

# Deconstructing Darwin

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## **abstract:**

It is not irrational to criticize Darwinian theory, as being, in its developed form, an incitement to crime. The message of Darwinism in the abstract is that species are not natural kinds, and that there is no reason to expect 'evolutionary progress'. In its concrete manifestations, in Darwin's writings as well as in his followers', it is more usually assumed that the poor, sick, savage - and Irish - are 'unfit', and will be eliminated soon (unless a misguided compassion delays the process). Even a more sociable Darwinism (emphasising the value of social feeling, and even of self-sacrificing heroism) insists that we can only 'really' mind about our kin and those few others who might do us good, and should for that reason act to prevent the poor or sick or 'savage' from breeding. Darwinists, though inconsistently, allege that we are always bound to be enduring the Malthusian tragedy, and cannot expect people to be more rational, generous or compassionate than they would be in such dire conditions. Because there 'must' be such a struggle for survival we 'civilized' folk initiate it. These ethical effects do not flow from the bare bones of Darwinian theory (that we are all related, with four thousand million years of history, and that populations change their character in part because of differences in the number of viable offspring resulting from the particular traits of the parent population), but they are so entangled with Darwinism as this is popularly presented that we have good reason to complain when our children are taught such 'Darwinism' as the only rational theory. On the contrary, if 'Darwinism' were the only truth, we could have no interest in the truth, nor any reliable way of uncovering it.

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## Deconstructing Darwin

Charles Darwin was not the first to speculate that there were forms of life before us, nor yet that all forms of life - both past and present - were genealogically related. He was not the first to try to exclude all final causes from his account of nature. He was not the only one to notice that in a Malthusian struggle for life it is generally those with some obvious superiority (of strength, or wit, or versatility) that survive to breed. Conversely, he was not himself responsible for every element of the neo-Darwinian synthesis that has come to dominate mainstream biological circles, and the mind of the chattering classes. Notoriously, he was himself 'Lamarckian', in allowing for the inheritance of acquired characteristics, and pre-Mendelian in that he did not know how inheritance could pass particular characteristics down, rather than blending, and so homogenizing, variations. He was neither the first to find it difficult to reconcile natural evil and orthodox theism, nor as militantly atheistical as some of his disciples. There are traces in his writings of an intolerable racism, but also clear evidence that he was personally and politically humane - though I find the hagiographical tendencies in much scientific biography implausible.

Scientists regularly, and properly, insist that any new theory must be examined critically, and tested to destruction, before it is at last accepted as a working model for the profession. They will often also agree that the motives which particular scientists bring to that enquiry may be mixed. People with a personal and imaginative attachment to the Steady State theory of cosmology, or even a personal antipathy towards their academic rivals, are likely to devise all manner of ingenious objections to the Big Bang theory, and yet more ingenious *ad hoc* solutions to the objections others raise to them. In this way, both sides assist the other to appreciate what else must (or may) be the case if their preferred doctrine is to be approved. Science does not demand that every scientist be honest, open-minded and self-critical, but that the institutions of peer-review and team rivalry, fueled by whatever personal emotion, prevent too ready an acceptance of a plausible but faulty view. Oddly, when the same thing happened to Darwinian theory, it is assumed that the squabble must have been, and be, between 'true scientists who see that the theory is obviously, unanswerably and uniquely true' and 'shabby obscurantists who are either mad, or ignorant, or evil'. To state the obvious: Darwin's contemporaries, including the unfortunate Samuel Wilberforce, had every right to identify difficulties in Darwin's theory. Indeed, it was their duty to do so, even if they relished the task for 'non-scientific reasons'. Those who don't want a theory to be true are always likeliest to think of the best objections, and so to compel those who do want it to be true (namely, the original theorists) to refine or to abandon what they had said. There may be a moment when the argument is closed: no one feels like arguing the point again, and no one wants to pay for more research. Until that moment is reached, the argument isn't closed, whichever side is right.

It is unfortunately necessary to emphasise this point. In the present climate of academic discourse anyone who is prepared to consider objections to Darwinian theory, or even to contemplate revised versions or alternatives to that theory, is automatically supposed to be either a 'creationist' or a 'deconstructionist', and 'therefore' culpably anti-intellectual. I myself belong to neither camp: as a rational realist I merely claim the right to question Darwinists, and seek to understand the arguments of anti-Darwinists. There are several points at issue. I think it very likely that the history of life-on-earth extends back four thousand million years, and that all contemporary living creatures here on Earth are genealogically related. It is also clear that, on certain plausible assumptions, Darwinian change is bound to occur. It is less clear that Darwinian processes are all that are involved in the production of life's present diversity. Darwin himself dismissed the argument by elimination favoured by Sherlock Holmes and all too frequent a visitor in popular exposition. He *should* have dismissed the argument from parsimony: that nothing but what can be shown to be needed can possibly be relevant. The metaphysical and ethical implications frequently drawn from Darwinian theory are also ones that I reckon we have good reason to reject: if that required me to reject Darwinian theory I would do so as readily as Wilberforce. That clearly strikes some people as almost blasphemous, though they might not use the word. Surely, they say, we have a duty to the Truth which transcends any other ethical or religious demand? Surely, we must have learnt by now that 'science' cannot be halted or suppressed, and that it should accept no premises upon the authority of any sacred text? We must 'cut loose the natural history of mankind from the Bible, and place each upon its own foundation, where it may remain without collision or molestation'. But it is worth recalling what Josiah Nott, whom I have just quoted, was actually demanding, in his 'lectures on niggerology': the right to postulate, and

claim, that there were many different human species, with no necessary similarity or shared compassion. Is it *obvious* that people have a right to spread whatever tales they think are true, and that there are no other duties than one 'to the Truth'? Is it *obvious* that there is only one route to the Truth, and that we must abandon everything else to reach it? Is it obvious that only what is endorsed by a particular clan of 'experts' should be agreed?

The Church, at any rate of England, soon accepted Darwin as an honourable and creative man, and most scientists soon professed themselves converted – though they did not always agree to *Darwin's* theory. 'The view of evolution that was popular among scientists in the second half of the nineteenth century was saltative, directed, and progressive'. Some of those who thought of themselves as Darwinists expounded the same theory as those who thought, more plausibly, that they were anti-Darwinists! His critics found fault with his theory not because it contradicted *Genesis* but because it was too speculative for their taste, because it abandoned any notion that the way things should be affected how things were, and because (at least in his successors' hands) it identified whatever was most 'noble' in humanity with what was thought ignoble. We cannot easily now appreciate the degree to which 'apes' struck civilized observers as loathsome parodies of the human. Precisely because they looked 'almost human' it was difficult not to see what they were doing as base: bestial in a far more real sense than what was done by less-human-seeming beasts. We have ourselves been coached to believe that chimpanzees are friendly and amusing innocents – to the point where it comes as a shock to realize that they can also be cannibalistic, infanticidal, violent, abusive and neglectful (just like us). The thought that *we* are apes is likely now to be associated with the thought that we could manage quite well in small, anarchical communities (with lots of sex). In the nineteenth century (not necessarily less realistically) it meant that we are selfishly and sensually indifferent to nobility, that all our rhetoric about the grandeur of humanity is only an ape's breast-beating (and probably that we *want* lots of sex). According to Whewell,

'The thoughts of Rights and Obligations, of Duty and Virtue, of Law and Liberty, of Country and Constitution, of the Glory of our Ancestors, the Elevation of our Fellow-Citizens, the Freedom and Happiness and Dignity of Posterity, - are thoughts which belong to a world, a race, a body of beings, of which any one individual, with the capacities which such thoughts imply, is more worthy of account, than millions of millions of mollusks and belemnites, lizards and fishes, sloths and pachyderms, diffused through myriads of worlds.'

Darwin clearly implied that human beings are simply a set of primate populations, having the characters that chanced to help their ancestors to breed, and owing nothing to any objective beauty. But in that case Whewell's praise is only panegyric.

The simplicity of Darwin's theory now conceals from us the moral and metaphysical difficulty of what he said. On the one hand, science was held to be inductive: that is, it progressed by forming useful, law-like generalizations from accumulated instances. On the other hand, despite a century's distrust of formal and final causes, it was widely supposed that there were distinct ways of being, or ways of being beautiful, to which the natural world was constantly approximating. Physicists in the grip of that idea sought out 'beautiful equations' whose scope went far beyond the observations. Darwin did the same, so introducing deduction to biology, while also denying the efficacy of just those beautiful forms on which the physicists, implicitly, relied. Darwin also spoke at length of the 'nobility' displayed in human compassion, while simultaneously arguing that only incompetents would choose their worst stock to breed.

But what exactly was the theory he proposed? Seeking an explanation for the survival of particular variations, he read (he later said) Malthus's grim suggestion that any population vastly outstrips its food supply (a little oddly, since its food supply just is another such population), and that almost all the creatures of a given generation therefore starve to death. Malthus's later editions acknowledge that this is not always happening, and therefore conclude that there are devices in place to slow down such population growth. In nature nothing breeds until it has an appropriate territory; in human society the poor should exercise restraint. But suppose that Malthus's first grim prophecy is correct. In that case, Darwin saw, it would be the creatures with some slight advantage over others that would leave most living offspring. Insofar as their advantage was transmitted to their offspring, there would be more with that trait in the next generation. So

by infinitesimal stages the population would 'improve'. Each surviving generation would, on average, be 'fitter' than the one before. That 'fitness' might reside in almost anything: strength, craftiness, endurance, or mere fecundity. It is clear that Darwin initially had in mind those characters and practices which did the *individual* some good. But almost any trait, in appropriate circumstances, can explain greater success as a breeder. Consider, for example, phenylketonuria. In our ordinary environment, this condition is 'unfit', since sufferers are damaged by normal dietary doses of phenylalanine. The problem can be contained by imposing a strict diet, low in phenylalanine and high in tyrosine. This is, by present standards, unpleasant and expensive. But if our dietary environment were to be changed, it would be the rest of us that suffered and failed to breed. There may be traits that are 'absolutely unfit', but we cannot always know just what they are: most 'unfitnesses' are relative.

Generalizing the idea, we find that, given three conditions, evolutionary change is inevitable.

1. Individual members of a species have different properties.
2. Some individuals, because of their different properties, have more offspring than those with others.
3. Offspring resemble their parents.

Huxley, reading the suggestion, thought how silly it was not to have seen it for himself. In fact, others had made the same discovery, including Arthur Wallace, whose imminent publication of an essay on the topic triggered Darwin's own publication, and Edward Blythe, whose published work Darwin had almost certainly read (and never acknowledged). Richard Owen's comment was perhaps a little ungracious, describing the theory as

'no very profound or recondite surmise; it is just one of those obvious possibilities that might float through the imagination of any speculative naturalist; only, the sober searcher after truth would prefer a blameless silence to sending the proposition forth as explanatory of the origin of species, without its inductive foundation'

But he had a point, and maybe an excuse, since Darwin had chosen to suggest that the *only* alternative to his theory was a belief in special, miraculous creation (whereas Owen believed that there was another explanation in the theory of archetypes). Whewell too had noticed something similar, that the *extinction* of species could readily be explained by 'natural causes' (ones still working in the world we know). It is not so clear that their origin can be explained like this. The idea, for example, that there were once plant-forms fitted to years of different lengths (and only the ones that chanced to match the actual length of the terrestrial year survived) struck Whewell as 'too gratuitous and extravagant to require much consideration'. Rather than suppose that all imaginable forms existed (and were culled), better suppose that only some imaginable forms are genuinely possible, and required.

Quite what Wilberforce said in his debate with T.H.Huxley is obscure. He made, it seems, a joke about Huxley's ancestry, and Huxley retorted rudely. But the main thrust of Wilberforce's case, apart from the lack of strictly inductive evidence, was probably to do with an issue that still troubles theorists. It is all very well to say, quite plausibly, that (other things being equal) the faster antelope will live to breed. It does not follow that successive generations of antelope can therefore be expected to get ever faster, even if there is still the same pressure to get away from ever-faster, ever-craftier, ever more cooperative predators. Even if only very fast antelopes breed (and in all real situations this will not be true) the result will only be, at best, to ensure that the range of antelope speediness is narrower. No antelope will ever break the sound barrier, however long and forceful is the evolutionary pressure. We can't make giants, or geniuses, or immortals by allowing only the tall, the clever or the long-lived to breed. That may eliminate the congenitally short, stupid or short-lived, but does not make anyone taller, cleverer or longer-lived than anyone was before. As Fleeming Jenkin said in his review of *The Origin*, the notion of indefinite variation 'seems no more accurate than to conclude that because we observe that a cannonball has traversed a mile in a minute, therefore in an hour it will be sixty miles off, and in the course of ages that it will reach the fixed stars'. To get something new out of the breed, something that was not already part of the range of that breed's variation, demands a change that cannot be predicted, and should not - by Darwin's own account - be

expected. It may be that evolutionary pressure for, say, size, will create the circumstances in which a radical variation can find breeding partners. As long as most of the breed are less than six-feet tall an extraordinary ten-footer will probably not breed, even if his/her size does constitute a personal advantage. Once most of the breed are already more than six-feet the ten-footer may more easily find partners, and so propagate that trait. It does not follow of course that any successor generation will provide a *twenty*-footer. Only if there is some external tug towards increasing size, speed, complexity or intelligence, can we reasonably expect successive generations of any particular lineage to experience any such steady increase. Oddly, even those evolutionary theorists who denounce any appeal to final causes, or to evolutionary progress, will often themselves expect that creatures get quicker, smarter, and 'more complex', over generations, just because 'it pays'. But the fact that it *would* pay only explains why it occurs if we concede a strength to 'final causation' that it was the Enlightenment effort to deny.

Darwin lacked any account of how such sudden variations beyond the previous range of a given character might occur, or how they were not blended back into that range within a generation. He was entitled to insist that, somehow, it could happen, since exactly such mutations did visibly occur within domesticated breeds, and could be preserved. That most such mutations were, on their own, injurious (for example, being born without a tail or an important layer of fur) was not an objection to the developed theory, but some confirmation of it. If the mutations were designed, or guided, we could expect that they were ones a designer wanted: as it was, they appear to occur 'at random', and only a few turn out to bring eventual advantages. This does not establish, of course, that they were *not* designed: our own thoughts, so some have argued, occur at first 'at random', and those few which survive conscious and unconscious culling are the remnant of uncounted 'really bad ideas'. Maybe that is how every designer works: pushing at the boundaries of the immediately given, in the hope that something, somewhere, works a little better.

Wilberforce and others may also, with some justice, have objected that the one thing Darwin didn't explain was the origin of species. Maybe, as others (including Herbert Spencer) had suggested, a given variety of living creature would, over the long run, be descended from those creatures of that kind which had some obvious advantage. But what reason was there to suppose that this variation *within* a species would at some point generate a genuinely different species? Greyhounds may get faster with the generations (at least to the limit of their kind's capacity), but a very fast greyhound is still of the same species as a bulldog. Left to themselves our dogs would probably revert to the standard 'mongrel' dog-shape, throwing up an occasional sport, and maybe having regional varieties. Black moths may outperform white moths upon soot-darkened trees (and be outperformed in turn when the trees get cleaner): but the species survives precisely because it still contains both varieties. As long as we hold an essentialist or typological account of species, this objection seems conclusive. An individual dog cannot become a cat, however catlike it may be; neither can a dog, in the natural course of events, ever give birth to a cat. If there were an especially cat-like puppy it would either fail to breed at all (and that's the end), or it would contribute its own cat-like character to the breeding pool of dogs (and not be a new species). Science fiction writers like to play with the notion that a genuinely new species might start to be born of older stock - but it seems that this could only be the result of divine, or alien, intervention.

The mainstream response is to deny essentialist or typological accounts of species. If a species is only a set of interbreeding populations then a new one comes about when there are barriers to interbreeding: at first, perhaps, merely external ones (as it might be, a newly impassible river), or merely temperamental (some variations just don't fancy each other much). Once any such barriers exist the populations can begin to drift apart to the point where there are mechanical or chemical obstacles to any successful interbreeding. This need not be because 'it pays': it is enough that there is no strong advantage in retaining a capacity to interbreed with creatures we shall never meet. Irish wolfhounds and chihuahuas are a single species - but that is only because there are so many intervening sorts of dog. What we now know as genetic information can flow, albeit slowly, between even such disparate lineages. But suppose all other dogs died off: the remaining sorts of dog would then be different species, since they would not, could not, breed (most probably they would be more different, more isolated than are lions and tigers - which can, on occasion, produce live, though probably rather confused, hybrids). If two creatures were once of the same species and now are not, merely because some other creatures have been killed, it is clear that a species-difference is not an *essential* one. In general, creatures are not of different species because they look different, or even

because they have 'sufficiently different' genomes: they look different, and may also differ substantially in their genomes, because they are of different species (belong to different breeding-pools). Different lineages of Darwin's Galapagos finches have developed distinct adaptations: once they were isolated from each other, and had adopted somewhat different habits, different variations were selected. Nothing rules out the possibility that one pair of creatures, of the same species, is more different phenotypically and genotypically, than another pair, of different species.

Speciation, in fact, has much the same effect as geographical or temporal isolation, allowing somewhat different sets of genetic variations to come into being. There is perhaps an evolutionary advantage in the habit of speciation: lineages that divide themselves may, under certain circumstances, be more fruitful than lineages that remain a single breeding pool (and so cannot easily occupy so many specialised niches). Some later commentators have remarked that the creation of such small, isolated populations, whose initial characters have not been 'selected', may be an important engine of evolutionary change. 'Natural selection', in short, may not be the only explanation for endemic characters: they may merely be the ones a chance-met bunch of ancestors actually had (though they could as easily have had a different set). The pregnant wind-borne finch that, perhaps, engendered all the Galapagos finches was not necessarily 'fitter' than any of her sisters: on the contrary, she was the one stupid enough to get swept out to sea, and lucky enough to land. 'Being lucky' is not a heritable condition. Of course, it may be that such 'luck' is always merited, and that *every* general character of a given lineage (how about our susceptibility to the common cold, or the minor differences between chimpanzee haemoglobin and our own) is one that has played an important role in propagating that particular lineage. We have no sound empirical reason to believe that claim, of course, and in any case it does not truly establish that all such characters are best explained by their success. The chance that no superior mutation has occurred is just, from that character's point of view, as lucky as its own survival.

Typological or essentialist thinking is not wholly dead. Even if biological species are not natural kinds it does not follow that there are none. Some of the variations that occur within those kinds erect barriers against interbreeding, and so create biological species, but it remains an open possibility that there are, after all, more serious divisions. Amongst mainstream biologists in the West such essentialism is associated with the supposed errors of 'creation science', whose advocates believe that there is good reason to identify discrete kinds as God's initial creation. But the idea has been supported elsewhere, and for other reasons. In German palaeontology 'typostrophism' seems to have been the most successful form during much of this century. For typostrophists evolution 'unfolds' the potentials of a type achieved in a single jump, and such types have life cycles analogous to those of individuals. The idea was offered by Robert Chambers, in *Vestiges of the Natural History of Creation* – a book reviled by Huxley – in the context of an ingenious version of the argument against induction later formulated by Nelson Goodman! On this account new forms do arise all of a sudden, and without alien or divine intervention: 'the first bird hatched from a reptile's egg'. Selection only operates at a low level of taxonomic diversification ('microevolution'), and is irrelevant to the origin of higher taxa ('macroevolution'). More plausibly, perhaps, what serves as an adaptive variation will depend, for example, on what the organism is already choosing to do: a longer, thinner beak will be of no use to a Galapagos finch unless it has already elected to probe for insects rather than crack nuts. It follows that evolution is not simply driven by environmental change, but also by the organism's preference (as non-Darwinians have often hoped). Typological considerations of the kind that Richard Owen pointed to have also been reckoned relevant when parsed as *engineering requirements*. Convergence may reveal exactly the sort of archetypes he meant.

Darwin's theory was originally advanced in opposition to catastrophism: the view that earlier forms of life were swept away by natural disaster or (equivalently) divine fiat, and the earth restocked. Instead, vast differences were engendered by infinitesimal variations, over aeons. Macroevolution was no different from microevolution. On this account our own relationship to (say) *Homo habilis*, or yet earlier ancestors, is just like that of a wolfhound to a peke: if all ancestral types had actually survived, genetic information could flow back and forth without any abrupt halt. Although the eventual products of genetic change may look strangely dissimilar, they are linked through generations that were hardly unlike at all. The difference between ourselves and, for example, chimpanzees is simply that the intervening types are now defunct: human beings, chimpanzees and bonobos, it turns out, are even more closely related, genealogically, than

any of us are to gorillas. Because our ancestors are defunct, we do not see that we are, in a way, of a single species - just as wolfhounds, greyhounds, pekes and chihuahuas are a single species. 'In a series of forms graduating insensibly from some ape-like creature to man as he now exists, it would be impossible to fix on any definite point when the term "man" ought to be used. *But this is a matter of very little importance*'. Just such an impossibility, when comparing populations synchronically rather than diachronically, is employed a few pages earlier to show that distinct varieties are not different species. Our ancestors and ourselves are, obviously, members of a single population (though we cannot pass genes backward to our ancestors) - and for that reason every living organism on Earth is one of our relations. We are not 'essentially' of another kind than they are. 'If man had not been his own classifier, he would never have thought of founding a separate order for his own reception.'

This is a conclusion with which I have some sympathy (and have indeed written to similar effect to Dawkins in *The Great Ape Project*). What is strange to me is how few devoted evolutionists are really comfortable with that conclusion. If humankind is not a 'natural kind', and species-membership does not constitute an essential difference, what justifies insistence that all human beings 'have rights' that no non-human being does? What justifies even the weaker conviction that all human beings share important characters only with each other? Nothing in the notion of a biological species requires that any two members of one species resemble each other more (whether phenotypically or genotypically) than either resembles any member of a different species. It is an axiom of civilized society that there are no sub-varieties of human being whose characters are sufficiently different as to justify distinctive treatment, or excuse differing behaviour. Darwin was himself impressed by the surprising similarity of Fuegians and Europeans, but nothing in his theory demanded that result. Rather the contrary: he believed that man had ascended from a savage state given visible form in those same Fuegians. If there are enormous physical differences between different 'sub-species' there may also be enormous mental and moral differences.

The point can be given additional force by contemplating Olaf Stapledon's imagined future. Long after Earth and the inner planets have been destroyed, he feigns, our immensely remote descendants will inhabit a terraformed Neptune - but not only as creatures vaguely humanoid. All the vertebrate inhabitants of Neptune will be our descendants.

Two hundred million years after the solar collision innumerable species of subhuman grazers with long sheep-like muzzles, ample molars, and almost ruminant digestive systems, were competing with one another on the polar continent. Upon these preyed the subhuman carnivora, of whom some were built for speed in the chase, others for stalking and a sudden spring. But since jumping was no easy matter on Neptune, the cat-like types were all minute. They preyed upon man's more rabbit-like and rat-like descendants, or on the carrion of the larger mammals, or on the lusty worms and beetles. ... On [the] marine flora fed certain highly developed marine worms; and of these last some in time became vertebrate, predatory, swift, and fish-like. On these in turn man's own marine descendants preyed, whether as sub-human seals, or still more specialised sub-human porpoises. Perhaps most remarkable of these developments of the ancient human stock was that which led, through a small insectivorous bat-like glider to the great diversity of true flying mammals, scarcely larger than humming birds, but in some cases as agile as swallows.

A humanoid form eventually develops out of pseudo-rabbits. Stapledon's fantasy is flawed - or at least it is motivated by a conviction that the world is bound to reinvent the human intellect, and even the human form, if given half a chance. Later fantasists (such as Dougal Dixon) have been less confident that 'human' characteristics would reappear. If they would, we might enquire, why didn't they appear long since? An older view supposed that dinosaurs were lumbering monsters well surpassed by agile and quick-witted foes, our ancestors. More recent revivals of a sort of catastrophism have suggested that the dinosaurs were killed by an accident that might as easily have killed off others. Either some small population of small mammals accidentally survived (not because of any heritable character), or else there was a heritable reason (they were hiding, or they were better adapted to a sudden frost) which had not previously given them any great advantage. Either way the dinosaurs were at least as successful in their way as mammals are in theirs. As another of Darwin's critics, Adam Sedgwick, insisted: 'the reptilian fauna of the Mesozoic period is the

grandest and highest that ever lived'. But in that case, if it's obvious the human-like intelligence appears when given half a chance, why wasn't there a humanoid saurian?

The thesis (which Stephen Jay Gould has defended with no anti-Darwinian intent) that sheer accident played a larger part in evolutionary history than Darwin thought is offered as a further blow to anthropocentric arrogance. Catastrophe, which isolated small, chance-met populations, with their accidental, non-adaptive characters, engendered novel species. There are creatures with human characters (namely, us), but not because there need to be, nor even because our special ancestors were bound to win. It just so chanced that some small population of hominids survived where others didn't. The thesis is less strange to orthodox religion than Gould supposes: 'a wandering Aramaean was my father'. It has never been sensible to think that God was required to select Israel, or Adam, or that they survived because they were, of themselves, 'more fit'. Saying that they just happened to survive is only a different way of saying that God willed that they survive, but for no earthly reason.

What is it, in any case, to be 'more fit'? 'Social Darwinists' followed Herbert Spencer in conceiving that individual organisms which managed to secure a larger share of relevant resources would leave more descendants, and so propagate the heritable characteristics that had enabled them to prosper. We should expect that stronger, swifter, smarter organisms had more children, or more grandchildren. Strangely, this led some of Darwin's followers, including his own children, to conclude that the State should take 'eugenic' measures to ensure that the fitter were not outproduced. Very unfortunately, it was said, human societies helped the 'unfit' to survive and reproduce: if the human species was not to regress, or vanish, we should take all appropriate steps to sterilize, or kill, the weak and stupid.

Or as Mr. Greg puts the case [so Darwin tells us]: 'The careless, squalid, unaspiring Irishman multiplies like rabbits: the frugal, foreseeing, self-respecting, ambitious Scot, stern in his morality, spiritual in his faith, sagacious and disciplined in his intelligence, passes his best years in struggle and in celibacy, marries late, and leaves few behind him. Given a land originally populated by a thousand Saxons and a thousand Celts - and in a dozen generations five-sixths of the population would be Celts, but five-sixths of the property, of the power, of the intellect, would belong to the one-sixth of Saxons that remained. In the eternal "struggle for existence", it would be the inferior and *less* favoured race that had prevailed - and prevailed by virtue not of its good qualities but of its faults.'

It is understandable that those who were described as weak or stupid (namely, the poor, the savage, the Irish or the Catholic) regarded Darwinism as an excuse for tyranny. It is also understandable that others reckoned that 'the upper classes', defended from Darwinian competition by ancestral privilege, were destined in the end to be replaced. Fortunately, or unfortunately, the aristocracy, by marrying heiresses, were selecting for sterility, 'and noble families are continually cut off in the direct line'. A similar accident has befallen Spain: by demanding priestly celibacy, and burning heretics, the Catholic Church has damaged Spanish stock.

Looking to the distant future, I do not think that the Rev. Mr. Zincke takes an exaggerated view when he says: 'All other series of events - as that which resulted in a the culture of mind in Greece, and that which resulted in the empire of Rome - only appear to have purpose and value when viewed in connection with, or rather as subsidiary to ... the great stream of Anglo-Saxon emigration to the west.'

The war of each against all which Hobbes had identified as the 'state of nature' might result in occasional lucky victories. But the natural assumption must be that those who secured a larger share of the relevant resources for themselves and for their descendants were not simply lucky: rather they shared some winning character. Spencer thought that individually successful entrepreneurs would win - and if they didn't, this must be because they had been cheated of their due reward. An alternative view, associated with Peter Kropotkin but also, so it seems, more true to Darwin's own convictions, was that the winning character was social. Tribes whose members worked together were more successful than tribes whose members fought each other to the death. Tribes which allowed every member an equal stake in the common resource were

more successful - or so Kropotkin and all right thinking liberals supposed - than ones which rationed resource by rank or ancestry, excluding the lowliest from any good beyond what they could grab for themselves. Darwinian competition, commonly so called, only occurs at the fringes of society, or in society's collapse. In more usual times and places, whether human or non-human, the successful types are those which manage to cooperate.

Huxley supposed - as some modern evolutionists also suppose - that 'human morality' is at odds with 'natural order'. The law of the jungle tells us to compete without a qualm for relevant resources, but the social law requires us to restrain our greed. Kropotkin - and some modern evolutionists - retort that solitary, selfish predators are very rare: the social law and the law of the jungle are agreed. Better cooperate than compete. In any such social species the occasional free-rider is detected and restrained: the road to survival and to successful reproduction is by agreement. Even if we choose to identify the 'gene', rather than the individual organism, as what, in the abstract, competes for space in later generations, the moral is not that 'selfish genes' survive by making selfish creatures. The most successful genes have made themselves indispensable to larger groups, and are neither themselves 'selfish' nor encourage 'selfishness' in their agents. This remains a Darwinian theory: it is those creatures which are themselves successful that can be expected to have more descendants - but the grounds of success, in life and in the reproductive stakes, is not entrepreneurial egotism but the capacity to work with others to a common goal. It is simply simple-minded to insist, against available evidence, that greedy and cold-hearted millionaires have more descendants, over the long run, than do the poor but honest. It is also simple-minded to suppose that honesty and kindness are reliably heritable characters. According to Darwin, 'some elimination of the worst dispositions is always in progress even in the most civilized nations'. In saying so, he assumes far too rapidly that there is a simple correspondence between phenotype and genotype: the truth is that the same genotype under different circumstances engenders different phenotypes, which will be more or less successful in reproducing their genotype. The enterprise that in one context earns a prison sentence may, in another, earn a peerage - and which has more descendants is another matter entirely.

Kropotkin is far more plausible than Spencer, and more in tune with Darwin's own likings. 'A nation which produced during a lengthened period the greatest number of highly intellectual, energetic, brave, patriotic, and benevolent men, would generally prevail over less favoured nations.' The virtues that Darwin expected to succeed are not simply those of individual energy: only if that energy is deployed for 'patriotic' and 'benevolent' ends can the nation benefit. 'Selfish and contentious people will not cohere, and without coherence nothing can be effected.' But patriotism and benevolence are not quite the same, nor yet is 'social coherence' just the same as justice. The sort of heritable virtues that - so to call them - *Sociable* Darwinians have in mind are nepotistic. The truly selfish and coldhearted leave no heirs: to succeed in the Darwinian struggle we must ally ourselves with others, and provide for those likeliest to be our kin. Equivalently, we must not establish a social order in which our rivals breed 'like rabbits', nor yet allow 'a few wandering savages' to occupy good fertile land.

Both sexes ought to refrain from marriage if in any marked degree inferior in body or mind. ... All ought to refrain from marriage who cannot avoid abject poverty for their children; for poverty is not only a great evil, but tends to its own increase by leading to recklessness in marriage. ... There should be open competition for all men; and the most able should not be prevented by laws or customs from succeeding best and rearing the largest number of offspring.

Darwin was, personally and politically, humane - and yet: 'We civilized men do our utmost to check the process of elimination; we build asylums for the imbecile, the maimed, and the sick; we institute poor-laws; and our medical men exert their utmost skill to save the life of every one to the last moment. There is reason to believe that vaccination has preserved thousands, who from a weak constitution would formerly have succumbed to small-pox. *Thus the weak members of civilized societies propagate their kind.* No one who has attended to the breeding of domestic animals will doubt that this must be highly injurious to the race of man. It is surprising how soon a want of care, or care wrongly directed, leads to the degeneration of a domestic race; but excepting in the case of man himself, hardly anyone is so ignorant as to allow his worst animals to breed'. Darwin goes on to say that we cannot 'check our sympathy' without 'deterioration in the noblest part of our nature', and must therefore be less ruthless than that passage might suggest. Quite

what justifies this unnatural enthusiasm for a damaging 'nobility' he does not explain. It also does not seem to have occurred to him (or to his disciples) that until there is a hospitable environment for all we simply cannot tell what 'faults' may be inherited. Darwin's own health was not of the strongest: if he had been born into a lower layer of society he might have died untimely. How many other 'Darwins' did? Once again, this is to confuse genotype and phenotype.

Darwin's peroration extols 'man's noble qualities, with sympathy which feels for the most debased, with benevolence which extends not only to other men but to the humblest living creature, with his godlike intellect which has penetrated into the movements and constitution of the solar system', but nothing in his theory makes it likely that there would be such a creature. The energetic Anglo-Saxon of his dreams will cherish his own kin, and look with equanimity on the elimination of savage races, or the sterilization of the 'unfit'.

At some future period, not very distant as measured by centuries, the civilised races of man will almost certainly exterminate and replace throughout the world the savage races. At the same time the anthropomorphous apes, as Professor Schaffhausen has remarked, will no doubt be exterminated. The break [between man and his nearest kin] will then be rendered wider, for it will intervene between man in a more civilised state, as we may hope, than the Caucasian, and some ape as low as a baboon, instead of as at present between the negro or Australian and the gorilla.

That is why, so G. Stanley Hall suggested, there is a gap between the fossil apes and us: our ancestors eliminated all the 'missing links'. H.G. Wells looked forward with relish to sweeping away 'those swarms of black and brown and dirty-white and yellow people'.

So a 'higher morality' is after all at odds with a 'natural ethic'? Darwin's fierce hostility toward the notion of priestly celibacy - an hostility he passed down to his children - is evidence of his preference for a 'natural' ethic, one which permitted or encouraged the 'fittest' to hand on their heritable qualities. How can it be that there are celibates at all? Any tendency towards celibacy must surely be one of the strongest candidates for deselection. More recent Darwinists have suggested that such cultural forms are parasites, 'mental microbes', 'memes', which ensure their own proliferation even at the expense of sterilizing or otherwise damaging their hosts. Alternatively, if celibacy (or a liking for celibacy) were an ordinarily heritable trait, perhaps it survives by giving some 'advantage' to the bearer's relatives. As Darwin himself noted, even if especially sagacious members of an early tribe 'left no children, the tribe would still include their blood relations'. Again: 'there can be no doubt that a tribe including many members who, from possessing in a high degree the spirit of patriotism, fidelity, obedience, courage, and sympathy, were always ready to give aid to each other and to sacrifice themselves for the common good, would be victorious over most other tribes; and this would be natural selection'. It does not seem to have occurred to Darwin that celibate priests might give that sort of advantage to their tribes. If it is sensible to propose that 'the gay gene' survives because gay men have more time and energy to spare to look after their sisters' children (really?), the same might be said of a 'celibacy gene'. It can also be argued that even genes which, occurring homozygously, inflict disaster may survive and prosper just because, in their heterozygous form, they contribute some special excellence: if the gene for sickle-cell anemia survives because it is only lethal when it is inherited from both parents, and actually advantageous (as securing resistance to malaria) when inherited only from one, the same can be said for any gene at all (and rarely be refuted). The distinction between genotype and phenotype is too often forgotten: a genotype that is selected, at one remove, because its usual phenotype is - for whatever reason - more successful than its rivals, may have quite other effects in other circumstances. Most of those who are now gay or even celibate might easily, in other circumstances, have been more fertile than those with other genes. It is only very recently that gay men would have had the option of refusing heterosexual intercourse (and so fatherhood). Breeding couples have not had to like each other, or the act. Would-be celibates may well have fathered (or mothered) just as many children as more amorous folk: maybe they fathered or mothered more ('profligate women bear few children, and profligate men rarely marry'). Hardly anyone, till very recently, would have seriously said that copulation was his/her only goal, and those that did (like Don Juan) were not necessarily most fertile. Is it remotely plausible to think that every heterosexual male desires to impregnate as many women as he can, and everything he does is guided to that end? Is every fertile woman really surrounded by a horde of competing suitors? Even the

Ik don't act like that. To ask the obvious question: did Richard Dawkins really only write his books so that there might be many little Dawkinses, and does he only believe his theories so as to promote that end? Has he succeeded? And if that is the explanation, and also the explanation for the theories' popularity, must we not begin to disbelieve them? If I believe that I only believed a theory because it was in my interest to do so, I have already begun to disbelieve.

David Stove has pointed out that the Malthusian axiom is clearly false for humankind (and probably false for most other animals). It is just not true that all human populations are *always* at the very limits of sustainable growth, so that there is a constant battle to achieve a bare share of the available resources. If that were our situation, then we could indeed predict that those who did not seize whatever they could for themselves and for their relatives, as well as those who did not bother to have children, would quickly find their distinctive heritable traits eliminated from the population. But there are - even nowadays - far fewer actual people than there are possible people, and famine conditions have always been the exceptions (nor are such famines produced by a simple increase in the population). It has not been true for humankind in all recorded history that 'of the many individuals which are periodically born, but a small number can survive'. Nor has it been true - it is indeed Darwin's complaint that it is not true - that the poorest and weakest members of society have the fewest children. It is not even clearly true that 'the struggle for existence' is going on, remorselessly, among the poorest, and each new generation of the poor, accordingly, is fitter, stronger, quicker, healthier than the last. Some regions of late Victorian Britain perhaps offered a model for the Malthusian tragedy: my own great-grandfather was the last survivor of twenty-two siblings. But the others were not starved to death, and neither did he survive just because he was the stronger. He simply survived some childhood illnesses for who-knows-what contingent reason, and was not down the mine when the roof fell in. Those ideologues who chose to regard class-stratification, overcrowding and careless mine-owners as necessary tools for the betterment of the species were choosing to believe that there was no alternative arrangement, that any attempt to improve the lives of the urban (and the rural) poor would leave us all worse off. They were mistaken.

By believing that we were all really, and permanently, enduring the Malthusian tragedy, Darwinians could excuse such treatment of the poor as they would not, being sympathetic souls, have wished to engineer: they could, in fact, pretend to themselves that it was something that they had not engineered. Harder-headed and harder-hearted Darwinians could go that one step further: claiming that they were 'doing good' (or at least doing good for them and theirs) by seizing whatever advantage beckoned. Behaviour that we might all forgive in desperate men, condemned to a bleak subsistence, was suddenly unavoidable, and 'right', because we must be always in that desperate state. 'The Darwinian theory of evolution *is* an incitement to crime: that is simply a fact' (says Stove). It incites to crime because it suggests that people are bound, 'really', to be no better than nepotistic, and bound to disguise what's really going on with talk of self-restraint, propriety, nobility or righteousness. Darwin himself preached sympathy (even for such savages as he supposed he'd seen in Tierra del Fuego, and even for such careless, squalid, unambitious and superstitious Irishmen as English ideology demanded must exist). But he offers no clear reason *why* such sympathy should be appropriate: a harder-headed Darwinian might have responded to an advocate of *laissez-faire* that it was indeed in our interests that 'no poor Briton should be forced to beg or steal, or take any other vicious course for bread, .. and that none of our commonalty who are willing to work should on working days be obliged to be idle, but that all such persons of both sexes and all capacities may know where they may be received and employed'. But that national interest need not extend beyond the nation's borders: if nations are weakened by the presence of the idle or the helpless poor, we have some national interest in helping them to work - and an equal interest in weakening other nations. There is a reason for the Opium Wars, and every other underhand device to seize an available advantage. Those who say they won't must have some deeper plot in mind, or else themselves be misled by their masters, the mad molecules. All any of us 'really' want to do is what will maximize the chances of our genes taking up more space in the next generation's gene pool. The brutal route to this event is war: kill our competitors and rape their women. More subtle routes are preferable, perhaps, but only because they evoke less resistance.

What is inevitable cannot be avoided. If human beings, like every other creature, are always bound to have produced as many children as they can possibly support, and bound to procure whatever further advantage for their children, nieces and nephews, and second cousins twice removed can be obtained by an

appropriate outlay, then so they will. The fact that Darwinians so often seem obliged to reveal the error of our ways (in having fewer children than we might, or giving help to unrelated strangers) is reason to suspect the theory. Not all the difficulties for Darwinian theory are real. Stove is a little unfair to E.O. Wilson and to Richard Dawkins, for example, in suggesting that they don't appreciate why animals accept submission signals (rather than killing their rivals when they have the chance), or why they don't allow others to abduct and rear their children. The point is not that Wilson and Dawkins cannot themselves feel the appropriate emotions (and so are puzzled by behaviour that makes, to them, no sense), but that it may seem, at first, that the behaviour they describe is less 'fit' than it might be. The answer may be simple enough: fighting to the death is always damaging (even for the victor), and willingly abandoning one's child to an abductor is incompatible with the attentive care that must be given to children if they are to survive at all. Cuckoos, of course, do abandon their children, but not to other cuckoos.

'Natural selection follows from the struggle for existence; and this from a rapid rate of increase.' Since Darwin immediately goes on to deplore the sad result when 'the struggle for existence [is not] sufficiently severe to force man upwards to his highest standard', and 'a few wandering savages' occupy 'enormous areas of the most fertile land .. capable of supporting numerous happy homes' it seems strange that he continued to believe in any such constant natural increase, or in natural selection. Elsewhere he contends only that 'man tends to increase at a greater rate than his means of subsistence; consequently he is *occasionally* subjected to a severe struggle for existence, and natural selection will have effected whatever lies within its scope.' The argument seems to be that since we *have* evolved, and evolution demands that some traits have been favoured at the expense of others, we *must* have been subject to the Malthusian nightmare (even though we manifestly weren't). On these terms evolutionary pressure must only be intermittent: much of the time human (and probably other) populations are well within the carrying capacity of their habitat, and there will be no 'struggle for existence' to eliminate the less fit. This doesn't mean that evolution stops dead: it may still be true that heritable characters which offer even the slightest increase in the number of viable descendants will spread through the population. We simply have no way of saying what those characters might be, especially since even *neutral* characters may also spread, by chance.

Believing that there must be such a struggle, we initiate it. The civilised races, remember, will soon exterminate such savage errors as still persist - or maybe, on a lighter note, absorb them, if it turns out that all sub-species are interfertile (but that is not what he says). Whatever heritable traits stand behind the civilised races' greater energy, inventiveness, rapacity and lack of self-control will certainly infect the later generations of our species. It is not certain that this will be good for us, nor that we shall not 'regress'. The Greeks 'who stood some grades higher in intellect than any race that has ever existed' still 'retrograded from a want of coherence among the many small states, from the small size of their whole country, from the practice of slavery, or from extreme sensuality, for they did not succumb until "they were enervated and corrupt to the very core"'. Let that be a lesson to us all.

One further familiar inference: the differences between men and women are to be explained as natural consequences of our evolutionary past.

Woman seems to differ from man in mental disposition, chiefly in her greater tenderness and less selfishness. ... Woman, owing to her maternal instincts, displays those qualities towards her infants in an eminent degree; therefore it is likely that she should often extend them towards her fellow-creatures. Man is the rival of other men; he delights in competition, and this leads to ambition which passes too easily into selfishness. These latter qualities seem to be his natural and unfortunate birthright. It is generally admitted that with woman the powers of intuition, of rapid perception, and perhaps of imitation, are more strongly marked than in man; but some, at least, of those faculties are characteristic of the lower races, and therefore of a past and lower state of civilization. The chief distinction in the intellectual powers of the two sexes is shewn by man attaining to a higher eminence, in whatever he takes up, than woman can attain - whether requiring deep thought, reason, or imagination, or merely the use of the senses and hands.

Comment seems superfluous. Not only is the mental and physical superiority of male to female assured, but even the characters in which women surpass men are suddenly symptomatic of an earlier and lower state of civilization. The future lies with energy and perseverance, in which a few exceptional women might perhaps be trained, but not the 'whole body of women', who must always lag behind.

The Enlightenment abandonment of 'final causes' was a methodological device, founded in a commendable humility about our chances of unraveling God's reasons for His acts. But what science chose to ignore (for its own purposes) became ignorable: if science knew nothing about such value, how could values ever be known at all? But in the guise of archetypes, such final or formal causes were still significant. When Darwin changed those archetypes to ancestors, and even made it evident that some ancestral types were nothing like their descendants, the last lone ghost of beauty disappeared. Lineages last for many reasons, but their being, variously, 'fit' has nothing to do with being beautiful. Indeed, being beautiful is without effect at all – unless by way of sexual selection. It is not only 'nature' that selects successful breeders: so do potential mates (though of course their judgement is subject to Dame Nature's rule). 'Being beautiful' is only having a character that will attract a mate, or – by extension – any sort of attentive care. We used to care for children, and admire that care, because we thought it beautiful, and them. Now, so Darwin led us to suppose, we think them beautiful because we care for them. It's not that we condemn infanticide because we think it's wrong, nor because we reckon children worth the cost: we think it's wrong because we love our children. We don't love them because we see that they are lovely: we think them lovely, because we find we love. Beauty is not a feature of the world that has its own effect on us: instead it is a projection of the emotions that we feel for merely Darwinian reasons. Even our tendency to believe that beauty is a causally important power, an objectively real datum, is engineered by genes that get an advantage from our fond delusion.

Some moralists have thought it didn't matter. Loveliness and dignity are an obvious part of *our* experienced world. In judging that a child is lovely why should we need to think her loveliness would survive our loss of love? Why should an imagined beauty that persisted even if we never cared for it be relevant to anything we cared for? The only evidence we could have that a joke is funny is that people laugh at it: what would be the point of claiming that my jokes are *really* funny, although no one laughs (not even me)? Their being funny just is the fact that we laugh. The beauty of children just is our loving them. The beauty of noble deeds is the admiration they excite. Realizing this should make no difference:

'Parents are no more likely to stop loving their children once they understand the role that such feelings play in the perpetuation of their genes than they are to cease enjoying orgasm once they understand its evolutionary role.'

On this account 'unweaving the rainbow' does not damage beauty: on the contrary, some have thought, it adds new levels of enjoyment when we realize what's 'really happening'. But Hull's claim (not his alone) is plausible only because we have already taken a step away from older ideologies. It is implicit in this claim that parental love and orgasm are just natural events, owing nothing to the beliefs and projects of particular human beings, and not intimations of the divine. All Dante really wanted was to get Beatrice into bed, and nothing would have altered in his heart if he'd come to believe that she was not an eternal beauty. Romantic love is easily deconstructed: why should we suppose that we will feel it still once we have realized its origin? Parental love is also, in large part, an artifact. Consider it a device, deployed by infants, to secure themselves: the unfortunate birds whom cuckoo-chicks control would feel quite differently if they could wake up. Is parental love, even as a 'natural' feeling, so secure? Parents have been known to shake or strike their children, to abandon them or kill them, without obvious qualms. No doubt those patterns of behaviour too can be made to seem the 'fitter': better unload unsatisfactory kids and start again, especially if they might not be ours. Even if we manage to endure the costs of caring, there will come a moment when we wish them gone. Is it obvious that sacrificial care will long outlast the discovery that kids are cuckoos? Even before we noticed, our care was less than perfect: knowing that the passing enjoyment of parental love is only a trick to keep us careful of our genes, will we really be as caring?

In the older ideology we were held to our duty by the conviction that the care we felt, and the objects of that care, were beautiful. Doing the right thing because we saw it to be right is likelier to lead to action than

our passing fancies, especially when we know those fancies' roots. When modern Darwinists, like Dawkins, urge us to rebel against 'the selfish genes' they cannot appeal to any higher standard than our own desires. In which case, it will probably be the stronger and more self-focused wishes that are preferred to any difficult devotion. 'Who isn't tempted', Epictetus said, 'by attractive and wide-awake children to join their sports and crawl on all fours and talk baby talk?' But this is a passing fancy, no more a judgement of right reason than the wish to swing the brats against the nearest wall. Epictetus, I should emphasize, supposed that there was a right way of behaving, revealed in part in what was 'natural'. Having been guided to that one right way by the pleasure that we sometimes get from it, we can sustain it even through its pains. It is one thing to do something because it's right, or beautiful, or noble. It is quite another to do it because we enjoy doing so. Is it even the same thing that we enjoy once we have given up the thought that it is right to do it? Do we even enjoy it just as much when we have realized why we once did?

Adam Sedgwick was right to think that Darwin's theories subverted normal moral sense. If Darwin was right that beauty, or moral beauty, had no part to play in making us have the feelings that we did, any more than it determined what the forms of life might be, then our feelings could have no more weight than their immediate strength could give them. Moderns fail to see the problem because they have already forgotten what was meant.

'As it is not for those to speak of the graceful forms of the material world who have never seen them or known their grace - men born blind, let us suppose - in the same way those must be silent upon the beauty of noble conduct and of learning and all that order who have never cared for such things, nor may those tell of the splendour of virtue who have never known the face of Justice and of Moral-Wisdom beautiful beyond the beauty of Evening and of Dawn.'

In brief, there seems good reason to suspect that Stove and other, earlier critics were correct. Darwinism - by which I mean the metaphysical and ethical theory, rather than any more cautious, and partial, scientific theory - is an incitement to crime: the robber barons who took comfort from Social Darwinism did neglect the strong Darwinian reasons to believe that success is not always to the swift or strong or crafty. But Sociable Darwinism is no great improvement. If successful tribes must always be composed of people who are loyal, brave and energetic in pursuit of tribal goals, this will bring especial comfort to another sort of robber baron, eager to be convinced that kindness is only misplaced maternalism, and that caring for the poor, or hoping to educate women to the highest standard, or conceding land-rights to a wandering savage is not just bad for his bank-account, but for the nation's. It follows that we have every right to be perturbed if neo-Darwinian theory, in Social or Sociable form, is taught to our children as an obvious truth which only obscurantists can dare to question. Social Darwinists destroy society; Sociable ones - or National Socialists - may yet destroy the world. Neither kind, it seems, can ever quite understand what others have against them.

Even more traditional moralists, of course, concede (or state) that every organism wills its own continued being, and is attached to other things in some proportion to their involvement in its being. It is *natural*, the Stoics held, 'for human beings to be friendly and philanthropic, to live in organized communities, to possess private property, to marry and have children'. It is also right, they went on to say, to recognize every human being as sharing the one nature, and to strive to treat all others as we would treat our nearest kin. It is even right to recognize the world itself as something more than *our* world, structured by our needs and fancies. The wise will realize that all of us together make the world. Stoics remained more anthropocentric than seems sensible: whereas the Platonic and the Biblical traditions alike insisted that human beings were not the most important creatures that there were, and weren't the only reason for the world's existence, Stoics tended to suppose that everything must be 'for us', and should be used at will. Even things we might at first think pests were for our good: 'bed-bugs are useful for waking us, and mice encourage us not to be untidy'. But even Stoics would have rejected any notion that the proper use of things was simply to satisfy our appetites (which could not ever be satisfied, since they grow with their own fulfilment). And even Whewell, whose praise of human being I quoted earlier actually acknowledged, and even insisted, that every sort of creature was created for its very own sake, as being beautiful, and not just for us.

Traditional morality, not only in the West, has rested on the notion that there are forms of life in which all human beings can find satisfaction. Ever since the Axial Age we have supposed that human beings everywhere deserve respect, and that we should not take hold of everything as if it were exclusively our own. The Spaniards whom Darwin so despised took the trouble to debate their treatment of the Indians, and drew the true conclusion that they merited the same respect as any human creature. Every such creature, however strange it seemed, was one for whom Christ died, and any service given them was claimed as service done to God. That there were greedy and rapacious Spaniards (as there were also greedy and rapacious Aztecs) is obvious: at least they did not claim God's licence to be greedy and rapacious, nor Nature's either. Even those traditionalists who made much of the great divide between the Human and the merely Animal usually acknowledged that the animals were also God's creation. Darwinians, in breaking down the wall between the human and non-human, have too often implied that, being animals, we must expect to behave as we supposed that 'animals' or 'savages' do. Stove's comment is apt: 'human societies are almost inexhaustibly various, but there is one thing which *no* human (or even animal) society is even remotely like: namely, "savage" life, and civilised life below the veneer, *as selfish theorists conceive it*'.

My intention is not to deny that there has been evolution, nor that all living creatures here on earth are genealogically related. Even those claims go beyond the merely scientific: as Philip Gosse pointed out, all the available evidence is quite compatible with God's having begun the world, in much the shape we see, a few millenia ago. That there 'really was' a time when 'dinosaurs ruled the world' is as metaphysical a claim as that there really wasn't. All science can say is that it is as if they did. I have no quarrel with that metaphysic, of a real past time, though I think it harder than some have thought to make much sense of what the world was like before there was a mammalian or human vision of it. My quarrel here, however, is with the mechanism Darwin theorised for evolution, and its ethical implications. In its strictest, least fudged form, this demands that we believe that every sort of creature is struggling for existence and for a share, by proxy, in the next generation. We are asked to believe (without the slightest evidence) that any sudden mutations from which radical new types can grow are not ones that a providential force intended (as Asa Gray, for example, argued), but only the ones that happened, without reason. God never summoned anything or anyone into seclusion to allow a novel form to emerge, though just such seclusions happened, and had effects. We are asked to believe, in turn, that only those behaviour patterns which would survive in dire circumstances can be counted on: whether those patterns are those of Social or of Sociable Darwinism hardly matters. Either way the laws of justice and right reason that our moralists have preached are bogus: the future will be as Orwell's O'Brien told us - a boot stamping eternally upon a human face. Those who believe they'll wear the boots may find this prospect comforting: the rest of us will not.

Virtue - as every moralist since Socrates has noticed - is not hereditary, and even Darwin usually only *hopes* that it may perhaps become so. It does not follow that it is not persistent. The prophets of the past have realised that, left to ourselves, we may indeed become fat, lazy and indifferent to the pains of others. It has been their claim that something new is always being intruded into history and the natural world, the radical claim that virtue is not measured by expectable, worldly triumph. They have claimed, in brief, that the world of nature is not closed, that something different interferes to remind us whence we came. They may, of course, have been mistaken: maybe their words are only mental microbes of the sort that interfere in a decent Darwinian 'progress'. But as before, this claim is as metaphysical, and as value-laden, as its opposite. Those of us who hold to the faith have at least this comfort - that it is not the expectably successful who have left their mark most clearly on our history. When the great, self-praising empires have all fallen, it is still the wandering Aramaean, summoned at seeming random from the nations of the Middle East, or the mendicant princeling who abandoned palace, wife and child to seek enlightenment, or else the Crucified Himself, who have preserved such images of decency as we still have.

It is an axiom of sound philosophy (and of the Enlightenment) that the Truth is worth discovering, and can be discovered by honest and critical enquiry. If Darwinism is substantially correct we cannot for long be thinking that the Truth is itself worth knowing, nor that we have much chance, by whatever methods, of discovering it. Our beliefs are dictated by 'the selfish genes', or else by the equally 'selfish memes', and survive in the human population only if they manage to parasitize the stock. Believing that we have believed things only so that the beliefs are spread, we have already stopped believing. 'The idea that one species of organism is, unlike all others, oriented not just toward its own increased prosperity but toward

Truth, is as un-Darwinian as the idea that every human being has a built-in moral compass - a conscience that swings free of both social history and individual luck.' If Darwinism is true we have no reason to care, nor any right to suppose that we could prove it. Conversely, if anything at all is really worth knowing, or pursuing, then there are real values with at least some influence on the world – if only on the brain chemistry associated with our having those beliefs. But if such an influence is possible we need not be so confident that such values have no effect on evolutionary change. Darwin took the Enlightenment proposal (that formal and final causes should be ignored) to its limit, by denying that any such causes had any *biological* influence. If he was wrong in this, it may be easier to imagine how the world of life has happened.

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