

## What, if anything, is a Darwinian anthropology?

Not too many years ago, I was scanning the job advertisements in anthropology and stumbled upon one for a faculty post in a fairly distinguished department in California. The ad specified that they were looking for someone who 'studied culture from an evolutionary perspective'. I was struck by that, because it seemed to me that the alternative would be a creationist perspective, and I had never heard of anyone in this century who did that. Obviously my initial reading was incorrect. That department specifically wanted someone with a particular methodological and ideological orientation; 'evolutionary perspective' was there as a code for something else.

It has fascinated me for a number of years that Darwin stands as a very powerful symbol in biology. On the one hand, he represents the progressive aspect of science in its perpetual struggle against the perceived oppressive forces of Christianity (Larson 1997); and on the other, he represents as well the prevailing stodgy and stultified scientific orthodoxy against which any new bold and original theory must cast itself (Gould 1980). Proponents of the neutral theory (King and Jukes 1969) or of punctuated equilibria (Eldredge 1985) represented themselves as Darwinists to the outside worlds, and as anti-Darwinists to the inside world. Thus, Darwinism can be both the new and improved ideology you should bring home today, and is also the superseded Brand X ideology. That is indeed a powerful metaphor, to represent something as well as its opposite. Curiously, nobody ever told me in my scientific training that scientific progress was somehow predicated on the development of powerful metaphors.

And yet, of course, they permeate evolutionary discourse. From the very beginning (Young 1985) in which Darwin himself asserted a meaningful relationship between the workings of nature and the conscious actions of animal breeders; to Thomas Hunt Morgan's famous characterisation of the array of genes on chromosomes as 'beads on a string'; to Sewall Wright's abstruse mathematics, graphing average population fitness against allele frequencies in  $n$ -dimensional hyperspace to visualise an 'adaptive landscape'; to Erwin Schrödinger's suggestion that heredity consists of encrypted messages, a 'genetic code'; and of course Richard Dawkins's idea of the 'selfish gene'. The idea I wish to develop here is that much of what is out there in the literature of so-called Darwinian anthropology is a paradoxical attempt to claim the ground of science and yet present a Darwinism that is often only metaphorical, and sometimes even unrecognisable as Darwinism. The fact is that, although spelled and pronounced alike, the word 'evolution' comprises a complex homonym, with four quite different meanings. It refers to the cosmological processes in which transformations of state are governed by the laws of physics, and thus future states are ultimately predictable – stellar 'evolution'. It describes the biological realm, referring to a genetic process within which variation is random with respect to the needs of the organism, and the appearance of goal-directedness is a result of sorting the pool of variants – the 'evolution' of species.

It further describes the realm of human history, in which variation is a product of the human mind, and goal-directedness is often a real phenomenon, a result of human agency – cultural ‘evolution’. Finally, the word as it is was predominantly used in Darwin’s own time, refers to the development of an organism from an embryo, an unfolding down a single path towards a goal established by the genetic program, from zygote to senility, a truly teleological system.

Of course we use the term ‘evolution’ principally the second way in biology, but the call for a Darwinian anthropology presumably is about the third way, which represents different processes, different rates, and is goal-directed in a way that the history of life is simply not. The absence of a unifying model for the two should be no more mystifying or depressing than the absence of a perpetual motion machine. But assuming that there is no such thing as creationist anthropology – if there is, I am not familiar with it – what, then, should be attractive about a self-consciously Darwinian anthropology?

Much of its attractiveness seems to lie in a desire to reduce complex phenomena to simple, more fundamental processes, as Newton did for matter and motion, and as population genetics and molecular genetics did for evolution in different ways in the 1930s and 1960s. But reductionism does not always lead to clarity or depth of understanding. It may be recalled that Ernst Mayr, a leading spokesman for Darwinism, has consistently opposed the reduction of its principal phenomena to *ps* and *qs*, an episteme he derided nearly half a century ago as beanbag genetics (Mayr 1959). Likewise E. O. Wilson, who would reduce human social behaviour to a special case of animal behaviour (Wilson 1975), nevertheless opposes the reduction of evolution, ecology and taxonomy to special cases of molecular biology (Wilson 1994). In many universities, new departments of organismal biology have been formed simply to preserve the anti-reductive dimension of the field.

The real contribution of Darwinism to anthropology is about the place of the human species in the natural order. But while it is well established that we fall phylogenetically among the African apes, the details are still obscure. It is unclear, for example, whether gorillas are more closely related to chimpanzees than we are, equidistant from chimpanzees, or more distantly related to chimpanzees than we are. The interpretation of many aspects of human evolution turn on how one handles that question – for example, whether bipedalism arose from knuckle-walking, or from more generalised suspensory locomotion (Richmond et al. 2001).

But very little of anthropology is of course geared towards questions like that. So long as the answers do not involve a denial of evolution, it is all Darwinian. To that extent, then, I am all for a Darwinian anthropology, although I confess I consider it a trivial proposition. I am all for a Copernican and Newtonian anthropology as well, but as long as none of us is out there denying the structure of the solar system or the forces of matter and motion in our work, I don’t see what value a specifically Copernican or Newtonian anthropology might have.

The call, then, for a superior Darwinian anthropology, while interesting in the abstract, would seem to have very limited value, given the divergent phenomenologies in question. Indeed, an earlier generation of evolutionary anthropological theorists explicitly (and properly) saw Herbert Spencer, not Darwin, as their forebear (White 1949; O’Dowd 1982). The newer argument that anthropology and specifically Darwinism can and should be formally linked seems to come in several ways. Five such schools are in various degrees of vogue with diverse segments of the scientific community.

## Darwinian anthropology 1

The first is the claim that a desirable Darwinian anthropology might be modelled on a Mendelian genetics, where alternative binary states of being (one usually pathological) are caused by different elementary units of heredity, ranging from Charles Davenport's (1911) gene for feeble-mindedness at the beginning of the twentieth century to Dean Hamer's gene for novelty-seeking at the beginning of the twenty-first (Hamer and Copeland 1998). There is no literal or material connection between Darwinism *per se* and the idea that all or any significant portion of variation in human behaviour is caused by the genes, although the eugenicists of the 1920s struggled mightily to tar their opposition with the brush of anti-Darwinism – that is, to brand them as creationists – as do the hereditarians of the twenty-first century.

I think there are three lines of data that show why their position is probably invalid. First, the fact that for the most part human behaviour does not vary randomly; it is geographically clumped. It is specifically the nature of the clumping – the structure of human behavioural variation – that is the core of anthropology. Were human behaviour not structured in such a fashion, there would be no need to do fieldwork, for you would have an equal opportunity of seeing anything anywhere. This is, of course, one aspect of what we mean by culture and one that the apes share in much lesser degrees; begging the question of its linguistic, symbolic, social and historical aspects that distinguish human behaviour from that of other species. The point is this: human thought and deed are structured geographically, and that is the major component of their variation.

Second, we know from studies of immigrants that this geographic pattern of variation, which I am using as a surrogate for culture, is non-genetic in origin, because people adopt, or *can* adopt, a new culture readily. So, given that the major features of human cognitive and behavioural variation are between-group differences, and that these are historical not genetic in origin, it follows that genetic variation in human behaviour can only comprehend at best a tiny portion of the scope of human mental and behavioural diversity. And finally, when we look at the overall patterns of variation, we find that where human behavioural variation is principally between-group, and often discrete, genetic variation is polymorphic and clinal. That is to say, most of the variation is within groups and neighbouring groups blend into one another genetically, even as they detest one another for their different and repellent behavioural features. In other words, a person's origin or identity is readily discernible from that of nearby peoples culturally, but not genetically. If the pattern of genetic variation diverges so widely from the pattern of cognitive and behavioural variation in the species, it seems rather remote to suppose that the former might be a significant cause of the latter.

## Darwinian anthropology 2

The second Darwinian anthropology is the one that claims that human acts are ultimately geared towards reproduction, and therefore all human endeavours must ultimately be interpreted as the spreading of genes, that is to say, as biological adaptations (Betzig 1986; Betzig et al. 1988). This is, of course, derived from Selfish Gene theory (Dawkins 1976), but significantly out-Dawkinses Dawkins. After all, the dust jacket of *The selfish gene* infamously informed us that we were just 'gigantic lumbering

robots' built by DNA to carry out its will; and yet the book ultimately sketched out a theory in which human behaviour was governed by the replication of 'memes' (see below), *not* genes. In essence he left it up to readers to adopt the deterministic metaphor they preferred.

Those that adopt the metaphor of the selfish gene as the key to understanding human behaviour often point to the significance of kinship as an organising principle of human society. But the breadth of naivete in considering basic aspects of kinship can be seen in this passage from Jared Diamond (1992: 87), which very casually explains sexual philandering scientifically as a reproductive strategy:

[W]e can't discuss human sexuality, and the role in our rise to humanity, without carefully considering the science of adultery . . . Once there is marriage, there is also the possibility of . . . 'the pursuit of a mixed reproductive strategy' . . . In plain English, that means being married while simultaneously seeking extramarital sex.

It is taken as self-evident here that marriage is just an unproblematic 'reproductive strategy'; and the fact that philanderers are not actually trying to reproduce – in fact, usually quite the opposite – is of no apparent relevance. Since marriage is about heterosexual unions, and heterosexual unions are fundamentally about reproduction in other species, it must be so in humans as well.

The oddity here is that this is the very antithesis of Darwinism, which ostensibly holds that biological forms are fundamentally unstable through time. The human foot is not usefully explicable as a grasping organ, as the gorilla's foot and other primate feet are. It simply does not grasp well, because it has been enlisted for another function, weight-bearing – for which its rigidity, unique amongst the primates, is both novel and valuable. Indeed, it would be perversely unscientific and paradoxically anti-evolutionary to try to understand the present function of this body part in terms of its grasping function in other species, which is only rudimentary in ours. Likewise, selfish gene theory, attempting to explain any and all aspects of human behaviour in terms of genetic replication because it may have been so in our ancestors, makes little sense logically or biologically from the simple standpoint of Darwinism.

### **Darwinian anthropology 3**

The theory of memes, monads of culture, invented by Richard Dawkins in 1976 at the end of *The selfish gene*, and of only sporadic interest until revived by Daniel Dennett (1995), is now undergoing a renaissance among born-again Darwinian cognitive scientists (Jeffreys 2000). But the problems begin with their elusive nature (Kuper 2002). Dawkins was only able to give the reader examples ('memes are tunes, ideas, catch-phrases, clothes fashions, ways of making pots or of building arches'), in a manner curiously reminiscent of E. B. Tylor's original definition of culture. E. O. Wilson's (1998) recent definition of a meme as 'the node of semantic memory and its correlates in brain activity' doesn't actually tell you how to find a meme or how to identify it if you are lucky enough to chance upon one – assuming you can also render that definition sensible.

We do not even know whether memes actually exist or not. This is an obvious stumbling block for any theory purporting to be scientific. It raises the question in my mind whether memes are like genes, which do exist, or like angels, which do not.

Among people who believe in *memes*, there is no concordance on the phenomenology of memes – whether they generally change adaptively along with genes, for example (sometimes called gene-culture coevolution; Durham 1991); or are carried along passively by the demographic and geographic expansion of human populations (Cavalli-Sforza and Feldman 1981); or are passed on by contact between genetically different groups (sometimes called dual inheritance theory; Boyd and Richerson 1985) – all producing a non-random association of cultural forms and allele frequencies – or whether they are simply crudely analogous to genes and do not intersect at all with genetic microevolution. If the answer is ‘all of the above’ and lies in the specifics of the example chosen, then it is unclear what advantage this holds over the basic political-economic approach of any basic rendering of the history of technology.

In microevolutionary theory we distinguish between genes, the hereditary units themselves, and phenotypes, their expression and interface with the outside world. Memes are commonly used in both senses, suggesting that the analogy breaks down very quickly. Obviously if there is no distinction between the units of replication (genes) and the units of interaction (phenotypes), then it immediately becomes unclear just what value lies in modelling cultural processes as if they mimicked genetics.

Moreover, as the late Stephen Jay Gould famously observed, the major features of evolution cannot be found in *Drosophila* bottles (Gould 1980). Population genetics is about the transformation of lineages, leaving their divergence unaddressed (Dobzhansky 1937); it is about genotypes, leaving bodies unaddressed (Mayr 1963); it does not confront the ways in which a creature comes to identify another as a potential mate or competitor for mates, rather than as just another part of the ecosystem (Paterson 1985); nor does it confront the role of mass extinctions in shaping the history of life (Gould 2003). The transformation of gene pools through time, rather like the diffusion of cultural elements, is a small piece of the story.

And finally, the equivalence of memes from place to place cannot be taken for granted. If we consider the meme for drying out leaves of the genus *Nicotiana*, setting them on fire, and inhaling the vapours, we know it was initially invented by, and spread among, the natives of the New World, and utilised in ritual, sacred contexts, most famously the peace pipe. In a contemporary context, that would be roughly the equivalent of smoking in church, for the associations of tobacco run the gamut from profane to very profane. These can only be considered the same meme from an arbitrarily narrow behavioural viewpoint, where acts have no meaning, and human behaviour is the same regardless of its context, like the behaviour of sparrows. Not only is this the very opposite, once again, of Darwinism, which ostensibly holds that things come to differ through time, but these are not even questions that Darwin or his ‘ism’ sought to explain – any more than Darwinism seeks to explain the evolution of the cosmos from the Big Bang. The idea that culture can be partitioned meaningfully into constituent elements, and can be usefully understood scientifically as the differential propagation of those variant elements, would be entirely unfamiliar to Darwin, as it indeed is to most evolutionary biologists (Wimsatt 1999; Coyne 1999).

What these first three Darwinian anthropologies share is the idea that everything is an adaptation for something. A culture trait may have been fixed because the genes for it were fixed, or because it augmented the survival and reproduction of its bearers or their kin, or simply because it augmented its own survival and reproduction – but effectively everything is there for a reason; everything has a deterministic explanation. It may be worthwhile, then, to step back and consider the critique of adaptationism

that has emerged from biology. While most often associated with Stephen Jay Gould, a vocal exponent of the critique, it really emerges from the reductive view of molecular genetics. If we consider, for example, that pig insulin functions adequately in humans in spite of having a slightly different structure, we will tend to be struck not so much by the precision tuning of the system, but by its laxity. Indeed, molecular evolution generally proceeds by the constant pressure of mutation and the stochastic processes of genetic drift, the basis of what has come to be called the neutral theory of molecular evolution (Kimura 1969; Li and Graur 1991).

When you compare DNA sequences from different species, you expect them to be different from each other, and similarity is queried by recourse to stabilising selection, the pruning of unfavourable variants. Such similarity would indicate some unanticipated functional relevance of the DNA, and thereby less tolerance of change than anticipated. But molecular evolution is governed principally by the dynamic pressure of mutations and their lucky spread – so difference is expected.

To a morphologist, on the other hand, evolution is basically conservative: animals are adapted, and difference is the result of an evolutionary change whose nature you query by recourse to some form of directional selection, the reproductive bias toward favorable variants. Why, for example, did humans lose body hair and become fully terrestrial? Note that one does not ask, ‘Why did other primates keep their body hair and remain arboreal?’ It is unarticulated, but heredity is taken here to be a fundamentally conservative process in which species will tend to remain as they are unless there is pressure on them to change. No explanation is required for remaining the same; an explanation is needed for the species that didn’t remain the same.

So morphologists see the hand of natural selection meticulously crafting bodies in adaptive harmony to their environments; while geneticists tend to see evolution as a very sloppy system, in which change is constant but meaningless (Marks 2002). In the well-known epigram of molecular biologist François Jacob (1977), evolution is like a tinkerer, not like an engineer. Jacob derived that simile by recourse to Claude Lévi-Strauss’s ideas about the origins of myths, expressed in *The savage mind* (1962). Indeed, with Lévi-Strauss nestled explicitly among bibliographic references to Darwin, Simpson and Mayr, we see that to this molecular biologist, evolution is like myth-making – not merely in the sense of content, but in the sense of process. Organisms (or at least their genomes) are ‘bricolage’; they are built up piecemeal through time and jerry-rigged to work, the same way that myths are.

Thus, the anthropologically-inspired molecular view of biological evolution articulated by Jacob is diametrically opposed to the views of these self-consciously Darwinian anthropologies, in which all features are seen as adaptations of one kind or another – a view that Gould (1997) famously labelled ‘Darwinian fundamentalism’.

## **Darwinian anthropology 4**

Another theory that has become popular of late as an avatar of Darwinism is that the key to understanding human nature lies not with humans, but with the chimpanzee (Stanford 1999). This situation arises in large part from the concordance of the popularity of Jane Goodall’s work with our poorly-theorised genetic similarity to the apes (Marks 2002). It needs to be acknowledged, of course, that our views of the apes

have changed from Jane Goodall's early and earnest attempts to portray chimpanzees as primitive hippies, in the context of those times (Goodall 1971), to Richard Wrangham's more gothic representations (Wrangham and Peterson 1996) centred on male bonding and aggression, and yet based upon not merely the same species, but literally upon the same chimpanzees as Jane Goodall's work. The chimpanzees appear to reflect the historical and social human times as much as the ape times (Haraway 1989).

Once again, however, one is forced to interrogate the Darwinism here, in which humans and chimpanzees are frozen in time, and superficial similarities are taken to be profound identities. Contrasting threatening displays expressed by a human and a chimpanzee, it may be somewhat astonishing that some scholars actually need to be reminded that only one of the two species can effectively intimidate you with his teeth, only one threatens by piloerecting, only one threatens with technology, only one may not even know his antagonist personally, only one may not stand to gain something immediate from his aggression, and only one could simply be pretending because he is an actor and it's his job. The similarities stem from the fact that they are representatives of closely related biological lineages, with similar bodies, facial muscles and overall appearances; the differences stem from the fact that they have been separated for seven million years, that one has a brain three or four times as large as the other, and that they have immensely divergent social histories as a result. Size apparently does matter here, and the Darwinian relationship between their behaviours is not clear at all.

Whether a Darwinian approach to primate behaviour has anything to contribute to social anthropology is very unclear to me, given that the word 'kinship' in primatology incorporates neither marriage nor fatherhood. Like evolution and evolution, kinship and kinship are homonyms as well. And of course it doesn't stop there. For example, infanticide is generally committed in a non-aggressive context by a human mother or her agent for economic or social reasons, but is committed in a highly aggressive context by adult chimpanzee males presumably unrelated to the infant, who then eat the baby's remains (Hausfater and Hrdy 1985). The similarity is grossly overstated by placing the same label on both cases. It is simply not biologically self-evident that anything another primate does, even if homologous, is more than symbolically similar to what our species does, however interesting it may appear.

Nevertheless, asserting that the trans-species comparisons are similar, if not identical, for being at least subsumable under a common name, has broader consequences.

Among our darker qualities, murder has now been documented in innumerable animal species, genocide in wolves and chimps, rape in ducks and orangutans, and organised warfare and slave raids in ants (Diamond, 1992: 170).

Thus, the biology expressed in this association between murder, genocide, rape, warfare and slavery in humans, and in a diverse assortment of other species, is a metaphorical biology, independent of Darwin – based on some sort of meaningful similarity that transcends homology, that is, the derivation from a common ancestry that is the ostensible core of Darwinism. The similarity here between the species being compared is literary and symbolic, and thereby paradoxically meaningful, I might add, only to humans.

The alternative is not to see human nature as infinitely malleable, as Steven Pinker (2002) represents it, but to see human nature as sufficiently malleable so as to be awfully difficult to generalise about with any degree of scientific rigour. It is fairly obvious that

if we had the genes of a cow we would act like cows; but it is far less clear what having the genes of a human compels us, or even encourages us, to do that is different or distinct from what having the history of a human – or the history of a privileged educated modern urban human – compels or encourages us to do. In the absence of well-controlled experimental data, which is generally the way we distinguish among alternative causal hypotheses in science, we cannot say much about it except to be struck by the extent to which globalisation processes will make it progressively more difficult to collect the controlled data necessary to establish generalisations about human nature rigorously. (Although there never seems to be a shortage of poorly controlled data and shabby polemic on the subject.)

The last idea I'll raise in the context of metaphoric extrapolation is a proposition set forth by a biologist and a mathematician some thirty years ago (Trivers and Willard 1973). They argued that where the variance in male reproductive success is greater than the female – in other words, some males really cash in as genitors and others get shut down, but females crank out pretty much the same number of offspring as one another – then to maximize their representation in the next generation, parents in good condition should bias their reproduction towards males and those in poor condition should bias their reproduction towards females.

To some extent this is strategic modelling of a situation familiar to gamblers. With little capital, your best bet is the sure thing; with lots of capital, you can afford to take risks. So this is an eminently testable proposition about whether animals are following their optimal theoretical strategy for getting their genes into the next generation.

Here is how we apply it to primates. First, we assume the boundary condition about relative male and female reproductive variance holds. Then we see whether good parental condition favours boys and poor condition favours girls. And we find that it works for spider monkeys; they do indeed seem to bias their reproduction toward the appropriate sex (Symington 1987). And then we find it doesn't work in baboons. So we come up with an *ad hoc* explanation – a very sensible one – that a mother in good condition shouldn't have sons, who will leave the group at maturity, but rather have daughters, who will inherit her high rank (Altmann 1980). So assuming that male variance in reproductive success is uniformly greater than female across primate species, and that the magnitude of that difference is inconsequential, we indeed find that parental condition influences sex ratio in a particular way – unless it doesn't.

The transfer of this idea to humans, however, requires even more substantial revision. In humans, for example, marriage might tend to equilibrate the reproductive fitness of males and females. So we will have to bury the 'if' statement (that is, the boundary conditions for the prediction itself) and not actually probe the variance in reproductive success in men and women; and sometimes we will study sex ratio – the proportion of males and females – as the subject of the biological investment, as it was in the original paper. But often we will no longer measure biological indicators for the 'then' statement, but rather extend this to a broader metaphorical form of investment; for example, how much time is spent with sons as opposed to daughters. 'Good condition' will be measured by symbolic attributes such as wealth, prestige and status (Nielsen 1994) – things that are locally valued at best, and sufficiently ephemeral temporally as to be very difficult targets for natural or sexual selection to hit.

Losing the 'if' and extensively transforming the 'then,' what remains are simply observations of whether boys or girls are favoured in some way by some classes of parents – human behaviour thus largely disconnected from biology and from evolution.

Small wonder that empirical studies statistically tormenting data that relate social status to investment in boys and girls, sometimes show the expected bias and sometimes don't. A recent study, for example, looked for actual sex ratio bias along with socioeconomic status in America and failed to find the expected relationship (Keller et al. 2001). While there might be sentiment for the conclusion that Americans have simply not evolved, it is more likely the case, as the workers themselves conclude, that the Trivers-Willard hypothesis simply doesn't work as formulated. Of course, they did not bother to try and demonstrate a greater variance in reproductive success of males than of females, which is the condition that Trivers and Willard actually set for their own hypothesis.

Finally, it is not uncommon to encounter the claim that the data do not fit the predictions of the theory with modern populations, but would have fit in ancient populations, which have the decided disadvantage of not being amenable to study. Of course, one can make assertions with impunity about data that cannot be obtained. I would contend that arguing about non-existent data is only remotely identifiable as science, and is manifestly not Darwinism.

## **Darwinian anthropology 5**

The last item on my list is somewhat different from the others in that its referent is a bit narrower. It comprises the assertion that being a Darwinian, or even a scientist, directly implies a repudiation of religion or of the spiritual altogether. Aside from a disagreement with Wallace over the evolution of the human mind, Darwin again had little to say of relevance here. And certainly the famous inserted phrase 'by the Creator' in the last line of the second edition of *Origin of species* left no doubt that Darwin himself hoped to communicate the compatibility of his ideas with those of contemporary religion, or spirituality, or ultimate cause.

'The human mind,' writes E. O. Wilson (1998: 286), 'evolved to believe in the gods. It did not evolve to believe in biology.' And again, 'We evolved genetically to accept one truth and discovered another' (1998: 288). If the human mind indeed evolved to accept religion and not science, that would thereby incidentally issue a blanket absolution to the scientific community for being unable to evangelise entirely successfully for their views. Carl Sagan (1996) believed religious people were atavisms, throwbacks to stupider times; Richard Dawkins (1995) believes evolutionary science shows that life, the universe and everything have no meaning, as Jacques Monod suggested some years earlier, when he wrote 'The ancient covenant is in pieces; man knows at last that he is alone in the universe's unfeeling immensity, out of which he emerged only by chance' (Monod 1972).

As the American lawyer Clarence Darrow used to say, that would be interesting, if true. But it is in fact neither provable nor falsifiable, and therefore outside the domain of science as science is generally constituted. If the goal of science is to make people generally insecure and miserable, then it is being well advanced by such musings as these. But they are more reminiscent of H. L. Mencken's definition of theology: taking the unknowable and putting it into terms of the not-worth-knowing.

What these all share, of course, is the self-serving utopian goal of supplanting religion with science, as any number of progress-drunk theorists used to dream a hundred and fifty years ago (Bury 1932; Nisbet 1980; Ruse 1992). If Darwin believed any of it, he certainly didn't talk about it much.

## Attributes of a viable Darwinian anthropology

Drawing on the criticisms I have raised about the diverse self-referentially Darwinian anthropologies being advanced in the contemporary literature, let me conclude by sitting forth five boundary conditions for such an enterprise to be viable; that is, to establish a consilient relationship between Darwinism and anthropology.

First, acknowledge the divergence of humans from the apes, and the biological uniquenesses of the human species. This is the core of Darwinism, and is certainly compatible with all normative versions of modern biology and anthropology with which I am familiar. I have always found attractive the idea from feminist primatology that the origins of marriage in the dim past stem from a convergence of interests between paternity certainty for males and provisioning the young for females, in a species that has fewer cues about female fertility (notably the absence of visual, olfactory or behavioral cues; and the presence of permanent fatty deposits posterior to the female nipples, mimicking their appearance when lactating); and also has more prolonged maturation of the offspring than is found in their close relatives, so that either a female now has to increase the inter-birth interval dramatically, or else get reliable help (Lancaster 1991). In such a model, the human species is placed within the wider context of primate biology, but the realities of the uniquely human condition generate the evolutionary narrative.

Second, utilise the primate data in broader ways than simply seeing humans as chimpanzees, which itself harks back to the eighteenth century, when apes were first discovered by science and their similarity to us was grossly overstated (Marks 2002). For example, the pattern of human sexual dimorphism is unique among the primates of the Old World, with females averaging 80 per cent of male body size and differing not at all in canine teeth. This situation is, however, approximated in some New World monkeys and prosimians, which might well afford a basis for understanding the trajectory of this facet of human evolution (Strier 1994). I don't know of a primate model for the sexual dimorphism in human body composition, but it seems to me that one has to be prepared to acknowledge that humans may just be different from other primates in some ways. And standing alone, animals less closely related to humans afford little basis for understanding any aspect of human behaviour. Darwinism is about a hierarchy that exists as a result of the proximity of descent of the species comprising it; to ignore the structure of that hierarchy is certainly un-Darwinian.

Third, walk away from the genetic basis of specific behaviours. Just turn around and walk away. Forget the cockamamie twin-studies with the twins who marry women the same name and give their dogs the same name (Wright 1998; Wright 1999); forget the cockamamie gene-mapping studies that are never confirmed or even retract the genes a month after they're reported (Kennedy et al. 1988; Holden 1991; Rice et al. 1999). Some of it is ideologically driven, some is financially conflicted (Tucker 2002); some of it is just incompetent; but no scientific thoughtful critical Darwinian should be citing this stuff. It is entirely alien to Darwinism.

This is not to deny that there is any genetic link to human behaviour, but simply that it must be relegated to an exceedingly small role in the overall study of variation in human behaviour, given what we already know of the patterns inherent in human genetics and in human thought. The idea that units of heredity somehow map directly on to units of human behaviour comprises no part of Darwin's thought, nor of most representations of Darwinism. The invocation of a nebulously innate basis of

personality or intelligence owes far more to Galton than to Darwin, and it is difficult to believe anyone today could be naïve about the political interests converging on the claim that social inequality is a natural, as opposed to a cultural, fact (Herrnstein and Murray 1994).

Fourth, Darwin explained adaptation as a natural process, but he did not believe that everything was an adaptation; and neither should we. Along with the fittest, the merely fit survive; and natural selection, in Sewall Wright's (1932; 1960) metaphor, pulls their descendants up the nearest peak. Evolution takes what is there and builds on it. Sometimes it works, sometimes it doesn't, and if it doesn't, you play with it till it does. Notwithstanding the widely cited 'Spandrels of San Marco', popularised in Gould and Lewontin's (1979) critique of adaptationism, a Darwinian anthropology should simply acknowledge that evolution can indeed be like a tinkerer, not like an engineer. The discovery that culture is adaptive, in any sense of the term, is trivial; and the recognition that function and origin are distinctly different is certainly a classic position in anthropology.

Finally, even the most casual familiarity with religion as a cultural system requires acknowledging that the vacuum created by supplanting an origin myth will have to be filled in ways somewhat more complex than merely asserting that 'we came from monkeys, deal with it'. There is an assumption here, alien I think to the most basic anthropology, that origin myths are modular, so you can bracket them off and isolate them from other kinds of local knowledge; and other, very different and unrelated modules can simply replace them, leaving everything else more or less intact. A Darwinian anthropology should be as culturally sensitive as any other kind of anthropology; and if Darwinism is a missionary activity it needs to be regarded as a piece with other missionary activities.

I consider myself a Darwinian anthropologist; that is to say, someone following intellectually in paths first trodden by Darwin. I also consider that I follow paths laid as well by other influential scholars – Huxley, Boas, Malinowski, Dobzhansky, Simpson, Washburn – who built on Darwin's work, augmented, and to some extent superseded it. If we wish to represent both Darwin and anthropology ably, it is worth considering the contributions of other relevant intellectual ancestors in making our endeavours scholarly and rigorous. And let us also try to do justice to Darwin's own contribution.

*Jonathan Marks*  
*Department of Sociology and Anthropology*  
*UNC-Charlotte*  
*Charlotte*  
*NC 28223, USA*  
*jmarks@email.uncc.edu*

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