

9.20 M.I.T. 2005

Class #21

Sociobiology subject matter

John Alcock, *The Triumph of Sociobiology*, ch 2:

Fitness

1. Define “fitness” as the term is used by sociobiologists. What are fitness costs and fitness benefits? Give examples.

p 24

John Alcock, *The Triumph of Sociobiology*, ch 2:

Misconceptions

2. What is the misunderstanding of sociobiological thinking we can see in the statements of Derek Bickerton, Michael Rose and William Kimler, quoted by Alcock? (pp 25-27)

Derek Bickerton

“When a bird practices what zoologists call ‘extra-pair copulation,’ can we really call this adultery?...The intent of the two activities is completely different...”

Michael Rose

“...there is the fundamental problem that, if most people calculate Darwinian plans of action, they certainly aren't aware of it introspectively. Net Darwinian fitness doesn't figure in the great lyric poems...”

William Kimler

“criticizes the sociobiological claim that adulterous women have sometimes raised their genetic fitness by cuckolding a social partner, on the grounds that [she might] be seeking more emotional satisfaction ... rather than a simple genetic benefit.”

John Alcock, *The Triumph of Sociobiology*, ch 2:

- “Understanding the difference between proximate and ultimate hypotheses, which are different but complementary to one another, can help us avoid the kind of confusion evident in Kimler’s complaint about sociobiology.” (p 28)

John Alcock, *The Triumph of Sociobiology*, ch 2:
Proximate vs ultimate

3. Contrast proximate mechanisms/causes and ultimate outcomes for a specific behavior.

Consider psychological and physiological / anatomical mechanisms (proximate causes) and, separately, the reasons for their evolution.

John Alcock, *The Triumph of Sociobiology*, ch 2:

George C. Williams vs Wynne-Edwards

4. What was the thesis of Wynne-Edwards in his 1962 book, that was forcefully countered in 1966 by George C. Williams?

Describe Williams' counter thesis, which is a key for understanding modern sociobiology (since 1975).

Wynne-Edwards ('62), *Animal Dispersion in Relation to Social Behavior*. Interprets almost every aspect of social behavior to be altruistic self-sacrifice that advances the welfare of the species" (Alcock, p 29)

George C. Williams ('66), *Adaptation and Natural Selection*.

"presented the counterthesis that evolved adaptations, including behavioral ones, were extremely unlikely to promote the long-term survival of entire populations or species *at the expense of individual reproduction.*"

End class 22

John Alcock, *The Triumph of Sociobiology*, ch 2:
Darwinian puzzles

5. What is a “Darwinian puzzle”? Give an example, and also a solution to the puzzle.

p 32f: “Anything that appears to reduce an individual’s chances of reproducing successfully, even by a small degree, becomes by definition a Darwinian puzzle.”

- Why do whirligig beetles congregate so much when large groups of them are attacked more often than smaller groups?
- Why do humans love pet dogs so much, although dogs can spread disease and cause lethal bites?

John Alcock, *The Triumph of Sociobiology*, **Appendix ch 2, Q2:**
Challenges for a Darwinian adaptationist

6. Which behavior of specific animals would challenge a Darwinian adaptationist (a sociobiologist) most? Study the four descriptions.

John Alcock, *The Triumph of Sociobiology*, **Appendix ch 2, Q3:**
Speculation about human warfare

7. Why would evolutionary biologists (like sociobiologists) object to the speculative argument of Marvin Harris about the origins of human warfare?