

INTRODUCTION

‘But I don’t feel afraid;
As long as I gaze on Waterloo Sunset
I am in paradise.’

– Ray Davies, ‘Waterloo Sunset’

One can easily envision the lanky, bearded figure of Alfred Russel Wallace, sitting silently with his feet up on the verandah of one of his hastily constructed Sarawak or New Guinea bungalows, sipping at an evening cup of tea. Facing him, in the far distance, the tropical sun is sliding lazily beneath the forest horizon. Like the protagonist of Davies’s pop masterpiece he must often have felt quite alone as he gazed out into the shadows, pondering the sublime – yet neither disappointed with his lot, nor envious of the many who seemed content to tread their more conventional paths. But here the parallel with the Davies character ends, for Wallace was not only the detached observer, but one of history’s notable participators as well: as the philosopher Charles Peirce once observed, ‘a man conscious of superior powers of sound and solid reasoning, which enable him to find paths to great truths that other men could not, and also to put the truth before his fellows with a demonstrative evidence that another man could not bring out’. So it was with Alfred Russel Wallace: he was not a man to just sit around and reflect.

The facts of Wallace’s long life are pretty well documented. He was born on 8 January 1823 in Usk, Monmouthshire, on the borderlands of England and Wales, to English parents of good character but few resources; by the age of fourteen, declining family finances had forced him to leave school and apprentice himself in London. Within a year he had taken up with his oldest brother, a surveyor and builder working in the western counties of England and southern parts of Wales. Wallace liked the work: it put him in direct contact with the wonders of the natural world,

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and also gave him an opportunity to absorb a range of instructive lessons on human values and needs. He might have remained in the business forever but for a work slowdown that forced his brother to let him go in late 1843. He soon found employment as a master at a private school in Leicester. There he read a number of books central to his future evolution as a thinker, most notably titles by Charles Lyell, Robert Chambers, and Thomas Malthus. He also had the good fortune to meet the young amateur naturalist Henry Walter Bates. Bates was like himself little educated, but his enthusiasm for natural history – especially insect collecting – proved irresistibly infectious. After about a year Wallace returned to surveying when his brother passed away suddenly, but by that point the die had been cast.

Wallace and Bates decided to turn professional as natural history collectors and in 1848 set off for the mouth of the Amazon River. They worked together for a while, then split up and went their separate ways. Wallace stayed in the Amazon region about four years before wearing himself out to the point of becoming too weak to continue (Bates was able to keep himself going for a total of eleven years). In 1852 he left Brazil for England, accompanied by most of his collections from the past two years.

The vessel he chose for his carrier managed to find its way out to the middle of the Atlantic without much difficulty, then promptly caught fire and sank, taking almost everything in Wallace's possession to the bottom along with it. He and his comrades were now forced to spend ten anxious days bailing out a pair of badly leaking lifeboats, but finally they were rescued and returned to England. After settling in, Wallace turned out several papers and a couple of books – *Palm Trees of the Amazon and their Uses*, and *A Narrative of Travels on the Amazon and Rio Negro* – that further established his reputation as an all-around student of nature. Deciding he wished to continue pursuing the same line of work, he secured a grant covering passage for himself and a young assistant to Singapore – to the area then known as the Malay Archipelago.

During Wallace's eight-year stay in the Malay Archipelago – 1854 to 1862 – he embarked on a total of more than sixty separate expeditions. These would really make his name. Apart from yielding the theory of natural selection and setting the field of biogeography on its modern track, his studies in the region helped to clarify its ethnography, led him to become the first European

resident of New Guinea, produced the first important extended ethological investigations on the orangutan and paradise birds, and provided him with a wealth of data on all manner of things physical, biological, and social. Finally, the famous ‘priority’ incident surrounding his conveyance of the Ternate essay on natural selection to Darwin assured his entry into the highest ranks of scientific discourse upon his return. He would soon take full advantage of this opportunity.

It was some years, however, before Wallace entered into a real dialogue with Darwin on the various ramifications of natural selection. When this began it became apparent that he could function equally effectively in the roles of defender and critic. Meanwhile, and despite still being something of an outsider to the British scientific/intellectual establishment, he leapt right into the discussions going on in a dozen different fields, including several most would view as being rather remote from natural history. By 1881, for example, he was President of the Land Nationalisation Society, an organization dedicated to removing ownership of the land from the hands of large private holders. Rather late in life he would additionally become a socialist; he was also an anti-vaccinationist, an anti-vivisectionist, and an early supporter of women’s suffrage.

When Wallace died on 7 November 1913 he was the last of the great Victorian scientists – men like Darwin, Huxley, Hooker, Spencer, Lord Kelvin, Tyndall, Lister, and Galton – to go. Less than a year later the world was at war, and his contributions – despite the fact that at the time of his death he was possibly the most famous scientist in the world – were largely forgotten. In the larger scheme of things there could be but one Darwin, after all.

More recently the pendulum has again begun to swing. Frankly, it is surprising that it took so long for the re-examination to begin. Wallace’s credits are formidable; there is of course the natural selection model and his ‘fathership’ of modern biogeographical studies, but to this can be added a good deal more. Many authorities now additionally regard him both as history’s foremost tropical naturalist, and its equally ranking field biologist; it is not likely to be long before he is also fully recognized as the first important link in the chain leading to the emergence of the modern biodiversity movement. In his own time he was considered the leading authority on the Malay Archipelago region, and his book *The Malay Archipelago* has ever since its writing been praised as

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one of the very finest exemplars of scientific travel writing. Late in life he took up the scientific study of planetary environments and in so doing became one of the founders of exobiology (and one of the first modern purveyors of the anthropic principle). In the domain of social studies he is slowly gaining recognition as an important anticipator of the Liberal Agenda that dominated twentieth-century sociology and politics. And one should also not forget that he was among the first to apply an entirely statistical approach to the study of an epidemiological problem, in connection with his opposition to the mandatory smallpox vaccination programme of the time.

Still, most observers today would point to Wallace's work on evolution, *sensu stricto*, as his crowning achievement. While that is hard to disagree with, one can make a case that we still don't have a clear picture of exactly what it was that evolution, as a many-dimensional subject, represented to him.

It has been indiscriminately held for rather too long that Wallace's and Darwin's ideas on evolution, as glimpsed through their thoughts on the theory of natural selection, were very similar – even interchangeable, once one gets past some of their more obvious differences over extensions such as sexual selection and the evolution of human consciousness. This appraisal is in profound need of considered re-examination. It is not insignificant, for example, that the two men came to the subject from quite different directions. Darwin, heavily influenced by his background in geology and the uniformitarian ideas of Hutton and Lyell, envisioned a gradualistic evolutionary process in which species lines diverged as natural selection – and perhaps other forces – acted to accumulate variation. In his view selection took place through a process of individual competition leading to a 'survival of the fittest' in which the better adapted differentially survived and thus had a better chance of passing along their characteristics to the next generation. To make this work, adaptive characters had to have functional utility – and, importantly, in Darwin's mind this applied whether one was speaking of the complexities of human biology and consciousness, or the more rotely operating adaptations of simpler creatures.

Wallace's first thoughts on evolution, on the other hand, appear to have been connected to his views on societal progress. At the tender age of fourteen he came under the influence of a group of London Owenites – utopian socialists – and took to heart their

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ideas on the relationship of just treatment to self-actualization. Early on he seems to have recognized a fundamental connection between the nature of belief and the evidence of the senses; i.e., that one's individual evolution as a functioning member of society was a matter of reasoning on the basis of facts. His earliest known writings extend this concept to the relative success of societies: those societies which are open to the flow of knowledge from without (and which permit its dissemination within) are those which can develop – evolve – into great nation-states.

Wallace had been thinking such thoughts for several years when he first read Lyell and Chambers in 1844 or 1845. The latter's anonymously-penned work *Vestiges of the Natural History of Creation* impressed him immensely, but more for its attention to the possible *fact* of a biological evolution process than for any suggestions it offered regarding the mechanisms behind it. It does seem, however (considering words of his published ten years later), that by about 1845 he had already arrived at an understanding of the process of species divergence that permitted of test: through the examination of the geographical-geological record of distributions of evolutionarily-derived sister groups. One might wonder how he could have thought this out so quickly; I suggest the following primary influences.

First, and to date rather overlooked, is the significance of his work as a surveyor – and in particular, his attention to map drafting and interpretation. From this he was fully practised in the art of thinking not only in time and space, but in representing such thinking in graphic terms. This would have been of fundamental importance to him in attempting to conceptualize the ramifications of species lines playing out in an actual space, the surface of the earth.

Second, by this time Wallace had read a fair number of important works that contained a strong geographical emphasis, as distinct from biology *per se*. It is hard enough to imagine a process of evolution – as Lamarck and Chambers had – but more difficult yet to envision the details of its unfolding within an actual, constraining, environment.

Third, and also an under-considered factor, is the way he dealt with utility, and how this was derived from his ideas on belief. Wallace felt that the condition of acceptance we refer to as 'belief' (or 'believing') could be considered neither meritorious nor voluntary: a belief based on incorrect information was never-

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theless a belief, and could not be overturned by a mere act of will until further clarifying information made itself apparent, and was accepted. Importantly, this meant that only *informed* belief was truly utilitarian – that is, could promote actions serving progress within the natural order. On this basis conventional theological ideas did not impress Wallace – it made no sense to him that one could be ‘saved’ or ‘go to Heaven’ merely on the basis of rote adoption of doctrine. Why should there be inherent merit attached to this kind of belief when all other kinds had to test themselves against provable realities?

If beliefs could be non-utilitarian, it was not taking much of a step to think that some biological adaptive structures might be so as well. But in making this connection Wallace lapsed into an unproductive stance that would stall his thoughts for over ten years. He probably reasoned that the ‘no *necessary* merit to belief’ notion found a parallel in the way biological characters functioned; that is, they were by-product *results* of the evolutionary process, and like beliefs could not always be viewed as useful (and, also like them, they could eventually be superseded by new ones).

Overall, I see Wallace’s thoughts on evolution as of 1855, the time of his writing ‘On the Law Which Has Regulated the Introduction of New Species’ (the so-called ‘Sarawak Law’ essay), as involving a peculiar kind of teleology in which final causes, not first causes, ruled. He had envisioned a kind of ‘geographical Bauplan’ model of natural change in which some ever-present and overriding environmental force or condition was shaping the evolutionary progression. He could probably prove that evolution did in fact take place – by documenting its results over time and space (i.e., in the modern biogeographical sense of tracing the biological/geographical/geological record of species divergence) – but there was yet the complicating factor that *some* adaptations, at least, appeared to have no utility. Indeed he directly argues both in his book *Travels on the Amazon and Rio Negro* and the essay ‘On the Habits of the Orang-Utan of Borneo’ (included in this collection) that individual adaptive structures are not necessarily utilitarian; again, he seems to feel that they are somehow *correlated* with the process of divergence and evolution, but not driving it. To believe the latter would, he probably felt, be giving into a first causes position: that there is *necessarily* a match – a one-to-one, and utilitarian causal relationship – between particular environmental characteristics and particular adaptations. Fact-

finding became Wallace's *de facto* research strategy: once enough information were gathered, perhaps it would be possible to identify the final cause operating, and then to work backward from this to investigate how its operation affected dynamics at the level of individual creatures (which, he still believed, sported particular, idiosyncratic, adaptations whose individual development obeyed no set rules of unfolding).

And so the matter remained until 1858, and the celebrated bout with malaria during which Wallace connected the ideas of Thomas Malthus on the 'positive checks' on human population growth to the notion that better-adapted individuals will tend to differentially persist and thus pass more of their characteristics along, through their progeny. Note, however, that the famous essay he sent off to Darwin 'for comment,' despite its outward similarity to the latter's ideas, could only solve a part of the puzzle for Wallace. Through the 'survival of the fittest' argument he could now see how adaptations were more integrally connected to utility than he had originally imagined: simply, those variations/adaptations that succeeded and were accumulated by a population did so not because they fulfilled – i.e., were specific to – some predestined role, but instead because the process itself found out – through trial and error – 'what worked'. This revelation turned his thinking completely around, leaving him with a new dilemma. While the new model provided a plausible reason for thinking that perhaps all adaptive structures might have utility after all, there yet seemed to be adaptations out there that, in fact, did not. The higher human attributes – mathematical and artistic abilities, for example – seemed to have no utility function that natural selection could possibly identify, and select for.

As soon as he read *On the Origin of Species* Wallace must have understood that Darwin had no such qualms about lumping together all human characteristics and explaining them on the basis of the hypothesis of utility. For several years he sank his differences on the matter, but by 1869 he was ready with a startling hypothesis that he felt could account for the apparent non-utilitarian nature of the higher human attributes. The first indication of this actually came three years earlier, when he publicly announced his interest in Spiritualism, and thus in positing the existence of a supra-physical – but nevertheless law-based, and 'natural' – reality. Now he embraced the notion that this reality completed the evolutionary causal picture: by mediating the final

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link between utility and adaptation. In this view there are subtle avenues of communication, mostly subliminal and only occasionally physically manifest, between the 'Spirit-World' and our individual consciousnesses. Through such contacts flow the kinds of information that help to educate us and raise us above selfish individualism, and into a custodial relationship with the earth and all of its inhabitants enlightened by a focused sense of respect and proper action. Wallace had concluded that there was utility to the 'higher human attributes' after all: they are the means through which egoism is overcome, and cooperation toward the attainment of higher goals is achieved.

Wallace's model of the evolutionary process was now complete, and true to the original 'final causes' vision he had imagined circa 1845. Whatever the final cause of evolution might actually be in detail, of most immediate import was its development of socially conscientious beings whose acts reflected an enlightened custodianship of their overall physical and societal domain. All causes pursuant to that end could be understood in simple natural terms – that is, without recourse to suppositions of miraculous intervention. With but few additional refinements (his eventual adoption of full-blown socialism in 1889, for example) he made few further adjustments to the basic model, being content instead to work out its various ramifications.

This is, indeed, a grand vision of reality. The outstanding question remains, of course, whether it represents an accurate vision. Much of the Darwin-Wallace synthesis – especially that directly involving natural selection – has proved a durable starting point for investigators of biology and biological change, but those 'supra-biological' refinements suggested by Wallace have faced tougher going. Still, there is a logical, and even aesthetic, elegance to Wallace's perspective that continues to attract interest, and not only for reasons of historical curiosity. Both the anthropic principle in cosmology and the Gaia hypothesis in global biology are arguably neo-Wallacian notions, and it is not altogether a stretch that someday we may discover that final causes play a more central role in evolution and cosmology than is currently perceived.

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Most of the various elements of Wallace's evolutionary cosmology are touched on in the present three-volume set, and to say much

more about them at this point would represent a duplication of effort. It is more interesting to conclude here, I think, by indulging in a bit of speculation as to what Wallace might think about the present state of evolutionary studies, especially as these relate to his own pioneering efforts.

Surely, Wallace would be the most pleased that the theory of natural selection still stands at the centre of the theoretical evolutionary biology stage. Indeed, its place is probably more secure now than it was during his own time. It is unlikely, moreover, that he would be terribly displeased that two studies he severely criticized – mutationism, and Mendelian genetics – have come into their own as central contributors to our understanding of evolution. Wallace's criticism of these subjects had more to do with many of their early supporters' attempts to look at them as superseding natural selection, rather than framing the origin and 'sorting' of the variation upon which it acts. It is invariably overlooked that Wallace's so-called 'hyperselectionism' regarding the dominating operation of natural selection was quite distinct from his appreciation of the roles of the laws of origin of variation themselves, which, he reminded his readers on many occasions, were quite unknown.

He would also be pleased that a number of the more special subjects he investigated remain of interest to today's workers. This is especially true of his studies on protective colouration, which still present some of the most interesting examples of natural selection at work. He might feel just a touch of disappointment regarding the increasing acceptance of Darwin's position on female choice in sexual selection over his own, but even there the former's victory is not yet complete, since the forces involved are admitted to be very complex, and even Wallace himself advanced ideas on female choice that sound rather modern (for example, the notion that the most brightly coloured animals are likely to be the ones in a most robust state of health, and are found attractive for that reason). Wallace would also find the continuing interest in the relation of hybridization effects to the speciation process gratifying, as he would the increasing attention being given to the meaning of biodiversity in evolution: for example, to continuing efforts to understand the underlying causes of latitudinal diversity gradients. He perhaps would take some amusement in the minor revolution caused by the Eldredge/Gould 'punctuated equilibrium' model regarding fluctuating rates of speciation over geological time – and

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the fact that he, like Darwin, is usually pictured as a gradualist – since he himself actually posited such ‘punctuated’ patterns of rate of evolutionary change several times in his writings.

In evolutionary biogeography, the so-called ‘permanence of continents’ model of paleogeography that Wallace supported has been superseded by plate tectonics and continental drifting, but it is difficult to believe that a man with as acute a mind as Wallace had would have failed to recognize the definitiveness of the evidence presented in the 1960s and not become an early convert. He might have taken the late 1970s rejection of his regionalization views by many of the cladistic biogeography school (and panbiogeographers as well) a bit hard, however. First, and ironically, Wallace’s initial writing on historical biogeography (‘On the Law Which Has Regulated the Introduction of New Species’, included in this set) relays a study framework hardly differing from the current phylogenetics-dominated approach (though of course he did increasingly ignore his own lead and look to regionalization models as his preferred unifying concept). More importantly, perhaps, his ‘final causes’-based cosmology suggested to him that there might be controls on speciation – and in turn biogeographic – processes operating at a more remote level than the immediate conditions of environment alone, and he may well have continued to suspect that these actually do exist, and are only awaiting our discovery.

Regarding the physical and mental evolution of human beings: here, the failure of his ‘supranatural influences’ model of the evolution of consciousness and self-awareness to attract more followers would have disappointed – but probably not surprised – him. Indeed, he might have drawn some solace from the fact that even so he has some supporters, a few acknowledging the possibility of existence of nearly untestable supra-spatial realities, with others (some members of the evolutionary psychology school, for example) exploring more conservative, yet not entirely Darwinian, possibilities. He might also have drawn solace from the continuing efforts to explore spiritualist, theosophical and paranormal ideas, especially to the extent that some of these (such as the psychologist Ian Stevenson’s studies on reincarnation) have actually produced kinds of favourable evidence not imagined in Wallace’s own time. Some of these might even have caused him to change his mind on theosophy, an evolutionary view he felt unable to support. And, in terms of the physical evolution of humans, he would have been

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pleased to find that his earliest published thoughts on the matter of species and racial differentiation still have relevance – most recently, in connection with the finds in North Africa of a possible direct line human ancestor of Miocene age, a relationship in time he posited in one of his early papers.

Wallace would probably have been most pained over the extent – or lack thereof – of human social progress in the ninety years since his death. It would discourage him that a fully productive form of socialism has yet to establish itself, and that acts of unselfish motive at the level of national government are still rare events. He would be pleased that women have gained the right to vote and have become more economically independent, giving them, as he prophesied, the chance to select better husbands – but might observe that perhaps they have not been so good at actually doing this as he would have hoped! It would continue to disturb him that the gap between rich and poor remains as great as it is, and that the common man still has not been able to protect his interests from the greed of powerful individuals and corporate entities. He would find it only barely believable that the Death Penalty is still commonly imposed. Nevertheless, ever the optimist, Wallace would probably applaud continuing unrest in the world as a sign that people still cared, and that there was yet a real chance that evolution would produce the final results he had anticipated so many years earlier.

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The present three-volume collection aspires to set before today's reader a balanced selection of Wallace's most important and interesting published writings on evolution. It should be noted at the outset, however, that it by no means exhausts all of those that actually exist: such an effort would fill roughly four further volumes of their size, including most or all of several additional books, and perhaps another one hundred or more essays, systematic revisions, book reviews, and letters to the Editor.

Still, the materials presented here arguably do account for the vast majority of Wallace's important thoughts on the subject. Volume One of the present set collects the bulk of his most interesting shorter writings that are not to be found in the 1891 collection *Natural Selection and Tropical Nature*. The latter, Volume Three of the present set, is itself a compilation that

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reprinted most of the essays originally appearing in two earlier collections, *Contributions to the Theory of Natural Selection*, published in 1870, and *Tropical Nature and Other Essays*, published in 1878. *Contributions...* included what are probably Wallace's three most famous essays on evolution: the 1855 'Sarawak' essay, the 1858 'Ternate' essay on natural selection (which actually was probably not written on Ternate, but that's a whole other story...), and the 1864 Anthropological Society presentation on the origin of human races. The book *Darwinism* has been reprinted as Volume Two of the present set. Originally published in 1889, it has come to be regarded as the most important late nineteenth-century review of the subject – despite the fact that it too is really just a collection of essays, having been based on presentations given during Wallace's ten-month lecture tour of the United States and Canada in 1886–87.

Volumes Two and Three of the set are facsimile reprints of the originals and require no further comment here. This volume, Volume One, consisting of some sixty-three shorter writings, has been compiled as follows. Originals of each work were either transcribed, or scanned and then converted to editable text using OCR software; everything was then triple-proofread to assure full faithfulness to the original sources. The selections have been arranged chronologically, in the order they actually reached the public.

Two further notes: the numbers attached to each item (e.g., 'S8,' for the 'Monkeys of the Amazon' essay) are part of an identification system introduced in my anthology and bibliography *Alfred Russel Wallace: An Anthology of his Shorter Writings* (Oxford University Press, 1991); this system has been continued, with additions, in my current World Wide Web site *The Alfred Russel Wallace Page* (<http://www.wku.edu/~smithch/index1.htm>). The reader will also notice that the pagination in each original source has been identified by inserting page markers – '[p. 234],' for example – that indicate where each page begins in the source publication.

Those interested in pursuing an exhaustive accounting of evolution-related subjects in Wallace's writings should consult the 'Wallace Bibliography' section of the above-mentioned website.

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