

## *Living On Earth, Online Notes*

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### **Chapter 5. Human Being**

120 *The group we visited on this first encounter:* These gorillas are in Volcanoes National Park, Rwanda. These are the gorillas studied by Dian Fossey, as described in her *Gorillas in the Mist* (1983) and the movie of that name. The tour operation is impressive. Each gorilla group can be visited by one small human group once a day for one hour, maximum.

Information about the Igisha group is here: <https://igcp.org/families/igisha/>

Information about the Kwitonda group, the one we visited on the second day, is here: <https://igcp.org/families/kwitonda/>

The color photo I have in the book is from the second day.

120 *Mammals arose back in dinosaur-dominated times:* See Steve Brusatte, *The Rise and Reign of the Mammals* (2023).

121 *One branch within primates is the great apes, or hominids:* See Sergio Almécija et al., “Fossil Apes and Human Evolution,” *Science*, 2021.

122 *But sometime over 5 million years ago, a primate line made its way:* From here I start to make use of Joseph Henrich’s book, *The Secret of Our Success* (2015).

122 *The primatologist Sarah Hrdy offers:* See her *Mothers and Others* (2009).

123 *Culture in this sense refers to the establishment and development:* As well as Henrich’s book, see Robert Boyd and Peter Richerson’s pioneering *Culture and the Evolutionary Process* (1985).

124 *For Sterelny, human societies continually rebuild: As well as The Evolved Apprentice* (2012), see Sterelny's *The Pleistocene Social Contract* (2021), which bears on later topics in this chapter.

125 *Until recently, researchers tended to think:* See Andrew Whiten, "Blind Alleys and Fruitful Pathways in the Comparative Study of Cultural Cognition," and the accompanying commentaries, *Physics of Life Reviews*, 2022. The Whiten paper is rather combative in tone, but the whole collection is valuable. For the bees, see especially Sylvain Alem et al., "Associative Mechanisms Allow for Social Learning and Cultural Transmission of String Pulling in an Insect," *PLOS Biology*, 2016.

125 *Is it due to brainpower, or perhaps a more cooperative:* The suggestion about cooperation is made by Sterelny in his commentary on the Whiten paper just above.

126 *Children often seem to have an eye out for transgressions:* For one of the original studies, see Marco Schmidt et al., "Eighteen-Month-Old Infants Correct Non-Conforming Actions by Others," *Infancy*, 2019. More research will (soon) be described in these online notes. Cecilia Heyes is a critic of some of this work; see her "Rethinking Norm Psychology," *Perspectives on Psychological Science*, 2023.

A new paper discussing norms both in humans and nonhumans is Kristin Andrews, et al., "Human and nonhuman norms: a dimensional framework," *Philosophical Transactions of the Royal Society B* 379 (2024): 20230026. doi.org/10.1098/rstb.2023.0026

128 *Tierra del Fuegians, living at the very tip of South America, traditionally made arrows:* Here is the rather wonderful passage from Henrich.

Among the Fuegians, making an arrow requires a 14-step procedure that involves using seven different tools to work six different materials. Here are some of the steps:

- The process begins by selecting the wood for the shaft, which preferably comes from *chaura*, a bushy, evergreen shrub. Though strong and light, this wood is a non-intuitive choice since the gnarled branches require extensive straightening (why not start with straighter branches?).
- The wood is heated, straightened with the craftsman's teeth, and eventually finished with a scraper. Then, using a pre-heated and grooved stone, the shaft is

pressed into the grooves and rubbed back and forth, pressing it down with a piece of fox skin. The fox skin becomes impregnated with the dust, which prepares it for the polishing stage (Does it have to be fox skin?).

- Bits of pitch, gathered from the beach, are chewed and mixed with ash (What if you don't include the ash?).
- The mixture is then applied to both ends of a heated shaft, which must then be coated with white clay (what about red clay? Do you have to heat it?). This prepares the ends for the fletching and arrowhead.
- Two feathers are used for the fletching, preferably from upland geese (why not chicken feathers?).
- Right-handed bowman must use feathers from the left wing of the bird, and vice versa for lefties (Does this really matter?).
- The feathers are lashed to the shaft using sinews from the back of the guanaco, after they are smoothed and thinned with water and saliva (why not sinews from the fox that I had to kill for the aforementioned skin?).

Next is the arrowhead, which must be crafted and then attached to the shaft, and of course there is also the bow, quiver and archery skills. But, I'll leave it there, since I think you get the idea. It's massively causally opaque.

His references: Lothrop, S. K. 1928. *The Indians of Tierra del Fuego*. (Museum of the American Indian and Heye Foundation). Henrich, "A cultural species" In *Explaining Culture Scientifically*, edited by Melissa Brown (2008, University of Washington Press).

129 *practices involving the detection and punishment of sorcery*: See Ron Planer and Kim Sterelny, "The Challenge of Sorcery," forthcoming.

130 *This view was championed by the American linguist Noam Chomsky*: See, for example, his *Rules and Representations* (1980).

130 *This has come to seem unlikely*: See especially Michael Tomasello, *Origins of Human Communication* (2008). See also Ron Planer and Kim Sterelny, *From Signal to Symbol* (2021).

132 *John Locke, in the late 1600s, saw language*: See Locke's *Essay Concerning Human Understanding* (1689).

133 *a phrase from the philosopher Josh Armstrong*: See his “Communication Before Communicative Intentions,” *Noûs*, 2021.

133 *The first evidence of stone tools dates*: Through here I follow Henrich’s *The Secret of Our Success*.

134 *There’s good evidence of the building of enduring structures from about 500,000 years ago*: See <https://www.nytimes.com/2023/09/20/science/ancient-human-woodworking.html>. “Nearly half a million years ago, humans in Africa were assembling wood into large structures, according to a study published Wednesday that describes notched and tapered logs buried under sand in Zambia.”

135 *The scale of Göbekli Tepe is substantial*: David Graeber and David Wengrow’s fascinating book *The Dawn of Everything* (2021) has much to say about many of the topics of this chapter from this point onward.

136 *Discussion in Australia, where stereotypes*: Bruce Pascoe’s *Dark Emu* (2014) has been an influential contribution to this discussion. Pascoe argues that some Aboriginal Australian groups farmed and lived in settled societies. In *Farmers or Hunter-Gatherers? The Dark Emu Debate* (2021), Peter Sutton and Keryn Walshe criticize the book, not to reassert an old view of Aboriginal Australian life as simple and “primitive,” but to argue that “the old people” of Australia were mostly complex hunter-gatherers (“hunter-gatherers-plus”).

136 *The political scientist James Scott’s book*: This is his *Against the Grain: A Deep History of the Earliest States* (2017). Graeber and Wengrow’s *The Dawn of Everything* is an absorbing counterpoint to Scott’s book, and Graeber and Wengrow discuss Scott near the end. They are skeptical about the causal story and the account of typical transitions that Scott offers, arguing, for example, that many early states were not notable for a rise in inequality. The view I outline here is somewhat Scott-ish, informed also by correspondence.

136 *when I first learned that, in old hunter-gatherer skeletons*: This was in Jared Diamond, *The Third Chimpanzee* (1991): “Corn, first domesticated in Central America

thousands of years ago, became the basis of intensive farming in those valleys around AD 1000. Until then, Indian hunter-gatherers had skeletons ‘so healthy it is somewhat discouraging to work with them,’ as one paleo-pathologist complained. With the arrival of corn . . . [t]he number of cavities in an average adult’s mouth jumped from fewer than one to nearly seven, and tooth loss and abscesses became rampant.”

139 *Play that involves explicit pretense*: See Alison Gopnik, “What Good Comes from Pretending?,” *The Wall Street Journal*, January 19, 2023. For primates, see Juan-Carlos Gómez, “The Evolution of Pretence: From Intentional Availability to Intentional Non-Existence,” *Mind and Language*, 2008, and Tetsuro Matsuzawa, “Pretense in Chimpanzees,” *Primates*, 2020.

141 *The outlines of Lévi-Strauss’s sketch*: Here I draw on Olivier Morin’s work, especially “The Piecemeal Evolution of Writing,” *Lingue e Linguaggio*, 2022, and Olivier Morin, Piers Kelly, and James Winters, “Writing, Graphic Codes, and Asynchronous Communication,” *Topics in Cognitive Science*, 2020. The suggestion about proper names and sound-based codes is from Morin.

142 *The “memory palace” or “method of loci”*: See Frances Yates, *The Art of Memory* (1966).

143 *An older tradition of memorization*: See David Reser et al., “Australian Aboriginal Techniques for Memorization: Translation into a Medical and Allied Health Education Setting,” *PLOS ONE*, 2021. For memory skills in Aboriginal Australian societies and others, see Lynn Kelly, *Knowledge and Power in Prehistoric Societies* (2015). The message-stick technology is discussed in Piers Kelly, “Australian Message Sticks: Old Questions, New Directions,” *Journal of Material Culture*, 2020.

From the Piers Kelly paper, in relation to how much information was conveyed by the markings on the stick itself:

In one reported instance, the designated messenger had died on route but the message stick was recovered and confidently interpreted.

Across the 19th and 20th centuries, the ever-expanding colonial frontier disrupted Indigenous networks that were formerly consolidated through kinship alliances,

ceremonial obligations, trade and war. Overwhelmed by violent and relentless frontier incursions, Indigenous people faced new limitations on their movements, imposed by missions, pastoral stations and police. As a result, it is perhaps not surprising that the communication system came under pressure. The puzzling phenomenon of messenger-less messages, as reported by Hamlyn Harris and others, may well have been a consequence of changing conditions on the ground that left intermediaries with far less freedom to move. It is in this context that we witness the emergence of hybrid communicative traditions developed at the interface between Indigenous and settler worlds. From the late 19th century onwards, it was not unheard of for settlers to produce their own message sticks for communication with Indigenous groups.... Others employed Indigenous messengers to send ordinary pen-on-paper letters to non-Indigenous recipients along traditional routes.... Indigenous people, meanwhile, sent message sticks in the care of non-Indigenous messengers (Brough Smyth, 1878: 355; Howitt, 1889: 329), or through the regular postal service (Banfield, 1908; Edye, 1903), a fact that suggests that both senders and recipients were confident that their messages could be deciphered without verbal mediation. The most recently recorded case of a mailed message stick involved an Indigenous soldier serving in World War II who sent a message stick through the military post to a kinsman in the Northern Territory (Anonymous, 1942).

145 *Written language is not just a combination of sender-receiver interaction and engineering:* These passages are from “Writing, Graphic Codes, and Asynchronous Communication,” by Olivier Morin, Piers Kelly, and James Winters (*Topics in Cognitive Science*, 2020):

Like languages, graphic codes consist of stable, conventional mappings between symbols and meanings, but (unlike spoken or signed languages) their symbols consist of enduring images. This gives them the unique capacity to transmit information in one go across time and space. Yet this capacity usually remains quite unexploited, because most graphic codes are insufficiently informative. They may only be used for mnemonic purposes or as props for oral communication in real-time encounters. Writing systems, unlike other graphic codes, work by encoding a natural language.

Writing systems are the only graphic codes that can rival the richness and versatility of spoken languages, while remaining sufficiently productive [that is, organized with smaller elements that can be recombined in many ways] to be learnable. The only way that writing achieves this is by encoding a natural language, working as a meta-code (so to speak).

145 *The twentieth-century biologist Richard Lewontin*: The essay can be found in Richard Levins and Richard Lewontin, *The Dialectical Biologist* (1985). While on the topic of loops, Fred Keijzer, Gáspár Jékely, and I wrote about how general the phenomenon might be in “Reafference and the Origin of the Self in Early Nervous System Evolution,” *Philosophical Transactions of the Royal Society B*, 2021. Another person who has written richly about them is the computer scientist Douglas Hofstadter. A “strange loop,” for Hofstadter, is one in which the viewer views themselves, or a sentence is about itself, or there is some other self-directedness that has this mind-bending, head-over-heels character. (Hofstadter says that when he was young, he went to a store selling the first video cameras that sent an image to a screen in real time and was going to aim the camera at the screen itself, and was told: “No!” See his *I Am a Strange Loop* [2007].)

146 *The Greek philosopher Socrates*: Socrates’s comments about writing appear in Plato’s *Phaedrus*. Socrates and his ideas were also described in writing by the historian Xenophon and the playwright Aristophanes.

147 *Literacy, in particular, has significant effects*: See Stanislas Dehaene et al., “Illiterate to Literate: Behavioural and Cerebral Changes Induced by Reading Acquisition,” *Nature Reviews Neuroscience*, 2015. See also Cecilia Heyes’s book *Cognitive Gadgets* (2018), which emphasizes the many effects of culture on our brains.

148 *The French composer Olivier Messiaen wrote “Quartet for the End of Time”*: This was the first of Messiaen’s works to engage with birdsong. Aspects of his dramatic recollection of the first performance in the prison camp have been questioned by others who were there (in relation to the condition of the instruments and size of the audience, for example). See Rebecca Rischin, *For the End of Time: The Story of the Messiaen Quartet* (2003).

148 *I’m reminded of a quote from an interview*: This is from Malcolm Knox, “After the Booker: Why Richard Flanagan Isn’t Playing Safe,” *Sydney Morning Herald*, September 22, 2017.

149 *Stephen Jay Gould imagined a “replaying of the tape”*: This is in Gould’s *Wonderful Life* (1989). See also Simon Conway Morris, *The Crucible of Creation* (1998).

150 *In a variant of this story, Sterelny sees the formation:* See his *The Evolved Apprentice*.

151 *Another biologist, Antone Martinho-Truswell:* In his book, *The Parrot in the Mirror* (2022).

Something Martinho-Truswell does not make use of, but other writers with their eye on birds do include, is what biologists call “neoteny.” Neoteny is an evolutionary change in which the adults in some species come to resemble more juvenile stages of their ancestors. They never grow up, in some respects, but become reproductively mature anyway. Birds, some say, are neotenous dinosaurs; we are neotenous primates.

I hedged the bird/dinosaur case – “some say.” There does seem to be controversy. John O'Reilly, in *The Ascent of Birds* (2019): “the role of neoteny in avian evolution turns out to be far more profound than de Beer could ever have imagined. For it is now apparent that neoteny enabled the rapid evolution of all modern birds and facilitated their subsequent global success.” On the other hand, the evidence that tends to be emphasized here suggests a mixed picture. The main paper is “Birds have paedomorphic dinosaur skulls,” by Bhart-Anjan et al. O'Reilly: “It turns out that all dinosaurs, even those that are most closely related to modern birds, underwent dramatic maturational changes in their skull structure. In contrast, the skulls of modern birds remain similar to their juvenile forms throughout life. The researchers concluded that birds evolved from dinosaurs by a block in maturation so that they retained the large brain, big eyes and short face of infantile dinosaurs.” However, from Jerry Coyne: “Note that the postcranial skeleton (the rest of the bird) shows no signs of padeomorphosis. Indeed, some features of the bird body are peramorphic with respect to dinosaurs: that is, they seem to show an extension (rather than a truncation) of development past the adult stage.” (<https://whyevolutionistrue.com/2012/05/28/birds-may-be-paedomorphic-dinosaurs/>). (Paedomorphism and neoteny are basically the same – some use the terms a bit differently, so that neoteny is one kind of paedomorphism.)

The Bhart-Anjan et al. paper does make a general claim: “birds (here referring to the extant radiation) and their close relatives thus seem to be paedomorphic, retaining a



morphology as adults that resembles that of the juveniles or embryos of most other archosaurs. " I am not sure what to make of this. I used to have a discussion of this in the book's main text but decided I didn't understand it well enough.

152 *Dolphins are large-brained animals*: See Ann Weaver and Stan Kuczaj, "Neither Toy nor Tool: Grass-Wearing Behavior Among Free-Ranging Bottlenose Dolphins in Western Florida," *International Journal of Comparative Psychology*, 2016.

155 *Octopuses have trouble with these sorts of things*: For an imaginative exploration of a change in course, see Ray Naylor's *The Mountain in the Sea* (2022).

155 *In his book Built by Animals, which was helpful to me*: This is in his first chapter.

156 *Contrast all this with our primate-style life*: Here I echo and modify a phrase from the philosopher Donald Williams, in "The Argument for Realism," *The Monist*, 1934, within a passage that was somewhat celebrated when I was a student.

Dare I suggest at last that a kind of high-mindedness and sportsmanship have conspired against the vulgar plethora of the evidence for realism, to protect from bathos the "persistent problems" and the laborious ritual of our profession? To bring such gross implements as "Mill's methods" to the limpid regions of philosophic discourse is like dynamiting a trout-stream. It gets the fish, but it misses all the exquisite impractical pleasure of angling with the thin line of dialectic. Besides, it depletes the game supply. These punctilios may, of course, mean simply a resolve that philosophy must be critical of the most mundane of opinions and methods. But so far as they are a mood of gratuitous superiority, the philosopher who does not think of philosophy as mere courtly pastime like parchesi will abandon them. The disclaimer of the earthier sorts of knowledge has isolated philosophy, made it a mystery or a jest, an escape from reality or "a visionary interpretation." Philosophy is not "higher" and super-scientific. It is the lowest and grubbiest inquiry round the roots of things, and when it answers real questions about the world it is and can only be an inductive science.

156 *In Greek myths and later reflection on them, especially in writers like Nietzsche*: See his *The Birth of Tragedy* (1872).