

CHAPTER 4

‘The Question of Questions’

T.H. Huxley, *Evolution by Natural Selection and Buddhism*

Let me begin with a brief word about the day on which I have chosen to give this talk: October the 23rd. It is a day of singular significance for skeptics like myself. It was in 1654 (when Rembrandt and Milton were alive) that Archbishop Ussher, the Primate of all Ireland, calculated that the Earth was created on 23 October 4004 BC at 9 o'clock in the morning — Greenwich Mean Time. It is now known that the Earth is about 4,112 billion years old, and that we humans, like all other living things, are the products of evolution by natural selection. Nonetheless, as I hope you will agree, October the 23rd is a poetically correct day on which to discuss T.H. Huxley's heretical ‘question of questions’.

‘The question of questions’ for we humans, ‘the problem which underlies all others, and is more deeply interesting than any other’ is, T.H. Huxley declared in 1863, ‘the ascertainment of the place which Man occupies in nature’ and of his relation to the universe of things.

‘Whence have we come’ and ‘to what goal are we tending’: these are the questions, declared Huxley, ‘which present themselves anew and with undiminished interest’ to every human being born into the world.

These are indeed the great and enduring anthropological questions.

They were echoed in 1897 by Paul Gauguin in his moving painting of Polynesians (now in the Museum of Fine Arts in Boston) on which he wrote (in French): ‘Where do we come from? What are we? Where are we going?’ And, they were reiterated in Gustav Mahler's haunting words at the outset of this present century, ‘Whence do we come? Whither does our road take us?’

T.H. Huxley's posing of what he called the 'question of questions' came at a crucial turning point in human intellectual history, just four years after the publication, in 1859, of Charles Darwin's *Origin of Species*. The answer that Huxley gave in 1863 in his book *Man's Place in Nature*, and 30 years later in his Romanes Lecture on 'Evolution and Ethics', are still of invigorating human interest.

Indeed, with the emergence in the mid-1990s of what has been called a 'new evolutionary enlightenment', Huxley's views have assumed renewed significance, and bear, with lively pertinence, on the future development of anthropology and our appreciation of what it means to be human.

It is about this 'new evolutionary enlightenment' and Huxley's concern, as an evolutionary thinker, with the human significance of choice behaviour, and of value systems like Buddhism, that I shall be speaking — values being the product of the human capacity to make choices.

Thomas Henry Huxley was born in England in 1825. After serving in HMS *Rattlesnake* for four years in Australian and New Guinea waters, as a surgeon and naturalist, and his election to the Royal Society of London, when only 26 years of age, he had by 1859 established himself as one of England's brightest young biologists.

His first reflection after mastering (in that year) the central idea of Darwin's *Origin of Species* was: 'How extremely stupid of me not to have thought of that!' In November 1859, he wrote to Darwin: 'I trust you will not allow yourself to be in any way disgusted or annoyed by the considerable abuse or misrepresentation which, unless I greatly mistake, is in store for you. Depend on it, you have earned the lasting gratitude of all thoughtful men. And, as to the curs which will bark and yelp, you must recollect that some of your friends, at any rate, are endowed with an amount of combativeness which (though you have often and justly rebuked it) may stand you in good stead. I am sharpening up my claws and beak in readiness.'

Huxley used them to telling effect during the summer of the following year when, during the annual meeting of the British Association for the Advancement of Science, he found himself on the same platform as Bishop Samuel Wilberforce.

The opposition to Darwin had indeed been fierce, and Samuel Wilberforce, the Bishop of Oxford, having assured his audience at great length that there was absolutely nothing in the idea of evolution, turned to the 35-year-old Huxley and, with smiling insolence, begged to know whether it was through his grandfather or grandmother that he claimed descent from a monkey.

Huxley slowly and deliberately arose, a slight figure, stern and pale, very quiet and grave, to tell the high and mighty Bishop of Oxford:

I should feel it no shame to have risen from such an origin, but I should feel it a shame to have sprung from one who prostitutes the gifts of culture and eloquence in the service of prejudice and falsehood.

The effect of these uncompromising words in Victorian England in 1860 was quite tremendous: one lady fainted and had to be carried out; others in the audience jumped clear out of their seats.

Evolution by natural selection had indeed become a force to be reckoned with.

In the *Origin of Species*, Darwin had not, in fact, discussed the bearing of evolutionary theory on the human species, other than to remark that 'Light will be thrown on the origin of man and his history'.

Of all the burning questions raised by the *Origin of Species* this was by far the most unnerving.

And, having told Darwin: 'I will stop at no point as long as clear reasoning will carry me further,' it was the intellectually intrepid Huxley, who had been conducting his own research on the comparative anatomy of primates, who in London, in 1860, gave a series of six lectures on 'The Relation of Man to the Lower Animals'.

This was heady stuff, and when, in 1862, Huxley gave two lectures on this same theme to the Philosophical Institute of Edinburgh, he was accused, in a local newspaper, of blasphemy and of having committed a 'foul outrage' on the entire human species.

Huxley was not deterred. Rather, he was inclined to think it 'a good thing', as he subsequently remarked to Haeckel, 'for a man, once at any rate in his life, to perform a public war-dance against all sorts of humbug and imposture'.

In 1863, then, he published his epoch-making book *Man's Place in Nature* in which, in concise and lucid prose, he showed, as he put it, 'that no absolute structural line of demarcation ... can be drawn between the animal world and ourselves'.

Huxley was thus the first to construct, on the basis of Darwin's theory of evolution by natural selection, a clear and logical image of biological man, and, as such, is clearly the founder of evolutionary anthropology.

For this achievement, Huxley was subjected, for some years, to no end of obloquy, but, as he wrote to Lord Rosebury: 'Abuse for six or seven years on the part of the public is not of the greatest consequence when one happens to be in the right and stands to one's guns.'

Scientific research during the 133 years since the first publication of *Man's Place in Nature* has demonstrated that Huxley was indeed in the right. There is now conclusive evidence of the fact of evolution by natural selection, and of the fact that we humans are part of the natural order.

Simon Easta, who heads the Human Genetics Group in the John Curtin School of Medical Research of The Australian National University, having estimated that there is only 1.6 per cent difference between human nuclear DNA and that of chimpanzees, has, with his colleagues, concluded that humans diverged from chimpanzees only some 3.6 to 4 million years ago.

We have thus reached a juncture in the history of human understanding when, as Daniel Dennett has recently put it, 'the fundamental core of contemporary Darwinism, the theory of DNA-based reproduction and evolution is ... beyond dispute among scientists'.

We are, as has become utterly clear, the products of evolution. Or, to put it more dramatically, we are not fallen angels, but risen apes. This key realisation changes all of our long-established assumptions about ourselves. In its light, human history, for the first time, becomes intelligible, and human behaviour understandable as never before. This radical transformation in human understanding — which has come to a peak in the mid-1990s — I shall call the 'new evolutionary enlightenment'. And, I confidently predict that, because it is based on fully tested scientific knowledge, it will far outshine the enlightenment of the 18th century.

But, the facing of our evolutionary origins has certain ineluctable consequences. As Stephen Jay Gould has put it, 'We may yearn for a "higher" answer — but none exists. And this explanation though superficially troubling, if not terrifying, is ultimately liberating and exhilarating.' 'We cannot,' as Gould says, 'read the meaning of life passively into the facts of nature. We must construct these answers ourselves — from our own wisdom and ethical sense. There is no other way.'

And, it is precisely here that Huxley's Romanes Lecture on 'Evolution and Ethics' becomes so important.

In March 1880, in a lecture at the Royal Institution, Huxley was able to claim that there was 'no field of biological inquiry in which the influence of Darwin's *Origin of Species* was not traceable'.

This was indeed the case. From about 1871, with the publication of Darwin's *The Descent of Man* and Tylor's *Primitive Culture*, evolution had been a dominant force in both biology and anthropology.

At this time, however, virtually all evolutionists, including Darwin, gave credence not only to evolution by means of natural selection, but also to rapid evolutionary change through the inheritance of acquired characters.

Indeed, some evolutionists, notably Herbert Spencer, were convinced that the inheritance of 'functionally produced modifications' (as Spencer called them) were the chief cause of evolutionary change in human populations.

This mistaken belief — as we now know it to be — in Lamarckian inheritance persisted unabated until just after Darwin's death, when, in 1883, August Weismann propounded his theory of 'the continuity of the substance of the germ cells'.

By the mid-1880s, Weismann's views were exciting intense interest, and, in 1887, when he attended a meeting of the British Association for the Advancement of Science in Manchester, a special symposium was arranged, devoted to the question 'Are Acquired Characters Hereditary?'

This symposium and the widespread dissemination of Weismann's ideas made the theory of the non-inheritance of acquired characters, in the words of George Romanes, the most important question that had been raised in biology 'since the promulgation of Mr Darwin's great doctrine'.

Thus, by mid-1889, Romanes ranked the widespread abandonment of Lamarckian principles that had been brought about by Weismann and others as 'a most extraordinary revolution of biological thought', and 'the turning of a tide of scientific opinion'.

It is in the historical context of this major revolution in biological understanding that Huxley's Romanes Lecture of 1893 must be seen.

With the demise of Lamarckism in the late 1880s, evolution by means of natural selection, in the eyes of many, became all-powerful.

Thus, Benjamin Kidd, in 1894, proclaimed that 'not only is the cosmic process everywhere triumphant, but our ethical and moral progress have no meaning apart from it: they are mere phases of it, developed, as every phase of life from the beginning has been, in the strictest and sternest conditions of Natural Selection' — an attitude not dissimilar to that of some contemporary sociobiologists.

It was against such deification of Natural Selection, which he had long championed as basic to the evolutionary process, as indeed it is, that Huxley recoiled in his Romanes Lecture of 1893, advancing instead an interactionist view of human action that, in the light of modern knowledge, was quite exceptionally prescient.

George Romanes was a wealthy Canadian, who, in 1892, established a fund in Oxford for an annual lecture. The first lecture was given by William Gladstone, four times Prime Minister of Great Britain and a fervent religionist, with whom Huxley had been much in controversy and of whom he did not have a very high opinion. He once compared him to 'one of those spotted dogs who runs on in front but is always turning around to see whether the carriage is coming'.

When Romanes invited him to follow Gladstone, Huxley found this so piquant as to be irresistible, and, in June 1892, he wrote to Romanes saying he had 'long been fermenting' in his head 'some relations of Ethics and Evolution' that he thought would be of interest.

This was a topic about which Huxley had been concerned ever since the publication of *Man's Place in Nature* almost 30 years previously.

Biological man, a primate among other primates, as he emerged from Huxley's *Man's Place in Nature*, raised deeply problematic questions. Much of human behaviour, it had become apparent, had to do with the fact that we human beings are indeed animals, with impulses and propensities that have evolved by means of natural selection.

Huxley was a realist with a well-informed sense of human fallibility, and, in his famous essay of 1889 on Agnosticism, he wrote:

I know of no study which is so unutterably saddening as that of the evolution of humanity ... Out of the darkness of prehistoric ages man emerges with the marks of his lowly origin strong upon him. He is a brute, only more intelligent than the other brutes, a blind prey to impulses which as often as not lead him to destruction; a victim of endless illusions ... He attains a certain degree of physical comfort ... and then, for thousands and thousands of years, struggles with varying fortunes, attended by infinite wickedness, bloodshed and misery to maintain himself, at this point, against the greed and ambition of his fellow man ... And the best men of the best epochs are simply those who make the fewest blunders and commit the fewest sins.

For Huxley, then, the notion that evolution can provide a foundation for morals was (as he put it in 1892) an 'illusion'. It was to the human implications of this realisation that he faced up in his Romanes Lecture over which, as it was the culmination of his life's work, he took 'an immensity of trouble'.

It was delivered on 18 May 1893 in the Sheldonian Theatre of the University of Oxford, and published the following year with a Prolegomenon longer than the lecture itself.

Huxley begins his Prolegomenon by contrasting the wilderness of the Sussex Downs, the result of evolution by natural selection, with his garden there, which had been created by the exercise of human choice.

'It will be admitted,' he wrote, 'that the garden is as much a work of art, or artifice, as anything that can be mentioned' and 'the same proposition is true of all the work of man's hands, from a flint implement, to a cathedral or a chronometer,' all of which, as 'works of art, or artifice' are to be 'clearly distinguished from the products of the cosmic process, working outside man, which we call natural ...'.

Here, T.H. Huxley is making the same distinction as Karl Popper, between World 1, the world of natural objects, and World 3, the world of human creations; and, like Popper, Huxley recognises that World 3 is produced by World 2, which is the world of human consciousness and choice.

Furthermore, and most significantly, Huxley, in 1893, is recognising that what anthropologists call culture is the result of human agency or choice, this being in crucial contrast to Tylor, for whom cultures were the products of natural selection, and to Kroeber and Boas, for whom culture, like God, was *sui generis* and 'beginningless'.

Huxley then, as well as being the founder of evolutionary anthropology in his *Man's Place in Nature* of 1863, is also, in his Romanes Lecture of 1893, the founder of interactionist anthropology, which, with the eclipse of both biological and cultural determinism, is certain to become the anthropology of the 21st century.

Huxley's metaphor of the garden is one, I would note, that also applies to mental states. Thus, in discussing Candide's 'sage aphorism' that one must cultivate one's own garden, Huxley interprets the term garden broadly, applying it to 'the stony and weed-grown ground' within his own skull, as well as to 'the few perches of more promising chalk' of his garden on the Sussex Downs.

This is an age-old metaphor. In *Romeo and Juliet*, Friar Laurence, soliloquising in his cell, remarks, in words that Huxley no doubt savoured:

Two ... opposed kings encamp them still in man as well as herbs — grace and rude will; and where the worser is predominant full soon the canker death eats up that plant.

While in *Othello*, Iago adjures Roderigo:

... 'tis in ourselves that we are thus and thus. Our bodies are gardens, to which our wills are gardeners: so that if we plant nettles or sow lettuce ... why, the power and corrigible authority of this lies in our wills.

To this Shakespearean insight I shall presently return, for Buddhism, as Huxley realised, essentially has to do with the ethical cultivation of oneself by oneself. But, first I must say more about the argument of Huxley's Romanes Lecture.

Man, he argues, has worked his way to the headship of the sentient world and has become the dominant animal that he is, by virtue of his success in the struggle for existence; and, in this struggle — as among other animals — it is 'self-assertion, the unscrupulous seizing upon all that can be grasped, the tenacious holding of all that can be kept' that have mattered.

Thus, 'the cosmos works through the lower nature of man' and the cosmic process, far from being a 'school of virtue' is 'the headquarters of the enemy of ethical nature'.

For Huxley, then, 'the ethical process' is essentially in opposition to 'the cosmic process', and 'the ethical salvation of humankind consists not in imitating the cosmic process' but in combating it.

This conclusion by T.H. Huxley, the agnostic, is, most interestingly, essentially the same as that of all the great religions of *Homo sapiens*, and I would suppose that it is the evolution, by means of natural selection, of the human brain, with its limbic system and frontal lobes, that has made the devising of ethical systems an inescapable necessity.

Let me now leap forward over 90 years to a remarkable statement: 'A Sociobiological Expansion of Evolution and Ethics', which was published in 1989 by Princeton University Press, together with the original text of Huxley's lecture and an introductory essay by James Paradis, Professor of Humanities in the Massachusetts Institute of Technology, whose study of Huxley, published in 1978, is of quite exceptional merit.

The author of this sociobiological expansion of Huxley's Romanes lecture is George C. Williams, sometime Professor of Biology at the State University of New York at Stony Brook, the author of the classic book of 1966 *Adaptation and Natural Selection*, and, at 70 years of age, one of the most distinguished of living evolutionary biologists.

Williams' essay is based on his intimate knowledge of the scientific research on natural selection which has taken place over the last three or four decades, and especially since 1964, following William Hamilton's identification of the phenomenon of inclusive fitness.

In the light of his knowledge of recent research, it is Williams' view that: 'No one of Huxley's generation could have imagined the current concept of natural selection, which can honestly be described as a process of maximizing short-sighted selfishness.' 'Organic evolution,' he writes, 'is worse than traditional forms of warfare, and worse than Huxley imagined.'

Nothing resembling the Golden Rule or any other widely preached ethical principle seems to be operating in living nature. It could scarcely be otherwise when evolution is guided by a force that maximises genetic selfishness.

And so, Williams concludes: 'Natural selection is as bad as it seems' and, as Huxley maintained, 'should, when it come to human action, be combated by ethical means'.

The sociobiological imperative, writes Williams, is thus a negative one: beware of manipulation by selfish individuals or selfish institutions, or our own selfish genes. And in this, biology can be of help in enabling us to appreciate what it is we are up against.

Towards the end of his Romanes Lecture, Huxley notes that 'the practice of that which is ethically best — what we call goodness or virtue — involves a course of conduct which, in all respects, is opposed to that which leads to success in the cosmic struggle for existence. In the place of ruthless self-assertion it demands self-restraint; in place of thrusting aside, or treading down all competitors, it requires that the individual shall not merely respect, but still help his fellows'.

And this subduing of nature to 'higher ends', this 'building up' of an artificial world within the cosmos, is, as Huxley points out, the direct result of human agency, for, to quote Huxley's own words:

Fragile reed as he may be, man, as Pascal says, is a thinking reed. There lies within him a fund of energy operating intelligently and so far akin to that which pervades the universe, that it is competent to influence and modify the cosmic process. In virtue of his intelligence, the dwarf bends the Titan to his will.

Here, as Lloyd Morgan was quick to note, Huxley is making a crucial new distinction between natural selection and human choice as agents of change — a distinction which has recently become a major issue in behavioural biology.

I should also note, in passing, that the apparent paradox of humans, as the products of the cosmic process being nonetheless able to modify this process, is fully explained by the evolutionary emergence of the human capacity to make choices, and the realisation that this capacity is part of our biology.

One of the books that first documented the modern scientific view of evolution by means of natural selection is *The Selfish Gene* by Richard Dawkins of Oxford University. It was first published in 1976.

After discussing, in great detail, the genetic determinants of evolution by natural selection, *The Selfish Gene* ends with these two sentences that recognise a different yet pre-eminent element in human behaviour and history: 'We are built as gene machines, but we have the power to turn against our creators. We, alone on earth, can rebel against the tyranny of the selfish replicators.'

Having read these stirring sentences, back in 1977, I at once wrote to Dawkins inquiring about the remarkable power that, in his view, we humans uniquely have, and putting to him that what he was referring to is 'the human capacity to make choices'.

In his reply of May 1977, Dawkins wrote: 'I cannot disagree with you. I am referring to the human capacity to make choices.'

And, in the second edition of *The Selfish Gene* of 1989, Dawkins reiterated this recognition. 'Our brains,' he wrote, 'are separate and independent enough from our genes to rebel against them ... we do so in a small way every time we use contraception. There is no reason why we should not rebel in a large way too.'

Here then, in contemporary behavioural biology, we find full acceptance of Huxley's innovative claim of 1893 that human beings by virtue of intelligence and choice can rebel against, and rise above, the titanic power of the cosmic process.

And this means, as is being increasingly recognised in the behavioural sciences, that the evolutionary emergence of the capacity to make choices — that is, of the power to select between alternatives — is of quite crucial human significance.

Indeed, it is arguably the defining characteristic of the human ethogram, being, as Kierkegaard once remarked, 'the most tremendous thing' that has been granted to humans.

In Canto 5 of the Paradiso of *The Divine Comedy*, Beatrice has this to say of humankind:

*The greatest gift of God's largesse, when He,
Created all, most prized by Him, and best,
As most akin to His own quality
Was the will's freedom, crown of all the rest
Whence of all creatures made intelligent,
They all, they only, were and are possessed.*

Here, Dante, within his pre-Darwinian world-view, is making essentially the same point as T.H. Huxley and Richard Dawkins.

However, in the light of recent evolutionary studies, it is now evident that choice behaviour — operating within the determinisms of nature — is, in contradiction of Dante, also present in infra-human animals, and is very much integral to the evolutionary process.

As long ago as 1933, H.S. Jennings, the American microbiologist, observed that 'life is a continuous process of selecting one line of action and rejecting another' and that this applied to all animals, including one-celled organisms.

William Baum, writing of animal organisms in general, has advanced as 'fundamental' the proposition that 'all behaviour constitutes choice, because in any set of environmental conditions several alternative activities can occur'.

And, John Tyler Bonner, of Princeton University, in his book of 1980, *The Evolution of Culture in Animals*, had conclusively demonstrated the existence, in species other than Man, of rudimentary cultural adaptations based on choice behaviour.

These cultural adaptations are made possible by the evolutionary emergence of what Ernest Mayr has termed 'open programs of behaviour', resulting from the gradual opening up of a genetic program to permit 'the incorporation of personally acquired information to an ever greater extent'.

An open program of behaviour is thus dependent on the brain-mediated storage and transmission of learnt, or exogenetic information, and further, does not prescribe all of the steps in a behavioural sequence, but, in Karl Poppers words, 'leaves open certain alternatives, certain choices, even though it may perhaps determine the probability or propensity of choosing one way or another'.

Within an open program of behaviour, then, a choice is made between two or more responses to produce what Bonner calls 'multiple choice behaviour'.

The emergence of culture in the course of evolution is to be viewed, therefore, as 'a new niche that arose from the experimentation of animals with multiple choice behaviour', and it is to this evolutionary innovation that the rise of cultural adaptations in the human species is to be traced.

We thus have before us, as a result of the researches of the last few decades, a view of human evolution in which the genetic and the cultural are distinct and interacting parts of a single system, and this means that, for anthropology 'the evolution of choice behavior' is the key, as E.O. Wilson put it in a letter that he sent to me in 1983.

Thus, after the publication in 1975 of *Sociobiology* in which there was no recognition of choice, E.O. Wilson's attitude radically changed, as did the attitudes of other leading biologists.

For example, J.Z. Young, formerly Professor of Anatomy at University College, London, in *The Oxford Companion to the Mind* of 1987, had this to say: 'The continuity of life is ensured by a continuous series of selections among sets of possible alternatives ... It is an essential of any living thing that it must make ... repeated decisions, using the best information available from outside and from within itself. And, every human being knows that this is also what he must do throughout his life.' 'Making choice,' J.Z. Young continued, 'between many nearly similar paths of action (for example, by speech) is our specifically human property' and 'we cannot be fully human unless we operate it freely'.

In 1993, Richard Passingham, of the Department of Experimental Psychology of the University of Oxford, in his book *The Frontal Lobes and Voluntary Action*, reached the conclusion that 'Human beings are capable of voluntary action in the most restrictive sense; that is, voluntary action involving the conscious comparison of alternative courses of action'.

And, Antonio Damasio, Professor of Neurology in the University of Iowa, in his book of 1994, *Descartes' Error: Emotion, Reason and the Human Brain*, has shown from his study of individuals who have suffered damage to their brains, from the surgical removal of tumours, that the human capacity to make choices is principally located in neural circuits in the frontal lobes.

The human capacity to make choices, from which both art and science spring, is thus biologically given. And further, in the light of modern research, it is evident that the two main mechanisms that have operated in the course of human evolution and history are the related mechanisms of natural selection and choice, for it is natural selection which has produced the brain in the frontal lobes of which the capacity to make choices is located.

All this, I would remark, is a validation by modern research of T.H. Huxley's recognition in his Romanes Lectures of 1893 of the key significance of the human capacity to make choices.

Yet, the freedom that our ability to make choices confers on us, is, as Dostoevsky realised, radically amoral in that it may engender evil quite as readily as virtue — evil, as in Claudius's prompting of Laertes to 'choose a sword unbated' and Laertes' choosing to anoint its point with the deadly contagion of an unction he had bought 'of a mountebank', or, on an altogether vaster and more horrific scale, the Holocaust.

And so, as Dostoevsky wrote on 9 August 1838, in a letter to his brother: 'One single condition is given to man, the weather of his soul is formed by the union of earth and heaven, and man is, therefore, a child beyond all laws ... It seems to me that our universe is a purgatory inhabited by heavenly spirits imbued with evil thoughts.'

In other words, the potentiality to do good is also a potentiality to do evil, and this means that we humans, with impulses and propensities coded in our neuropeptides and in the limbic systems of our brains as the result of millions of years of evolution by means of natural selection, and possessing a freedom through imaginative choice to enact these impulses and propensities in virtually an infinity of ways, are existentially in need — as are no other animals — of a code of ethics by which to order our behaviour. We are truly the changelings of possibility.

Thus, in evolutionary terms, the emergence in human populations of the idea of an ethical god, or of some equivalent value system, is a virtual necessity.

In the Torah of the nomadic Hebrews, for example, dating from about the 13th century BC, Yahweh is depicted as setting before his chosen people alternatives of 'good' and 'evil', and then requiring of them that they should enter into a covenant with him to choose as he would have them choose.

As this historically important example indicates, virtually all human laws and rules (from wherever derived) are essentially socially preferred alternatives that have been instituted, as the jurist H.L.A. Hart has felicitously phrased it, 'with the intention of withdrawing certain kinds of conduct from the free option of the individual to do as he likes'. As Freud once remarked: 'That which no human soul desires is in no need of prohibition.'

Yet, the existence of laws by no means curbs the lawless impulses and propensities of very many individuals, for, as the French neurobiologist Jean-Pierre Changeux has put it, the limbic system and the hypothalamus have enough autonomy vis-à-vis the cortex that, under the pressure of particularly strong sensory stimulation, motivation may increase to such an extent that an individual 'goes into action' — even if the cortex says 'no' to the act in question.

And so, as Huxley noted in his Romanes Lecture, as long as our species survives on planet Earth 'every child born into the world' will bring with him or her 'the instinct of unlimited self-assertion' and 'will have to learn the lesson of self-restraint and renunciation'.

One of the conditions of the Romanes Lecture was that there should be no discussion of either religion or politics.

This imposed a peculiar difficulty on Huxley, who, having concluded that 'the proportion of good and evil in life may be very sensibly affected by human action' and having argued that so far 'as we possess a power of bettering things it is our paramount duty to use it', was in need of an example of a human value system that, while not a religion, was an example of that kind of effective combating of the cosmic process that he had in mind.

The example he chose was Buddhism, which was just becoming known in the West, mainly through the activities of Professor Rhys Davids, who in 1881 had founded the Pali Text Society, and from whose Hibbert Lectures of 1881, Huxley cited this judgement about the innovative significance of Buddhism, as enacted in the 5th century BC by the Indian moral thinker Siddhartha Gautama:

For the first time in the history of the world, Buddhism 'proclaimed a salvation' which each individual could gain for himself or herself in this world, during this life, without any least reference to God, or to gods either great or small.

In instancing Buddhism as a humanly significant ethical system, Huxley had this to say in his Romanes Lecture of 1893:

With just insight into human nature, Gautama declared extreme ascetic practices to be useless and indeed harmful. The appetites and passions are not to be abolished by mere mortification of the body; they must, in addition, be attacked on their own ground and conquered by steady cultivation of the mental habits which oppose them; by universal benevolence; by return of good for evil; by humility; by abstinence from evil thought; in short, by total renunciation of that self-assertion which is the essence of the cosmic process.

It is not difficult to see why Huxley, as a scientist and agnostic, was drawn to Buddhism.

On the inside of the back cover of the diary he kept as a naturalist during the cruise of HMS *Rattlesnake* in Australian and New Guinea waters, Huxley wrote, under the heading 'Thatige Skepsis' (which he got from Goethe), these words: 'An active skepticism is that which unceasingly strives to overcome itself and by well directed research to attain a kind of conditional certainty.'

And, in 1881, he declared that 'the essence of the scientific spirit is criticism'.

This, we may set beside the words of the Buddha in the *Kalama Sutra*: 'It is proper for you to doubt ... Do not go upon report ... Do not go upon tradition ... Do not go upon hearsay ...'.

Indeed, as T.L.V. Murti, in his classic study *The Central Philosophy of Buddhism*, states: 'Criticism is the deliverance of the human mind from entanglements and passions. It is freedom itself. This is the true Buddhist standpoint.'

In Buddhism, one of the five precepts (all of which are concerned with the combating of natural inclination) is 'not to lie' and the apperception of things as they actually are, or *sunyata*, is the mark of an enlightened individual.

In his famous letter to Charles Kingsley of 23 September 1860, Huxley wrote: 'truth is better than much profit. I have searched over the grounds of my belief, and if wife and child and name and fame were all to be lost to me one after the other as the penalty, still I will not lie ...'.

And in this same letter of 1860, Huxley also wrote:

The absolute justice of the system of things is as clear to me as any scientific fact. The gravitation of sin to sorrow is as certain as that of the earth to the sun, and more so — for the experimental proof of the fact is within reach of us all — nay, is before us all in our lives, if we had but eyes to see it.

This, of course, is a precise description of what Buddhists call karma: that is, the fact that in the deterministic cosmos we inhabit, we inevitably experience the consequences of our own actions and thoughts — a truth well known to poets.

Thus, Boris Pasternak writes:

*Curling, furling,
At misery's full tilt
Towards me rush my own deeds
Crests of past experience.*

While Milton, in his *Comus* of 1634 tells us:

*He that has light within his own clear breast
May sit i' the centre, and enjoy bright day;
But he that hides a dark soul and foul thoughts
Benighted walks under the midday sun
Himself is his own dungeon.*

We are indeed the self-consumers of our own woes.

As we have seen, Huxley's Romanes Lecture turns on the fundamental distinction between natural selection and what Shakespeare calls the 'power and corrigible authority' of our capacity to make choices.

As Trevor Ling has documented, all Buddhist analysis begins with the recognition that humans have a measure of freedom of moral choice, and Buddhist practice has essentially to do with acquiring the freedom to choose as one ought to choose: that is, of acquiring a freedom from the passions and desires that impel us to do what we ought not to do, or not to do what we ought to do.

And to this end, the Buddhist dharma enjoins:

Right understanding: free from superstition and delusion

Right thought: high and worthy of human intelligence

Right speech: kindly and truthful

Right action: peaceful and honest

Right livelihood: bringing hurt or danger to no living person

Right effort: in self-training and self control

Right mindfulness: having an active and vigilant mind

Right concentration: in deep meditation on the realities of life.

These ethical ideals are, moreover, practical and humanly realisable ideals — as numerous Buddhists down the ages have shown.

Let me now go on to say that, like Huxley, I have drawn attention to Buddhism, not in any sense to proselytise, but to make the fundamental point that we human animals, despite having evolved by natural selection, have been able to enact ethical systems that, in the words of Ernest Gombrich, show what humans can be. And, as Gombrich comments: 'This achievement does give us all authentic and rational hope for our futures.'

What our species needs, above all else, is a generally accepted ethical system that is compatible with the scientific knowledge we now possess.

Albert Einstein thought an evolved form of Buddhism most likely to answer this need; and Huxley, I think, would have agreed.

What can be said, in the light of our present knowledge, is that it is now possible for individuals — if they so choose — to live their lives in ways that consistently generate good karma — both for themselves

and for others. As Einstein remarked in one of his letters to Max Born: 'What the individual can do is to give a fine example, and to have the courage to uphold ethical values ... in a society of cynics.'

This is, of course, nothing new, and I shall end with a shining example of an innovative ethical choice that would, I am sure, have appealed to T.H. Huxley. It is from *The Mahabharata*, the great epic of ancient India, whence came Buddhism.

It was Yudhisthra, the eldest of the Pandava brothers, who, you may remember, survives the slaughter of the terrible conflict with their rivals, the Kauravas.

He is finally left, burning with grief at what has happened and wandering aimlessly with his ever faithful dog.

Then, as heaven and earth reverberate, he is accosted by the sky god, Indra, and promised all the felicities of paradise if he will cast away his dog, and mount Indra's chariot.

But Yudhisthra replies: 'O lord of a thousand eyes, it is extremely difficult for one of virtuous conduct to commit an unrighteous act. I do not wish for felicity if I have to abandon a creature who is devoted to me.'

At which his dog is instantly transformed into Dharma — the personification of virtuous choice.

And, Yudhisthra, for having chosen righteously rather than to his own selfish advantage, is recognised by Indra as having no equal — not even among the gods themselves.

Such then is 'the power and corrigible authority' of our capacity for making good and wise choices, and of defining in a uniquely human way, as T.H. Huxley envisaged in his Romanes Lecture of 1893, our place in nature.

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