

[I think I sent this list to Reeve and Sherman in the middle of a discussion of their manuscript on adaptation]

Some criticisms directed at the concept of adaptation and its use

1. Sociobiologists treat every effect of every trait as an adaptation or as adaptive (Source: anti-sociobiologists).
2. Whether or not a trait is to be hypothesized to be an adaptation, and investigated as such, is affected by the conditions of its evolutionary origin and the reasons for its origin. Thus, a trait need not be regarded as likely to be an adaptation in some particular context if it originated in a different context, or it ought not to be considered likely to be such, or at least one ought to be especially careful making such an assumption. Included are traits that represent homologues of traits seen in other organisms or the other sex: that is, adaptation need not be invoked to explain a homologue of an obviously adaptive trait or organ (Source: Stephen J. Gould: e.g., see his essay on the function of the clitoris, or the one discussing the large penis of spotted hyena females).
3. The presence of a trait cannot be considered an adaptation if the trait is also found in related taxa and is deemed to have been present in the common ancestor; instead it ought to be considered as a result of phylogenetic inertia and treated as nonadaptive on that account (Source: ???).
4. If a particular trait is found throughout a group of taxa, this implies that it has been created and maintained by natural selection, thus is appropriately hypothesized to be an adaptation (Source: ???).
5. Recently appearing traits cannot be regarded as adaptations because environments change so fast. One must restrict the concept of adaptation so as to include history, or "design by natural selection" or it becomes meaningless, applied willy nilly to every trivial variation in a species that happens to cause greater reproduction than its alternatives in one or another temporary or otherwise restricted environment (Source: ???).
6. Complexity is not a good criterion of a history of design by natural selection (Source: ???).
7. Behaviors, or acts, are not themselves adaptations, rather their underlying psychological or physiological (or ontogenetic? genetic?) mechanisms are the adaptations (Source: any dedicated evolutionary psychologist).
8. Sociobiologists use the concept of adaptation in a way that unjustifiably implies optimization (Source: Gould or Lewontin?).
9. Natural selection means no more than better versus worse in the immediate environment, and this usage precludes using the concept of adaptation to refer to anything except alternative traits -- whether actual or imagined for purposes of analysis -- and how they affect reproduction in the immediate environment (Source: Reeve and Sherman in QRB, 1993?).
10. It is futile to try to restrict the concept of adaptation to traits showing evidence of design by a history of selection because history cannot be reconstructed, whether the history of changes in the trait or historical conditions of the environment (Source: Reeve and Sherman in QRB, 1993?).

An organism is regarded as adapted to a particular situation, or to the totality of situations which constitute its environment, only in so far as we can imagine an assemblage of slightly different situations, or environments, to which the animal would on the whole be less well adapted; and equally only in so far as we can imagine an assemblage of slightly different organic forms, which would be