

On Group Selection

The first law of science could be: "Don't tilt at hoop snakes." If you "don't fire until you see the whites of their eyes," then presumably you will have stared closely enough to know that there are indeed eyes to have whites. What else could William of Occam meant when he said, "What can be done with fewer assumptions is done in vain with more"?

In efforts to understand complexity, the only feature of which relevant for this argument is extreme unlikelihood, the greatest of all explanatory principles (as Graham Bell, 1997, has noted) is selection or differential survival and reproduction of different forms that change only infrequently and for the most part slightly. In this argument, group selection among living forms becomes an "additional assumption." The meaning is only that it must be viewed with appropriately strong skepticism. The more functional units assumed in the hierarchy of organization of life -- the more cooperative assemblages assumed to have earned the right to be designated as vehicles of selection -- the harder we must look to be sure there are indeed eyes to have whites and no hoop snakes. The organism is our magnifying glass, lying as it does below every assemblage we are prone to call "group," and standing as it does alone in the universe as the epitome of the concept of emergent property. We peer through this glass to see life cycle, with ontogeny, reproductive peak, senescence, and the inevitability of death that correlates with a concerted and unitary effort at reproduction and incidentally creates generations. The organism shows us identifiable and predictable stages and unities of function as a result of the combined effects of hundreds of thousands of the paired, shufflable, distinctive cards of life that evolutionary biologists have for nearly a century called "genes." The organism is in fact unity of function enforced by a bizarre and complicated machinery of mitosis and meiosis, such that each member of each pair, have equal chances of immortality. — at least

It seems obvious that we cannot understand life without assuming that these unique phenomena we call organisms are alternatives in the persisting race for genetic immortality: vehicles of selection that have earned the additional designation of units of selection. Genes are selected in groups (Alexander 1993). We see the whites of the eyes clearly.

But what about the relatively puny efforts at cooperation above the level of the individual? No ontogenies, no life cycles, no senescence, no

inevitability of death, no indefinitely persisting unity of function. Every time we explain a trait without invoking that higher level, Old William surely smiles. When can we not assume such simplicity?

Two circumstances are relevant: First, all of the interests of the individuals in a group may be identical. If this condition is repeated often enough, or lasts long enough, tendencies will evolve to recognize it and respond by appropriate cooperation. Presumably, repetition and continuance of such conditions are what created the organism, which earns the designation as unit of selection by having become a continuing enforcement of the identity of interests of all those diverse and for practical purposes unrelated genes living in the groups we call genomes.

In the second circumstance the individuals in a group do not share the same interests. Our magnifying glass, the organism, tells us that when it serves interests represented at its level and below by maintaining the recombining effects of sexual reproduction, it incidentally restricts the likelihood of parallel commonalities of interest at higher levels by making every individual genetically distinct. We must therefore proceed even more carefully than we might have expected to be sure there are eyes to have whites, and no hoop snakes lying in wait.

Humans have used their evolved mental scenario-building capacities to create a unique feedback between need and novelty: cultural mutations that serve needs identified before they are served and filled at first in the mind alone. Other kinds of selection depend on mutations whose causes are independent of the needs of their carriers; in the face of life's now unparalleled complexity, these mutations nearly always oppose reproductive success. Understandably, when faced with the complexity of long-term living processes, other than those familiar through their own mental capacities, humans are tempted to believe in some kind of conscious design rather than (or more than) selection. It works faster and is enormously more familiar and credible. Moreover, in their own social groups humans are capable of inducing the appearance of design, and even design itself, at levels higher than the organism. In so doing, group-living humans create changing equilibria between seeking of personal goals by individuals whose interests differ, and common seeking of personal goals by individuals when such occur. They create such equilibria both in actuality and as hoop snakes designed for the tilting of naive fellows with possibilities of serving the creators' interests, even when such actions are contrary to the interests of the dupes. These temporary and incomplete equilibria are called by names such as family, tribe, community, religion, club, union, gang, dictatorship, democracy, republic, nation, army, and

many others. As the existence of human design has influenced creationists to accept design where design requires hoop snake equivalents, so are selectionists sometimes influenced (and urged) to use the convergence between the appearance and actuality of cooperative design in human social groups to assume its existence not only in nonhuman groups but as well in human groups even when its actuality may be questionable. There is a self-fulfilling prophecy in this, and a hint of moral imperative: if we are not cooperating fully now, we ought to be, and if we argue that we are doing it, or that we ought to be, we are obviously more likely to do it. Vice versa for admirers of old William, which is a convenient indignance if you happen to have staked your career on the role of this particular additional assumption in explaining life. We can even leave aside George Williams' (1993) comment that arguing the moral superiority of group selection over individual selection is like arguing the superiority of genocide over random murder.

If we are making scientific judgments then it is not morality we ought to be arguing but the nature of the facts, which are in fact the nature of morality in science. For all but what "ought to be," then, the proof of the pudding is gained by asking about each social situation whether and to what extent the additional assumption of group selection is needed or useful. Experiments designed to make groups of organisms have attributes resembling those of individuals suggest the opposite of what their purveyors seem to think: they suggest that group selection is unnecessary. Instead, we must identify predictions that oppose one another and see which are fulfilled in nature. We must parade actual cases. If such are not obvious we need no assumptions additional to the individual level, which after all does not exclude sociality, and other individuals as a part of the selective environment. Such procedures will tell us, better now than the theoretical wranglings that may nevertheless may have been necessary precursors, just when the eyes are there and the hoop snakes are not.

References

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