

Q & A

Drew Rendall

Drew Rendall was trained as a biological anthropologist. He did his PhD at the University of California-Davis under Peter Rodman, where he studied vocal communication in rhesus monkeys and was influenced in this by additional Davis mentors, Peter Marler and Don Owings. He did a postdoc with Robert Seyfarth and Dorothy Cheney at the University of Pennsylvania studying vocal communication in baboons in northern Botswana. His research continues to focus on identifying core structure-function relationships in the communication systems of primates and their psychological underpinnings, particularly as they relate to the evolution of human communication, including language. His work now explicitly incorporates studies of humans and additional non-primate taxa in an effort to broaden the comparative framework. He sometimes also works on associated topics related to the evolution of social behavior and cognition.

What set you down the path to biology in the first place? Well, I have a pretty bad memory, for most things; for an academic, this isn't good really (it's why I often choose kind of silly titles for my papers because then I can usually remember at least that part of them). But I probably had some key formative experiences that set me on this path, because there are a few events that stand out clearly. The first was the day before my fourth birthday (or somewhere around there). I was with my Mom at the grocery check-out, and there were stuffed animal toys hanging from the rafters. One was a chimpanzee. I wanted it. Bad. I can't remember why, or just how shamefully I exhorted her. But I'm pretty sure it wasn't her proudest public moment. And from the sequelae, I was pretty sure I'd failed. The stuffed chimp certainly didn't travel home with us. But, next day, there it was. I can't say what happened to that chimp in the end, but I recall that we spent a lot of time together.

Another formative event occurred years later, in my second year as an undergraduate. Having long forgotten that chimp, I was in a pre-commerce program, bent on making money I think. There was a woman, Lisa, in the same program, but she was taking an anthropology course as an option. She showed me her homework from that class, which was a sketch of an early hominid habitation site. The homework was to figure out where they did what — like flake stone tools, butcher carcasses, cook, sleep, and so on. Or something like that. I thought, "Wow, that's homework? I could handle that!" I switched majors the next semester. (Lisa didn't and is very happy and makes a lot of money now; I don't, but I married her sister which has been way better.)

Do you have any regrets? No way. I mean, is there a better way to make a living? OK, a modest living, but following wild monkeys in wild places? Who does that and calls it work? (Or expects to get any sympathy if they do?) As a kid, I didn't mess-around in the forest collecting bugs and frogs as I should have done. Instead, I squandered my childhood playing hockey, baseball and football. But somewhere along the way, I guess I realized that field biology offered a second chance to a failed athlete who loved being outdoors and being his own boss (more-or-less). I think I really got excited about field research when I did my first field 'experiments' — playback experiments on rhesus monkeys testing their ability to recognize the calls of different social companions. Playbacks are a clunky technique, no doubt about it. But they can help to hone your ideas about animal behavior and communication. And, for me, the immediacy of the responses you get from the animals and the sense then that you've somehow engaged them in a significant, and sometimes revealing, way is exciting. Maybe because I'm a pretty bad ethologist, really. Too little patience for just watching animals and waiting to see how months of field data are going to turn out. I need to know, NOW.

Do you have any heroes? Oh yeah. Lots. Including the usual suspects, like Darwin, Tinbergen, Thorndike, Weiner (dare I say Skinner?).

I've come recently to love Andy Clark and Rodney Brooks too for their championing of biologically realistic models of embodied cognition. Another current hero is Jeff Alberts. He's a developmental psychobiologist (I think that's what he'd call himself) at the University of Indiana. He's eminently sensible and seems to have an especially nuanced appreciation of behavior, biology and evolution, knowing exactly how much adaptation to put 'in the organism' and how much to leave out (*à la* Clark and Brooks). He studies rat social development and self-organization — in other words, how superficially complex and adapted behavioral outcomes can arise incidentally, or through simple principles of self-organization. I love simple explanations, particularly ones that allow organisms to exploit regularities of the environment to obviate the need for complex internal machinery. Jeff also plays guitar and builds amazing things out of wood. And he has a very smooth voice. I wish I had even his voice.

One of my current non-science heroes is Ian Tyson, a cowboy folk-singer from southern Alberta. He also has a cool voice and writes haunting songs about the west. But that's not what I idolize him for. I met Ian once, accidentally, back-stage at a local show at the Longview Community Center (where he still performs and sometimes records). I thought it was the bathroom (it's a long story). He corrected me, with a fragrant string of expletives (for which he's well known actually). I scurried out and went straight to the table selling his CDs and bought all the ones I was missing. You have to respect a guy who reflexively cusses-out the public he's beholden to. You can trust him to tell it like it is. Ditto in science.

What do you see as the key directions in your field now?

I don't really have a field, but if I did I guess it would be comparative psychology — meaning the biology and evolution of 'minds' (which I flail away at through the 'window' of communication). This has become trendy stuff — again. It was popular post-Darwin, championed most notably by George Romanes, fell into disrepute (thanks to Thorndike, Watson and Skinner who curbed its anthropomorphic excesses), and

was revived with the emergence of cognitive ethology. And the cycle of excess is being repeated, I think. All animals are proving to be really, really clever, and, more remarkably, in very human-like ways. Hmmm. That's not a very interesting kind of evolution. And I wonder if a lot of the results we're getting don't have more to do with the way we're conceptualizing the problems we put to animals. For example, do animals communicate symbolically? Well, the question itself kind of limits the possible answers and rules out all manner of other (perhaps unimaginable) possibilities.

It's a tricky problem. How do you ask appropriate questions about animal minds that aren't colored by your own sense of the problems they face? Where's your unbiased point of entry into their lives? I don't have an answer, obviously, but I'm pretty taken by philosophers of mind and roboticists (like Clark and Brooks) who have advocated more decentralized, homeostatic, embodied and distributed models of cognition, and by folks (like Albers) who have applied these models to real animals and real behavior. I think maybe this is where comparative psychology needs to go. And I think it's going to show that much of what appears to be complex in behavior is actually fairly simple mechanistically, and not 'in the animal' at all, but 'in the world', meaning in the loopy feedback nature of animal-environment engagement. And I think it's going to show us that for humans too! That's going to be the epiphany.

What do you see as problems in modern science publishing? A big one is anonymous review. It's supposed to be the backbone of science, guaranteeing fairness and objectivity because anonymous reviewers can comment freely without fear of reprisal. But we know full well that anonymity also changes people's behavior in many ways. You tip wait-staff in your home-town restaurants way more than those in the far-flung places where you vacation, and you walk right past accident victims on crowded streets. Scientists are people too. So, the protection that anonymity affords also encourages self-serving biases, which actually leaves science spineless. And, really, you have to ask yourself: if you put your name on, and stand by, your own published papers,

why would you not do the same in your reviews? If the evidence and logic you offer are equally sound in each, what do you have to fear?

Do you have any advice for young academics? Sure. Read. Read a lot. And read widely. And try to remember what you read. It helps. I'm not a big believer in 'insightful discovery' or the 'Aha!' moment in science. At least not as the kind of purely creative process it's sometimes taken to be. I think most of what are called discoveries already exist really, in the dots of different disciplines, that just need to be glimpsed by a single pair of eyes in order to be connected. (If that makes sense? I'm not a big fan of metaphor either, but I use them all the time.) You're never going to do anything other than create a dot or two with your own work if you don't step-back to allow the broader patterns to 'pop-out'. In other words, it's 'pattern recognition' all the way down.

The other bit of advice is to 'put a tiger-in-your-tank' (my Mom used to say that before our hockey games) and go for it. This is cliched advice, I realize. But it's no worse for it. Stick with what it is that gets you jazzed. And, in the end, you'll carve yourself a little niche. This was easier maybe for me than it might be for some folks because I married young and my wife, Karen, always had an accomplished career. So I was relieved of the pragmatic constraint of earning a living (a constraint I basically still live free of).

Oh yeah, and a final tip — really just the corollary of the above two — is, "Listen to what others have to say, then forget it and hoe your own row (like Ian). And marry smart (it helps with all that hoeing)." And, the more resistance you get for your ideas, the surer you should be that you're on to something important. As Mark Twain said, "When you find yourself on the side of the majority, it's time to pause and reflect." I live by that refrain. I figure the bandwagon's already pretty heavily loaded. Doesn't need further deadweight. So, I'll work on tossing some rocks in its path. (There I go with that metaphor stuff again.)

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Quick guide

Whale song

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What's special about whale song? People have known about whale song since at least the early whaling days. In the nineteenth century whalers were referring to 'singers' in their whaling logbooks. But it took until 1971 before a scientific description was published. Shortly thereafter, a commercial record was released that brought humpback whale (*Megaptera novaeangliae*) song home to stereo systems all over the world. Ever since, humpback whale song has been part of our culture, referred to often in books, movies and musical compositions. In the US, the National Aeronautics and Space Administration (NASA) even included whale song on a phonographic record sent into space aboard both Voyager spacecrafts.

Whale song is scientifically interesting because of its distinct pattern of change in some species. In humpback whales, all males in a population tend to sing roughly the same song at any one time, but individuals that are within earshot of each other do not coordinate their songs to sing the same phrases at the same time. Intriguingly, this shared song changes gradually over the singing season, so that the shared song sung at the start of the season differs from the one we hear towards the end. This requires both vocal learning and coordination between whales, which is rare among mammals. Scientists using whale song for tracking and counting whales in the oceans have provided much new information on whale song. Whale song can inform us about population structure if we compare songs in different geographic areas. Songs of populations in different ocean basins are very different, while subtle variations within a basin can indicate relatedness.

Do all whales sing? No, only some of the baleen whales have been found to be singers. Song is defined as a repetitive acoustic