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Avoiding Vicious Circularity Requires more than a Modicum of Care

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Abstract: Any general account of successful selection explanations must specify how they avoid being ad hoc or vacuous, hazards that arise from their recursive form.

Hull et al. are correct that Lipton and Thompson (1988) provides warrant for the belief that natural selection explanations are not necessarily circular. Indeed, Lipton and I argued that natural selection explanations are circular only to the extent that they are recursive. In a selection explanation, the explanandum (e.g., the properties of an organism) is explained by virtue of an explanans (e.g., selection for those properties) that refers to the explanandum. Strictly speaking, selection explanations are not circular so long as the frame of the explanans ("selection for") contains some information not provided in the explanandum. In general, recursive explanations have heuristic value in a science that is groping toward the discovery of the cause of some dramatic and well-defined phenomenon. For an example, one need only think of the medical search for the cause of AIDS. The infectious agent was known recursively as the human immunodeficiency virus (HIV) long before it could be identified as a particular structural entity.

However, I am not sure I agree with the target article authors that vicious circularity can avoid in natural selection explanations with only a "modicum" of care and effort. As Lipton and I point out, great care has to be taken in the deployment of recursive explanations to steer between the perils of ad hockery and vacuousness. Consider three explanations for the whiteness of a polar bear's fur:

(1) Because white bears have been selected for white fur.

(2) Because camouflaged bears have been selected for camouflage.

(3) Because disproportionately reproducing bears have been selected for disproportionate reproduction.

All three are equally recursive, but they are not equal in heuristic value. Neither (1) nor (3) offers any help in identifying the white bear's advantage, (1) because it applies only to white bears against a white background and (3) because it would be true of any creature no matter what its background. However, (2) is useful because it suggests a general class of causes to which having white fur against a white background belongs. Thus, avoidance of vicious circularity in a natural selection explanation is dependent on offering the right kind of description in the explanandum – not so narrow as to invite an ad hoc explanation, not so vague as to invite a vacuous one. Such descriptions require a precise understanding of the natural history of the creature whose existence and properties are to be explained by a selection theory.

This requirement has an important implication for Hull et al.'s project of providing a general of selection-type explanations. Any such *general* account must include a *general* description of the properties of the entities that are selected for, whether these entities be organisms, immune system elements, or habits. When we fail to include such descriptions in our selection-type theories, or when those descriptions are too specific or too vague, selection theories lose much of their heuristic value. Recursive theories with an inadequate specification of the explanandum are properly termed degenerate because their intellectual evolution has resulted in the loss of some crucial feature. For many years, I have inveighed against the degeneracy of sociobiological theory (Thompson 1982; 1987a; 1987b; 1993). Evolutionary psychology, by contrast, has struggled to shake loose this degenerate tradition by defining a priori the problems that human behavioral adaptations were designed to solve (Barkow et al. 1992; see also Cosmides & Tooby's remarkable "primer" on evolutionary psychology posted to the web at *www.psych.ucsb.edu/research/cep/primer.html*). Thus, by focusing on the specific demands of the human ancestral environment, evolutionary psychologists have been able to provide more heuristic selection explanations than their sociobiological predecessors.