The evolution of advertising

This issue of Ardea contains a review of a book entitled ‘The evolution of beauty: how Darwin’s forgotten theory of mate choice shapes the animal world – and us’. The book is written by Richard O. Prum, professor in ornithology at Yale University. Because it is about sexual selection, my prime research interest, I felt I needed to read it. And after reading it, I felt I needed to (ab)use this editorial to discuss it. An editorial is not the same as a book review, but you’ll have to forgive my diatribe.

Readers of Ardea will need no convincing that birds are the most wonderfully diverse and beautiful creatures on the planet. A fundamental biological question is why this is so; more precisely, how did these ‘ornamental traits’ – this beauty, if you wish – evolve? As any textbook in animal behaviour or behavioural ecology will tell you, it was Darwin who came up with an explanation. Darwin realized that his theory of natural selection only explained the evolution of traits that increase an organism’s chance of survival, and that ornamental traits such as beautiful song and gaudy plumage might rather do the opposite. So, Darwin proposed the theory of sexual selection, which explains the evolution of traits that increase an individual’s chances of obtaining one or more mates to reproduce. The agents of sexual selection are the sexual rivals and potential mates. Being unsuccessful or less successful does not mean organismal death, but evolutionary death (no or fewer offspring). Darwin recognized that there are two processes at work: intra-sexual selection (competition) leading to selection of traits such as weaponry and large body size, and inter-sexual selection (mate choice) which selects for traits that enhance attraction by members of the opposite sex.

We can be grateful for inter-sexual selection, because it led to avian beauty. But as Malte Andersson wrote in his book ‘Sexual selection’ in 1994 “the evolution of female preferences remains controversial”, and that is still true today. Without going into details, several hypotheses have been proposed, including direct benefits to choosy individuals, sensory bias (selection on the sensory system in another context than mate choice), selection for species recognition (and hence avoiding hybridization), genetic indicator mechanisms and Fisherian self-reinforcing selection. Andersson noted that these explanations “are all compatible and may apply in combinations”. Now comes Prum’s book. He argues that virtually all evolutionary biologists have betrayed Darwin and have followed Wallace in believing that mate choice is adaptive. Prum seems truly upset by Zahavi’s ‘handicap principle’, which suggests – with other indicator models – that individuals can judge the underlying quality of a potential mate through the expression of the (costly) ornament. Prum calls it “antiaesthetic sexual biology” (R.I.P. Amotz).

Reading the book, it felt like Prum rants and raves against anyone who even entertains the idea that the handicap hypothesis or indirect ‘good genes’ benefits of mate choice might be valid, including Alan Grafen, Richard Dawkins, and most of the rest of us lesser mortals. The poor evolutionary psychologists are hit the hardest – and even below the belt –, but Ardea is an ornithological journal, so I gladly refrain from further discussing what Prum has to say about humans. I like reading books and I greatly admire people – including Prum – who write well. I much enjoyed the personal accounts of birding trips and travels, the detailed descriptions of natural history including the courtship displays of manakins and bowerbirds he and others observed, and the celebratory narratives of his own research or that of his students and collaborators on duck penises, manakin wing bones and dinosaur plumage colour. His personal stories of success and failure (mostly success of course) are coloured, but also colourful and worth reading. The natural history descriptions made me reminisce about my own experience of the thrill of watching behaviours not yet described or understood.

When it comes to Prum’s ‘Beauty Happens’ hypothesis on aesthetic evolution, I am genuinely interested in understanding his ideas, but am baffled by his arguments. Prum contends that there is a lot of bad science out there and that “adaptive mate choice explanations often seem like Rudyard Kipling’s ‘Just So Stories’”, and he laments about unreproducible results and null results hidden in file drawers. He writes “Many studies have failed to find any evidence of a correlation between good genes and female sexual preferences”. Fair enough. But all these valid concerns seem to be raised only when it comes to tests of alternative hypotheses that do not fit with Prum’s pet idea. In his discussion of evidence in favour of Beauty Happens, issues about scientific quality and rigour have gone out of the window. What follows are unbalanced and uncritical statements, and a book filled with just so stories. The expression ‘the pot calling the kettle black’ sums it up well.