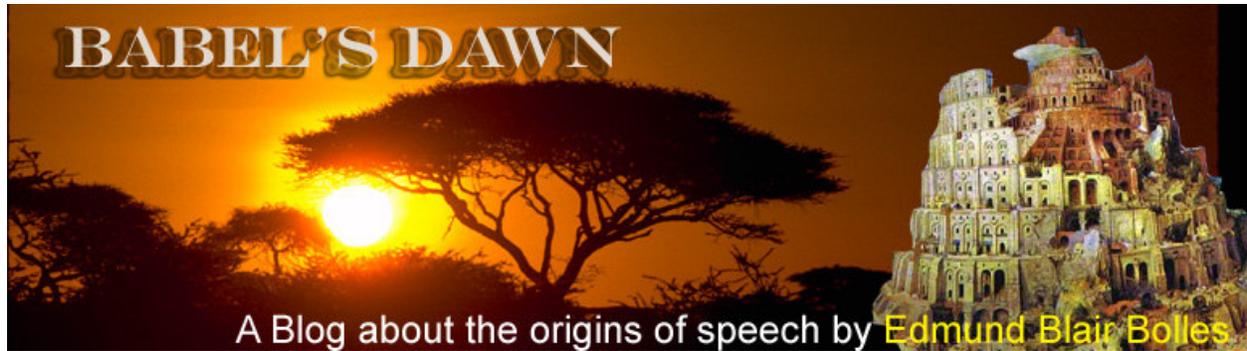


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Post of: September 6, 2009

Three Years On: Tri-Level Selection



The Broadway musical *Avenue Q* includes a song titled "Purpose" that expresses a typical musical song idea, *I gotta find purpose, I gotta find me.*

On this blog, I'm often thinking out loud, especially in posts like those of this current series where I've been celebrating *Babel's Dawn's* third anniversary by considering some things I've learned by writing it. The first post in the series noted a psychological discontinuity in which the human lineage developed an unprecedented ability to freely redirect their attention. (See: [Voluntary Redirection of Attention](#)) The next post considered a sociological break in which, by redirecting one another's attention, people deliberately transform themselves and their communities (See: [Transforming Our Natures](#)). Meanwhile this thinking aloud has kept me postponing the question of, when redirecting attention and learning radically new things from one another is so plainly advantageous, why we alone evolved such an ability. I intend to answer that question in this post, but I cannot help being distracted a bit of a paradox. I'm asking how deliberate behavior can be supported by a process as anti-purpose as natural selection. Either I've written myself into a box, or there is an unexpected backdoor to this line of thinking.

It didn't feel like I was walking into a trap. The backdoor I was anticipating was multilevel (or group) selection. This blog has long taken the position that the evolution of speech must reflect multi-level (or group) selection rather than gene-only selection (a.k.a., selfish genes). (See: [A Vote for Group Selection](#)) Altruism based on kinship can explain much in the animal world, but it is a very poor explainer of the routine generosity and trust that effective verbal communication assumes. There are many other examples as well. Every human group includes penalties for breaking the group's rules. Humans take care of one another's children, and let others come close, even coo over and hold, newborns. Humans also have white eyeballs that advertise the direction they are looking. Each of these examples requires, at best, a separate, *ad hoc*, selfish-gene explanation, but they can all be easily explained as part of group selection.

I expected to report that our ability to redirect attention and form a complete idea rests on group support. Meanwhile the new understanding that comes from redirected attention gives people the ability to act in unprecedented, purposeful ways. Purposeful action in this narrative also traces to group selection.

Let me show you what I mean with an example:

- **A new power of attention:** Out on the plain a moving figure catches someone's attention. —*There goes Joe*, says one person. —*Oh yeah*, says a friend. *He must be moving toward yon gazelle*. By directing each other's attention both of them learn something new.
- **A new power of transformation:** Once they know that Joe is moving toward yon gazelle, one of the observers can say *Let's give him a hand* and go join the hunt. They go off on a purposeful activity that was unavailable a minute earlier, before separate acts of attention were combined into a new understanding.

Saying that this activity rests on multilevel selection really won't do, but neither can we say that it rests on selfish gene selection. The problem is that the exemplar activity, gazelle hunting by a self-conscious group, does not rest directly on genes and cannot be selected in itself. The best that is possible is selection that supports purposeful activity, but the benefits of purposeful activity are ambiguous. Purposeful organisms can behave brilliantly or they can run off on fools' errands. Typically, they engage in a combination of foolish and sound purposes. In order to evolve a species that benefits from its purposeful behavior, the system requires a means of selecting beneficial purposes and rejecting harmful or useless ones.

This selection cannot be made by either selfish genes or group-level selection, because there is no predicting the quality of the purposes that will emerge from the traits supported by genes. So we need a third kind of selection that retains good purposes and gets rid of the poor ones. We can call evolution that works at all three levels, tri-level selection.

1. At the base **gene selection** supports individual fitness.
2. Next comes **group selection** supporting group fitness. When individual fitness contradicts group fitness, the group is undermined. If selfishness really is beneficial, this subversive process will overwhelm the group. Group selection might not disappear, however, because a subverted group may not do as well as a less selfish one. Even so, this conflict between the gene and group levels of selection suggests why group selection has been extremely rare amongst mammals.
3. The top level, **purposeful selection**, differs from the first two in that it is not completely blind. It can judge results. Yet it is not so far-seeing that it abolishes the tension between the various levels of selection. Individual fitness can still benefit from individual purposes that subvert the group's fitness, but this time the group can fight back by making rules and enforcing them. At the third level, there is great tension between balancing purposes. Communities can stagnate because they protect so well

against individual purposes that nothing new happens, or they might become so dynamic that protection against subversive purposes evaporates and group coherence comes apart.

Tri-level selection suggests a reason why mores species don't talk, especially among the social species. Talking itself is not automatically stabilizing. Even if groups develop speech, they are liable to be subverted by the individuals who are looking out for number one. They might redirect attention in the spirit of [Stephen Colbert](#) who shouts, "Look," and, while his opponent looks away, Colbert rearranges the chess board.

To survive the corrupting tendencies of selfish-gene pressures speech's transforming purposes have to be valuable and new purposes contribute to survival only when the established way of life is no longer sufficient. Chimpanzees, gorillas, and orangutans have stayed in the forests, even as forest shrank, while the human lineage for the past five million years has been adapting to life outside the forest. For these outcasts new purposes could make a difference. Thus, talking requires moving up the selection ladder to tri-level selection.

Selfish-gene selection is the default condition. It is found among chimpanzees and bonobos today, and likely dominated the last common ancestor of apes and humans. Then group selection came to dominate some species in our lineage. At first, these species seem likely to have been speechless, evolving group behavior for some reason other than the new purposes that speech allows. Then, as speech developed, purposeful selection appeared. Blind, natural selection, did not disappear. In fact there was something new for blind selection to favor—a brain that could best support purpose, re-directed attention, and routine transformation of behavior.

These ideas require plenty of testing and sharpening, but I like them because they account in a natural way for the seemingly unnatural traits that characterize any human society—purposeful behavior, group-oriented behavior, and creative behavior. Whatever turns out to be the ultimate explanation for human origins, it is going to have to acknowledge and account for these distinct traits. I am very familiar with writers that deny there can be a natural explanation for human uniqueness, and I am also familiar with the ton of literature that tries to explain away this uniqueness, either by denying its reality or its singularity. After three years of blogging and, before that, fifty years of head scratching, it feels good to at least know what an explanation could look like.

Links:

Avenue Q Purpose: <http://www.youtube.com/watch?v=mATf3SAqj30>

Voluntary Redirection of Attention: http://www.babelsdawn.com/babels_dawn/2009/08/this-blogs-third-anniversary-is-about-to-roll-around-inspiring-me-to-post-a-few-general-remarks-about-what-i-have-learned.html

Transforming Our Natures: http://www.babelsdawn.com/babels_dawn/2009/09/three-years-on-transforming-our-natures.html

A Vote for Group Selection: http://www.babelsdawn.com/babels_dawn/2007/12/a-vote-for-grou.html

Stephen Colbert: <http://www.colbertnation.com/the-colbert-report-videos/210357/november-12-2008/cheating-death---women-s-health>