

Living On Earth, Online Notes

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Chapter 4. Orpheus

89 *From the Rose-breasted Cockatoos (or Galahs)*: Ornithology seems to have a special tendency toward controversy (perhaps following the lead of the birds of the chapter opening), and this extends to naming and capitalization. Some say that because birds, unlike other animals, have official common names, it's apt to capitalize the first letters (<https://ornithology.com/upper-case-bird-names/>). Others reject this. I am following my publisher's preference.

90 *Their evolution began in the Jurassic*: Through here, I use Stephen Brusatte, Jingmai O'Connor, and Erich Jarvis, "The Origin and Diversification of Birds," *Current Biology* 25 (2015):R888-98, doi: 10.1016/j.cub.2015.08.003.

92 *Communication has borders*: A lot of this is discussed in Ronald Planer and Peter Godfrey-Smith, "Communication and Representation Understood as Sender–Receiver Coordination," *Mind and Language* 36 (2020): 750-770, doi.org/10.1111/mila.12293. It gives citations to a large recent literature, which stems in part from Brian Skyrms's revival of David Lewis's model of conventional signaling (see Skyrms's *Signals*, 2010, Oxford), and also from Ruth Millikan's *Language, Thought, and Other Biological Categories* (1984, MIT).

93 *Vervet monkeys, for example, give alarm calls to one another*: Robert Seyfarth, Dorothy Cheney, and Peter Marler, "Monkey Responses to Three Different Alarm Calls: Evidence of Predator Classification and Semantic Communication," *Science* 210 (1980): 801-3, doi: 10.1126/science.7433999.

94 *The idea that nearly anything could be used*: The classic discussion of arbitrariness is Ferdinand de Saussure's *Course in General Linguistics* (1916).

95 *bacteria use chemical communication*: See Steven Rutherford and Bonnie Bassler, “Bacterial Quorum Sensing: Its Role in Virulence and Possibilities for Its Control,” *Cold Spring Harbor Perspectives in Medicine*, 2012. There are many papers on this topic.

95 *In the unusual circumstances of Octopolis and Octlantis*: See David Scheel, Peter Godfrey-Smith, and Matthew Lawrence, “Signal Use by Octopuses in Agonistic Interactions,” *Current Biology*, 2021. This paper discusses the Nosferatu behavior, though not under that name.

98 *The earliest two operas that have survived*: These are *Euridice* by Jacopo Peri and Ottavio Rinuccini (1600), and *Orfeo* by Claudio Monteverdi and Alessandro Striggio (1607). Peri’s 1597 *Dafne*, which is mostly lost, is sometimes regarded as the very first opera.

98 *The ornithologist Richard Prum uses the phrase*: I draw especially on his paper “Coevolutionary Aesthetics in Human and Biotic Artworlds,” *Biology and Philosophy*, 2013, as well as his book *The Evolution of Beauty* (2017).

101 *Once we put insects, and their all-important relation*: Insect consciousness is no longer a fringe idea. See Andrew Barron and Colin Klein, “What Insects Can Tell Us About the Origins of Consciousness,” *PNAS*, 2016, and Matilda Gibbons et al., “Motivational Trade-Offs and Modulation of Nociception in Bumblebees,” *PNAS*, 2022.

101 *But now it is thought likely that the initial role of feathers*: This is in Brusatte, O’Connor, and Jarvis, “The Origin and Diversification of Birds,” and many other papers.

102 *The colors in a coral reef*: See Jörg Wiedenmann and Cecilia D’Angelo, “Revealed: Why Some Corals Are More Colourful Than Others,” *The Conversation*, January 30, 2015, and (a more technical version of the same work), John Gittins et al., “Fluorescent Protein-Mediated Colour Polymorphism in Reef Corals: Multicopy Genes Extend the Adaptation/Acclimatization Potential to Variable Light Environments,” *Molecular Ecology*, 2015. Also Alya Salih et al., “Fluorescent Pigments in Corals Are Photoprotective,” *Nature*, 2000.

Thanks to Meryl Larkin for help here. This site has more information:

<https://www.gbrbiology.com/knowledge-and-news/how-corals-get-their-colour/>. It raises the possibility that some coral colors may be matched to fish vision, and that would qualify the claim that coral colors are not produced to be seen. See also Mikhail Matz, Justin Marshall, and Misha Vorobyev, “Are Corals Colorful?,” *Photochemistry and Photobiology*, 2006.

103 *They form long-lasting bonds*: See Amanda Vincent and Laila Sadler, “Faithful Pair Bonds in Wild Seahorses, *Hippocampus whitei*,” *Animal Behaviour*, 1995.

105 *the whole enormous branch of passerines*: This section draws often on Tim Low’s excellent book *Where Song Began* (2014, Penguin).

105 *One study found that even other birds can’t always tell lyrebird counterfeits*: Anastasia Dalziell and Robert Magrath, “Fooling the Experts: Accurate Vocal Mimicry in the Song of the Superb Lyrebird, *Menura novaehollandiae*,” *Animal Behaviour*, 2012. Females also call, and mimic; the function of their calls is less clear, but they may play a role in nest defense and competition between females for breeding territories. See Anastasia Dalziell and Justin Welbergen, “Elaborate Mimetic Vocal Displays by Female Superb Lyrebirds,” *Frontiers in Ecology and Evolution*, 2016. The females I’ve heard also seem to sing more softly than males.

106 *Lyrebirds spend most of their time on the ground but can fly when they want to—although it often looks like an approximation of flight*: While this book was in press, I came across a photo of a lyrebird flying taken by Benjamin Hallowell, in which the flight is far from an approximation. With Benjamin's permission, I have included it here:



This is by far the most impressive example of lyrebird flight I've seen. It made me wish I'd worded that passage a little differently, although most of the time, the flights are rather ungainly.

His facebook post: [https://](https://www.facebook.com/groups/641952810034464/permalink/1505232257039844/?rclid=Nw6papGzBpVa5G96&share_url=https%3A%2F%2Fwww.facebook.com%2Fshare%2Fp%2FTDQx5LhypTGR5sq7%2F)

https://www.facebook.com/groups/641952810034464/permalink/1505232257039844/?rclid=Nw6papGzBpVa5G96&share_url=https%3A%2F%2Fwww.facebook.com%2Fshare%2Fp%2FTDQx5LhypTGR5sq7%2F

Here is a video he took with some other moderately impressive flights:

https://www.youtube.com/watch?v=x97U_75GpuI

See also: <https://echidnawalkabout.com.au/lyrebirds-can-fly/>,

<https://www.youtube.com/watch?v=-3Ke7mSfMrQ>

108 A flock of cockatoos found their calls answered unexpectedly: I have just once heard a lyrebird apparently responding to other birds of the same species. I say "apparently" because there was just one event, and coincidence is possible. But it seemed pretty clear. Some Australian Magpies were warbling, and a male lyrebird who was digging in the earth by the side of the road looked up and briefly but accurately reproduced their call. He continued on with a few other calls, then stopped, and resumed digging (June 2024, Katoomba area).

For the calls of Australian Magpies: <https://www.abc.net.au/news/science/2023-08-19/magpie-australias-favourite-animal-sound-winner-science-week/102735560>

109 *The smaller cluster includes another group of birds*: This cluster also includes the treecreepers (not included in my tree diagram). These early branchings seem to attract some controversy. I use Carl Oliveros et al., “Earth History and the Passerine Superradiation,” *PNAS*, 2019.

109 *Male bowerbirds build a nest-like structure*: In this section I draw on some books by Clifford Frith and Dawn Frith: *Bowerbirds: Nature, Art and History* (2008, Frith & Frith) and (more academic) *The Bowerbirds* (2004, Oxford).

Charles Darwin, during the visit to the Blue Mountains I described in chapter 3, observed Satin Bowerbirds, and they informed his realization of the importance of female choice in his theory of sexual selection.

111 *In the case of preferences for blue*: See Gerald Borgia, Ingrid Kaatz, and Richard Condit, “Flower Choice and Bower Decoration in the Satin Bowerbird *Ptilonorhynchus violaceus*: A Test of Hypotheses for the Evolution of Male Display,” *Animal Behaviour*, 1987. Prum does not endorse this view.

I emailed some experts to ask about all this, and they were cautious—no clear pattern has emerged. Thanks to Gerald Borgia for the “far from civilization” comment about blue objects; I have only seen these bowers closer in. The Great Bowerbird I saw had some dark green ornaments.

111 *Jared Diamond, in the course of some intrepid work*: See his “Animal Art: Variation in Bower Decorating Style Among Male Bowerbirds *Amblyornis inornatus*,” *PNAS*, 1986. See also Joah Madden, “Do Bowerbirds Exhibit Cultures?,” *Animal Cognition*, 2008.

112 *Their courting behaviors seem to employ*: As birds can see into the ultraviolet part of the spectrum, and different parts of the male’s body reflect differently, what looks to us like a pretty uniformly blue-black bird dancing in unusual ways might look more psychedelic to a female.

113 *Gerald Borgia, after studying the birds extensively*: “Why Do Bowerbirds Build Bowers?,” *American Scientist*, 1995.

113 *Biology has seen a long-running and sometimes tense*: This debate is central to Prum's *The Evolution of Beauty*.

116 *In 1964, the lyrebirds down there*: See F. Norman Robinson and Sydney Curtis, "The Vocal Displays of the Lyrebirds (Menuridae)," *Emu—Austral Ornithology*, 1996. While on the topic of whipbirds: their whiplike sound has a standard reply call from a partner, a bit like a cheery wave. Sometimes a lyrebird will include the reply as well.