

## Flying Feathers — Some Theory of Animal Conflict

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A common Spring sound at Dhee Sar is the trumpeting of mated and unmated male Himalayan snowcocks. They begin telling all who are present about their location around sunrise. This gets our day started — albeit a bit early. We've habituated some snowcocks around camp and this year we're spending spare time watching them.

The other afternoon, we were watching a pair of snowcocks above camp when a second male, (apparently without a mate), flew over and began calling. The female seemed oblivious to the new male; she continued foraging on dried grasses protruding through the snow. Her 'mate' was anything but oblivious. He began trumpeting in response to the intruding male. Meanwhile, the new male got closer and closer to the pair. The female, perhaps thinking the new male was too loud, or too quiet; too shiny, or too drab; or perhaps just wanting a change of scene or diet, flew to an adjacent ridge. Her mate followed closely behind, honking all the way.

The second male watched where they flew. When they landed, he flew over towards them, alighted, and resumed his calling. He approached the pair — bowed down with a train of white tail feathers — and shuffled towards them while simultaneously calling. The female flew to another ridge — again with her mate in tow. The second male

followed.

The mated male appeared to have enough of the intruder. He charged the intruding male and a brief, but intense scuffle began. Feathers flew in the breeze and suddenly a very quiet snowcock popped out of the melee and soared down valley and out of sight. The victorious male ran up towards his mate and resumed foraging, punctuated with bouts of calling.

Why do animals fight? What general behavioral principles can we identify that help explain animal combat? In this essay I will discuss some current ideas about animal fighting that may be used to explain the preceding incident.

Contrary to popular belief, when non-humans fight, they may fight to the death. Why would animals want to fight when there are real risks of injury or death associated with combat? What is the function of fighting?

In general, we assume that non-humans may compete over access to scarce resources. Resources might be food, water, habitat, or access to a fertile mate.

In many instances, competition may not lead to overt fighting between individuals. Weaker individuals may 'know' they can't

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compete with a stronger competitor and may give way if there is an encounter. Intra-sexually selected traits, (see 'Natura' Autumn 1991), may advertise fighting ability. For instance anyone who hears a deep roar of a red deer knows that the individual is large. Since calling is energetically expensive, a deer that can sustain the roar over a long period of time is advertising that it is also quite strong. Thus, weaker red deer may avoid agonistic encounters with stronger deer.

Yet, we see fighting between deer, snowcocks, and other species in nature. In fact, combat-related injuries are a significant cause of mortality in male red deer (and other polygamous ungulates that have been well studied). What other general behavioral principles may help us understand our observations of combat?

Since fighting may lead to injury or death, it is in each individual's best interest not to fight an individual that is clearly too strong. If preliminary information about the strength of a competitor is ambiguous, a competitor may come in for a closer look. For instance, one individual may 'probe' its potential opponent — essentially asking whether it is really as strong as it looks. Probing may take many forms in different species, but generally functions as a 'low-cost' way to determine if an individual holding a resource is bluffing.

Probing is the first step in what may be an 'escalated' encounter — an interaction that moves closer and closer to actual combat. The key point is that rarely do 2 animals just start fighting without a period of assessment of their opponent's actual strength. In many cases, one of the individual's may realise that it is an inferior competitor and may end the agonistic encounter by moving away. However, sometimes agonistic encounters do escalate to combat.

When 2 animals fight, we assume that the intensity of each interactant's fighting is

proportional to the value of the resource in question. If the resource is not that rare, then a fight may not be that intense. However, if a resource is very difficult to acquire, then it may be worth it to fight harder. Mates are often a resource that is quite limiting. In many species only a fraction of the adult males in the population are able to mate in a given year. In the snowcock example, the 'owner' of the resource appeared to win. The mated male kept his mate. Why? Well, it's quite possible that the challenger was an inferior competitor — he couldn't fight well. However, it is also that the mated male 'realised' the true value of his resource (maybe he successfully mated with the hen last year) and was willing to fight more for it. The common observation that owners (of territories, mates, etc.) tend to win fights may be in part explained by the differential assessments of the value of resources. In general, the owner of a resource has greater knowledge of its true value. Thus, the owner may be willing to escalate either faster and/or more than a 'naive' opponent who is gambling on the true value of the resource.

In some instances animals do fight to the death. Often, fatal fighting occurs in captive situations when the loser can't properly hide or escape. However in nature, we can infer that fatal fights are probably over particularly valuable resources and probably between relatively equally matched individuals.

Animal conflict is responsible for the evolution of many striking morphological and behavioral traits. The next time you see 2 animals involved in an agonistic encounter, try to apply some of these principles and see if it helps you better understand both the process and the outcome of the interaction. ■