

Universal Darwinism

SIR — In a recent book review (*Nature* 360, 25; 1992), Richard Dawkins comes close to admitting that evolution by Darwinian selection is so obviously *a priori* true in this and all other imagined worlds that it belongs to a category of knowledge that 'is more important than the facts that just happen to be true'; the latter being so numerous (blood is red, and so on) that no individual memory can cope with their retention. Whereas the more usual fun debate in biology is arguing the toss over whether life is an act of God or an act of natural selection, Dawkins is now dangerously close, in his quest for scientific respectability for his belief in Universal Darwinism, to bringing natural selection over to the side of God. It is no longer a scientific theory requiring all the usual rigours of proof and disproof but a set of beliefs on a par with theology which is *a priori* very likely to be true in all places at all times.

The problem with this view of life is that it makes a statement of probability ('very likely to be true') based on the unique singularity of life as we know it here on Earth. This is equivalent to making erroneous statistical calculations of how many times HIV should have transferred to the human species during the millions of years separating us from monkeys, given that a transfer has been observed to have happened uniquely in the past ten years.

If we define evolution as modification by descent, that is, a process for changing the genetic composition of a population with the passing of the generations, then there is no reason to suppose that, in other worlds at other times, processes that we actually know to be untrue here on Earth are untrue over there. Lamarckist evolution is a case in point. Mutationism is another. Both could be front runners in a mode of life with different procedures of inheritance and development. And there could be many more once we settle into our comfy armchairs and take to heart J. B. S. Haldane's view that "the universe is not only queerer than we suppose but queerer than we can suppose" (*Possible Worlds*, 1927). Even on Earth, there are other non-Darwinian processes contributing to the evolution of adaptive biological novelties which may (or may not) be operating elsewhere. If we stick to the only acceptable scientific attitude that true facts are those which are observed, then we will never know *scientifically* about imagined lifestyles elsewhere. All we can know in the meantime is via the hard experimental slog uncovering the ever-increasing number of facts of life as it is around us, including Earth-bound natural selection.

There is nothing rational or law-like about biological organization and the processes that gave rise to it, given that there are no predictable regularities of events on a par with physical phenomena. This should not be taken as a counsel of despair driving us towards the intellectual suicide of unknowable Universal Darwinism. On the contrary, the study of illogical and unpredictable organisms and the variety of bizarre and chaotic evolutionary processes at play should be an exhilarating challenge.

Gabriel A. Dover

Department of Genetics,
University of Leicester,
University Road, Leicester LE1 7RH, UK

Genuine genius

SIR — Jonathan Katz¹ complains about systems of competitive review which encourage "consensus science", and wants to reform the system so as to encourage "original and venturesome research". But I doubt that any system, conservative or reformed, can either silence or create genuine genius.

It is part of the nature of new and original ideas that present systems tend to discourage them. This was true at the time of Jeroboam in Israel, where King Solomon first tried to silence Jeroboam's ideas for social reform by offering him a lucrative job within the system². And it was true at the time of Descartes in Europe, where even the University of Leyden forbade mention of his name and where the atmosphere that led to Galileo's persecution led Descartes to decline to publish *Le Monde* during his lifetime³.

Katz suggests reforming the present funding system in science to encourage original and venturesome research, but the sort of people who are good at manipulating systems will probably quickly learn to succeed in whatever new system we adopt, while genuinely original and venturesome thinkers will probably always have a hard time. That is not necessarily a bad thing. The fact that an idea is original and venturesome does not make it true. The conservativeness of social and academic systems tends to weed out ideas that are original but not true, and helps to ensure that the original thinkers who survive the tendency of the system to discourage them will be those whose ideas are truest and most deserving of a wide and lasting hearing. The conservatives who tried to silence Descartes succeeded in silencing hundreds or thousands of lesser thinkers, but Descartes' ideas, 300 years later, are still influencing our physics, physiology,

geometry and philosophy.

Frank J. Leavitt

Jakobovits Center

for Jewish Medical Ethics,
Ben Gurion University of the Negev,
Beer Sheva, Israel

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2. 1 Kings 11:40.
3. Russell, B. *A History of Western Philosophy* 559, Simon and Schuster, New York, 1945).
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More on legumes

SIR — Tate and Enneking's warning¹ of how consumers could be supplied with *Vicia sativa* in place of red lentils is not a unique case. A few years ago, yellow lentils were exported from Turkey to India and, because they resemble pigeon pea (*Cajanus cajan*), which is commonly consumed in India, they became popular. Traditionally, in the Middle East, yellow lentils are consumed after they are soaked in water and the washings discarded. But in India, the imported lentils were eaten without detoxification as the Indian population is accustomed to consume pigeon pea 'dal' without any processing. The import of yellow lentils from Turkey was therefore discontinued.

Another legume belonging to the same subfamily as *V. sativa* — *Lathyrus sativus*, which contains the neurotoxin beta-N-oxalyl aminoalanine (BOAA) — is cultivated in India and other countries². The neurotoxic effects of *L. sativus* have been well documented in several animal species and outbreaks of neurolathyrism in humans have been reported from India, Bangladesh, Nepal and Ethiopia. According to recent estimates, nearly one million tonnes of *L. sativus* are produced every year for human consumption. The government of Nepal recently banned its import.

In the quest to provide protein-rich legumes, particularly in regions where dietary protein deficiency is widespread, special care has to be taken to ensure that only legumes free from toxic constituents are encouraged. Because there is generally no restriction on the international trade of legumes, the Codex Alimentarius Commission of the FAO/WHO, as well as countries exporting, importing or cultivating legumes reported to contain toxic constituents, have to produce appropriate guidelines to safeguard human health.

Ramesh V. Bhat

T. C. Raghuram

National Institute of Nutrition,
Indian Council of Medical Research,
Hyderabad 500 007, India

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