Author's reply: I did not mean to suggest that a mother is always certain of the paternity of her offspring – merely that she is certain that her offspring perpetuate her genes, while a father can never be similarly sure that his genes are perpetuated in the offspring of his sexual partners. Hence, it is suggested that each gender faced distinct reproductive problems that required different adaptive solutions.

I am indeed aware of the long-time opponents of evolutionary psychology that Lucas refers to. Most (e.g. Rose & Rose and Lewontin) are evolutionary biologists who are prepared to accept that physical organs (e.g. the eye or the hand) have been designed by selection but draw the line at the human psyche or mind. Their antipathy to any suggestion that the human mind may have any architecture whatsoever that could have been shaped by the evolutionary process places them effectively in the camp that views the mind as a *tabula rasa*.

Moreover, Lucas is quite mistaken in suggesting that evolutionary psychology is biologically deterministic. Biological determinism is simply wrong and you will find every book or chapter on the subject stressing this fact (see Buss, 1999; Thornhill & Palmer, 2000). Unlike the narrow (non-evolutionary) biological view, evolutionary psychology accepts that all traits are the result of the interaction of genes and the environment. However, the difference between this view and that of the 'standard social science model' (Tooby & Cosmides, 1992; Gaulin & McBurney, 2001) is that traits are not considered to be endlessly malleable. Some traits are fixed through a wide range of environmental conditions (obligate traits; e.g. having two eyes), while others are highly sensitive to environmental change (facultative traits; e.g. degree of tanning of the skin or the propensity to violence). Nevertheless, even obligate traits can be disrupted as a result of environmental factors at critical developmental stages.

Evolutionary psychology has no problem accepting complexity and contrary to Lucas does not consider the brain or any other human organ to be optimally designed. Evolution produces its effect quite often through compromise and through building on what already exists. The design of the human throat that creates the propensity to choke each time we swallow due to the passage of all the food precariously over the wind-pipe is a case in point. Nor is it denied that factors other than selection, such as drift and mutation, influence the frequency of traits in a given population. However, only selection is capable of producing *adaptations* – the domain-specific, highly specialised traits or organs that perform a survival or reproductive function for the organism and contribute directly to its inclusive fitness (see Williams, 1966). Hence, whereas the colour of blood may be the result of drift, the design of the lens in the human eye can only have been the result of selection.

Lucas alludes more than once to the excesses of 'eugenics' and 'social Darwinism'. No doubt social Darwinism was bad science and an abuse of Darwinism. Evolutionary psychology, by contrast, is a hypothesis-driven empirical science and not a political ideology. This does not mean it cannot be abused or distorted but science cannot be blamed for its abuse by the unscrupulous. It is also worth remembering that the excesses of extreme 'environmentalism' (a trend still quite influential and prevalent in various quarters) were no less gruesome and led to the death of millions of people in Stalinist Russia and elsewhere all in the name of creating the new citizens (through re-education and indoctrination).

Finally, Prothero is right to point out that sciences other than psychiatry tolerate a degree of conceptual pluralism. However, I would contend that the pluralism in physics has stimulated considerable theoretical and experimental work to resolve the inconsistencies generated by mutually exclusive theories. Can we say the same about psychiatry?

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Psychotropic drugs and sudden death

In their editorial, Appleby *et al* (2000) indicated that the mechanism of sudden death among patients taking antipsychotic medications might be ventricular arrhythmias and that QTc prolongation might be a particularly important harbinger of these events.

Another electrocardiographic sign (without prolonged QTc) that may be associated with sudden death from ventricular fibrillation is the Brugada sign (i.e. right bundle branch block and elevation of the ST segment; Brugada & Brugada, 1992). Buckley & Sanders (2000) have commented that although no specific antipsychotic has been directly associated with the Brugada sign (unlike the tricyclic antidepressants), antipsychotic medications with the capacity to block sodium channels may precipitate this and possibly lead to sudden death.

In addition to the risk factors mentioned, drug–drug interaction is an important consideration. Drugs like the tricyclic antidepressants and lithium, with their propensity to prolong the QT interval, may have a synergistic additive effect when combined with an antipsychotic medication. Inhibition of the cytochrome P450 enzymes involved in the metabolism of psychotropic drugs leads to increased blood levels, and prolongation of the QT interval in individuals taking antipsychotic medications such as haloperidol, sertindole, risperidone and olanzapine occurs in a concentration-related manner (Drici *et al*, 1998). Certain selective serotonin reuptake inhibitors (fluvoxamine, paroxetine) are potent inhibitors of some of these cytochrome P450 enzymes. Grapefruit juice, although seemingly innocuous, has attained some notoriety from its association with prolonged QT intervals in individuals taking terfenadine and has been implicated in one death (Jefferson, 1998). Grapefruit juice is a potent inhibitor of the P450 CYP1A2, 2A6 and 3A4 enzymes, which are important in the metabolism of clozapine, amitriptyline, imipramine and clomipramine. Clinicians should therefore be mindful of these interactions and give the appropriate warning to their patients taking these medications.

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