The Strange "Laissez-Faire" of Alfred Russel Wallace:

The Connection Between Natural Selection and Political Economy Reconsidered

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Alfred Russel Wallace (1823-1913) is remembered as the naturalist who devised the principle of natural selection independently of Darwin. But Wallace spread his intellectual energies well beyond the subject of biology. He was the author of a profusion of speculations, on matters stretching from vaccination and astronomy to spiritualism and phrenology.

Wallace also had a strongly expressed suite of economic ideas. These ideas are of slight value in themselves. They lack both originality and depth; they made little or no contribution to the development of economic thought. But Wallace's economic ideas are relevant to the drawn-out debate over the connection between political economy and Darwinism.

Many commentators have contended that there is a close connection between political economy and Darwinism. This supposed connection has two distinct characterisations, and they are worth distinguishing. The first maintains that the connection is merely one of "transference": Darwinism transferred ideas from economics to biology (eg Cowles, 1936, p. 341). The second maintains that Darwinism amounted to a "transcription" or "projection" of political economy on to biology (eg Schweber, 1980, p. 277). [1]

The first characterisation is more modest, and the second more radical. Whereas the first assumes that biology was prior in the minds of natural selectionists, and the transference amounted to no more than the opportune exploitation of ideas in another

[1] "Darwinism was an extension of laissez-faire economic theory from society to biology" (Young, 1985, p 3)". "What Darwin did was take early-nineteenth *political*

field (political economy); the second believes that political economy was prior in the minds of natural selectionists, and that biology was deliberately (if unconsciously) wrought in the image of political economy. Whereas the first allows the possibility that natural selection had a disinterested and scientific genesis, the second suggests that natural selection was ideological in its origins. In the second characterisation, the natural selectionists made nature in the image of political economy because political economy was apologetic for the establishment, and the conformity of nature to political economy would further the effectiveness of that apologetic. [2]

The advocates of both characterisations of the connection typically draw strongly on (i) the explicit expression of debt to Malthus by Darwin, and (ii) the fact that both natural selection and political economy stress the benefits of competition.

Both versions of the connection hypothesis have critics. These critics point to the uneconomic character of that part of Malthus's thought which Darwin drew upon, and to Darwin's relative lack of interest in, and knowledge of, political economy (Gordon 1989).

This paper argues that the case of Alfred Russel Wallace is strong evidence against there being an ideological connection between natural selection and political economy. The argument is simple. Wallace was a keen advocate of natural selection. Yet he was

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economy and expand it to include all of the *natural* economy"(Lewontin, quoted in Mogie, 1996, p. 2086)

[2] "It is beyond doubt that their [Darwin's and Lyell's] theories were central to others reconciling and apologetic doctrines" (Young, 1985, p. 199). Darwin's theory "made Nature an ally of the middle-classes (Moore quoted in Mogie, 1996, p. 2086). "Darwin was not averse to making social and economic applications of his theory. He clearly linked economic success with selective fitness and thought his theory supported individualist economic competition" (Weikart, 1995, p. 611).

also the ardent adversary of several of the most important claims of political economy. Further, he was a champion of the interests of that section of the population that political economy, and even natural selection, was supposedly antagonistic to: the working class. If natural selection was a matter of projection of an apologetic political economy on to biology, how is it that Wallace devised the principle?

The fact of Wallace's natural selectionism is celebrated, and the characteristics of his political economy are well known to those interested in his life (Clements, 1983). Yet the plain significance of the conjunction of both these features of his thought for the debate over economics and natural selection has not been pressed. It is the purpose of this paper to do so

The first section of the paper briefly rehearses Wallace's Darwinian credentials. The second section outlines Wallace's deprecatory views of orthodox political economy. The third section considers the suggestion that Wallace, despite these views, was nevertheless an "individualist". The fourth section casts some doubt on the other evidence in favour of a natural selection: political economy connection. The fifth section touches on the sociology of knowledge issues raised by the case of Alfred Russel Wallace.

WALLACE AND NATURAL SELECTION

From the age of 35, and until his death at the age of 90, Wallace was a firm advocate of natural selection. He had devised the thesis independently of Darwin, and did not falter in its advocacy.[3]

There were some differences between Darwin and Wallace over evolution. (Hartman, 1990; Kottler, 1985; Wallace, 1905, v.2, pp. 6-22). They differed over the possibility of inheritance of acquired characteristics (Darwin believed in it, Wallace did not). They differed over the reality of sexual selection, as distinct from ecological selection (Darwin believed it, Wallace did not). They differed over whether natural selection explained the origin of man (Darwin believed so, Wallace did not). But these disagreements were disagreements between allies. Wallace has been described as "second to none in his defence of Darwin's view" (Durant, 1979). "The original concept of natural selection as the sole agency for explaining modifications in the organic world, except for those in man, boasted no more staunch defender than Alfred Wallace" (Turner, 1974, p. 94).

WALLACE ON POLITICAL ECONOMY

Wallace's advocacy of natural selection coexisted with a strongly held suite of views on economics.

Wallace cannot be described as an "economist". There is no positive evidence that he read any economic writing before he formulated the principle of natural selection in 1858, with the exception of Malthus's *Principles of Population*. But by at least the

[3] Indeed, partisans of Wallace have argued that Darwin appropriated the idea from Wallace (see Bernstein, 1984, p. 235). However almost all historians of this episode

latter stage of his life he was certainly acquainted with the theses of political economy. He quoted the economic works of Smith (1900, v.2, p. 202; the first line of *The Wealth of Nations*), Ricardo (1895, p. 128)[4], Mill (1913, p. 71; "Of International Trade" *Principles of Political Economy*), Senior (1900, v.2, p. 289; *Essays on Ireland*), Jevons (1900, v.2, p. 145; *Money and the Mechanics of Exchange*), Cairnes (1898, p. 356; *Leading Principles of Political Economy*) and Fawcett.[5] Darwin, by contrast, never refers to, or quotes from, the economic writings of any of these authors.[6]

Wallace rejected much of what he read.[7] Specifically:

1. Wallace opposed free trade. To Wallace, "free trade" was a system of "free imports". "Our boasted freedom of trade ... consists in our being at a great

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would classify natural selection as a genuine doubleton.

[4] Wallace quotes Ricardo as writing, "There is no gain to society at large from a rise in rent; it is advantageous to the landlords alone, and their interests are thus permanently in opposition to those of all other classes". (A far from exhaustive search has not found this statement in Ricardo's works).

[5] Wallace also read Henry George's *Progress and Poverty*.

[6] The are only two economic works for which there is positive evidence that Darwin read: McCulloch's *Principles* and Sismondi's *New Principles* (Gordon, 1989, p. 451). Darwin once declined Wallace's invitation to read Henry George on the ground that political economy was "destructive" of his mind. (Wallace, 1905, v2, p. 14). Darwin does refer to the non-economic works of Smith and Mill.

[7] See Gaffney (1997) and Clements (1983) for commentaries on his economic ideas.

disadvantage in half the markets of the world" (1900, v.2, p. 181). He favoured imposing tariffs in accordance with the tariffs that foreign countries imposed on the home country. He also maintained that free trade imposed external costs, in the form of environmental degradation, and that this recommended the restriction of free trade (1900, v.2, p. 177).[8]

2. He favoured the introduction minimum wages. He recommended "a very high minimum wage for really necessary or useful work" (1913a, p. 30).

3. He proposed the creation of an inconvertible note issue (1900, v.2, p. 147).

4. He was hostile to interest and profit income. Wallace believed lending at interest should be illegal, except for personal loans of a fixed duration. Not even such personal loans would be enforceable by law; the loans would be made at the risk of the lender (1905, p. 246).

5. He championed the nationalisation of land. In Wallace's view private property in land was "barbarism" masquerading as "civilisation" (1905, p. 235). In 1870 he joined the Land Tenure Reform Association, and later organised the Land Nationalisation Society (Wallace, 1892; Gaffney, 1997; Gould, 1988). He scorned the Free Trade in Land movement which sought to abolish entails and to make conveyancing cheap and expeditious: Wallace believed the elimination of such market imperfections would only lead to a further concentration of land ownership (Wallace, 1900, v.2, p. 255).

[8] Wallace draws from Smith in an attempt to turn the tables on free-traders. "It is a maxim of political economy", writes Wallace, "that the home trade is the best trade for the prosperity of the country"(1913a, p. 36). This supposed maxim is drawn from Smith's reasonings concerning the relative productivity of capitals in domestic industry and foreign trade (*Wealth of Nations*, Book II, Chapter 5). Protectionists before Wallace had used Smith's "maxim" to embarrass free traders (Byles, 1893).

6. He advocated the prohibition of the export coal and iron, and the extensive regulation of any other industry that was producing a product “essential to comfort” and in “practically limited quantity” (1900, v.2, p. 140)

7. He proposed the management by state authority of all industries “essential to public welfare”

8. He entertained doubts over Say’s Law leaning, instead, toward a pre-Keynesian under consumptionist view. In Wallace’s opinion “every pound paid extra in wages is a pound more expended in food, clothing, furniture houses, and other necessaries of life. It will, therefore, benefit the makers and growers and retailers of those commodities by the increase of their trade (1913a, p. 36)”

9. He believed “capital” was “the tyrant and enemy of labour” (1905, p. 247).

10 He urged the provision of bread free to anyone who was “in want” of it (1913a, p. 25).

The incongruity of these 10 propositions with orthodox political economy need not be laboured.

Accordingly, Wallace did not hold orthodox political economy in any great esteem. In a public lecture in 1886 on “Social Economy and Political Economy” he described the “‘old political economy” [ie, laissez faire economic theory] as “effete and useless” (1905, v.2, p. 129). At greater length he complained,

> For more than half a century both our Government and our mercantile classes have acknowledged the importance of political economy, or the science of the rod of wealth; and they have made it

> their guide in trade, in manufacture, in foreign commerce, and in legislation ... .Yet after fifty years ... of following what was professed to be an infallible guide, we find ourselves in the present day (1886) in the terrible quagmire of commercial depression. ... . In all our great cities we have stagnation of business, poverty and even starvation. Certainly, according to the doctrines of the political economy which we have followed, none of these things ought to have happened (1900, v.2, p. 188).

With more choler he declared,

> Everywhere, to-day, it [political economy] is being denounced by thinking men as a false science - as a delusion and a snare - as an *ignis fatis* [i.e. delusive light], leading men away from the paths of happiness and true well- being, and guiding them towards the quagmires of unhealthy competition, poverty and discontent. ... Surely a science like this - so narrow in its scope, so powerless for good, so utterly divorced from all considerations of morality, of justice, even of broad and enlightened expediency- should be treated as a blind and impotent guide, which, if any longer followed, will lead us on to social and political ruin (1895, pp. 126-128).

It may be noticed that Wallace's grievance in the last quotation is not that economics is actually at fault. Its defect lies in its unconcern with, and unhelpfulness to, the working class. Here we arrive at a key to Wallace's economic views: his urgent concern to find a remedy for the plight of the working class. He believed this plight was desperate. He went so far as to claim (in 1898) that the proportion of Britons in poverty was larger than at any time in her history (1898, p. 342). He felt that "the condition of the workers as a whole is absolutely unbearable, is a disgrace to civilisation, and fully justifies the most extreme demands of the workers" (1913, p. 12).

His own political economy was always, therefore, governed by a concern to increase the wealth of (British) workers. He opposed, for example, the unhindered export of coal and iron from Britain largely on the ground that it would raise the price of these products for British workers (1900, v.2, p. 143). In a similar vein he opposed public funding for science, while supporting public funding for "popular" museums, on the grounds that workers would patronise popular museums but would not participate in scientific research (Turner, 1974, p. 86).

In the light of this class sympathy it is not surprising that Wallace treats Marx favourably in comparison to the "old" political economists. Marx is described as a "social reformer". One of the principles of the Land Nationalisation Society is judged by Wallace to resemble the "main thesis" of Marx.[9]

[9] "*PropXIII*. It is out of the pauper and floating masses who have been separated from the land, and have consequently no option between starvation and selling their labour unconditionally, that capital is originally formed, and is, therefore, enabled absolutely

Wallace joined Marx in faulting political economy for being apologetic for dominant class interests. He complained that political economy (along with clergy) "enforced" the belief that it was "natural and inevitable that there should be rich and poor" (Wallace, 1913a, p. 5).

This all leads to the question: how can natural selection be a projection of an apologetic political economy if one of the discoverers of natural selection championed the interest of labour, spurned political economy, and chastised its doctrines as apologetic for capital?[10]

WALLACE THE INDIVIDUALIST?

A critic may charge that the previous section has exaggerated the distance between

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to dictate to the very labour that creates it, and to defraud that labour of those surpluses which ought to remain wholly with the latter" (Wallace, v.2, p. 242).

[10] Another who combined an adherence to natural selection with a hostility to political economy was Wallace's companion in the struggle, A.J. Ogilvy (1834-1914). Ogilvy founded the Tasmanian Land Nationalisation Society, and the Democratic League, the forerunner of the Tasmanian Labor Party. He wrote *The Third Factor of Production*, and *A Colonist's Plea for Land Nationalisation*, to which Wallace supplied a foreword. In 1901 his pen yielded *Elements of Darwinism*, and in 1913 *The Ape Man*.

political economy and Wallace. Were not the precepts of economic policy in English political economy in 1860 some distance from the laissez-faire of Ricardo or James Mill? And did not Wallace identify himself at some stages in his life an "individualist"?

It is true that some of Wallace's ideas on land would have found nurture in the thought of Mill and Cairns: it was Mill who invited Wallace to join Mill's Land Tenure Reform Association.[11] It is also true that Wallace admired some aspects of Herbert Spencer, and in 1884 recommended that Britain adopt what he described as the "true system of laissez-faire". (Laissez-faire, he complained, was "abused as if it had failed, when really it has never been tried"). Further, Wallace was capable of suddenly stating, in the midst of a polemic against political economy ("blind", "impotent", "altogether insufficient"), that political economy was "mainly true" (1895, p. 126). In autobiographical writings Wallace represented himself as an individualist in youth, who only became a "socialist" in his late 60s.[12] In the light of such apparent incongruities one recent critic has described him as "libertarian", as well as socialist (Wallace in Smith, 1991, p. 164). [13]

Nevertheless, one may doubt whether these remarks amount to evidence that Wallace had to any significant degree assimilated economic liberalism.

[11] Wallace quotes Cairnes approvingly on the unmerited income of the landlord (1892, p. 116).

[12] Wallace began to call himself a socialist from 1889 (Durant, 1979, p. 48). In his autobiography Wallace records that his absorption of Owenism in his teenage years did not prevent "my adopting the individualist views of Herbert Spencer and the political economists" (Durant, 1979, pp. 36 and 74).

[13] In sympathy with this position, one critic has identified Wallace with the "new puritanism" of the mid 19th century, which sought to achieve social reform by the physical reformation of the individual (Turner, 1974, p. 80).

Consider Wallace on Herbert Spencer, the supposed missionary of laissez-faire and individualism. What specific views of Herbert Spencer impressed him? It was Spencer's *Social Statics* (1851) that sent him into an enthusiasm shortly after its publication (Wallace, 1900, v.2, p. 333). What so excited him there? Spencer's blunt condemnation of private property in land.[14] Wallace was also impressed by Spencer's depiction of progress as consisting of the extending victory of social man over anti-social man.[15] Is this the mindset of an individualist?

Further, it has to be understood that Wallace's use of the terms "individualist" and "laissez-faire" was eccentric.

Consider Wallace on "individualism." In 1900, after his own self-described conversion to socialism, Wallace published a paper entitled, 'True Individualism - The Essential Preliminary of a Real Social Advance' (1900, v.2, p. 510). This paper is

[14] "Equity, therefore, does not permit property in land ...On examination all existing titles to such property turn out to be invalid ... It appears that not even an equal apportionment of the earth amongst its inhabitants could generate a legitimate proprietorship ... we find … that the theory of the co-heirship of all men to the soil, is consistent with the highest civilisation" (Spencer, 1851, p. 125)

[15]Wallace had an entirely different judgement from the political economists about the importance of altruism (or what he called "hospitality"). "Hospitality is, in fact, one of the most general of all human virtues, and in some cases almost a religion. It is an inherent art of what "constitutes "human nature" ... ." (1913, p. 101)

largely devoted to arguing that society must implement "a strict regulation of the transmission or inheritance of wealth". This sentiment is closer to the *Communist Manifesto* than individualism as it is commonly understood. [16]

Or consider his expression, "true laissez-faire". Wallace explains that his "true" system of laissez-faire included land nationalisation, and the state management of all industries essential to the public welfare. Is this laissez-faire? We can agree with Wallace that his "true" laissez-faire had (at that date) never been tried.

What should we make of Wallace's references to individualism and laissez-faire?

First, Wallace was a man of many thoughts, to the extent that he was an "intricate", and sometimes even flatly inconsistent author.[17] He could, for example, deny "general over-production" (1900, v.2, p. 190) as a cause of slumps on one page, and literally on the next page advance an under consumption explanation of slumps. With such an inconsistent author, surely the best procedure is to find the position which gives the "best fit" to the author's varied remarks. A position of interventionist egalitarianism will give a far better fit than a laissez-faire one.

The second appropriate inference from Wallace's individualist remarks, is that there was undeniably an "individualist" accent to Wallace's program of interventionist egalitarianism. Wallace was not a collectivist. His socialism was never an attraction to a great and organising state. "Socialism" was to Wallace "the use by everyone of his

[16] Point Three of the Communist Manifesto's 10 point program: "Abolition of all right of inheritance". The first point is: "Abolition of property in land".

faculties for the common good, and the voluntary organisation of labour for the equal benefit of all"(1905, v.2, p. 274). The use of the word "voluntary" in his definition of socialism is surely significant. Under Wallace's socialism industry would be run by enterprises composed of capital-owning workers. Land nationalisation would not amount to a system of state farms or agricultural collectives. Rather, the state would be the sole owner of land, which would rent out its land to a throng of individual tenants.[18]

Nevertheless, Wallace's individualist accent was still far removed from the individualism of ordinary political economy. If Mill and Cairnes favoured restrictions on property rights in land in particular situations (especially Ireland), they never advocated the nationalisation of land. Wallace allowed his land nationalisation to be "strongly opposed by all the recognised authorities in political economy" (1905, p. 249). Further, and above all, Wallace's "individualism", whatever it was, cannot be described as apologetic for the wealthy.

WHAT IS LEFT OF THE NATURAL SELECTION-POLITICAL ECONOMY CONNECTION?

If Wallace is evidence against a connection between political economy and natural selection, is there not some evidence for it?

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[17] See Durant (1979, p. 51) for Wallace's self-contradictions over eugenicism.

[18] Wallace's economic position is reminiscent of the curiously anomalous figure of Thomas Hodgskin ([1827] 1966): simultaneously anti-capitalist and anti-collectivist.

This evidence in favour includes, and above all other, the fact that the two discoverers of natural selection both refer to Malthus as a critical catalyst of their thoughts (Darwin [1884] 1974; Wallace, 1916, p. 113).[19] But what did Darwin and Wallace use in Malthus? There are many possible things. To political economists, there is a thesis of a long run equilibrium level of *per capita* consumption that is invariant to transfers from rich to poor. But this is not what Malthus meant to Darwin and Wallace. What they used of Malthus was the suggestion that not all who were born could survive to reproduce.[20] This proposition is entirely unnecessary for Political Economy's Malthusian thesis concerning *per capita* consumption; that thesis can be secured by allowing everyone born to live, but having fertility rates vary. And the presumption of political economists is that the Malthusian mechanism would operate through fertility rates (See Gordon, 1989, p. 443).[21] In this connection it is worth noting that Malthus is not treated by Wallace as a political economist: Wallace described Malthus's work as "philosophical biology"(1905, v.1, p. 232).

There are two other themes of political economy that might have lent themselves natural selection:

[19] Inevitably, perhaps, some critics are unimpressed by this reference (de Beer, in Darwin, 1974). The "personal response" of the present writer to these facts is that it is absolutely remarkable that both Darwin and Wallace give high credit to Malthus, and it must signify.

[20] Notice that, whereas Malthus's world picture is one of long run stationarity, that of Darwin and Wallace is one of long run movement.

[21] Ricardo is not forward in identifying whether it is through death rates or birth rates that the Malthusian mechanism operates. But his objection to the Poor Laws is that they remove the rewards of "restraint" (Ricardo [1821] 1973, p. 62). Mill explicitly states that in developed societies it is variations in the birth rate (not the death rate) that is the means of the Malthusian mechanism (Mill, [1848] 1974, Book I chapter 10 section 3, p. 156).

1. Competition for wealth as productive of wealth. This was at the heart of classical political economy, and its congruence with natural selection is plain. Wallace, however, believed that the "struggle for wealth" had "deplorable results" (1898, p. 367). Hostile references to "unhealthy competition" in the human world are plentiful in Wallace.

2. The existence of design without a designer (the invisible hand). This notion is present in Smith, Hume, Mandeville and other enlightenment authors with respect to economic and social worlds. This notion would suggest the possibility of design in the natural world without a designer. Hume explored design without a designer in the natural world in his *Dialogues Concerning Natural Religion*. There he also took up the question that, if there is design without a designer, how does this design occur? He edges close to the notion of the selection of fit forms and the elimination of the unfit: "It is in vain, therefore, to insist upon the uses of the parts in animals or vegetables, and their curious adjustment to each other. I would fain know how an animal could subsist, unless its parts were so adjusted?" (Hume [1779] 1935, p. 227). One can only speculate as to whether notions of design without a designer may have at least allowed the very question of the origin of design in the natural world to be put in Wallace's youthful agnostic mind.[22]

There is a third possible influence from social thought. It is plausible to suppose that the dissolution of the 18th century's complacent presumption of social equilibrium, and the eruption of the 19th century's preoccupation with social fractures, was congenial to the genesis of natural selection. A static and placid picture of society is less congruous with the drama of the survival of the fittest than the theory of social

turbulence. But this transformation in social thought only slightly touches political economy. Ricardo's economic theory does have the seeds of social clash *in nuce;* but almost the same could be said of Smith. And it was not the political economists who cultivated these seeds, it was their adversaries: the St Simonians, Comte and Marx. These thinkers were apt to fault political economy for missing the social clash, and for rejoicing in a non-existent harmony.

THE CASE OF ALFRED WALLACE AND THE SOCIOLOGY OF KNOWLEDGE

The previous sections have used the case of Alfred Russel Wallace to scrutinise the proposition that natural selection was a projection on to nature of a political economy apologetic for a dominant class interest. This proposition is just one manifestation of a general and familiar vision of science. This vision is summarised by Gross and Levitt:

"Science is not a body of knowledge: it is rather, a parable, an allegory, that inscribes a set of social norms and encodes, however subtly, a mythic structure justifying the dominance of one class, one race, one gender over another" (Gross and Levitt, 1994, p. 46).

This vision further maintains that the "scientific aristocracy" which practices science is "organically connected to the ruling elite ... its prestige, authority and epistemological monopoly are guaranteed by the power of the state and the social formations it principally serves"(Gross and Levitt, 1994, p. 63);

[22] Later in life Wallace moved from agnosticism to a belief in an "overarching intelligence" and theism. It is worth noting that Wallace seems to have been attracted

Alfred Wallace's scientific achievement, we have argued, makes for a jarring disconfirmation of this theory. Rather than seeking to inscribe norms justifying the dominance of one class, one race, one gender, Wallace sought to turn over such conventional dominance: of the wealthy, of the white race and (we may add here) of men.[23] And rather than being "organically connected" to its ruling elite, few could be less connected than Wallace to the elite and its social formations.[24] "Wallace was different from most of his scientific contemporaries because his life had been different from theirs. Those typical English institutions of the family, the church, the public service, the military or the university did little or nothing to mould his character" (Turner, 1974, pp. 69-70; Moore, 1997). His biographers are unable to point to distinguished family connections to commerce, or to plump investments of his own. His education finished at 14. His brothers were apprenticed to building trades, he to a land surveyor.

The teenage Alfred Wallace, without any scientific education or encouragement, spent his evenings at an Owenite 'Hall of Science'. The meagre material rewards of a prospective career in science were augmented by the prospect of a sale of insects

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to Malthus's theodicy (1905, p. 237).

[23] Wallace once described white man as the true savage (Durant, 1979, p. 3).

[24] Late in life Wallace was laden with honours. But the situation was the reverse in 1858, when his first paper on natural selection was jointly read with one by Darwin before the Linnean Society. Even in 1864 his application to be secretary of the Royal Geographical Society was rejected. "He remained outside the professional community of scientists, whether he liked it or not" (Durant, 1979, p. 33).

collected from the Amazon, and a government grant. His mind was animated by the new idea of evolution. Perplexed by its mechanism, he seeks the intellectual company of the like minded. One is Darwin who, like himself (as Wallace notes), was a beetle collector, a traveller, and a reader of Malthus. He produces an idea which threatens to eliminate the remaining rational authority from Christianity, its teachings and temporal instruments.[25] It threatens more: Marx writes to Engels with the news that natural selection has shown that the proletarian critique of capitalism has a basis in Nature (Marx, 1941, p. 126). Wallace's idea succeeds with biologists and the public, and that success is born of an intellectually honest attempt to remove perplexity. But the logical faculty is not the only source of reward in his mind; that faculty yields without struggle to wish fulfilment in the face of spiritualism and pseudo-astronomy.

The vision of science that A.R. Wallace is most suggestive is best entered by considering the individual rather than society: not because the individual is exogenous to society, but because the individual is the plainest proximate cause of scientific activity. That activity begins with an individual which is both like and unlike other individuals. This individual is like others in that their beliefs are chosen as instruments to best obtain rewards they value. Their beliefs are, therefore, self-serving, or "ideological" in broad terms. But what makes the individual unlike others is that their

[25] Both radicals and conservatives have believed that Darwinism was subversive. Marx told Lassalle that it dealt the "death-blow" "for the first time to 'teleology'[ie creationism] in the natural sciences" (Marx, 1941, p. 125). A prominent conservative of the 20th century writes thus of the subversive effect of Natural Selection: "It was, of course, Darwin's theory of natural selection which first popularised the notion that Man and his environment are involved in an endless automatic process of improvement. Who can measure the consequences of this naïve assumption? What secret subversive organisation, endowed with unlimited funds and resources, could hope to achieve the thousandth part of what it achieved by discrediting the then

rewards are to a considerable degree immaterial, and include, critically, the satisfaction of a logical faculty: a soothing of a sensitivity to problems and errors, the tickling of a sensibility to order and clarity; a relief of an itch understood. The reward to this faculty does not preclude other rewards, material or immaterial. Neither does it preclude the existence of a countervailing reward to believing things contrary to good reason. This individual (i.e. the scientist), therefore, is neither a priest of power, nor a robot angel, calmly, rationally and disinterestedly pursuing truth. They are neither noble or ignoble, they are merely human.[26]

Being human, they are not solitaries, and will associate with their own kind in order to obtain esteem, and to secure intellectual exchange. In brief, they form a scientific community, and that is critical to the prosperity of science.

The relations of this scientific community to society at large are ambiguous. Trivially, there will be a relationship of dependence. The larger society will provide material rewards (or perhaps penalties). Further, that larger society's ideology may impart biases to members of that community. These biases may be so strong that the only science is bad science, i.e. unsuccessful science.[27] It is in this field of bad science that ideology hunters will find their richest quarry.

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prevailing morals and values ?" (Muggeridge, 1988, p. 62). For more in the same vein, see Carroll (1994).

[26] See Leonard (1999) for an extended attempt to analyse the scientist in terms of a model of rational economic man.

[27] Society maybe such that (successful) science will not exist. Perhaps that is the most normal state of affairs.

But even though science is dependent on larger society, successful science is also autonomous within that society. It is capable of disturbing that society. Its attachment to the logical faculty allows it to reach conclusions hostile to traditional teachings (regarding, for example, race, gender, species, class). Science is not a projection of society, it is a subculture. And like the more familiar sub cultures it will have ambivalent relations to the larger society in which it exists.

CONCLUSION

This paper has scrutinised the economic positions of one of the two co-discoverers of natural selection: Alfred Russel Wallace. It has shown that Wallace rejected many of the key tenets of orthodox political economy of his contemporaries: free trade, the gold standard, competition, the market determination of wages and interest rates, the demerits of state property, and the merits of private property. It has been argued that this rejection of political economy has been motivated by his concern to improve the welfare of the British working class. The paper concludes that the case of A.R Wallace makes for a pungent falsification of the popular thesis that natural selection was a projection onto biology of orthodox political economy. A more likely location of the non-scientific or (in a non-pejorative sense) metaphysical roots of Wallace's thought is the Owenism of his youth. There one will find socialism and religious skepticism. In that skepticism lies latent a question which Christianity did not need to answer: how can design come to an undesigned world?

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