Correspondence

PHILIP BLIGH

The Illusory Self

Susan Blackmore in *The Meme Machine*[1] has made out a persuasive case for the self as non-existent – that there is no 'me', no 'I', no *Cartesian Theatre* (Dennett's phrase) in which the self can sit watching all that is going on in its brain and body. In fact, that is all there is to us – our personality – a brain and body and the all pervasive memes which infect every thought, every idea and control every action. 'There is no separate self jumping into the synapses and starting things off. My brain does not need me.'[2]

Blackmore turns to the experiments of the neurosurgeon Benjamin Libet to find evidence that consciousness, the special property of the self, is not in control of our actions. In one experiment electrodes were attached on the wrists and the brain of the subject so that, when asked to flex her wrists, the moment of flexing, the time when the rising potential in the brain initiating the action and the conscious decision to act – all could be recorded. Results showed that, while the brain decided to act 550 milliseconds before flexing occurred, the subject did not consciously decide to flex the wrist until 200 milliseconds before the wrists did so. This result together with other experiments led Blackmore to the conclusion that 'consciousness does not direct our actions. Conscious awareness comes all right, but not in time. The hand is removed from the flame before we consciously feel the pain. We whacked the tennis ball back before we can be conscious of it coming towards us. We have avoided the puddle before we were conscious of its existence.[3]

Putting rough figures into our game of tennis: a 120 miles per hour service will arrive at the other end of the court in some 340 milliseconds, which lies between 550 and 200, so your brain can hit the ball in time with some 200 milliseconds to spare but your conscious decision is too slow to do so.

Blackmore believes that the self is just a bundle or complex of memes, a selfplex, organised to link experiences/perceptions/sensations together to tell a story, form a narrative, which is a work of fiction (a novel if you like). This gives us the illusion of a self as the author of the novel and hence of all that we do –

1 Published Oxford University Press (1999). Her latest book, *Consciousness: An Introduction*, was published June 2003 by Hodder Arnold H&S.
2 *op.cit.* p.226 Some philosophers (eg Daniel Dennett and Patricia Churchland) believe that once we understand the brain there will be no mystery of consciousness left – ie understand the hardware of neural activity and networks and we will understand the software of human experience programmed onto it.
3 *ibid*. p.227

hence the illusion of being in control of our bodies and our brains – and our tennis! But its control is an illusion. What is in control of us is our memes, the cultural replicators that inhabit our brains and which can spread like wildfire throughout society determining our every thought and idea and action – just as genes replicate through the biosphere and determine our biology.

Some memes organise themselves into insidious complexes that give the illusion of a self which is responsible for so many of our ills. 'By its very nature the selfplex brings about self-recrimination, self-doubt, greed, anger, and all sorts of destructive emotions.'[4] In contrast, 'The creative achievements of human culture are the products of memetic evolution, just as the creative achievements of the biological world are the products of genetic evolution. *Replicator power is the only design process we know of that can do the job*, and it does it. We do not need conscious human selves messing about in there as well.'[5] Thankfully ' . . . the inner self is a memeplex . . . so can be dismantled . . .'[6]

The secret of life is don't listen to an illusion – don't listen to the self telling us stories of its past, or its plans for the future – live in the present and let the creative memes get on with the job.

I remember our undergraduates measuring reaction times between the knee jerk reflex and the response kick, which always brought some light relief on a dull afternoon. But the reflex arc, Blackmore's 'taking your hand out of the flame before being conscious of pain', is a survival mechanism which bypasses the more lengthy neural pathways involved in the slower conscious contributions to more reflective and deliberate action. Tennis likewise involves the faster autonomic reflex actions of our central nervous system to achieve rapid response.

But the game of tennis is far more than that. The game is played by the stories we tell; it is about the experiences of the past and the narrative plots or plans or strategies of the future. When I wait to receive a serve how I respond is as much determined by my *anticipation* of what I expect will happen from past experiences and by my prepared strategies of how to return the ball as it is by the speed of my reflexes. Where I stand, how I hold my racket, the way I will hit the ball and where, are all determined as much by my years of training and experience and my theory of the 'other mind' on the opposite side of the net as by the brain response to the eye's seeing the ball hit by my opponent's racket. The way I play the game is as much a narrative plot of the self as it is

4 *ibid*. p.245
5 *ibid*. p.140 italics mine
6 *ibid*. p.245

of the present activity of the brain.[7]

If the self is a memeplex then surely we must ask whether, if the self is an illusion, the memes are an illusion too. The idea that memes have a life of their own (just as the self does) clearly worry those like Dennett who prefer to talk about 'meme effects in the brain' rather than memes.[8] It was many years ago now that Gilbert Ryle in his book *The Concept of Mind* (Barnes & Noble, 1949) gave the illustration of a visitor being shown round the University of Oxford. Having seen the colleges and students, punting on the river, and so on, he turned to the guide and asked, 'But where is the University?'[9] It is like being shown the signal patterns from electrodes implanted in the brain and NMR scans of its activity, etc and asking, 'But where is the mind?' (or memes or self for that matter!) Ryle called this a 'category mistake'; the university exists at a different level of reality from the activity of the component parts of which it is comprised. It belongs to a different category but that does not mean that the university is consequently an illusion. Nobel laureate Stephen Weinberg takes issue with the social constructivist in his belief that theories such as those of quarks and Maxwell's theory of electromagnetism have an objective status – 'are as real in the same sense . . . as rocks in the ground',[10] that is, that they are beyond culture and thus not just products of memes. 'The goal of a simple unified theory attracts people of all sorts, because we think that the theory is out there to be found, and that we can find it. And the theories we develop in pursuit of the goal are the same theories in all cultures'.[11] Or again: 'What drives us onward in the work of science is precisely the sense that there are truths out there to be discovered (not just culturally constructed), truths that once discovered will form a permanent part of human knowledge.'[12]

Angus Kerr in his *Theology after Wittgenstein* includes some words of Gregory the Great as quoted by Thomas Aquinus: 'We stand, as it were, behind the wall of the body, sheltered from the eyes of others in the recesses of our mind: but when we wish to reveal ourselves we come forth, with speech as the gateway, in order to show our inner selves.'[13] Susan Blackmore would shudder at

7 More sophisticated studies of motor responses than those of Libet as by G M Chose & J H R Mausell amongst others show, for example, that 'subjects can anticipate events with great temporal precision' by developing temporal strategies 'based on accumulated experience'. ('Attentional modulation in visual cortex depends on task timing', *Nature* (2002) 419, 616-619). J Cabrera & J Milton discovered that, when balancing a stick on the palm of the hand, whereas 'it takes 100 milliseconds for someone to react to a visual cue like a wobble, 98 per cent of the hand movements people used to keep the stick upright happened faster than that'. (*Physical Review Letters*, (2002). 89 – as reported in *New Scientist* (5 Oct.2002) p.19)

8 Blackmore, *op.cit*. p.238

9 Ryle, Gilbert *The Concept of Mind*, Barnes & Noble (1949), p.15f.

10 Weinberg, Stephen *Facing Up. Science and Its Cultural Adversaries*, Harvard University Press (2001), p.205

11 *ibid*. p.268

12 *ibid*. pp.200-201 – brackets mine.

13 Kerr, Angus *Theology after Wittgenstein*, Blackwells (1986), p.80

the dualism in this statement, but his phrase 'with speech as the gateway' through which the self enters the 'real' world has much to commend it. For it is in the stories we publish abroad by which we link together our experiences thanks to the development of language that the self is made known.

Terrance Deacon in *The Symbolic Species* speaks of the 'autonomous power of words over things'[14] He uses the dramatic biblical phrase 'and the Word became flesh' to make his point that the evolutionary 'process I describe is no less miraculous because it is explainable by science'. That evolutionary miracle is the human brain and what makes it extraordinary 'is not just that a flesh and blood computer is capable of producing a phenomenon as remarkable as the human mind, but that the changes in this organ responsible for this miracle were a direct consequence of the use of words'.

What is 'miraculous' is that 'something as abstract and virtual as the power of words', something as unreal as 'an idea changed the brain'. 'So in a very real sense I mean that the physical changes that make us human are the incarnations, so to speak, of the process of using words.'[15] If we may extend his reference to the opening words of John's Gospel: 'In the beginning was the Word, and the Word was with God and the Word was God' and then the Word become incarnate in human nature, imago dei, the grand illusion of our existence which marks us out as human beings.

J Wentzel van Huyssteen writes: 'It is only in the narrative form that the ultimate truth of human existence finds expression.'[16] In our hunger for cosmic coherence – for existential order – having abandoned the meganarratives of the great religions and ideologies by which we sought to explain the totality of our life and work, we turn to the 'narrative plots of imaginative fiction'. 'Narrative theology grows directly from the deep conviction that temporal narrativity constitutes the substance of personal human identity.'[17]

The idea of Blackmore and others of self as a story is finding echoes in the writings of theologians. If self is an illusion it is a very persistent and readable one at that – of which her book is a splendid example.[18]

Philip Bligh was until recently Rector of Holy Cross Anglican Church, Canberra, Australia and previously Head of Applied Physics, Kingston Polytechnic/University.

14 Deacon, Terrance *The Symbolic Species*, Penguin (1997), p.321
15 *ibid*. p.321f
16 van Huyssteen, J Wentzel *The Shape of Rationality*, Eerdmans (1999), p.123
17 *ibid*. p.70
18 Philosopher Thomas Nagel has observed how some natural sympathy 'between the deepest truths of nature, and the deepest layers of the human mind' make many nervous – perhaps the latter are not so illusory after all – as general nervousness about any harmony between mind and world is 'one manifestation of a fear of religion which has large and often pernicious consequences for modern intellectual life'. (*The Last Word*, Oxford University Press. Oxford University Press (1997), p.130.) Roger Trigg who gives these quotations adds: 'Many, and Nagel admits that he is one, just want atheism to be true.' (*Philosophy Matters*, Blackwell (2002), p.141)

PETER G. H. CLARKE

Selfhood is not an Illusion

I would like to comment briefly on Philip Bligh's letter. A *meme* is any idea or behaviour that can be transferred between people by imitation. It was Richard Dawkins in *The Selfish Gene* who coined the word, and memetics has since become a minor discipline, well represented on the web although much less so in refereed journals. It was also Dawkins who argued in the same book that organisms (including humans) are 'gene machines', throwaway devices blindly programmed by the selfish genes for their own survival and propagation. In *The Meme Machine* Susan Blackmore combines Dawkins' two ideas in her concept that minds are meme machines, unwitting meme-replicators subservient to the tyranny of the selfish memes. She deduces that we have no free will, and that our consciousness is not the driving force of our behaviour. She also maintains that the power of religions can be explained by the propagation of largely false memes, but although critical of most religions she has a positive attitude to Buddhism, to which she ascribes the view that the self is the most pernicious of all memes.

Frankly, I am critical of many of these ideas, and agree with Rosamund Bourke, in her book review,[1] that 'only metaphorically can a meme be regarded as having a life of its own'. Blackmore builds too great an edifice on the flimsy foundation of metaphor. But here I would like to focus on one of her arguments that might seem better grounded. As Philip Bligh's letter describes, Blackmore argues from the experiments of B. Libet et al. that consciousness, the special property of the self, is not in control of our actions. Libet et al. reported in 1983 that the brain potential initiating action, the '*readiness potential*', began about 300-400 ms before the conscious decision to move, implying that the latter was too late to be causally responsible for the movement. I would stress that the interpretation of Libet's famous experiment is still hotly debated. Points of contention include the question of whether the relevant brain potential is the *readiness potential* or the *lateralised readiness potential*, which occurs much later; the difficulty of measuring the time of a subjective experience; and imprecision in the timing of slow brain potentials.

Finally, it is worth noticing that Blackmore serves up some rather conventional claims in a way that might trick us into swallowing her more controversial ones. The causal irrelevance of the conscious self to the pain reflex (which does not involve a conscious decision or even the brain) is easy to accept, but this should not lull us into denying the self's essential involvement in decision-making. Her statement 'There is no separate self jumping into the synapses' is banal – even a Cartesian dualist would be unlikely to believe in *that* kind of self; but the danger is that in accepting her anti-Cartesian sugar we swallow her Buddhist/rationalist pill of denying the real self, the person loved by God as an individual.

Peter Clarke is a neuroscientist at the University of Lausanne, Switzerland

1 *Science & Christian Belief* (2000) 12, 189.

P.G. NELSON

Human origins

In Graeme Finlay's informative and stimulating article on human origins,[1] he concludes that relations between the DNA of humans and apes 'establish unequivocally the fact of our evolution', and 'deal to the hermeneutic paradigm of biblical literalism what Galileo's findings dealt to the Aristotelian paradigm of his day'. This is a very bold claim, and I wonder whether we can be quite as sure as this, for the following reasons.

Although the differences in DNA between chimpanzees and humans are relatively small (1-2%), they are nevertheless very large in absolute terms. The number of base pairs in a haploid cell of a human is about 3.2×10^9.[2] A difference of 1–2% thus corresponds to $3–6 \times 10^7$ base pairs.

Finlay refers to sections of DNA that appear to be relics of a species' history. The problem here is that we do not yet know the full workings of DNA within a cell. Evidence is emerging that non-coding DNA has a part to play in cell chemistry.[3] Like vestigial organs, 'fossil' DNA might turn out to be functional after all.

Finlay goes on to discuss how human evolution can be reconciled to the Bible. I would like to make two comments on this.

Finlay argues that natural selection acting on random variations can produce orderly change. This is true. But the process is only determined (i.e. inevitably leads to a particular change) if all possible variations occur. Otherwise, which change occurs (and thus whether humans emerge from the process of evolution or not) requires further specification.[4]

Finlay cites the widely held view that what characterises human beings is their ability to enter into relationship with God, and that this is what is meant by the 'image of God'. However, many who hold this view also contend that Genesis should be interpreted according to the understanding of the people for whom it was first written. There must be considerable doubt whether the ancient Hebrews would have understood 'image' (*selem*) in this way.

P.G. Nelson is a lecturer in chemistry at the University of Hull.

1 Finlay, G. '*Homo divinus*: the ape that bears God's image', *Science & Christian Belief* (2003) 15, 17.
2 Strickberger, M.W. *Genetics*, 3rd edn. (New York: Macmillan, 1985), p. 45.
3 Hirotsune, S., *et al*. 'An expressed pseudogene regulates the messenger-RNA stability of its homologous coding gene', *Nature* (2003) 423, 91.
4 Nelson, P.G. *Big Bang, Small Voice: Reconciling Genesis and Modern Science* (Latheronwheel, Caithness: Whittles, 1999), Chap. 6.

GRAEME FINLAY

Human Origins – a Response

I am grateful for the opportunity provided by Dr Nelson's letter to clarify aspects of my review. I will address the points in the order raised.

Scientific issues

1. The number of base differences between any two humans (~2.4 x 10^6 per haploid genome)[1] is approximately the same as that between any two chimpanzees, and only one order of magnitude less than that between humans and chimpanzees.[2] The base substitution rate that generated the observed human-chimpanzee difference (~1 x 10^{-9} changes/site/y) is unremarkable,[3] and compatible with our genetic status as 'slightly remodeled chimpanzee-like apes'.[4]

2. Relics of species history (including vestigial structures[5]) are defined not by their current functionality, but by the manner of their origin. The familiar processes of genetic duplication and insertion occur randomly, unrelated to the body plan of the organism. However, they provide raw material that may be co-opted to provide genetic function.[6] For example, the *INSL4* gene (generated by

1 The International SNP Map Working Group 'A map of human genome sequence variation containing 1.42 million single nucleotide polymorphisms', *Nature* (2001) 409, 928.
2 Stone, A.C., Griffiths, R.C., Zegura, S.L. and Hammer, M.F. 'High levels of Y-chromosome nucleotide diversity in the genus Pan', *Proc Natl Acad Sci USA* (2002) 99, 43; Kitano, T., Schwarz, C., Nickel, B. and Paabo, S. 'Gene diversity patterns at 10 X-chromosomal loci in humans and chimpanzees', *Mol Biol Evol* (2003) 20, 1281; Gilad, Y., Bustamante, C.D., Lancet, D. and Paabo, S. 'Natural selection on the olfactory receptor gene family in humans and chimpanzees', *Am J Hum Genet* (2003) 73, 489; Yu, N., Jensen-Seaman, M.I., Chemnick, L. *et al*. 'Low nucleotide diversity in chimpanzees and bonobos', *Genetics* (2003) 164, 1511.
3 Yi. S., Ellsworth, D.L. and Li, W.-H. 'Slow molecular clocks in the old world monkeys, apes, and humans', *Mol Biol Evol* (2002) 19, 2191; Liu G., NISC Comparative Sequencing Program, Zhao S. *et al*. 'Analysis of primate genomic variation reveals a repeat-driven expansion of the human genome', *Genome Research* (2003) 13, 358.
4 Wildman, D.E., Uddin, M., Liu, G. *et al*. 'Implications of natural selection in shaping 99.4% nonsynonymous DNA identity between humans and chimpanzees: enlarging genus *Homo*', *Proc Natl Acad Sci USA* (2003) 100, 7181.
5 The vomeronasal organ has lost its original pheromone-sensing functions in Old World primates (including humans). This happened when a gene encoding a key signaling protein started to accumulate damaging mutations in a common ancestor. The dozens of genes for receptor proteins no longer served any function, and have been decaying ever since. Whether the vestige of this organ performs any other function is irrelevant to this remarkable demonstration of our evolutionary history. See Liman, E.R. and Innan, H. 'Relaxed selective pressure on an essential component of pheromone transduction in primate evolution', *Proc Natl Acad Sci USA* (2003) 100, 3328; Zhang, J. and Webb, D.M. 'Evolutionary deterioration of the vomeronasal pheromone transduction pathway in catarrhine primates', *ibid*., 8337.
6 Finlay, G. '*Homo divinus*: the ape that bears God's image', *Science & Christian Belief* (2003) 15, 17. As examples of such co-optation ('exaptation') attention was drawn to references 22, 31, 70, 82.

a copy-and-paste mechanism in an ancestor of the Old World primates) is regulated by sequences within an endogenous retrovirus that entered primate DNA at approximately the same time.[7]

Science and the Bible

1. Mutations occur as part of the freedom that God has granted his creation.[8] God does not determine specifically each mutational event which has shaped our genome, for then he would have determined each one that caused genetic disease – which is not compatible with his nature.[9] The human form did not have to be the way it is.[10] It is not a particular base sequence, but a destiny in union with Christ that is guaranteed (1 Cor.15:20; 2 Cor.1:21-22; Eph.1:14).

2. The 'image of God' is a spiritual quality.[11] In its original historical setting, this phrase indicated that 'humanity was intended to represent God's kingdom on earth'.[12] Any such role for humanity presupposes that God makes his will known, and that his creatures respond appropriately in service and worship. This constitutes (in current parlance) 'relationship'. The alternative, that Israel regarded Yahweh as a *deus remotus*, is not acceptable.

The changes that distinguish the human and chimpanzee genomes are being starkly revealed.[13] Does this 'remarkable genetic similarity' threaten 'our sense of uniqueness as a species'?[14] Despite appeals for scientific prudence,[15] molecular fundamentalists[16] inevitably will proclaim their litany of category mistakes. Christians must welcome the findings of primate comparative genomics. They reflect the means of grace by which God has granted our bio-

7 Bieche, I., Laurent, A., Laurendeau, I. *et al*. 'Placenta-specific *INSL4* expression is mediated by a human endogenous retrovirus element', *Biology of Reproduction* (2003) 68, 1422.
8 Polkinghorne, J. *Science and Creation* (London: SPCK, 1988), pp.62-63.
9 The 'eschatological doctrine of providence' assures us that God will transform the randomness and concomitant suffering of this world into the glory of the new creation. See Konig, A., van Niekerk, E. and Olivier, D.F. *Systematic Theology* (Pretoria: UNISA, 1988), pp.327f.
10 Biology is 'historically conditioned'; the route of evolution is 'open and subject to historical vicissitudes' Rolston III, H. *Genes, Genesis and God* (Cambridge: CUP, 1999), pp.148f, 209; Alexander, D.R. *Does evolution have any religious significance?* (Pitlochry, Perthshire: CiS, 1998), p.21.
11 Lucas, E. *Genesis Today* (London: SU, 1989), p.143; Osborn, L. *Guardians of Creation* (Leicester: Apollos, 1993), pp.131f.
12 Hess, R.S. 'Genesis 1-2 and recent studies of ancient texts', *Science & Christian Belief* (1995) 7, 141. I.J. du Plessis has written that the 'image of God' means that Adam 'stands in a special relationship both to God and to creation...God set man in his creation to represent him and declare him Lord over everything.' *In* du Toit, A.B. *Guide to the New Testament* V (Pretoria: NG Kerkboekhandel, 1985);
13 Anzai, T., Shiina, T., Kimura, N. *et al*. 'Comparative sequencing of human and chimpanzee MHC class I regions unveils insertions/deletions as the major path to genomic divergence', *Proc Natl Acad Sci USA* (2003) 100, 7708.
14 Paabo, S. 'The mosaic that is our genome', *Nature* (2003) 421, 409.
15 Carroll, S.B. 'Genetics and the making of *Homo sapiens*', *Nature* (2003) 422, 849.
16 A term from Klein, G. and Klein, E. 'Bridge or ravine?', *Nature* (2001) 413, 365.

logical endowment, the substrate that God is transforming, at supreme cost to himself, into a new creation (2 Cor.5:17) bearing the likeness of the Man from heaven (1 Cor.15:42ff).

Graeme Finlay is a cell biologist in the Auckland Cancer Society Research Centre and lectures in general pathology at the University of Auckland, New Zealand.