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Evolution and Ideology

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spite their traveller's knowledge of that hard biological world, didn't live there and could thus tell their ideological traveller's tales.

ciety and human values, neither was committed full-time to research into the topic. Both the fervour and the high ideological content of their visions depends, it seems, on their relative ignorance of the issues involved. This may sound odd, especially in the case of Huxley, for he did, after all, write a book called *Man's place in nature*. But neither Huxley nor Kropotkin wrestled, day by frustrating day, year after year, with the bewildering complexities of issues like the emergence of altruism or aesthetics.

Moving to the end where the scientific evidence is at its most profuse we find Darwin and Wallace, another improbable pair (a rich liberal squire and a socialist-spiritualist of working class origins). It is possible, as I hope I've shown, to discern the contrasting ideological threads in their work, but these threads do not dominate the fabrics. Much more impressive is the piling up of huge assortments of observations, coupled with determinations to make sense of them all. And when the sense runs contrary to their prior ideological positions, Darwin and Wallace yield their ideological positions, not their hard-won observations.

Where does this leave the issue of evolution and ideology? The most interesting studies in recent history of science have been those which have challenged the commonsense distinction between science and ideology. Regularly, they have shown that what was thought to belong to a realm of hard, objective fact belongs equally to the realm of ideology. Somewhat to my surprise, I find that such an enterprise, when directed at a survey of Darwin, Wallace, Huxley and Kropotkin, doesn't pay off very well. Any distinction drawn in the name of commonsense needs to be treated suspiciously, but in this case, guilt isn't at all obvious. Darwin and Wallace lived full-time in a hard world of knobbly, awkward, uncomfortable biological facts that forever got in the way of any sort of smooth presentation of the visions of nature that were directed simultaneously by their desires and their ideological positions. Kropotkin and Huxley, de-

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runs through Kropotkin's formulations: his scientific theories are congruent with his politics, and the congruence is greater than it is in the cases of Darwin, Huxley and Wallace.

To echo my opening example, if we were presented anonymously with a copy of *Mutual Aid*, and were asked to say something about the likely ideological stance of its author, we could say a lot more than we could say about the author of the theory of gases and pressures. With some confidence we would suggest that the author of *Mutual Aid* wished, by reference to biological data, to promote a genial, co-operative vision of human society.

Conclusion

Ideology theory is sometimes an all-or-nothing affair. In its strongest form it declares that nothing is free from ideology and that everything science included is equally ideological. The sketches of four nineteenth century biologists and their theories presented in this paper do not confront the strong form of this theory, but they do make use of a weaker form of the term. A distinction can be made between on one hand the biologists' world-views, values, desires and needs (their 'ideologies,' in the weak sense), and on the other hand, the facts about nature that their researches uncovered. And if we make this distinction, it appears that in the four cases discussed here, ideology is most powerfully evident when the scientific evidence is thinnest. Starting at the thin end, we find Kropotkin and Huxley. They are an improbable pair: their visions of the significance of evolution for human affairs could not have been more different, with Huxley seeing an absolute disjunction between moral humans and savage nature, and Kropotkin seeing harmony between co-operative humans and co-operative nature. But they make a pair because despite their obvious interest in the topic of the evolutionary emergence of human so-

noted that if just the emotive terminology is modified, examples like this could be used to establish his seemingly quite different, more genial law of mutual aid:

”while fully admitting that force, swiftness, protective colours, cunningness, and endurance to hunger and cold, which are mentioned by Darwin and Wallace, are so many qualities making the individual, or the species, the fittest under certain circumstances, we maintain that under any circumstances sociability is the greatest advantage in the struggle for life. Those species which willingly or unwillingly abandon it are doomed to decay; while those animals which know best how to combine, have the greatest chances of survival and of further evolution...The fittest are thus the most sociable animals, and sociability appears as the chief factor of evolution.”

Reconciliation seems more or less complete when Kropotkin goes on to say that ‘Darwin was quite right when he saw in man’s social qualities the chief factor for his further evolution.’

But in the later chapters of *Mutual Aid*, where Kropotkin tours through human rather than biological history, Kropotkin addresses himself to issues that were not Darwin’s concern, namely, issues to do with the advocacy of anarchism. Briefly, Kropotkin’s argument is that peaks of civilization have come when societies have been at their most co-operative and most free from state interference. Troughs in civilization come when natural disasters force people into wars for the means of subsistence, or when power is concentrated in the hands of tyrants or the state. His arguments drawn from recorded history could stand on their own merits, but one of Kropotkin’s most cherished beliefs was that history is continuous with biology, and that when people engage in co-operative, anarchistic activity they are in tune with the most fundamental principle at work in nature: ‘the feeling of human solidarity ...has been nurtured by all our preceding evolution.’ Clearly, an ideological thread

The connections between scientific theories and the scientists who formulate them are commonly not obvious. For example, if we were to be presented anonymously with a theory that said ‘If the volume of a gas is halved, its pressure is doubled,’ we would be able to say nothing certain about the ideological outlook of the theory’s originator, beyond making the obvious observation that he or she must be keen on science. But no trace of the scientist’s gender, race and political views could be detected in the theory itself. Obviously, in European science, it is highly likely that the scientist will have been white and male, as was actually the case in this example. But the presence of the theoriser isn’t directly registered within the theory. Indeed, it looks as if there’s no ideological content to the theory at all. In other cases, however, there is. Notably, theories which have bearings on who we are and how we ought to behave, have ideological footprints all over them. When scientists are addressing the problems of human origins, human evolution and human nature, the boundaries between the scientists, the natural phenomena they investigate, and the theories they formulate, are sometimes so trodden down that it’s difficult to see where one stops and the other starts. They go round and round in muddy loops. It is difficult to separate the object of study, the person studying it, and the theory in which the results of the study are embodied.

The most notable example of a scientific theory that bears the marks of ideology is Darwin’s *Origin of Species*, published in 1859. Darwin’s book set off a great, ramifying enquiry into humanity’s place in nature. This enquiry is of interest to anarchists because in 1890 Kropotkin pitched into it with the first of a series of articles which were eventually published in book form as *Mutual Aid*, in 1902. A simplified interpretation of Darwin’s and Kropotkin’s positions would be this: Darwin, whose intellectual outlook was decisively shaped by Victorian capitalism, produced a theory of evolution which pictured nature as a battlefield where plants and animals fight out a bloody

struggle for existence in which only the fittest survive, whereas Kropotkin, shaped by an intellectual tradition which stressed cooperation, pictured nature as a haven of peaceful, friendly, mutually supportive behaviour among animals. Thus, it seems that Darwin's and Kropotkin's ideologies influenced, or perhaps even governed the visions of nature presented in their biological work.

If the case were as straightforward as this, we could routinely predict the sort of evolutionary theories that scientists will propose, simply by investigating their prior ideological commitments. At the same time, we would have little confidence in the evolutionary theories themselves, for we would tend to see them not as reliable descriptions of what really goes on in nature, but as projections of their originators' politics.

A less crude and more interesting picture emerges if we look afresh at some of the famous contributions to the enquiry that Darwin opened up.

Darwin

Let us start with Darwin himself. In the first edition of *The Origin of Species* (1859) he set out a vision of nature which, despite some softening features, was grim. Individual plants and animals vary, and these accidental variations, when submitted to the ruthless rigours of natural selection in a world where there will never be enough food to go round, determine who shall survive and who shall perish. It is a process of unremitting selfishness. Adaptive variations help only their possessors; that's what is meant by 'adaptive.' 'If it could be proved,' Darwin wrote, 'that any part of the structure of any one species had been formed for the exclusive good of another species, it would annihilate my theory.' The theory, as Darwin made clear, was not restricted to plants and animals; he intended it to be applied, without modification, to the emergence of humankind

stop at the emergence of humans from animals; it carried on, through ancient history, the Middle Ages and up to modern industrial society. In one grand sweep, Kropotkin connected up the evolutionary and the historical past. His book is as much a work of history as of biology.

Like Darwin, Kropotkin's method is to pile up anecdotes. He relates how he watched crabs combining to help a 'comrade in need' who had fallen onto his or her back and who couldn't turn over unaided. He relates how, in a population of sparrows, each sparrow 'shares any food it discovers with all the members of the society to which it belongs.' He suggests that migrating birds gather together, before they start, and 'evidently discuss the particulars of the journey.' Prairie dogs, he observes, sociably 'go visiting one another.' These examples and there are plenty more like them may sound whimsical, but if we compare them with Darwin's own anecdotes, we find that Kropotkin is by no means embarrassed, as it were, by the comparison. Here is an example from Darwin, for comparison: 'I have myself seen a dog, who never passed a cat who lay sick in a basket, and was a great friend of his, without giving her a few licks with his tongue, the surest sign of kind feeling in a dog.' The tendency of both writers to use anthropomorphic language when describing animals makes them both occasionally sound like Beatrix Potter. It is not only in their anecdotal style, and in the point of their anecdotes, that Darwin and Kropotkin sometimes resemble each other. Their conclusions too converge from time to time, or differ only because of verbal, rather than substantial disagreements. For instance, in developing his argument for Natural Selection and the survival of the fittest in humans, Darwin suggested that sociable behaviour exhibited by a member of a human tribe might well directly favour him or her in the struggle for existence, whereas a member who exhibited only ruthlessly individualistic behaviour might antagonise members of the tribe to the extent that his or her survival would be jeopardised. Kropotkin

ral Selection) of his own grand theory, but insisted, come what may, that no special provision needs to be made to account for the emergence of humans. The equally liberal Huxley, by contrast, was not especially concerned about the intricacies of various evolutionary mechanisms, but had a passionate desire to proclaim a disjunction between Natural Selection, which has guaranteed the emergence of humans, and ethics, which are constructed in defiance of it. Meanwhile, out on the left wing, Wallace, the socialist, was surprisingly, but unswervingly committed to a demonstration of the sufficiency of Natural Selection to account for the evolution of every feature of the plant and animal worlds save for certain features of humans. Plainly, it's not easy to read off this trio's biology from their politics.

Kropotkin

What position on these issues did the anarchist, Kropotkin, take?

He did not limit himself simply to skirmishing back and forth across the issues defined by Darwin, Wallace and Huxley, although, oddly, when he did specifically address these issues, he was in many ways closest to Darwin. Like Darwin, he was fundamentally committed to a vision of nature that presented animals and humans in one uninterrupted evolutionary continuum. Unlike Wallace, he envisaged no special spiritual interventions, and he denied Huxley's claim that ethical human behaviour can be founded only upon a repudiation of the evolutionary forces that have shaped us. Kropotkin's chief aim was to show that although Natural Selection and the Survival of the Fittest are undoubtedly at work in nature, 'mutual aid' is at work too. In his own words: 'Mutual aid is as much a law of nature as mutual struggle.' In order to demonstrate this, Kropotkin's ambitious project took him into territory that Darwin had not even staked out. Kropotkin's account did not

from the brutes. Thirty years later, Kropotkin was to respond to the selfishness of this first Darwinian account by proposing that there is plenty of evidence of animals selflessly helping each other. Thus, it might seem that Kropotkin and Darwin were ranged against each other in defence of quite different accounts of the way nature works, and that ideology gives us an explanation of those accounts. This won't do.

Darwin's own position on the sufficiency of Natural Selection shifted a great deal during the twenty or 50 years between the first edition of the *Origin* and his death in 1882. In succeeding editions of the *Origin* and in other books, he steadily reduced the emphasis given in his evolutionary theorising to the Natural Selection of accidental variations, and increased the emphasis on other factors. Additionally, during the decades following the first edition of *The Origin*, numbers of naturalists had joined the enquiry into evolution and had given their own spins to the evidence. So when Kropotkin joined the fray, thirty or 50 years after it had started, he was adding to an already weighty, complicated and often contradictory enquiry. The enquiry had two enduring features. First, virtually everybody within the scientific community accepted that evolution has happened. But secondly, there was no agreement on precisely how it has happened. Notably, the theory of Natural Selection came under fierce and well-informed attack, and Darwin was obliged to beat a somewhat confused retreat. At his death in 1882, Natural Selection theory was in deep trouble, whereas evolution itself was no longer contested.

It is often thought that the sharpest, most anguished ripostes to the starkest formulation of Darwin's theory came from Christians. Certainly they had a great deal to worry about if they wished to preserve a belief in a wise and loving god, but if we set Christian objections to one side, we can still find plenty of anguish, felt by people who had no orthodox Christian allegiances. George Bernard Shaw, for instance, was deeply disturbed by the desolate prospects opened up

by Darwin. In a lecture given in 1906, which he later worked up into the preface to his play *Back to Methuselah* (1921), Shaw wrote that the 'Darwinian process may be described as a chapter of accidents: when its whole significance dawns on you, your heart sinks into a heap of sand within you. There is a hideous fatalism about it, a ghastly and damnable reduction of beauty and intelligence, of strength and purpose, of honor and aspiration, to such casually picturesque changes as an avalanche may make in a mountain landscape, or a railway accident in a human figure.'

Shaw's objection to the theory is plain enough, but he was not a scientist and thus could draw on no solid biological evidence to help him out. He could only bluster: 'When a man tells you that you are the product of Circumstantial Selection [i.e. Natural Selection] solely, you cannot finally disprove it. You can only tell him out of the depths of your inner conviction that he is a fool and a liar.' Shaw's moral revulsion at the implications of Natural Selection and the Survival of the Fittest was, and remains, quite common. We can track the same revulsion, though backed up with arguments more substantial than Shaw's 'inner conviction' when we move into the work of the biologists themselves. Indeed, Darwin himself was revolted by the prospects opened up by his own new world of accident and struggle; he was never able completely to come to terms with his own recognition that there is no more design in the process of evolution 'than in the course which the wind blows,' and that the ways of nature are blundering and cruel. He was certainly no unfeeling, mechanical conduit for the transfer of brutal capitalist competition from the factory floor to the forests and oceans of wild nature.

In 1871, twelve years after he had published his *Origin of Species*, Darwin published his *Descent of Man*. It is a frustrating, anecdotal, rather unclear book. Its one consistent, convincing drive is to show that the physical and mental resemblances between humans and animals are so close that there can be

by a single set of evolutionary forces, had increased the number of forces in the set rather incoherently. Natural Selection was pretty well suffocated. Wallace, by contrast, re-asserted the theory in its pristine form; in his preface he declares that his 'whole work tends forcibly to illustrate the overwhelming importance of Natural Selection over all other agencies in the production of new species.

Now, this might lead us to expect that Wallace would write, like Huxley, in the Nature-red-in-tooth-and-claw mode. Given his assertion of the primacy of Natural Selection, Wallace would be likely to emphasize the pitiless struggle for existence. However, unlike Huxley, he plays it down. As a socialist, and as a believer in an unseen world of spirit' which manifests itself in humans, he was perhaps predisposed to look on the bright side and to give the biological evidence, which he marshals with a skill at least equal to Darwin's, a cheerful interpretation. He argues, for example, that it is misleadingly anthropomorphic to imagine that in the great struggle for existence, animals suffer in the way that humans would. Animals' deaths are usually swift, and the doomed creatures can't anticipate their fate. 'As a rule,' he says, animals 'enjoy all the happiness of which they are capable.'

When it comes to the emergence of humans, though, Wallace, quite unlike Darwin, insists that new evolutionary forces must have come into play. Natural Selection will have been competent only to seize on features strictly useful to their possessors in the struggle for existence. It will have been incompetent to guarantee the consolidation into human populations of things like the capacity for mathematics, or music, or humour.

What this rapid survey of the views of Darwin, Huxley and Wallace three of the leading contributors to the enquiry about human origins shows, is that there is surely some sort of interplay between ideology and scientific theory, but that it is not at all easy to specify precisely what it is. The liberal Darwin was ready to diminish the importance of the chief factor (Natu-

to deal with facts, to some extent within my knowledge, and further evidenced by abundant testimony, as a naturalist.' The boundary here between science and ideology has collapsed. Despite the closeness of their collaboration, Huxley and Darwin were saying very different things about the origins of ethical human society. For Darwin, it has steadily evolved from pre-human origins, whereas for Huxley it has been achieved by some sort of heroic existential confrontation between humans and their sordid evolutionary past.

Wallace

By around 1890, then, the enquiry into human origins, human nature and human destiny was wide open. Kropotkin's entry into the debate was by no means eccentric. But before turning to Kropotkin himself, it is instructive to look at the work of Alfred Russel Wallace.

Wallace was doomed always to play second fiddle to Darwin. He generously accepted this humble role, but the clarity of his thinking during the decades following the publication of *The Origin of Species* should give him a higher claim. Back in the 1850s, and perfectly independently of Darwin, he had formulated the theory of Natural Selection. But when he found that Darwin had got there first, he magnanimously gave him priority. During the 1860s, Wallace's interests in socialism and spiritualism drifted him away from the inner circle of Darwinians, and Darwin grew impatient with him when traces of spiritualism began to appear in his evolutionary writings. But in nearly every way, Wallace was steadier on his feet than Darwin was in the difficult territories of Natural Selection theory and human evolution. In 1889, seven years after Darwin's death, Wallace published a magisterial survey of evolution. With characteristic self-effacement, he entitled it Darwinism. Darwin himself, while insisting that humans and the brutes have been produced

no doubt that a single set of evolutionary forces has shaped both animals and humans. Whenever Darwin is faced with the challenge of explaining a characteristic that seems to be distinctively, or uniquely human, he searches for an example of a rudimentary form of that characteristic in an animal. A famous example is his explanation of the supposedly exclusively human characteristic of religious belief. If Darwin could find no evidence of something akin to religious belief in pre-humans, he would be compelled to concede that there is a distinct rift between humans and the brutes, and that a supplementary law of some sort will be necessary to account for the uniquely human. In the case of religion, he speculates that primitive humans would have practised a crude animism. Then, searching for an even more rudimentary form of religion among the animals, he gives the example of the behaviour of his own dog, who growled when a parasol lying on the lawn was moved by a slight breeze:

He [the dog] must, I think, have reasoned to himself in a rapid and unconscious manner, that movement without any apparent cause indicated the presence of some strange living agent.

It is not a very impressive explanation, though we do well to remember how difficult it is to explain the complexities of human behaviour by reference to evolutionary origins. And the difficulties become prodigious if we limit ourselves as Darwin initially tried to do to the theory of Natural Selection. If the only permissible explanation for every single feature of humans is that these features, at some stage in evolution, must have conferred on their possessors significant advantages in the struggle for existence, how do we explain features like altruism, or aesthetics, or religion? What possible survival advantage could have been conferred on somebody who had a tendency to risk his or her life for others, or who had a talent for music, or who believed that there is a God? In general, it was and remains hard to frame explanations for the emer-

gence, in imperceptible stages, of a society of moral humans from non-moral brutes. Darwin wrestled, page after page, with such problems, and his examples are usually much more plausible than the one concerning the dog and the parasol. But in the process of working out complex examples and marshalling mountains of evidence, he attenuated both his earlier notion of the Struggle for Existence, and his reliance on Natural Selection. It is sometimes unclear who is struggling with whom. Is it an individual struggling directly with nature (with an intensely cold climate, for example); or is it two individuals of the same species struggling with each other for the means of subsistence; or is it the members of one species struggling with another species; or is it groups of individuals from one species struggling with other groups from the same species? In Darwin's examples it is not always clear. And when the going gets tough for Natural Selection theory, Darwin falls back on five or six other evolutionary mechanisms, including the inheritance of acquired characteristics (if I learn to hunt, my offspring will be born with a hunting ability), and Sexual Selection (certain features exist because they have been beneficial in the struggle to find a mate).

Also, far from revelling in the idea of Nature red in tooth and claw, Darwin gave humane ethical evaluations of some of the evidence he was producing. The tendency of animals to expel wounded members from the herd is, he says, 'almost the blackest fact in natural history, and when he reaches his discussion of the evidence that, among modern humans, the poor and feckless are out-breeding the well-to-do and respectable classes, he stops well short of the disturbing eugenic recommendations that were proclaimed by writers like Francis Galton and Herbert Spencer.

Darwin, then, by the 1870s was by no means the single-minded advocate of the one, all-sufficient evolutionary mechanism of Natural Selection, nor was he at ease with the ethics that might be held to flow from such a heartless law of nature.

Huxley

The writings of T.H. Huxley, 'Darwin's bulldog,' on the evolution of humans have an air of great clarity and force, but unlike Darwin, Huxley was not inclined to work through reams and reams of anthropological and biological evidence, puzzling his way towards evolutionary explanations. Darwin is frank, painstaking, unpretentious; Huxley is combative, dazzling, flashy. In 1888, he published an article on 'The Struggle for Existence in Human Society.' It has a single, powerful idea running through it, an idea that he was to elaborate more fully in his famous lecture on 'Evolution and Ethics' in 1893. The idea is that far from there being an evolutionary continuum linking the non-moral, the rudimentarily-moral, and the fully-moral worlds, there is an absolute disjunction between the moral and the non-moral: humans can behave morally; nature cannot. 'From the point of view of the moralist,' Huxley writes, 'the animal world is on about the same level as a gladiator's show.' Huxley presents Nature as a war of all against all. And while primitive humans necessarily had to fight tooth and claw to hoist themselves clear of the brutes, once into the fully human world, they had equally necessarily to stop, turn, confront the Struggle for Existence that had governed their own evolutionary emergence, and set about establishing tight ethical limits to its operations. Huxley does not explain precisely how this dramatic change in evolutionary tactics happened. His more urgent concern is to warn his readers that the growth in population in the most wretched areas of industrial cities, coupled with intense international competition, are likely to overwhelm the ethical systems that have been established in defiance of Nature. The primeval, brute struggle for existence, he fears, will begin again. Darwin was cautious about drawing overt political lessons from his biology, but Huxley was unabashed. He pompously and mock-modestly proclaims: 'I am merely trying