

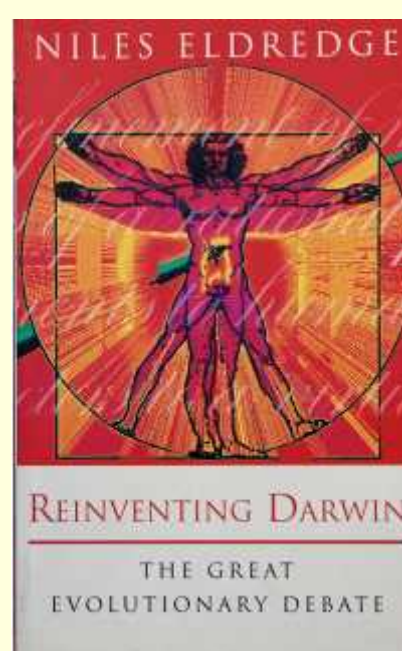
Who is afraid of a reductionist?

Niles Eldredge about ultra-Darwinists and sex

a review by Gert Korthof

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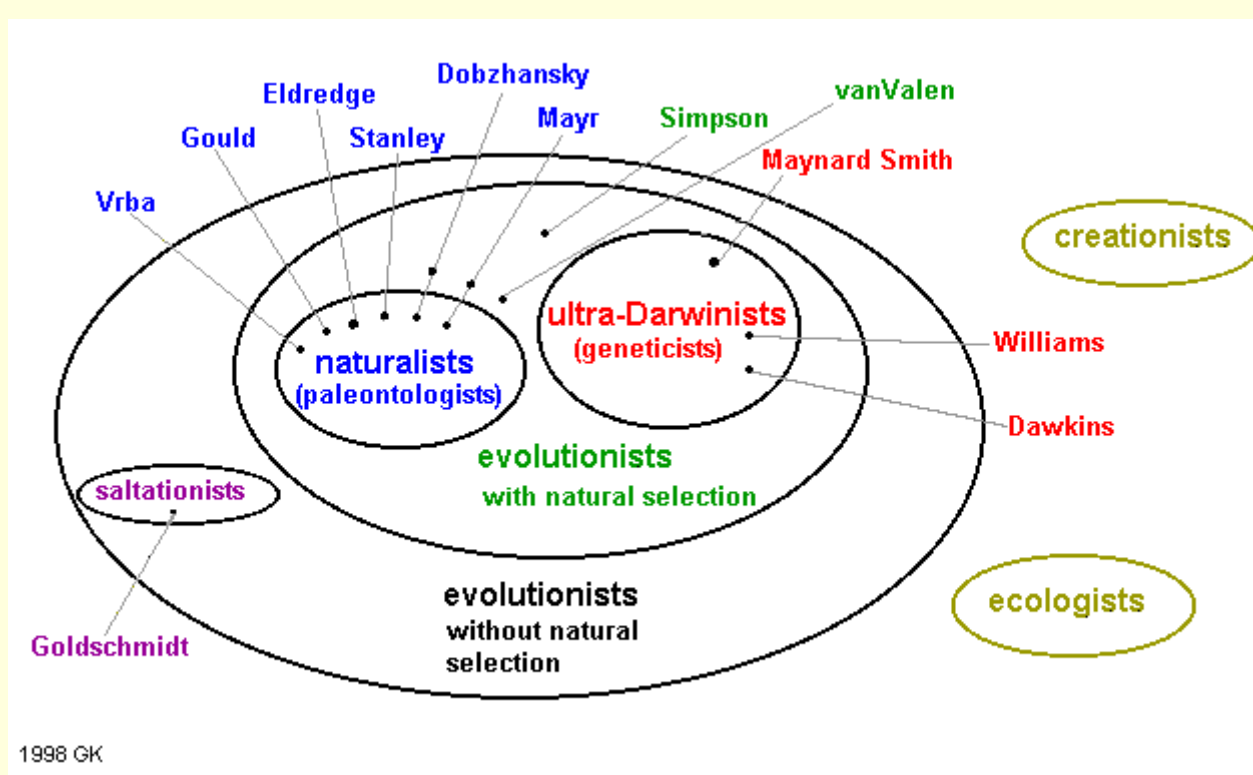
Reinventing Darwin has refreshing ideas to offer for those who enjoyed a traditional neo-Darwinistic education and thought that *the* theory of evolution exists irrespective of who explains it. I learned from Niles Eldredge that scientists such as Maynard Smith, Williams and Dawkins (geneticists) are in fact **ultra-Darwinists**. He himself, Gould, Stanley and Vrba are presented as the **naturalists**, all being paleontologists.

This book is well written and centres on the conflicting views on evolutionary theory of those naturalists and ultra-Darwinists. There is indeed debate in the book. Niles Eldredge does not recognise 'Normal Darwinists', but probably he would classify evolutionists as Dobzhansky, Mayr and Simpson in that group. Anyway they are neither in the ultra-Darwinist group nor in the naturalist group.


Eldredge is a critic of neo-Darwinism. Neo-Darwinism is a **gene-centered** and essentially **reductionist** approach to evolutionary explanation' and a 'distortedly oversimplified view of the natural world' (page 4). Next we encounter a criticism well-known to creationists: the unjustified extrapolation from generation-by-generation change to change on a geological time-scale. Neo-Darwinism is OK in its proper domain, but when extrapolated outside its proper domain things go wrong. Ultra-Darwinians transform natural selection from a filter to a creative force that shapes organic form. Naturalists however take the existence of large-scale ecosystems seriously. They can't be reduced to changes in gene-frequency.

'Ultra-Darwinians are strangely silent about why adaptive change occurs when it does and why adaptive change does not seem to occur' (p.6). If evolutionary change is inevitable, why do 'living fossils', like *Limulus*, stay unchanged for 200 million years? Naturalists suggest a possible explanation in some of such cases 'habitat tracking', that is species move to a suitable environment, in stead off changing their anatomy.

I placed Eldredge in the category 'Non-religious critics of orthodox neo-Darwinism' (in fact: 'anti-ultra-Darwinism') and 'pro-evolution', because he does not doubt evolution (common descent).



Overview of participants in the great evolutionary debate.

 **"Reinventing Darwin. The Great Evolutionary Debate."**
by Niles Eldredge.
Phoenix Giant Paperback.
1995.
244 pages.
Contents:
1. Setting the Table
2. The Heart of the Matter: Adaptation and Natural Selection
3. The Great Stasis Debate
4. Evolution in Real Time: Punctuated Equilibria and the Eternal Wrangle
5. High Stakes at the High Table: Macroevolution and Species Sorting
6. Approaching Complexity: Evolution in the Real World
7. Paradoxes in Ultra-Darwinism: Sex, Social Systems and the Reproductive Imperative

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Sex

In the last chapter Eldredge discusses 'Paradoxes in Ultra-Darwinism':

"The second paradox is the very existence of sex. If the very name of the game of life is to leave as many copies of your genes behind, why on earth do so many organisms reproduce sexually, thereby limiting themselves to contributing only half of the genes that go into each descendant? ... the paradox of sex has not yet been resolved. Nor will it just go away." (p. 205)

and further down the chapter:

"... it is pure folly to mix them with someone else's on a 50-50 basis" (p. 217)

Eldredge solution is:

"Once we admit that nature might not be so dogmatic about the reproductive imperative, sex ceases to loom as such an intractable problem." (p. 219)

It seems to me that individuals and species which are 'not so dogmatic about the reproductive imperative' will soon be outcompeted by species which are *very dogmatic about reproduction*. Precisely that is what we are seeing in nature: sexually reproducing species outnumber asexually reproducing species. So Eldredge doesn't have a solution...

Nine years later, in *Why we do it. Rethinking Sex and the Selfish Gene*, Eldredge reaffirms the problem of sex: "that sexual reproduction cuts in half the rate at which individuals can spread their genes". "Why didn't the world stay asexual? Why didn't parthenogenesis (production of offspring from a single, maternal diploid parent) drive sexual reproduction off the game-of-life board?" (p. 47-49). Amazingly, he then states:

"But consider this: there is a problem only if we assume that the struggle for existence is really all about the spread of an individual organism's genes. ... then sexual reproduction is no more costly to the individual than asexual reproduction. (p. 49)

Well, apparently, the problem has just gone away. But, then why offer DNA repair or any other hypothesis as an explanation for sex at all? And if sexual and non-sexual reproduction are equally costly, then we should predict as many sexual as non-sexual species. But this prediction fails: the majority of species have sexual reproduction. Whether that fact is a big or a small or no problem, it is a fact that demands explanation. Why sex?

Further Reading

- Niles Eldredge (1982) *The monkey business: A scientist looks at creationism*.
- Niles Eldredge (1985) *Unfinished Synthesis: Biological Hierarchies and Modern Evolutionary Thought*.
- Niles Eldredge (1999) *The pattern of Evolution*. W.H. Freeman, 1999. 250 pages. Reviewed by Mark Pagel in *Nature*, **397**, 664-665, 25 Feb 1999.
- Niles Eldredge (2000) *The Triumph of Evolution and the failure of creationism*. Freeman and Company, 2000. hardback, 223 pages.
- Niles Eldredge (2004) *Why We Do It: Rethinking Sex and the Selfish Gene*. W W Norton & Company. Hardcover, 224 pages. reviewed by Robert J. Richards (2004) [Sex and the Single Cell](#). The New York Times Book reviews, June 20, 2004. Reviewed by Robert Foley "Sex under pressure" in *Nature*, **430**, 613-614 (5 Aug 2004): I completely agree with this clear review.
- Niles Eldredge (2005) *Darwin: Discovering the Tree of Life*.
- [Hierarchy versus Reductionism](#). A review of "Reinventing Darwin" by Richard Gordon, University of Manitoba.
- [Species, Speciation and the Environment](#) by Niles Eldredge, Ph.D. (October 2000). An actionbioscience.org original article. [Added: 11 Dec 2002]
- [A book review by Danny Yee](#), 1996. [Added: 27 Aug 04]

korthof.blogspot (moderated)	home: Was Darwin Wrong?	wasdarwinwrong.com/kortho10.htm
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