Pedestals and Glass Ceilings

In her editorial "Heroines and role models (19 July, p. 249)," Maxine Singer seems to be missing the point. Heroines are created to make us say: "Isn't she wonderful? I couldn't possibly be like that!" In other words, their function is to keep women out. By contrast, role models are supposed to make women and minorities think, "I could be like that," and so encourage us to try to come in. Of course, that doesn't do much for us either, because usually the problem is not that we don't try to enter, it's that we are kept out.

White males, who grow up surrounded by role models of every shape and size, may be able to afford heroes. I am not sure those of us who see very few people like us in places where we would like to be, can.

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Maxine Singer is too pessimistic about the dearth of heroines and female role models. They abound, but not in the traditional places. Just take a look at my wife, Millie Hughes-Fulford, who has just come back from space in the Columbia shuttle. During her 7-year arduous training for SpaceLab Life Sciences–1 she kept her laboratory going, churned out papers, and gave pep talks at schools and the like.

Oh yes, she continued in her magnificent role as a mother and a wife, too.

Heroine? Role model? You bet. None better!

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Understanding Evolution

The briefing about University of California, Berkeley, law professor Phillip E. Johnson's book *Darwin on Trial* (News & Comment, 26 July, p. 379) is a good illustration of the failure of the scientific community to follow its own advice about the perennial evolution controversy. Instead of simply addressing the skeptical arguments advanced in the book, the article relies on ad hominem remarks. It is pointed out that Johnson's religious views predispose him against naked materialism (although in his book he states that he finds nothing a priori incredible in God's using Darwinistic evolution to produce life), and a science educator is trotted out to opine that Johnson misunderstands the scientific process. Johnson is also found guilty by association because Creationists like his book.

Well, now. It is also true that fascist governments have embraced Darwinism, that most scientists are not trained logicians, and that many commentators on evolution are predisposed in favor of naked materialism. But all of this is name calling and quite beside the point. In his book Johnson appears to be an interested, open-minded, and very intelligent layman who sees large conclusions drawn from little evidence, notices anomalies in current evolutionary explanations, and will draw his own conclusions, thank you, about the validity of Darwin's theory. A man like that deserves to be argued with, not condescended to.

The theory of evolution by natural selection is not a difficult concept to grasp, and Charles Darwin addressed *The Origin of Species* itself to a general audience. But neither is it self-evident to many people that natural selection can fully account for the world they observe. Thus when questions about the theory arise in public forums, the scientific community would do much better in the long run to patiently list supporting facts and frankly admit where positive evidence is lacking, rather than paternalistically maintaining that an understanding of the theory of evolution is reserved for the priesthood of professional scientists.

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Immortal Sequence

Examination of nucleic acid and protein sequences compiled in computer databases has led to many significant findings of homology between sequences and shared sequence motifs among divergent organisms. We wish to report the discovery of a sequence motif of potentially great importance which is shared by proteins from a number of organisms. This motif consists of the amino acid sequence Glu-Lys-Val-Ile-Ser; or, in the one-letter amino acid code, "ELVIS."

We examined the Protein Identification Resource, National Biomedical Research Foundation (NBRF) protein database (release no. 26.0) using the FASTP algorithm

of Lipman and Pearson (*1*). Of 25,814 sequences contained in this release, we found the ELVIS motif in four proteins, including the transposase of the IS256 element of *Staphylococcus aureus*, a mitochondrial protein from *Saccharomyces cerevisiae*, the thymidylate synthase from bacteriophage T4, and the colonization factor antigen I (CFA/I) of enterotoxigenic *Escherichia coli*. We also found numerous instances of the ELVIS motif with conserved changes, such as ELIIS and ELVIT; these were not investigated further.

Since that fateful day of 16 August 1977 when Elvis Presley, considered by fans the world over as "The King," passed on, there have been many attempts to uncover evidence that this rock and roll legend is still among us. For the most part, these efforts have been conducted in a haphazard manner and quite frankly have lacked credibility. Elvis sightings in shopping malls, doughnut shops, and aboard alien space craft have yet to be properly documented. We believe this report is the first credible evidence that "The King" is still among us, at least within the lower life forms.

The frequency of occurrence of the ELVIS motif (1.5×10^{-4}) was strikingly higher than the frequency of this motif by chance alone (1 in 20^5 or 3×10^{-7}). As a control, we examined the occurrence of the five-letter name of another legendary musician of a completely different era and style, namely, Franz Joseph Haydn. The HAYDN sequence motif was absent from the NBRF database, thus supporting the unique occurrence of ELVIS among protein sequences. Because the frequencies of individual amino acids vary among organisms, we performed an additional control and searched the database for the same five amino acids of ELVIS but rearranged to spell "LIVES." None of the 25,814 sequences contained this sequence.

The biological significance of the ELVIS motif is not clear at this time. Additional experiments using site-directed mutagenesis to alter individual residues in this motif may yield further insights. The occurrence of ELVIS in the CFA/I antigen of enterotoxigenic *E. coli* may provide a clue. Those who have traveled to areas in which that organism is endemic may have felt the presence of ELVIS in the form of abdominal cramping and related discomforts.

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REFERENCES

1. D. J. Lipman and W. R. Pearson, *Science* **227**, 1435 (1985).

Children and Divorce

The landmark surveys reported by Andrew J. Cherlin *et al.* (Articles, 7 June, p. 1386) challenge case reports and folklore that blame divorce per se for emotional and academic problems in children. Using longitudinal epidemiologic data, the authors found that a majority of children have disturbances well before a divorce occurs and that much of the effect of divorce on children can be predicted by conditions that exist before separation. Future research, and social policy that follows, need to identify these conditions.

There appears to be a strong association (although the direction varies) between divorce and major depression in parents. Studies of children at high risk for psychopathology have shown how major depression in parents can affect children, irrespective of divorce (*1*). As major depression in adults is a treatable condition, these findings have implications for preventive intervention in parents and children.

A ScienceScope item, also in the 7 June issue (p. 1365), notes that the federal government plans to increase funding for research on psychiatric disorders in children. This research is long overdue. Epidemiologic studies conducted in the United States show that many of the major psychiatric disorders have their first onset in childhood and adolescence and that there has been an increase in the rates of some psychiatric disorders in more recent birth cohorts (*2*). Social policy based on systematic research may, in the long run, be the most effective and least costly way of improving the health of children.

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REFERENCES

1. M. Fendrich, M. M. Weissman, V. Warner, *Dev. Psychol.* **26**, 40 (1990).
2. G. L. Klerman and M. M. Weissman, *J. Am. Med. Assoc.* **261**, 2229 (1989).

Cherlin *et al.* reveal shortcomings of the "disruption model," but they do not adequately address the question of *why* some children showed more behavior problems before divorce. We found that boys show poorer adjustment and have more arrests the more divorces and remarriages their mothers have (*1*). We also found mothers' antisocial behavior and youth appear to be highly correlated with the number of divorces and remarriages they experience, with low involvement with their sons, and with a lack of skill in monitoring their sons' behavior. The cycle that results in a boy's behavior problems is frequently initiated when an antisocial and unskilled teenager has a baby.

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REFERENCES

1. D. M. Capaldi and G. R. Patterson, *Dev. Psychol.* **27**, 489 (1991).

Response: Our study, based on national, longitudinal surveys, provided evidence that a substantial part of the effects of divorce on children can be predicted by conditions that existed well before separation occurred, at least for boys. But, as Capaldi and Patterson note, a study such as ours cannot provide detailed information about *why* problems were apparent in some families before separation. Determining more precisely what is causing pre-separation difficulties for children will require additional studies that use intensive, direct observation of families. We are pleased to learn about the studies cited above that are investigating antisocial behavior by the parents, unskilled parenting, and major depression.

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Patent Validity

Eliot Marshall's article "The patent game: Raising the ante" (News & Comment, 5 July, p. 20) gives the impression that Life Technologies takes the position that the patents to modified T7 DNA polymerase assigned to Harvard Medical School are invalid. We have taken no position regarding these patents apart from the general recognition that issued U.S. patents enjoy a legal presumption of validity unless and until shown to be invalid by the courts or by the U.S. Patent and Trademark Office.

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Erratum: In the Research Article "A thermodynamic scale for the helix-forming tendencies of the commonly occurring amino acids" by Karyn T. O'Neil and William F. DeGrado (2 Nov. 1990, p. 646), figure 3 contained some errors. The label of the *y*-axis should have read "log[Peptide] (μM), and the symbols should have been labeled as follows: Ala (◇); Phe (□); Ile (*); and Asp (△).