, which suggests that Piagetian and other theories of cognitive development (notably Chomsky's) have underplayed social learning in "*Homo Imitans*".

Much of the experimental work reported here is recent, or not conveniently available in journals, many of the chapters include useful literature reviews, and the paperback edition is very reasonably priced.

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