

Darwin and Wallace as Environmental Philosophers

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ABSTRACT

The thoughts of Darwin and Wallace on human evolution and the relations between humans and the rest of nature are compared. Despite significant differences, it is suggested both great evolutionists have much to offer in addressing our current socio-ecological predicament.

KEYWORDS

Charles Darwin, Alfred Russel Wallace, sexual selection, human evolution, nature and human nature, racial difference, environmental justice

The 150th anniversary of the publication of Darwin's *Origin* marks much more than the presentation of a major new scientific achievement. Though, as is well known, Darwin said little in the book about the place of humans in his view of organic evolution, its explosive metaphysical, religious and moral implications were immediately recognised. Of course, Darwin's near-silence on these matters was a motivated one. He was only too well aware of their significance. In his early notebooks he admonishes himself for his materialism, and, in an astonishing passage written prior to his hitting on the idea of natural selection, he wrote:

Animals – whom we have made our slaves we do not like to consider our equals. – Do not slave-holders wish to make the black man other kind?...the soul by consent of all is superadded, animals not got it, not look forward if we choose to let conjecture run wild then animals our fellow brethren in pain,

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disease, death & suffering & famine; our slaves in the most laborious work, our companions in our amusements. They may partake, from our origin in one common ancestor we may be all netted together. (Barrett et al. (eds.) 1987: 228–9, notebook B 231–2)

Already Darwin compares what might now be called ‘speciesism’ – the view that humans are a category apart from other species, the sole bearers of moral significance – with the racist ideologies that sustained human slavery. He even countenances the idea of animals as our equals. They are, at least, ‘our fellow brethren’ in that human and animal lives have so much in common – the range of pleasures, pains, fears and enjoyments shared by all sentient beings. But there is also the social dimension – the ways in which the lives of (presumably mainly domesticated) animals are interwoven with human social and economic activity, sometimes as companions, sometimes as slaves. Finally, the thought that inspires these radical speculations: that we are all descended from a common ancestor, and so are all ‘netted together’. This notion of the ‘netting together’ of humans and the rest of living nature has three dimensions: ecological interdependence, social entwinement and kinship. These features remained as a persistent structure of thought throughout Darwin’s life.

However, it was not until much later that Darwin was finally provoked into presenting his views on specifically human evolution to the public in a systematic way. His *Descent of Man and Selection in Relation to Sex* was first published in 1871. Among other things, the spur to the publication of this major work was provided by a challenge from his erstwhile close ally and admirer, Alfred Russel Wallace. In fact, this was the second time Wallace had propelled Darwin into publication. Despite numerous determined efforts by historians and biographers (for example, Fichman 2004, McKinney 1972, Raby 2001, Shermer 2002, Smith 1992/1999 and Smith and Beccaloni [eds.] 2008) to gain retrospective recognition for Wallace as the independent discoverer of natural selection as the principal mechanism of organic evolution, the myth of Darwin as the lone original genius of evolution has persisted and predominated in this year’s celebrations of the publication of the *Origin*.

In the standard accounts, a letter from Wallace suddenly appears as from nowhere, outlining what Darwin immediately recognised as substantially the same hypothesis as his own. Wallace’s paper, along with drafts of Darwin’s own ideas, is read at the Linnean Society, and Darwin hurriedly completes the text of the *Origin* for publication the following year. Thereafter Wallace retreats again into obscurity.

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Wallace had, of course, long been preoccupied with the question of the origin of species, and, like Darwin, had travelled extensively in the tropics. The two men had maintained an extensive correspondence prior to 1859, and continued to be in dialogue with one another for many years after. The extent and direction of their mutual influence is a matter of controversy, and not germane to my theme here. Of greater interest here are the wider philosophical issues that their joint discovery of natural selection posed, and the ways in which they attempted to make wider moral and metaphysical sense of the implications of their discovery. Both men would have referred to themselves as ‘philosophic’ naturalists, but Wallace was, from early on, much more open and explicit about his wider philosophical speculations.

WALLACE BEFORE *THE ORIGIN*

Wallace lacked Darwin’s resources and elevated connections, had begun his working life as a land surveyor, and through that developed an early aversion to private ownership of land, as well as a love of nature and the skills of field natural history. From early on he became a firm religious sceptic and an Owenite socialist. Lacking elite connections, and unencumbered by religious inhibitions, Wallace had much less to lose than did Darwin in ‘coming out’ as an evolutionist. Like Darwin, Wallace’s evolutionary thinking was strongly shaped by his overseas excursions. Wallace’s first such adventure was an exploratory and collecting journey to the Amazon (May 1848 to July 1852), initially with fellow naturalist Henry Walter Bates. This ended in the disaster of a fire at sea, the loss of many of his specimens, and almost of his own life.

However, in the testimony of his autobiography, his experiences in South America left him with three great sources of wonder. First was ‘the virgin forest, everywhere grand, often beautiful and even sublime’. The second ‘feature that I can never think of without delight, is the wonderful variety and exquisite beauty of the butterflies and birds... Even now I can hardly recall them without a thrill of admiration and wonder’. The third ‘and most unexpected sensation of surprise and delight’ was evoked by Wallace’s encounter with the indigenous people of the Amazon: ‘In every detail they were original and self-sustaining as are the wild animals of the forest... The true denizen of the Amazonian forests, like the forest itself, is unique and not to be forgotten’ (Wallace 1908: 149–151).

To judge from his correspondence with Bates before their voyage, Wallace was already familiar with the evolutionary writings of Lamarck and

Robert Chambers, and, though critical, broadly sympathetic to their view of the transformation of species. By the time of his second great adventure – his eight-year travels in the far east, from 1854 to 1862 – Wallace had become a firm ‘transformationist’ and, though a critic of Lyell’s continued defence of the idea of the fixity and special creation of each species, a follower of his methodological and geological ideas. The uniformitarian view of nature as subject to natural law, and of geological transformation as the result of long epochs of gradual, cumulative step-by-step change, carried, Wallace thought, the implication that living forms, too, must have undergone comparable cumulative change.

Correspondence between Darwin and Wallace indicates that for both men the matter of human origins and nature figured large – but Darwin preferred to avoid the whole question as ‘so surrounded with prejudices’ (Darwin 1887 [1857], vol. 2: 109). There is some evidence that Wallace chose the location for his second tropical adventure partly in hopes of encountering the orang utan in the wild – as possibly one of the closest relatives of our own species. At the same time, he was deeply engaged theoretically on the question of the mechanism of evolutionary change, but the problem posed itself somewhat differently for Darwin and Wallace. As is well known, Darwin was strongly influenced by Paley’s natural theology, and so for him, an explanation was needed not just of the fact of organic change, but the production of adapted forms – the appearance of design. For Wallace, on the other hand, organic diversity and geographical dispersion were the primary facts to be explained. He scorned the idea that the intervention of a divine creator was required to explain the adaptation of living organisms (it is as if, he argued, that we should praise the creator for, having made a box, thinking of putting a lid on it! – Wallace 2002: 31). On the contrary, what seemed to him most significant in nature was the presence of features that defied functional, or ‘utilitarian’ explanation – the exquisite beauty of the tropical butterflies or birds of paradise, for example (Wallace 1856).

So, prior to the breakthrough to the idea of natural selection, Wallace was committed to the idea that beauty was an objective feature of the natural world, but combined this with a view of human progress according to which true fulfilment was to understand and to value the diversity and beauty of the natural world for its own sake (Smith 1992/1999). But ‘progress’ was not to be confined to human personal and social development alone – Wallace seems to have seen progressive change as somehow an intrinsic feature of nature itself. So, when, in 1858, he finally sent his version of natural selection for Darwin’s comments, the struggle for existence was, for him, a mechanism that produced progressive organic change. Though not fully articulated at

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this time, Wallace was already committed to a ‘macro-evolutionary’ narrative of ‘progress’. Taken strictly, by contrast, Darwin’s ‘natural selection’ produced only more and more successful adaptation to the demands of the local conditions of life of each organic lineage.

On two key issues, there was already some degree of divergence between Wallace and Darwin, and, in the case of Wallace especially, some considerable inner tension in their wider metaphysical and moral outlooks. As we shall see, Wallace’s view of evolution as ‘progressive development’ chimed well with his progressive socialist politics, but sat uncomfortably with his admiration for indigenous people – their approach to ‘the perfect moral state’ – and his loathing for the corruption, materialism, inequality and class-exploitation of his own ‘advanced’ civilisation. How could this constitute ‘progress’ over the mode of life of so-called ‘savages’?

But Wallace has not only to efface – even invert – the usual normative connotations of the distinction between the savage and the civilised, he also has problems with the connotations of the contrast between the human and the animal. Wallace’s equivocation on this prior to 1858 is striking. The mode of his encounters with the orang utan is that of the huntsman. He shoots as many as he can, measures and skins them to be sent back home as saleable specimens. His apparently unquestioning ruthlessness in the pursuit of his quarry is quite shocking to the modern reader. However, one incident stands in stark contrast. The episode is written up in several places, but perhaps most tellingly in a contemporary letter home. In it, Wallace describes having shot dead a ‘wild woman of the woods’ but spared her baby. Wallace makes every attempt to keep the baby alive and contented, giving her a young monkey for a companion. Eventually, however, his efforts fail, and the infant dies. There is no mistaking Wallace’s remorse and grief, and he concludes with an emotional expression of paternal affection: ‘... and I’m sure nobody ever had such a dear little duck of a darling of a little brown hairy baby before’. By now, of course, it is clear that the ‘wild woman of the woods’ was a female orang utan, and throughout the letter Wallace notes how like a human infant is his baby orang, how different in that respect, from its monkey-playmate (for a fuller exploration of this incident, see Benton 1997).

So, through his own emotional engagement as well as through his close observation of the facial expressions and responses of his orphan orang, Wallace is brought unmistakably up against his kinship with another living species. But the moral horror that we might expect to flow from such a recognition seems not to follow – though there is some playful acknowledgement in the letter’s titillating transposition of the species of the mother. Wallace’s equivocation on the gap between the human and the animal is connected with

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his admiration for indigenous people and their cultures. Unlike Darwin, his deep egalitarianism prevented him from seeing 'savages' as in some sense representing a lower form of human life, partially bridging the gap between modern humans and our imagined pre-human ancestors.

WALLACE AND DARWIN AFTER 1858: THE IMPLICATIONS OF NATURAL SELECTION

However, Wallace's independent invention of the concept of natural selection (he preferred 'struggle for existence') in 1858 marked the beginning of a major shift of perspective (for a more detailed exploration and defence of this account of Wallace's shifts of perspective, see Benton 2008). The notion that species are formed over extended periods of time by the relative success of bearers of inherited variations in the struggle for existence clearly carried the implication that all or most of their specific traits must either have been, or now be, of use to the members of the species in their struggle for survival. Though he continues to recognise the existence of apparently non-utilitarian features (colours, crests and the like), these are now seen simply as 'unimportant', rather than evidence of the existence of beauty as an intrinsic feature of the natural world. From now on, his view of the severity of the struggle for existence leads him to assert that '... none of the definite facts of organic nature, no special organ, no characteristic form or marking, no peculiarities of instinct or of habit, no relations between species or between groups of species – can exist, but which now must be or once have been useful to the individuals or the races which possess them' (Wallace 1870: 47).

While still on his travels, Wallace read and re-read with delight and admiration, Darwin's *Origin*. From 1859 onwards until the late 1860s, Wallace was a staunch defender of the view of evolution propounded by both Darwin and himself – but always deferring to Darwin's authority (even, in 1889, publishing an exposition of their theory modestly entitled '*Darwinism*' (Wallace 1889)!). During this period Wallace demonstrated the explanatory power of the idea of natural selection by applying it to a wide range of puzzling empirical cases, such as the patterns of distribution of species – including human races – in the Pacific, the colour patterns of the Papilionidae (swallowtail butterflies) and the nesting habits of birds.

In only one respect does Wallace allow himself to diverge from Darwinian orthodoxy during this period. Indeed, as has often been noted, Wallace was a more orthodox Darwinian than Darwin himself. Through successive edi-

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tions of the *Origin*, Darwin made concessions to his critics, acknowledging natural selection as only one – though perhaps the most important – among a number of mechanisms of organic change. Wallace, in contrast, remained firmly committed to natural selection as *the* evolutionary mechanism. It is interesting that a key issue for several of the topics Wallace took up between 1858 and 1864 was how to explain those ‘unimportant’ characters that appear to have no adaptive function and which we are tempted to regard as beautiful. Darwin had devised a specific mechanism to explain these traits: sexual selection. Whereas natural selection worked on the survival-relevant traits of organisms, sexual selection worked on their opportunities to secure mates and reproduce themselves. For Darwin, there were two aspects of sexual selection – competition between males for access to females, and the reciprocal ‘choice’ exercised by females in selecting their mates. The hypothesis seemed especially appropriate in explaining cases of sexual dimorphism – the greater muscular power and possession of ‘fangs’ in the case of the male orang, or the huge differences in the plumage of male and female birds of paradise.

Though Wallace was reluctant to openly disagree with Darwin, his essays evidence a degree of hesitant scepticism. He is prepared to accept the ‘armament’ of males as the outcome of their struggles over access to females. This, after all, can be seen as merely a special case of natural selection as Wallace understood it. However Wallace struggles hard to devise alternative explanations for those cases that imply female choice of males on aesthetic criteria. In these cases, Wallace hypothesises that the bright colours and decorations of the males are characteristic of the species, and what requires explanation in terms of natural selection is the dull, cryptic coloration of the females. This can be done by noting that in all the cases he can find, it is the female that incubates the eggs. Being therefore more vulnerable to predation, she is advantaged by her cryptic colouration. Confirmation is found in the one case where this dimorphism is reversed – here it is the cryptically coloured male who incubates the eggs!

WALLACE IN 1864: NATURAL SELECTION AND HUMAN EVOLUTION

By 1864 Wallace was ready to put the idea of evolution by natural selection to its most severe and momentous test: its application to the human case. In an extraordinarily brilliant, but deeply problematic, paper, Wallace argues that for ‘solitary’ species, natural selection would incessantly act on bodily traits,

but, once a species emerged that had the intellectual capacity for invention, as well as dispositions for social cooperation and mutual 'sympathy', natural selection would increasingly act to develop those social and mental traits, rather than the merely bodily or organic ones. Physical differences between the races would thus have emerged at an early stage in human evolution, prior to the subsequent development of distinctively human social, moral and intellectual abilities.

At first sight this seems to deliver a resolution to at least one of the difficulties Wallace has in reconciling the view of evolution by natural selection with his continuing moral and political commitment to the idea of human social and intellectual progress. It can be accepted that humans are closely similar to the anthropoid apes in their physical character, but one and the same mechanism, natural selection, that formed them bodily can also explain how far removed fully developed humanity is from its ape-like ancestors with respect to its mental and moral character. As Wallace puts it, his theory 'neither requires us to depreciate the intellectual chasm which separates man from the apes, nor refuses full recognition of the striking resemblances to them which exist in other parts of its structure' (Wallace 1864: clxix).

But Wallace takes the argument still further. As the social division of labour and human inventive powers are augmented, the supreme causal power of natural selection is at last limited, and even to some extent reversed. As their ability to bend the forces of nature to their own purposes develops, humans, through domestication and cultivation, impose their own purposive selection on their fellow species. Where Darwin had used human selection in domestication as the basis for his analogy with nature's 'selection' of 'favoured races', Wallace makes the reverse move – humans turning the tables on nature and displacing natural selection in favour of their own needs and preferences.

In the original version of the paper (substantially revised in later editions), Wallace concludes with an evocation of the utopian possibilities lying before a humanity possessed of such social dispositions and intellectual powers:

We can anticipate the time when the earth will produce only cultivated plants and domestic animals; when man's selection shall have supplanted 'natural selection' ... [when] the world is again inhabited by a single homogeneous race, no individual of which will be inferior to the noblest specimens of existing humanity. Each one will then work out his own happiness in relation to that of his fellows; perfect freedom of action will be maintained, since the well balanced moral faculties will never permit anyone to transgress on the equal freedom of others; restrictive laws will not be wanted, for each man will be guided by the best of laws: a thorough appreciation of the rights,

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and a perfect sympathy for the feelings, of all about him ... and mankind will have at last discovered that it was only required of them to develop the capacities of their higher nature, in order to convert this earth, which had so long been the theatre of their unbridled passions, and the scene of unimaginable misery, into as bright a paradise as ever haunted the dreams of seer or poet. (Wallace 1864: clxvii–clxx)

Indeed, the distance now separating humans from their anthropoid ancestry is so great that it provides us with a ‘new argument for placing man apart, as not only the head and culminating point of the grand series of organic nature, but as in some degree a new and distinct order of being’ (ibid.: clxvbiii).

But, as Wallace himself seems to have recognised very quickly, his apparent resolution of this internal tension in his world-view only served to intensify others. Two, in particular are directly relevant to our theme. First, the word ‘homogeneous’ is an indication of the racial politics that Wallace’s new view of human evolution commits him to. Utopia is to be won by a continuing struggle for existence among the races, in which the inferior will be exterminated by the superior, more perfect forms. Wallace presented his paper first to the Anthropological Society of London, a racist break-away from the Ethnological Society (see Raby 2001: 176; Fichman 2004: 154). He may have naively conceived his contribution as an attempt at reconciliation, but it was clearly profoundly at odds with all he had previously experienced, thought and written on the topic of indigenous peoples, and his continuing commitment to egalitarian values. Moreover, there was an internal contradiction in the hypothesis itself: how could a ruthless struggle for existence among the races produce as the victor a being with the highly developed sympathies and generous moral sensibilities of the creators of Wallace’s utopia?

Second, the vision is one of nature so subjected to human purposes that (except for the depths of the oceans) all wild species have been replaced by cultivated and domesticated forms. This, too, is profoundly at odds with Wallace’s repeated expressions of his wonder and admiration at every encounter with the wild animals and birds, the dazzlingly beautiful butterflies and the majestic forests of his tropical adventures.

WALLACE’S ‘HERESY’ AND DARWIN’S DESCENT

Perhaps we should see this paper as evidence of the extraordinary rigour with which Wallace was capable in pressing his commitment to the idea of natural selection to its limit. But his own alarm at the implications may

explain his rapid renunciation of his links with the Anthropological Society, and the eventual emergence of yet another moral and metaphysical synthesis – a veritable ‘bombshell’, delivered first in 1869, then fully articulated from 1870 onwards. (Some historians deny that this new synthesis constitutes a major transformation of Wallace’s outlook. See, for example Smith 2008a and 2008b, and the opposed view in Benton 2008).

In a sharp deviation from his former Darwinian orthodoxy, Wallace now argues that, although humans undoubtedly evolved from ape-like ancestors, natural selection alone could not have been the mechanism of this transition. Wallace rests his case on the necessary utility of traits acquired and fixed by natural selection. If we consider the limited material culture of our ancestral forms, Wallace argues, it is clear that they would not have required the perfect delicacy and perfection of the hand. Equally, upright posture, beauty of form, the loss of body-hair, speech and beauty of voice, musicality and like features could have offered no advantage in the struggle for life to ancestral species that struggled for existence under conditions then obtaining. In a particularly ingenious argument, Wallace concludes from the minimal differences in cranial capacity possessed by contemporary ‘civilised’ humans, ‘savages’ and the earliest known fossil humans that early hominids must have had the *capacity* for all the moral virtues and cultural achievements of contemporary humans, despite their having no occasion to develop or *use* them. An unused, or unexercised capacity is not one that could have been acquired by natural selection. On the contrary, Wallace argues, early humans must have been endowed with the potential to develop virtues exhibited only at an advanced stage of civilisation (‘... those wide sympathies with all nature, those conceptions of the infinite, of the good, of the sublime and beautiful ...’) by some creative force in anticipation of a future state of society. Such a creative force must be, in some sense, an intelligent, purposive being or beings.

From the mid-1860s Wallace had first become interested in, and then a fully converted advocate of, the spiritualist fad then widespread in Victorian society. Human distinctiveness, our capacity for moral, spiritual and aesthetic development, is henceforth understood as the outcome of the supplementation of natural selection by the guiding force of supernatural spiritual agencies directing the course of evolution.

Not surprisingly Darwin, Huxley and their circle were disappointed, if not scandalised by Wallace’s departure on this rather central question. For a second time, it seems, Darwin was driven into print by Wallace’s provocation. His great work, *The Descent of Man and Selection in Relation to Sex*, first published in 1871, was Darwin’s first systematic and explicit attempt

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to bring human evolution within the terms of his general account of organic change. In several places he cites admiringly Wallace's 1864 paper, while systematically answering Wallace's later sceptical arguments. Upright posture and perfection of the hand, he argues, would certainly have conferred an advantage in the struggle for existence and so are quite explicable in terms of natural selection. Loss of body hair and beauty of voice, including musicality and the development of speech, Darwin attributes to the successive effects of female choice: to sexual, rather than natural selection. Finally, the most challenging attribute, the moral sense (as distinct from mere utilitarian calculation), is to be understood as a secondary consequence of the evolution of a being with both high intelligence and 'social instincts'. Humans share with other animals 'self-preservative' instincts, and these give short-term satisfaction, but with the development of the social instincts of sympathy for others and pleasure in their company, conflicts arise between the two sorts of disposition. However, for beings approaching humans in intelligence, past and future possible acts can be compared and evaluated, and misery experienced at the thought of tribal disapproval when a selfish act overrides a sympathetic one.

THE PLACE OF HUMANS IN NATURE: DARWIN *VERSUS* WALLACE

At this stage Darwin and Wallace have clearly arrived at quite different views of the place of humans in the natural world. In Wallace's case, rigorous commitment to natural selection as the sole causal agency in evolution has taken him first to a view of humans as emancipating themselves from this very power by their own social and intellectual capacities, but then to the introduction of supernatural causes in the human case to account for our special status. The previously shared commitment to scientific materialism and the methodological assumptions of uniformitarianism is now breached by Wallace's conversion to spiritualism and application of his new beliefs in an attempt at scientific explanation. Darwin, by contrast, remains true to materialist and uniformitarian presuppositions.

Where Wallace, both in 1864 and in his later 'spiritualist' writings, sets humans apart from the rest of the animal kingdom, seeing them, even in 1864, as 'a new and distinct order of being', Darwin consistently emphasises the commonality of humans and other species. This is evident in the passage quoted above from his early notebooks, as well as in the development of his argument in the *Descent*. He devotes his first chapter to defence of

the view of humans as descending from some ape-like ancestor. Although Wallace would not have disagreed with this, he might not have fully endorsed Darwin's concluding remark: 'It is only our natural prejudice, and that arrogance that made our forefathers declare that they were descended from demi-gods, which leads us to demur to this conclusion' (Darwin 1874 [1871]: 25). In his chapter on the origins of the moral sense he bases his argument on the range of instincts – both social and self-preservative – and the repertoire of emotional responses associated with them as shared by both humans and non-human animals. Strikingly, Darwin attributes aesthetic sensibility to non-human species as an intrinsic part of his notion of sexual selection. In discussing the courtship display of male birds to females, he considers many examples of male characters that could only have arisen as ornaments. If this is accepted, then it must also be admitted that 'the female was created and endowed with the capacity of appreciating such ornaments' (Darwin 1874 [1871]: 616).

DARWIN AND WALLACE: CONVERGENT EVOLUTION?

But there are, less obviously, important points of convergence between the two great evolutionists. Though in the *Descent* Darwin makes a stronger case for the role of natural selection than Wallace allows, he implicitly concedes Wallace's main sceptical point: there *are* developed human traits that cannot be explained solely in terms of natural selection. Darwin includes use-inheritance, laws of growth, and, more centrally, sexual selection alongside the agency of natural selection. Where Wallace leaps from the limitations of the idea of natural selection to spiritual agency, Darwin searches for other natural causal mechanisms, acting in conjunction with natural selection. In particular, the explanation of the moral sense represents it as a secondary consequence of the combination of attributes independently acquired through the action of natural selection. Even here, in the case of the evolution of the 'social instincts', Darwin broadens the concept of natural selection to include the formative influence to social life itself as a selective agency.

Despite their reliance on quite different causal processes, both men rate appreciation of beauty as among the highest of human faculties. But now it seems clearer that there is an underlying reason in Wallace's resistance to the idea of sexual selection: to concede choice on aesthetic criteria as an attribute of non-humans would be to erode the elevated status of fully developed humanity. Darwin had no such qualms, even commenting that women like to adorn themselves with the brightly coloured plumes of birds,

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with the implication that humans and birds share a common set of aesthetic preferences.

On morality, too, there are aspects of convergence. Wallace attributes moral development to supernatural guidance, while for Darwin it is grounded in the advance of human association. Nevertheless, both men share much in the *content* of their moral vision. As we saw above, Wallace's persistent view of progress was one in which the 'higher' faculties of love of beauty, intellect, mutual sympathy and equality were developed. And, his strange lapse of 1864 aside, this included, too, a sense of wonder at the diversity and beauty of non-human nature – '... those wide sympathies with all nature'.

For Darwin, moral progress took the form of an ever-widening sphere of human sympathy as a result of the combination of tribes into nations, and the associated use of reason to extend the social and sympathetic instincts to 'men' of all races and nations. The ultimate development of moral sense would be to include within its scope all sentient beings:

Sympathy beyond the confines of man, that is, humanity to the lower animals, seems to be one of the latest moral acquisitions ... This virtue, one of the noblest with which man is endowed, seems to arise incidentally from our sympathies becoming more tender and more widely diffused, until they are extended to all sentient beings. As soon as this virtue is honoured and practised by some few men, it spreads through instruction and example to the young, and eventually becomes incorporated in public opinion. (Darwin 1874 [1871]: 123)

REVIEW: HUMANS AND NATURE IN THE THOUGHT OF DARWIN AND WALLACE

So, Darwin, like Wallace, has a strong sense of human distinctiveness, but manages to combine this with a comprehensively naturalistic account of our nature and origins – one that emphasises our kinship and interdependence with the rest of nature. His account avoids both the reductionism of much that passes now as 'Darwinism' applied to the human case (see, for a collection of essays critical of 'neo-Darwinism', Rose and Rose 2000), while at the same time refusing the hubris of the technological optimism of Wallace's 1864 'utopia'. Indeed, in a wonderful essay in praise of the earthworm Darwin devotes a section to 'the part which worms have played in the history of the world':

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The plough is one of the most ancient and most valuable of man's inventions; but long before he existed the land was in fact regularly ploughed, and still continues to be thus ploughed by earthworms. It may be doubted whether there are many other animals which have played so important a part in the history of the world, as have these lowly organised creatures. (Darwin 1945 [1881]: 148)

Perhaps, then, to view Darwin's nature-philosophy in terms of today's debates, he is close to an ecocentric, or biocentric world-view, stressing human kinship and interdependence with the rest of living nature, and advocating an extended sympathy and moral concern for all sentient beings.

Given Wallace's persistent attempts to justify a view of humans as somehow separate from the general series of organic forms, and elevated to the status of a 'new and distinct order of being', we might be tempted to represent him as closer to the 'anthropocentric' end of the spectrum of environmental philosophies. But this would be to discount his evident sense of wonder at the beauty and diversity of living beings. Moreover, as an eloquent critic of the injustices of industrial capitalism, his 'humanism' makes possible a more powerful indictment of the ecological and human costs of that economic system than was attempted by Darwin. In denunciations of what we might now call the environmental injustices of industrial capitalism Wallace echoes the much earlier protests of Engels's *Condition of the Working Class in England* (1969 [1845]; see also Benton and Dennehy in Arthur 1996):

Yet it is among those nations that claim to be the most civilised ... that we find ... the greatest recklessness, in continually rendering impure this all-important necessity of life, to such a degree that the health of the larger portion of their population is injured and their vitality lowered, by conditions which compel them to breathe more or less foul and impure air for the greater part of their lives. The huge and ever-increasing cities, the vast manufacturing towns belching forth smoke and poisonous gases, with the crowded dwellings where millions are forced to live under the most terrible insanitary conditions, are the witness to this criminal apathy ... (Wallace 1903, cited in Knapp 2008: 217–18)

But Wallace was not concerned solely with the bodily effects of environmental degradation. When, after decades of East End working-class struggle against illegal enclosures, Epping Forest was at last saved by act of parliament for public enjoyment and recreation, Wallace prepared (unsuccessfully) a set of proposals for the future management of the forest. Parts already denuded of trees were to be planted up with samples of species from

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throughout the northern temperate regions, but the unspoilt parts would be left to allow 'every one ... the right to roam unmolested, and to enjoy the beauties which nature so lavishly spreads around when left to her own wild luxuriance' (Wallace 1900 [1878]: 75). Management should preserve the swamps and boggy hollows, as 'Every lover of nature finds them interesting and enjoyable. Here the wanderer from the great city may perchance find such lovely flowers as the fringed buck-bean, the delicate bog pimpernel and creeping campanula' (ibid.: 93).

For those of us faced with the still more intense social and ecological destructiveness of our contemporary forms of capitalist 'development', the different but complementary thoughts of these great nineteenth-century evolutionists continue to have much to offer.

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