First Class Essays

Too often superb work is left to collect dust simply because it was written by students in the context of university courses. That's not right. This series collects some of the top student work produced in the context of my courses at UCL. It's work well done, and it's work rich with ideas.

Joe Cain, series editor

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FIRST CLASS ESSAYS

Was Wallace More Darwinian Than Darwin Himself?

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Introduction

Alfred Russel Wallace (1823-1913) was an English naturalist, philosopher, anthropologist and social reformer – evidently something of a maverick. His theories on evolution, formed after two major expeditions to tropical islands, were so similar to those of the infamous Charles Darwin that the latter read them with "stupefied horror," and hurried to publish his own, long-ruminated ideas in Origin of Species (Bernstein 1982 p. 653). Despite effort to present these two men as co-authors of the theory of evolution at the time, it is Darwin's name that perpetuates in the teaching of natural selection; in the debates surrounding evolution versus 'intelligent design'; his portrait on the English ten pound note.

In 1912, a year before Wallace' death, Henry Fairfield Osborn, then president of the American Museum of Natural History, wrote:

> In retrospect of British biology during the 'wonderful century' there stand out four men who names will endure: Lyell, Darwin, Wallace and Galton.

Why then, has it not whilst Darwin's has? As evolutionary theory grew, around the 1860s, Wallace's name was intrinsically linked to Darwin and 'Darwinism'. Note this term and its further nod to Charles. It is this noun which we are familiar with, which summarises the ideas of variation, natural selection, survival of the fittest and evolution from less adapted to better adapted populations. Yet Darwin was not a strong defender of his ideas, and over time weakened his arguments considerably (Schwartz 1984). Wallace's developments were more in line with the original thinking. In light of this, and Wallace's primary impact on the publication of the theory, it is sensible to ask: "Was Wallace more Darwinian than Darwin himself?"

These questions will be looked at in due course. We need to have a greater understanding of the events surrounding publication of Origin of Species, what exactly being 'Darwinian' entails, and why Wallace did not champion his own cause.

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But first, a brief account of the life of Alfred Russel Wallace.

Wallace the man

Wallace was born on 8th January 1823 in Usk, Gwent. After a brief residence in London, age 15, he left to join his brother William in the surveyance trade. During this employment he discovered a love of outdoor work and natural history. He became a member of the Mechanic's Institution, and eventually landed a teaching job at Collegiate School, Leicester. Here, he met the young amateur naturalist, Henry Bates – a turning point in Wallace's career.

After the death of William, Wallace was forced to leave his teaching job in order to run the deceased's surveying business. He did, however, still find time for natural history pursuits - finally being inspired by William H. Edward's A Voyage Up the River Amazon to launch his own collecting expedition to South America. Having enlisted Bates, at age 25, Wallace set off for the mouth of the Amazon on 25th April 1848.

During this, and the subsequent solo exploration of the Malay Archipelago, Australasia, from 1854 to 1862, Wallace was in mind of the causes of organic evolution, thoughts he explored through the study of birds, primates, plants and geography. The inspiration for this came from several works: Charles Lyell's Principles of Geology and Robert Chambers' Vestiges of the Natural History of Creation, which he was in agreement with; and those on Creationism and Lamarckism, which he was not.

It was during the latter trip that Wallace wrote the papers that so stunned Darwin, now known as the Sarawak and the Ternate, named for where they were written. Upon returning to England, he married Annie Mitten, and published over 150 essays, letters and reviews. Not all were on evolutionary theory – in fact, he wrote just as much social commentary and on biogeography as evolution (Shermer 2002). Particular interests, for example spiritualism and Land Nationalisation were developed in later life. This is key to understanding Wallace's backseat place in modern opinion of 'Darwinism'.

After a long, scholarly life, Wallace died in his sleep on 7th November 1913. Following brief suggestions that Wallace should be interred next to Darwin in Westminster Abbey, he was buried in the local cemetery of Broadstone, the town that was home to his final years. Two years later, a medallion bearing his name was placed in the Abbey. Clearly, his contributions were vastly appreciated at the time of his death. Though not quite as highly as Darwin's, during his time and even more now. Why so?

Darwinism

"Some of my critics declare that I am more Darwinian than Darwin himself," wrote Wallace, in his autobiography, published towards the end of his long and successful life, "and.. they are not far wrong." (Wallace 1905 p. 237) The man himself seems to have answered the question at hand rather simply, but can we take his word for it? Furthermore, aside from the explanation above, what is the criteria one must fill to be named a 'Darwinian'?

Several social theorists have analysed the groupings of scientists and philosophers as members belonging to a certain idea, theory or discovery. David Hull and Phillip Kitcher particularly have analysed what constitutes a Darwinian. The traditional view

is that a person ascribed a certain label adheres to the main principles from which the label's name is formed: Darwinians believe in natural selection from variation, survival of the fittest etc. However, Hull points out that there were no uniform tenets of Darwin that everyone completely agreed or disagreed with following publication of the Origin (Hull 1985). Herein lies the problem: no-one was Darwinian, or indeed the opposite! (Recker 1990)

Kitcher (1985) proposes the following solution – that Darwinians are grouped as such due to a shared belief in concepts. For example, Malthus' theory and Lyell's uniformitarianism, which were key to formation of the Origin. Hull suggests a network of scientific communication centring around the main figures of Darwin, T.H. Huxley and to a lesser extent Wallace (amongst others). Furthermore, Kitcher expands on his idea by stating that issues pertaining to Darwin's theory would be the unifying concepts discussed, such as promise in a new look at sexual selection. Combing this with Hull's network, it would seem that a Darwinian can be defined as one who communicates primarily with key personalities surrounding Origin of Species, helps to develop the theories by constructive discussion, and believes in a few core concepts such as the ideas of Malthus and Lyell.

Is this what Wallace meant when he agreed with his critics? Probably not. He was referring specifically to the 'principle of utility', which he described as one of natural selection's "chief foundation-stones" (Wallace 1905 p. 237). Darwin and Wallace disagreed on many aspects of the development of their original theories. Wallace generally felt he strengthened the theory whereas Darwin shied away – there is much evidence to suggest this (Recker 1990). Wallace was brave, something of a wannabe social reformer; Darwin of poor-heath, afraid to really challenge accepted belief. Thus it has been said of Wallace that "no one championed natural selection, and Darwin, more bravely and vigorously than Wallace." (Raby 2002 p. 197). If so, why then is it still Darwin's, and not Wallace's theory? A look into the events surrounding publication of Origin of Species will tell more.

The discovery

On June 18, 1858, Charles Darwin received a letter from Wallace that shocked him so greatly that he was induced to publish his theories on evolution, which were so strikingly similar to Wallace's, prematurely. Even after Lyell and Hooker attempted to spur Darwin into publication years ago, drawing him to Wallace's earlier ruminations from Sarawak, it was only until Darwin read the Ternate essay that the full realisation of the risk to his claim of primacy occurred. Where Wallace was somewhat rash, penning his essay in less than a week; Darwin had purposefully delayed, in order to gain reputation, to soften the blow of such a controversial theory (Shermer 2002).

It was Darwin who worried about authorship and co-authorship. Wallace was thousands of mile away, the impact of his musings unbeknownst to him. Lyell and Hooker formed the fair plan: to present both writings and a letter to show Darwin's priority to the Linnean society on July 1, 1958. Wallace was informed only after these events took place – understandable as mail could take three or four months to reach the Malay Archipelago. Thus Darwin's name comes first in evolution, though Lyell and Hooker had stated that "both men deserve ample recognition" (Shermer 2002 p. 120).

Wallace, it seems, was pretty pleased with the outcome: he writes in his autobiography the same, accepted historical account that I have presented. There

was no conspiracy to subdue Wallace, as the likes of Bernstein and Brackman have suggested. Their politically charged and inflammatory writings have nothing to do with the truth of the matter - that Wallace was more than happy to let Darwin be major proponent of the theory: "I am grateful that it had not been left to me to give the theory to the world" (Crawford p. 26). He was a modest man who felt the place in evolutionary theory history he held was more than he ought to have (Wallace 1905 p. 193):

> ..they had given me more honour and credit than I deserved, by putting my sudden intuition.. on the same level with the prolonged labours of Darwin.

His contentment with how the matter was dealt with is evident. For Wallace, it was not his life's work. He had plenty more to give to the scientific community, as we will see in the next section.

Wallace the scholar

First, a look at the sheer volume of Wallace's work: 747 published articles, essays, reviews, commentaries and letters. 508 scientific papers, 191 published in Nature. 12% of all his papers were on topics of anthropology such as archaeology, ancient history and linguistics. 22 books written: 6 on evolutionary theory, 6 on social commentary, others in biogeography, natural history, botany, and spiritualism (Shermer 2002). It would be cautious to say Wallace was a prolific writer. So too, underestimating him to believe that his contributions to evolutionary theory are the only matter worth discussing in this essay.

As we have seen in the short biography of Wallace, science was not an exact discipline for him. With no degree from Oxford, London or Cambridge, as in the case of Lyell, Huxley and Darwin, Wallace had no peers or tutors to appease when he set off for the Amazon, on an expedition spawned from a love of nature and its history. Hence, from the Malay Archipelago, Wallace collected 125,660 specimens, including 310 mammals, 100 reptiles and 8000 birds (Bernstein 1982). Over a thousand were new species (Shermer 2002). It is from these collections that Wallace formed the two theories he is most known for: that we are discussing, and that of Wallace's Line –the hypothetical boundary between Australasian and Southeast Asian fauna.

From his autobiography we can see how his tropical collections spawned ideas about the origin of species (Wallace 1905):

> … for the preceding eight or nine years, the great problem of the origin of species had been continually pondered over… my varied observations and study had been made use of to a down the foundation for its full discussion and elucidation.

Yet this was not the purpose. Earlier in his memoirs, Wallace writes that his agent in England, Mr Stevens, "heard several naturalists express regret that I was "theorizing" when what we had to do was collect more facts". This is important when considering the importance of Wallace's contributions, both in his opinion of them, and the opinions of others. Wallace was not well known as a naturalist, his Sarawak paper made little impression. Darwin was the man who had been pondering for twenty years.

Upon his return to London in early 1862, Wallace did not at first deal with the Origin of Species question, in fact he did not write about natural selection until late 1863, when he penned "Remarks on the Rev. S. Haughton's Paper on the Bee's Cell, and on the Origin of Species." He spent time organising his collections, gradually writing up his exploration of "The Malay Archipelago," and ingratiating himself into the society of men who revolved around Darwin, Huxley, Lyell and Hooker. According to Hull's reasoning, Wallace was transformed into a Darwinian at this time.

How much of a Darwinian? If looking in traditional terms, we must analyse the differences between Wallace and Darwin's theories. It is true that they disagreed – only naturally, since debate is in the nature of scientific discovery. However, it seems these differences were underplayed by both men. Darwin wrote to Wallace in 1870:

I hope it is a satisfaction to you to reflect – and very few things in my life have been more satisfactory to me - that we have never had any jealous towards each other, though in some sense rivals.

Wallace notes this in his autobiography, so it may be fair to assume bias on his part. However, the fact that Darwin scarce referred to he and Wallace's differences has been noted by others, particularly Joel Schwartz (1984). In his paper, Schwartz suggests that Wallace moved away from Darwin due to other interests, namely spiritualism and mesmerism. On the other hand, Camerini proposes that Wallace's departures were "strictly Darwinian," more in line with the original thinking (Camerini 2002 p. 155). Again, a confusion over what Darwinism actually is. To gain a clearer picture, a summary of the main differences, synthesised from three sources: Wallace's autobiography, Schwartz's paper and the biography written by Wilma George (1964):

> The operation of sexual selection: whereas Darwin believed the preference for bright colours of males, found in plain coloured females of some animals, was the only form of sexual selection, Wallace believed females also underwent selection according to coloration suitable for camouflage and protection.
>
> The transmission of mountain flora: Darwin looked to glacial means for explanation of arctic plants found on isolated mountain tops; Wallace aerial transportation by birds and winds.
>
> Inheritance of variation: Lamarck's views on inheritance of acquired characteristics were eventually, and reluctantly, accepted by Darwin. Wallace rejected Darwin's adaptation of this, termed pangenesis.
>
> Moral and intellectual development of man: Darwin stood firmly by natural selection, but Wallace could not accept the occurrence of this taking place without the intervention of some other "agency" (Wallace 1905 p. 236).

Evidence for all of these discussions can be found in James Marchant's collection of Wallace's personal letters (Marchant 1916).

The first two points are not of great importance to this discussion, as they are more minor arguments in the grand theory. However, the latter two are truly interesting, for the difference in sides that the two men take. Regarding variation, Wallace is

much more the Darwinian, as stated by Camerini, although the statement is only valid in light of later developments in evolutionary theory. Lamarck's theory of heredity is now widely discredited. Kitcher goes as far as saying that rejection of Lamarckism is a one of the conceptual ideas that makes one a Darwinian. Interestingly, here is another "Wallacean" contribution to Darwinism (Brackman 1980 p. 57). Thus Darwin was not a paradigmatic Darwinian (Recker 1990 p. 463). Furthermore, as neo-Darwinism arose from the infusion of Mendelian inheritance, it became clear that Wallace had been more correct.

On the other hand, Wallace's refusal to apply natural selection to man's moral and intellectual qualities is a huge departure from general Darwinian agreement (in the Hull sense) on the evolution of man. He was aware of this himself, calling it his "little heresy" in a letter to Darwin (Raby 2002). These doubts began to surface around 1865, in concurrence with a broadening of Wallace's attention – he produced his first political writing, a letter entitled "Public Responsibility and the Ballot" in May of that year (Smith 1998). This was followed by publications on geodesy, glaciation and museum organization. Clearly, Wallace's mind was developing, as did his religious and moral beliefs.

Wallace's conversion to spiritualism in the late 1860s is regarded by some as the cause of his move away from Darwinism regarding man. In this sense, Wallace did not go the 'whole orang'. Schwartz (1984) suggests that Wallace's struggle to bridge his scientific and moral beliefs led to a reduction in scientific articles written in later life. Indeed, during the 1870s he produced more essays on social issues, for example the Church, free trade, and forest management (Smith 1998). By the 1880s he was something of a social radical: president of the Land Nationalisation Society, campaigner against the Vaccination Act of 1898. Wallace's stance on these issues were of such importance to him that he devoted two of the last few chapters of his autobiography to explaining these particular beliefs.

The beliefs were not particularly popular. Spiritualism and mesmerism were observed contemptuously by most learned people and with suspicion by the majority. Socialism in Victorian England was never going to be well received. It is likely that Wallace's unusual opinions overshadowed his valid scientific contributions just enough for his name to forever be the minor one compared to Darwin's major.

Wallace: the real Wallace

In 1889, Wallace published "Darwinism", its title a culmination of Wallace's perpetual use of the term to describe the theory both he and Darwin came upon (George 1964 p. 75). The book reviewed the topic, and gave a definitive update on Wallace's compounded views. Reading between the title line, it seems that Wallace did not see his departures as anti-Darwinian, in fact quite the opposite. His developments, reached after enormous discussion within a circle of intellects, were the epitome of Darwinism. I conclude with reasoning for and against the rejection of this idea, and an explanation for his lack of recognition.

Few realise that the head of some of the chapters in Origin are phrases that Wallace evoked in his Ternate essay sent to Darwin (Wallace 1905). Wallace also promoted the description "survival of the fittest" sufficiently to Darwin that it became commonplace, directly linked to Darwin (Smith 1998). There is a lot of Wallace in 'Darwin's' theory, but unlike Brackman I will not go so far as to campaign for the term Wallacean in place of Darwinian.

As has been told, Wallace was a "fervent" supporter of Darwin (Crawford). As a direct result of his Ternate paper, The Origin of Species was published sooner than intended. Although Wallace's contributions to the theory, both then and later, were numerous, he always believed the theory to be Darwin's (George 1964). Darwin was established, the respectable face of the 'Darwinism' machine, whilst Wallace was the young controversial who acted as the fuel. He was not interested in being Darwin, he simply filled a role that Darwin couldn't undertake, or simply was unwilling to do: defender of the theory.

It is true that some of Wallace's elaborations may have been more in line with the original thinking, and even explained better than Darwin's further concepts (Bernstein 1982). George suggests that Origin was not about speciation – it never once mentions a particular species – Darwinism was (George 1964 p. 251). But the obvious clue is in the title: Wallace did not believe that he should have any more credit that he had already received. This deference is one of the major factors when trying to understand the contemporary loss of the memory of Wallace.

The title question must remain unanswered. Darwinism, it seems, is not an entity that can be defined sufficiently to analyse individual contributions. Yes, Wallace was a strong character in Darwinism as a whole, by Hull's definition he contributed to discussion vigorously; by Kitcher's he rejected Lamarckism much more strongly than Darwin himself. In contrast, his spiritualist leanings were not in line with the concepts put forward as Darwinian. However these theories are somewhat presentist: when Wallace's critics called him "more Darwinian than Darwin himself" we can be assured they were not thinking along such historiographic lines. Wallace believed himself to be Darwinian in the aspects of the theory where he stuck to the original tenets, admitting his 'heresies' where he diverged – never trying to spin his version into one of his very own. He had other campaigns to attend.

Increasingly, Wallace is being resurrected. Bernstein and Brackman's publications occurred in the last 25 years, writings that attempt to create a conspiracy theory against Wallace, wrongly promoting him as the man outdone, trodden on by Darwin and his 'cronies'. To focus on Wallace's contribution to Darwinism is an insult to this "Grand Old Man of Science". Wallace gave so much more, both scientific and social. Wallace's line is still an inordinately useful boundary for the study of Australasian life; his stand on vaccination based on strictly scientific data and reasoning relevant at the time. We should remember him for these contributions too, but why don't we? By associating himself with Darwin, by filling his shoes to the point of sometimes becoming what Darwin was meant to be, he was eclipsed. Without Wallace, there may not have been a Darwin as we think we know him. But without Darwin, Wallace could have stood in his own light.

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