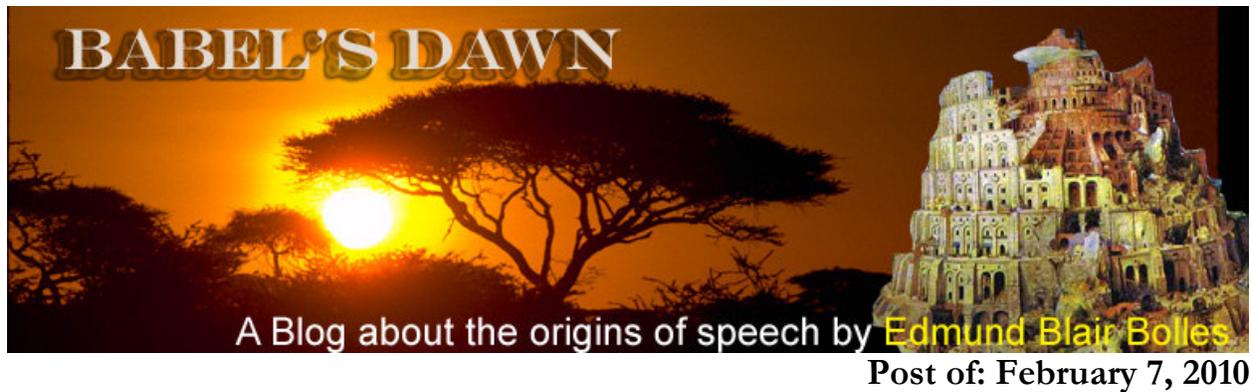
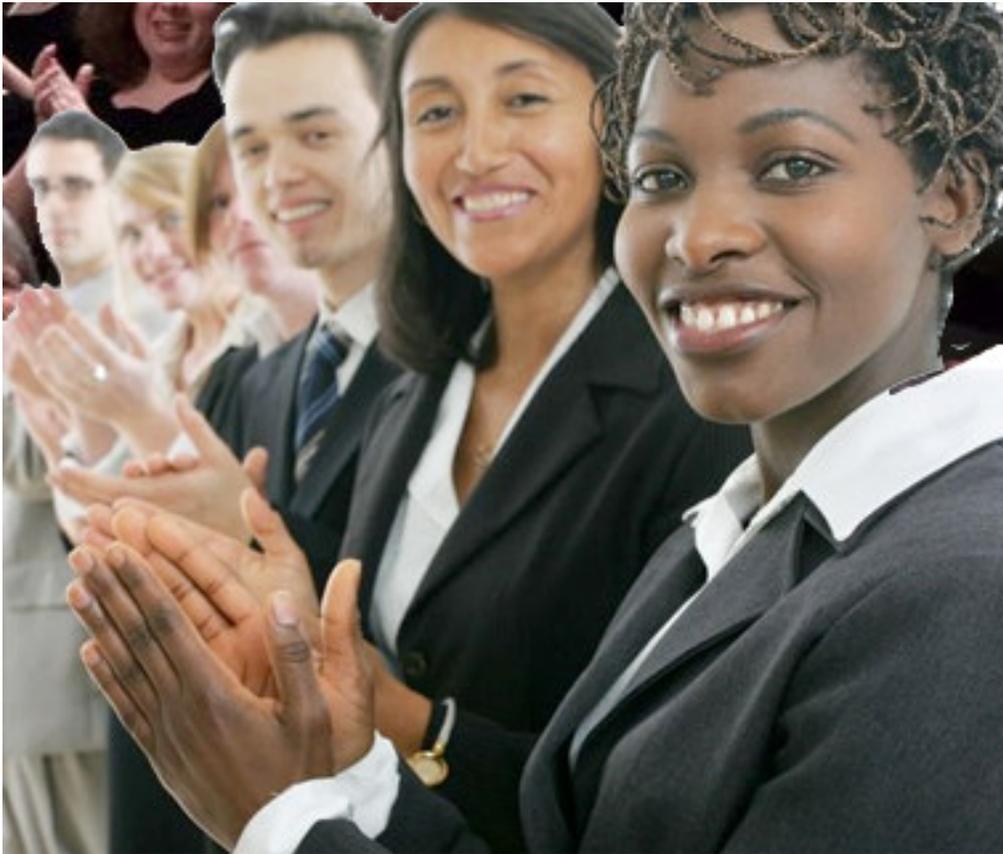


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Apes Ain't Us



Applause! Applause! How strange people are. We will work our hearts out for praise.

Last week's post ([here](#)) looked at a recent paper by [David A. Leavens](#) and [Timothy P. Racine](#) which discusses the prerequisites of joint attention. The paper's principle conclusion was that apes are capable of every element of joint attention, so they already have any intellectual abilities needed to support it. The most sustained and productive form of joint attention is speech, however, apes do not have voluntary control of their vocal systems. But they can make sign-language words with their hands, and they have good voluntary control of their gestures. So why don't they combine joint attention with gesture to have some kind of simple exchanges of words? The authors of that paper seem to think the explanation is in the different "sociocultural contexts" [249] of chimps and humans. In other words, it has nothing to do with biology, which is why, even though I was

generally impressed by the paper, I suspect their explanation for the difference between apes and us is incomplete.

In considering where joint attention in human infants comes from, the authors say:

There is no aspect of human joint attention in infancy that could not have been acquired through experience (i.e., learned). ... We have no *a priori* basis to promulgate a theoretical perspective that human infants alone among vertebrates, are so appallingly obtuse that evolution had to come up with human species-specific cognitive modules to do the same things that, as we shall see, other animals managed to do without such modules. [p. 247]

But other animals don't do it very well or often, nor do they organize their entire community around the activity. I reported some time ago that [Peter Mundy](#) and [Lisa Newell](#) identified a special circuit that links two separate attention centers of the brain, making joint attention much more productive. (See: [How the Brain Supports Conversation](#)) Even so my real beef with this passage lies in the material I removed and hid behind those ... dots:

An astonishingly large number of contemporary researchers seem to believe, incorrectly, that any behaviour acquired as a result of reinforcement must be cognitively uninteresting, or, as [Reddy and Morris \(2004\)](#) concisely observed in a related context, 'that anything learned from reinforcement cannot constitute genuine knowledge' (p. 650). What is acquired through learning, trained or incidental, is knowledge—real knowledge, in real organisms, operating in the real world.

This aside seems quite irrelevant to the main point and I'm interested to see that it got through an editorial and peer-review process. It is the sort of [cri de coeur](#) that professional writers sometimes pen but know to cross out because it editorializes without advancing the point. But there it is, a tip of the cards: the kind of experience the authors refer to is stimulus-response learning with reinforcement. They may be right, but in last week's post I was agreeing with a more general reference without accepting a revival of behaviorist premises about learning. Perhaps somewhere in that wail lies the thought that if chimpanzees had the same experience that humans had, they would be engaging in joint attention (and using language?) to the same extent that humans do.

Of course, the authors are quick to point out that chimpanzees cannot have the same experiences. For one thing, chimpanzees grow so much faster and become independent at a much earlier age. A six-month old chimp is active while a human of that age is still helpless. But surely we became so dependent because somewhere along the evolutionary line we had attentive caregivers who were ready to help for astonishingly long periods.

The authors do specify how joint attention is taught (reinforced) in humans. They argue that human infants point simply "to obtain the attention or an affective response from a caregiver." [245] A bit later, the authors spell out how the reinforcement can work without anybody doing any deliberate teaching:

If, for example, positive affective displays are reliable consequences of children's pointing, then pointing to elicit positive emotion can be both untrained and learned. [246]

It sounds reasonable, but wait a second... what's that business about a positive emotion? One difference between species is what serves as a reinforcing reward. You wouldn't try to train a

zebra by giving it steak, and you wouldn't try rewarding a lion with grass. Now we all know that you can reward a child (or even an adult) with praise. Does that work for chimpanzees as well? If not, we have found a species-specific difference between humans and apes.

And what's the role of positive emotion in relationships between apes? Do mother apes ever make a fuss over the actions of their offspring the way humans do? Do they encourage their young through praise? If not, we have found another species-specific difference. I have my suspicions about what research would find, but since I know of no empirical investigations into the question of whether a chimpanzee can be trained to do something if rewarded by praise alone, I'll keep mum. But it would be interesting to establish whether or not humans are unusual in wanting and giving shows of approval and pride in one another.

And as I was writing that last paragraph I came to doubt that all human parents give praise their babies the way middle-class Westerners do. In fact, some probably give little or no positive emotional support. Yet joint attention and speech is universal, even among the poorly mothered. The thought makes me suspect that the reinforcement story is incomplete, and some kind of further motivation lies behind the learning. Just the other day *Biology Letters* published a report (abstract [here](#)) suggesting that human infants as young as 5 months are "neurobiologically prepared for sharing attention with other humans."

The authors downplay the difference between behavior in the wild and behavior in captivity. Since they are interested in competencies, their approach is fair, but I'm interested in evolutionary histories where the difference matters more. The biological world is full of competencies that are never realized; in evolutionary theory that sort of competency is called pre-adaptation. I think the authors have established that chimpanzees are pre-adapted for initiating joint attention such as pointing. Assuming our ancestors were the same, that pre-adaptation gets rid of the need to evolve a theory of mind or any mind reading skills that some have suggested that joint attention requires.

But that's not the end of the story. The process of transforming a pre-adaptation into an important function is called exaptation. Something has to happen to make a species start using its abilities spontaneously and well. The authors seem to believe that nothing has to change in the species for a chimpanzee to be pointing and sharing in joint attention like a human, but I don't buy that. Cognitively they are ready although probably not ready to be facile joint attenders. But are they emotionally ready to make steady use of their ability? At a minimum, learning the activity requires a taste for praise and a readiness to give it. Those are very odd things for a species to display, but they are well known characteristics of humans. Somewhere along the human lineage members began to care what others thought of them. Matters of pride, praise, guilt, and shame began to alter behavior. A whole new range of activities became possible.

Links:

Last week's post: http://www.babelsdawn.com/babels_dawn/2010/01/apes-and-us.html

David A. Leavins: <http://www.sussex.ac.uk/psychology/profile114996.html>

Timothy P. Racine: <http://www.isrl.illinois.edu/~amag/langev/author/tpracine.html>

Peter Mundy: http://www.ucdmc.ucdavis.edu/mindinstitute/ourteam/faculty_staff/mundy.html

Lisa Newell: <http://www.iup.edu/page.aspx?id=16745>

How the Brain Supports Conversation: http://www.babelsdawn.com/babels_dawn/2008/02/how-the-brain-s.html

Reddy & Morris (2004): <http://tap.sagepub.com/cgi/content/abstract/14/5/647>

Cri de coeur: <http://tap.sagepub.com/cgi/content/abstract/14/5/647>