Woodall interprets this poem to be about Borges's dashed hopes of marrying one of his young collaborators, María Esther Vásquez. Yet surely the title and theme of a paradise lost point to John Milton, who, like Borges, went blind with his greatest poetry yet to be written; and it seems clear that the ill-remembered garden stands simply for having been able to see.

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Showing Off

THE HANDICAP PRINCIPLE.
By Amotz Zahavi and Avishag Zahavi. Na'ama Ely, trans.
Oxford University Press. 320 pp. $25

by Lionel Tiger

This richly persuasive book is the distillation of more than 20 years of argument about one central idea—namely, that much of what appears to be profligacy or excess in nature is really a form of economy. Among biologists, the standard explanation of such showy phenomena as the peacock's tail, the stag's antlers, or the tendency of the gazelle when threatened by a predator to leap straight into the air before fleeing is that they are adaptations run amok. They may be magnificent, biologists argue, but they serve no evolutionary purpose. The Zahavis, he a professor of zoology at Tel Aviv University and she a former professor of plant physiology at the Volcani Center for Agricultural Research, beg to differ. Applying Darwinian theory to their extensive study of animals in their native habitats, they contend that the reason why the males of many species evolve puzzlingly costly and often absurd characteristics and behaviors is precisely because these reveal, by their very burdensomeness, that the males are sufficiently strong and healthy to make formidable competitors and desirable mates. The users of this information are other males, who rank themselves according to certain recognizable clues, and females, who generally make the reproductive choices.

Implicit in the authors' "handicap principle" is the decisive role played by females in sexual, and hence natural, selection. This idea has been around since the mid-1970s, when the Zahavis published their first exploratory paper. (Around the same time, I was editing what was probably the first collection of scholarly pieces on female hierarchies.) The questions being asked then were intriguing: How do females organize their "pecking orders"? How is it decided which females get to mate with which males? What is the basis for the often turbulent negotiations surrounding sexual access? Biologists still know little about these questions, but with studies like this one the picture becomes clearer.

While developing their hypothesis, the Zahavis explore a variety of related biological issues. One is ritualization, or the process by which animals appear to coordinate their behavior in order to avoid fights, conduct courtship, and attract mates. Why do potential competitors observe what appear to be standardized rules? About ritual behavior such as *lek*, the stylized milling about of elk bucks and other male ungulates, the Zahavis claim that it "brings out crucial differences in performance, which in turn reflect accurately the different abilities and motivations of the competitors." In other words, evolutionary selection seeks a level breeding field. The obvious comparison is with the way human sports are organized by levels of skill to ensure real competition. Even the professionals tend to give inferior teams first pick of rookie players; sport, like biology, is most exciting when it is about exquisite differences. When the score is 58 to 3, the fans go home. When it's a cliff-hanger, they stay.

A closely related question concerns what appear to be wasteful responses to predators on the part of some animals. When a bird sees a cat, it issues a warning call. Why does it do that? Why not just scoot silently away?

The conventional biological explanation is that the bird is driven by a kind of self-interested altruism (or altruistic self-interest): it warns its fellows out of a supposed biological imperative to preserve the collective DNA. The Zahavis offer a simpler explanation: the bird is discouraging the cat. By flagrantly announcing its awareness of the predator, it also signals its confidence in its ability to escape. Perhaps the cat should go find a less energetic bird. Reinforcing this argument is the fact that some warning calls are specific to particular predators. Do birds taunt cats?

The Zahavis make a similar point about the always fascinating relationship between hosts and parasites. Some of those relationships are symbiotic, that is, of mutual benefit to both species. In those that are not symbiotic—that involve a mutual threat or "arms race" between the two species—the Zahavis discover a curious gray area. Sometimes, they suggest, a host species may "choose" a particular parasite as a compromise burden, one that will protect it against more harmful and debilitating enemies. They offer the illustration of the cuckoo and the crow. The cuckoo lays its eggs in the nests of other birds, where its nestlings eventually displace those of the other bird. The crow's response to this parasitic behavior is to tolerate and indeed care for the interlopers as though they were its own. In turn, cuckoo nestlings behave less aggressively toward crow nestlings than toward the offspring of less accommodating hosts.

Between such hosts and parasites there is, the authors claim, an adjusted equilibrium that gives both a certain amount of reproductive elbow room. Such relationships are subtler than they appear at first and have important medical implications. For example, the recent work of Paul Ewald, a medical researcher at Amherst College, suggests that AIDS carriers may be living longer not only because of medication but because the virus that prevails over time is the one that does not rapidly destroy the host necessary to its propagation.

Overall, the Zahavis' book is enlivened by a style that is indirect, playful—almost, one is tempted to say, cubist. The authors' conclusions will obviously be controversial, including their support of one recent hypothesis that is the subject of an explosion of inventive research. It has to do with the role of physiological symmetry in both individual development and sexual selection. In a nutshell, it appears that individual animals—and humans—whose facial and other bodily features are symmetrical rather than irregular are more likely to have had a healthy fetal development, to be relatively free of parasites and viruses, and to be more attractive to potential mates. So the peacock bracing himself to spread a heavy but perfectly symmetrical tail is doing so to convince the plain peahen that he will be a healthy paterfamilias. Beauty, it would seem, is more than feather-deep.

It should go without saying that such findings tend to reinforce commonsense understandings of human behavior. For example, few will dispute the idea that costly adolescent male behavior such as buying huge, preposterous tires for a pickup truck or carrying the loudest boom box on the block is meant to intimidate rivals and impress any female within miles. More disputed are certain biological findings related to female behavior. The female preoccupation with cosmetics is, according to the misconceived puritanism of certain feminists and other radicals, a capitulation to the forces of marketing. Yet it would seem that there is a biological basis for this preoccupation: clear, smooth skin has been shown to be an irreducible feature of male mate selection. After nearly a half-century of enforced plainness, women in mainland China have almost overnight joined the international sisterhood of make-up artists. Chairman Mao challenges Charles Darwin and loses.

Perhaps the most agreeable aspect of this book is its seamless linking of animal and human data, and, more inventively, its extrapolations from human experience into the lifeways of other animals. What Max Weber called *verstehen* (intense empathy) is here applied, with great freshness, to species other than our own.

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