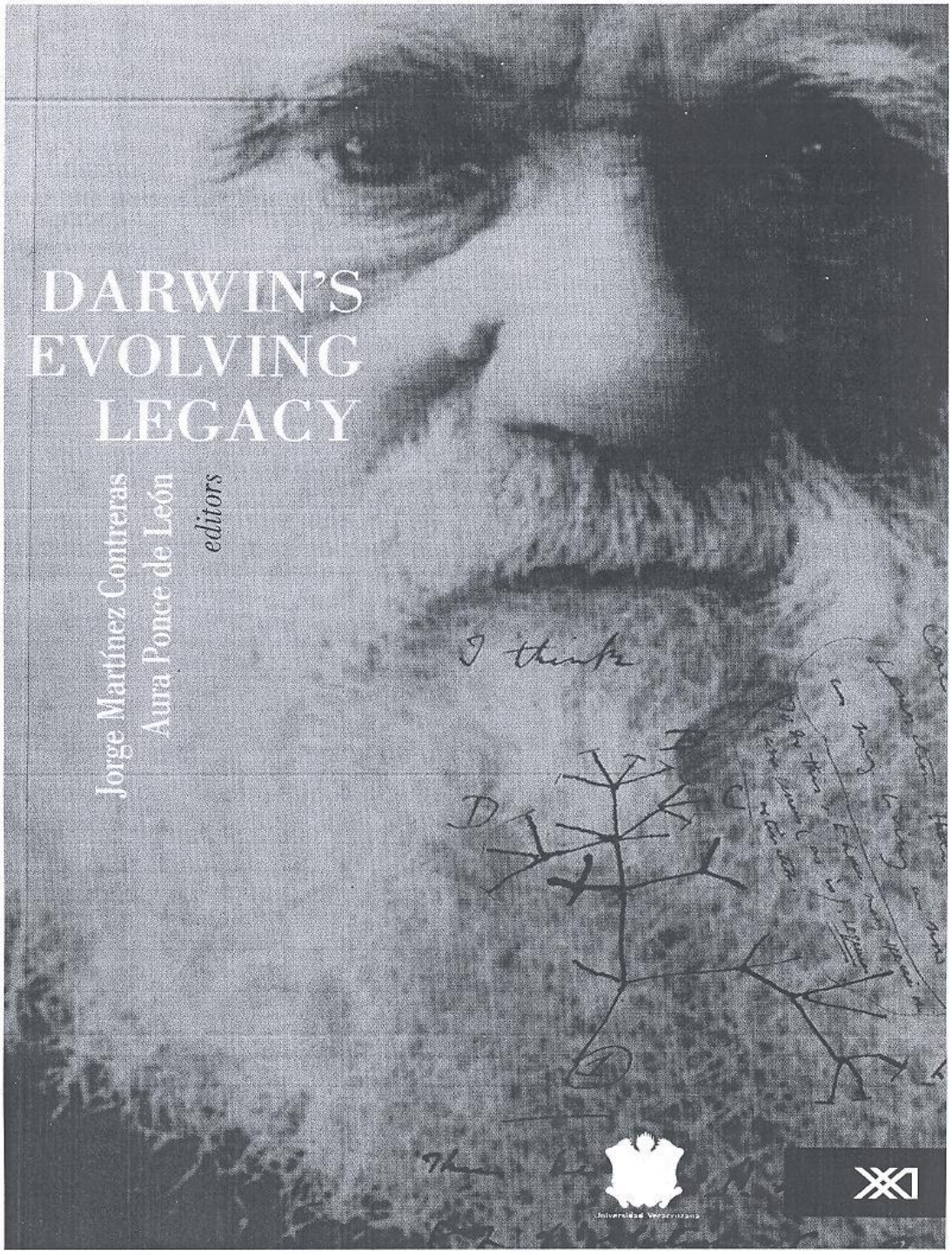
DARWIN'S
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Jorge Martínez Contreras
Ana Ponce de León
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DARWIN'S EVOLVING LEGACY

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CONTENT

SECTION II
HISTORY AND PHILOSOPHY OF EVOLUTION

HUMAN BEINGS AND EVOLUTIONARY THEORY: C. DARWIN AND A. R. WALLACE

ROSAURA RUIZ GUTIÉRREZ*
JUAN M. RODRÍGUEZ CASO**
RICARDO NOGUERA SOLANO†

INTRODUCTION

In this essay our objective is to show how important human beings were for Charles Darwin and Alfred R. Wallace in the construction of natural selection theory. We will make use of some particular examples which can clarify the relevance of their experiences with human subjects, and also the cultural and natural shock that they engendered by meeting non-European people first hand, a unique opportunity for any naturalist at the time.

Most of our examples are taken from the periods of travel which Darwin and Wallace undertook. Instances such as these can give us an idea of the importance of these experiences in a naturalist's career and much more, considering that the origins of Darwinism were found by both men on the islands that they visited (Hodge, 1991). The examples to be developed in this essay are as follows: in Darwin's case his contact with Fuegians, especially with those who were travelling with him on the *Beagle* and with slaves on the Brazilian coast; and in Wallace's case, his experience with indigenous communities in the Amazon and in the Malay Archipelago, especially with Malays and Papuans, since he lived with them for many years. All of these examples demonstrate the relevance for Darwin and Wallace of humans in their understanding of natural processes, especially in their search for a mechanism to explain the transformation of organisms. Darwin and Wallace, co-discoverers of the theory of evolution by variation

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and natural selection shared not only this realization but importantly many other points. These influenced one another in their search for an explanatory mechanism that determined the transformation of organisms. Primary among these points in common are the expeditions they made, Darwin around the world aboard the *Beagle* from 1831 to 1836 and Wallace in the Amazon from 1848 to 1852 and the Malay Archipelago from 1854 and 1862. From these expeditions both acquired and improved their skills as collectors, both gained valuable reputations as natural historians, and both made numerous observations that became crucial for their explanations of the transformation of organisms (for a study on the importance of their experiences on the field in relation with social factors that influenced both authors early natural history writings, see Fagan, 2007).

During the *Beagle* voyage Darwin had come into contact with slaves in Brazil, gauchos in Argentina, Australian aborigines, and of particular importance, the inhabitants of Tierra del Fuego, Fuegians. In every case, the shock of meeting people so different from Europeans (or more specifically British) was enormous for him, and his diary and letters provide excellent examples of such impact.

On the other hand, Wallace met numerous indigenous groups. He spent most of his time during his travels living on his own as the only European among the territories and tribes which he came into contact with. During these times he made observations and wrote diaries that helped him to subsequently write many descriptions of the people and tribes he had met. These writings covered subjects such as culture and manners, their geographical distribution, physical descriptions and writings classified as ethnographies.

In both cases their experiences with humans were extremely important in their search for a mechanism which could shed light on that "mystery of the mysteries," the origin of species. The possibility to observe at first hand "non-European people" gave them a different perspective on the relationships between human beings and especially man's origins. It must be born in mind that during the beginning of nineteenth century there was fierce debate in europe about the place of humans in nature and upon the subject of races and their origins, a topic in which Darwin and Wallace became interested in from the beginning of their careers.

DARWIN IN SOUTH AMERICA

During the *Beagle* voyage, Darwin had the opportunity to observe many things which would form the basis of his theory: fossils, finches, ostriches, turtles and so on. However, if there was something that really struck him was encountering "non-European people." Since reading some publications that Darwin had encountered during his youth, such as Alexander von Humboldt's *Personal Narrative of Travels to the Equinoctial Regions of the New Continent, During the Year 1799-1804* (1804), he had become very excited and interested in exotic people and places, and the opportunity to travel around the world was one he could not afford to miss.

The *Beagle* voyage (1831-1836) was a great opportunity that allowed him to travel around the world for five years, visiting especially the southern part of South America. During the trip he came into contact with Argentinean gauchos, came to know the reality of the black slaves in Brazil (he was already interested in slavery prior to the voyage as his family was deeply involved in the abolitionist movement in Britain, but this was the first time he could see slaves and their brutal treatment by their masters), as well as diverse indigenous communities in Brazil, Chile and Australia. Two of these are particularly important cases to emphasize due to their future relevance for Darwin's theoretical development, the Fuegians and the slaves.

First some background about the relationship between the Fuegians and the *Beagle*: in the first voyage of the *Beagle* (1828-1830), Captain Robert FitzRoy captured a small group of Fuegians in response to a boat robbery. That group consisted of two men, one girl and one boy, and FitzRoy decided to take them to England in order that they be "civilized" and eventually returned to their tribes as missionaries. With that objective in mind, FitzRoy gave them names: Jemmy Button (originally O'run-del'lico), Fueguia Basket (originally Yok'cushly), York Minster (originally El'leparu) and Boat Memory (original name unknown). The former died of smallpox on the return trip to England, and Richard Matthews, an Anglican missionary took care of the survivors under FitzRoy's guidance. During the second Beagle voyage, more than a year later, FitzRoy took the three Fuegians to return them to their homeland, this being one of the main objectives of the trip. During this time Darwin had the opportunity to become familiar with them, what might be called "non-European

people" according to current cultural and social traditions. He made detailed descriptions about their behaviour on the ship, their characters, physical appearance, relation between them and with the rest of the crew, the impact of their time in England as they came to be "civilized."

As already mentioned, the condition of the slaves in Brazil was not new to Darwin. Since his stay in Edinburgh (1825-1827) he had known a former slave, John Edmonstone (he arrived at Glasgow from Guyana in 1817 with his "master," Charles Edmonstone; since he could not return to America because of the risk of re-enslavement, he settled in Scotland. He was self-employed, and thanks to the social relations of his "master," who had taught him taxidermy, was given a space in the University of Edinburgh—where his knowledge of bird-stuffing was much appreciated. Furthermore, and a fact that is becoming more widely known, both he and his family were deeply involved in the anti-slavery movements that emerged in Britain at the beginning of nineteenth century. His family took a leading role in the political field, and Darwin initially a more discrete role in the public arena. In the end this commitment became his "sacred cause," to abolish slavery through a scientific discourse that could establish a common origin for human races. Herbert and Barret stated how important human nature was for Darwin since his earliest writings: "Several lines of inquiry begun in Notebooks B and C are carried forward in M. Darwin's comments on the origin of man reveal that the subject held no terror for him; the liberal views of his family in religion helped him accept the consequences for man and transmutationism theory" (Barrett *et al.*, 1987, p. 518). This view can be defined as a monogenist naturalist perspective, in contradistinction to the biblical origin story of Adam and Eve (see Desmond and Moore, 2009, for a complete and persuasive analysis on the relation of Darwin's scientific work and his anti-slavery convictions).

With these experiences and observations, Darwin began to write his notebooks of various different topics on his return to England. In them we find the first clues about his interest in explaining the origin and organic development of human beings. In particular notebooks M, written in 1838 and titled [*Metaphysics on Morals and Speculations on Expression (1838)*], and N, written between 1838 and 1839, [*Metaphysics and Expression (1838-1839)*]. These were his first attempts to discuss the case of humans from a naturalist point of view, in which we find

for example reference to David Hume's works, including *Natural History and Religion* and *An Inquiry Concerning the Human Understanding*, one of the most important philosophical influences in Britain in the nineteenth century, and a very important one for Darwin in his personal search for answers to human nature (see Huntley, 1972). However his first public works were on subjects aside from the origins of man. It was not until 1871 that he finally decided to publish his own ideas on human evolution, *The Descent of Man, and Selection in Relation to Sex*. The first part of the book is entirely dedicated to a naturalist view on humans, from their origin to their gradual development via some lower forms, the development of mental powers, their genealogy (including their place on the tree of life and its relation with other organisms like monkeys) and the controversial topic of human races. The second part was principally on sexual selection, its generalities and comparisons among different organisms with humans, always following a scale from lower to superior beings.

In general terms, the argument contained within *Descent* is to show that an entirely naturalistic account for the origin of human beings was possible, since all their characteristics (biological and psychical) can be explained through natural processes:

> Dès le premier chapitre intitulé *The Evidence of The Descent of Man from Some Lower Form*, Darwin établit la descendance de l'homme en s'appuyant sur l'homologie des structures morphologiques et embryologiques avec les grands primates et sur l'existence des structures résiduelles telles les rudiments cartilagineux observables sur les pointes des Oreilles de certains homes ou encore sa pilosité (Virole, 2000: 37).

In *Descent*, Darwin also stated the importance of gradual process from animals to humans:

> is that man is descended from some less highly organised form. The grounds upon which this conclusion rests will never be shaken, for the close similarity between man and the lower animals in embryonic development, as well as in innumerable points of structure and constitution, both of high and of the most trifling importance (Darwin, 1882: 606).

Darwin raised three main points in order to show the importance of natural processes:

- Firstly, he wanted to show there was continuity between animals and human beings, exemplifying it with numerous evidences he already used in other works (i.e., evidence from studies of comparative anatomy of organs from diverse types between animals and human beings).
- Secondly, he stated categorically that it was through natural selection that distinctive characteristics associated with humans had originated, again arguing the continuity between animals and humans.
- Thirdly, he conceded that although some characteristics could not have arisen by natural selection, they must have arisen by entirely natural processes.

In fact, experiences with Fuegians played a crucial role in establishing his proposal of a gradual evolutionary process for human origins: "Darwin's views on human evolution were strongly influenced by his encounters with the inhabitants of Tierra del Fuego" (Paul, 2009: 223). Darwin in *Descent* used his experiences on the Beagle with Fuegians in order to make a comparison of mental powers between different human races. He placed the Fuegians in the lowest rank but accepted that if they can live in a different environment (like Jemmy Button, Fueguia Basket and York Minster) they could learn and improve their mental powers:

> The Fuegians rank amongst the lowest barbarians; but I was continually struck with surprise how closely the three natives on board H.M.S. *Beagle*, who had lived some years in England, and could talk a little English, resembled us in disposition and in most of our mental faculties. If no organic being except man had possessed any mental power or if his powers had been of a wholly different nature from those of the lower animals, then we should never have been able to convince ourselves that our high faculties had been gradually developed (Darwin, 1882: 65).

It is clear that Fuegians and slaves played a definitive role in Darwin's conception of his evolutionary theory, a path of observations and conclusions which we can follow through his publications, diaries, notebooks and correspondence. With all these we can see how important the need to explain the origins of human beings was. (Possibly the most complete work on Darwin and his studies on humans

is Gruber, 1974, a comprehensive study that includes notebooks and some not very well known writings by Darwin on humans).

WALLACE AND "HOW TO CIVILIZE SAVAGES"[1]

On the other hand, Wallace's interest in the study of human beings began when he was very young, during his stay in South Wales (1837-1839) while working as a surveyor with his brother William. There he learned the reality of farming communities, traditionally excluded from the political and cultural milieu. This experience provoked him to write one of his first essays, *The South-Wales Farmer*, an ethnographic study on Welsh farmers that included descriptions about their culture and manners.

Wallace's interest in human beings was very clear from his first efforts to become a naturalist, as he expressed in a letter dated December 28, 1845, to his friend Henry W. Bates:

> I would observe that many eminent writers give great support to the theory of the progressive development of species in animals & plants. There is a very interesting & philosophical work bearing directly on the subject, "Lawrence's Lectures on Man" delivered before the Royal Coll[ege] of Surgeons & which are now published in a cheap form. The great object of these lectures is to illustrate the different races of mankind & the manner in which they probably originated—and he arrives at the conclusion [,] as does also Mr. Pritchard [*sic*] in his work on the Physical history of man, that the varieties of the Human race have not proceeded from any external cause but have been produced by the development of certain distinctive peculiarities in some Individuals which have become propagated through an entire race (cited on McKinney, 1969).

The expeditions he made to the Amazon (1848-1852) and to the Malay Archipelago (1854-1862) provided plenty of contact with and

[1] Despite *savage* being a common word in anthropological/ethnological works during the nineteenth century, we prefer to use the term *non-European people* in relation to any indigenous group referred to in this paper, as current evolutionary biology recognizes no superiority of any human race or particular group. Wallace published a paper with the same title in 1865.

experiences of numerous indigenous groups, Quehianas, Cohidias, Omauas, Macunas, Tucanos, Buahunas, Arikenas in the Amazon; Papuans, Malays, Dyaks, Arru in the Malay Archipelago. Of course he also came into contact with other Europeans, Dutch and Portuguese, and also Chinese. These experiences and observations resulted in numerous anthropological writings, a clear example of his capacity as an observer and most importantly of his distinct vision in comparison with other travelers of that time. Although he maintained a clearly imperialist language, jidging from books like *The Malay Archipelago* (1869) his was a different view from other naturalists. He spoke of indigenous groups without a sense of superiority; he acknowledged that comparative "inferiors" to the British, "non-European peoples" had potentially the same capabilities and characteristics that could serve them in the future to reach a comparable state of civilization.

These experiences proved to be of great importance for Wallace's future. Consider for instance the time he spent living with the Dyaks, a general term for around 200 different Malay groups. During the nineteenth century, Dyaks were enslaved by Malay traders. In Wallace's view they were easy prey because of their simplicity and honesty, allowing traders and chiefs to cheat and oppress them at every opportunity (Wallace, 1856). What most impressed Wallace was their social and moral sense, since there were equal rights for men and women, and they always preferred to say nothing when asked a sensitive question rather than lie or reveal a damaging truth. All these characteristics were for Wallace a clear example of a high moral capacity, evidence he subsequently used to support his particular view of human evolution.

In many of his descriptions of the people of the archipelago it is common to find references to graduality between races (for example, on *The Malay Archipelago*, 1869), an idea he extended to orangutans and human races, based on physical resemblances. An important point to emphasize in relation with this was Wallace's intention to visit this area in particular. He had been deeply influenced by Robert Chambers book *Vestiges on the History of Natural Creation* (1848), in which we find the conclusion that humans first originated in South-East Asia and from here migrated first to India and the Middle East, afterwards to Europe and Africa, an argument based mainly on comparative studies of the language and physiognomy of every known human race.

One interesting example of how Wallace related his field work on topics such as biogeography with that of human beings is the argument he made of a dividing line between two biogeographic regions, Oriental and Australian (this line would be called later the "Wallace line") He considered the evidence of these two clearly differentiated distributions of plants and animals, this same logic also used by Wallace to consider a similar division between two different indigenous groups, Malays on the north and Papuans on the South (see Vetter, 2006).

These kinds of experiences in the field also helped him dealing with diverse problems related to human beings from a naturalistic perspective, such as the problem of the origin of human races. This was a controversial discussion at the time in England, especially among two particular scientific societies, the Ethnological Society of London and the Anthropological Society of London. The "ethnologicals" defended monogenism as the explanation for human origins, an argument based mainly on James C. Prichard's position which was related to a literal interpretation of human origins as found in Genesis, in which the origin of the human beings were the first couple, Adam and Eve. On the other hand, the "anthropologicals" sustained a polygenistic position, in which there were numerous origins for the diversity of races, particularly for black and white races. Some supporters of this position, such as James Hunt, believed that Blacks and Whites were different species, not just different races, a position that clearly helped to continue to legitimize slavery.

On March 1, 1864, Wallace presented a paper to a meeting of the Anthropological Society of London, entitled *The Origin of Human Races and the Antiquity of Man Deduced From the Theory of "Natural Selection,"* in which he gave a mixed answer to the discussion between monogenists and polygenists. He first proposed a unique origin for the human races with a subsequent diversification in different zones of the world into different races. This proposal was based on his experiences with "non-European people." Making a utilitarian argument, his view on the relation between different kinds of humans was that in the end all were basically the same, physically and mentally speaking, and because of that he advocated a common origin with subsequent diversification and influence from environmental factors.

Considering this background, three features of Wallace's account of the evolution of the human mind and morality stand out. First,

he conceived the selective environment to be other proto-human groups—which would have an accelerating effect on the evolutionary process since social environments would rapidly change through responsive competition. Secondly, he proposed that selection worked on the group, rather than the individual—which allowed him to explain the rise of altruistic behavior, that is, behavior perhaps harmful to the individual but beneficial to the group. In his original essay on the transmutation of species (1858), Wallace conceived of the struggle for existence as occurring among *varieties* instead of individuals. He continued to think in such group terms when considering the evolution of moral behavior. Finally, in a note to the published version of his talk to the Anthropological Society, he mentioned that he was inspired to develop his thesis by reading Herbert Spencer's *Social Statics*. Spencer's own early brand of socialism had attracted Wallace. In *Social Statics* (1851) Spencer had envisioned a gradual and continual adjustment of human beings to the requirements of civil society, with individuals accommodating themselves to the needs of their fellows, so that eventually a classless society would emerge in which the greatest happiness for the greatest number would be realized. Spencer assumed that the inheritance of useful habits would be the means by which such evolutionary progress would occur, while Wallace believed natural selection to be the agent of that progress (Richards, 2009: 102-103).

In the following years Wallace continued writing upon topics related to humans, in which human nature in every sense became the focus. His various "non-scientific" interests played a significant role in his search for answers about what is human, what are man's origins, the antiquity of humankind, the diverse races and so on, always looking for an unifying answer. Furthermore, he was not only interested in the physical or biological aspects of humankind, but also in explaining features like mind, a point in the end that would distance him from Darwin and many other scientists.

HUMAN BEINGS IN EVOLUTIONARY NATURALISTIC EXPLANATIONS

The importance of human beings for Darwin and Wallace can be seen from the beginning of their careers as naturalists, and also from

their correspondence, as can be seen when Darwin wrote to Wallace on December 22, 1857, as he comments on the possibility of studying the case of human beings:

> You ask whether I shall discuss "man"—I think I shall avoid whole subject, as so surrounded with prejudices, though I fully admit that it is the highest & most interesting problem for the naturalist—. My work, on which I have now been at work more or less for 20 years, will *not* fix or settle anything; but I hope it will aid by giving a large collection of facts with one definite end (Darwin, 1887: 108).

This letter is just one example of the different approaches taken by Darwin and Wallace in their study of human beings, despite obvious shared interest in the topic since their first years as naturalists. These approaches are also good examples of their respective characters and values. Darwin was interested in humans since the *Beagle* voyage, he wrote two notebooks with notes and questions in the late 1830s and his correspondence with other naturalists showed some opinions about it. Yet it was not until 1871 that he decided to publicly express his views, which can be understood as an expression of the reserved attitude he always maintained towards his research in general. On the other hand, Wallace was also interested in humans since his youth, but chose to write and publicly express his opinions and ideas on this topic. This attitude he maintained until his last years, participating in many discussions about anthropology/ethnology, publishing numerous papers and books, becoming in that way one of the leading voices on anthropological issues.

Of great importance for the concept of graduality was the remarkable *Principles on Geology* (1830-1833), by Charles Lyell. Darwin read it during the *Beagle* voyage and Wallace during his time in Leicester, around 1844. For both it deeply influenced their respective proposals. Lyell's proposal was based on uniformitarian principles of geological studies, but for Darwin and Wallace those principles could also be applied to other natural processes, such as biological ones (Hodge, 1991). With that idea in mind and after their experiences in the field with "non-European people," they could conceive a strict view of gradualism in human evolution. Another great influence that shaped Darwin's perspective on humans was Hume, one of the leading philosophical voices of Victorian Britain. However this was not

the same for Wallace, who practically never mentioned Hume in his writings, with the exception of those in which he criticized Hume's scientific methodology so as to defend spiritualism (Wallace, 1866: 1, 4, 8).

The impact of slavery on the development of evolutionary theory had not been fully considered until recently, neither in Darwin nor Wallace's evolutionary visions; yet for both it played a key role in each particular gradualistic conception of human races. Slavery was an essential part of anthropological questions for Victorians in the interconnected fields of politics and natural history (see Desmond, 1989). Darwin and his family were committed to the anti-slavery movement, and Darwin's search for a naturalistic explanation for the origins of humankind were pursued in order to legitimize, from a scientific point of view, the political efforts of his family (see Desmond and Moore, 2009); Wallace, on the other hand, a convinced socialist since his youth, enjoyed many happy years living among the Dyaks, a group traditionally enslaved by Malays. Living surrounded by their situation, he asked himself many times how a group like the Dyaks could survive considering the food limitations due to Malay policies, an idea that was inspired by his reading of Malthus, which gave Wallace the immediate answer about his search of an evolutionary mechanism.

One of their intellectual differences, sexual selection, is a good example of their different understandings of human evolution. Wallace always thought that sexual selection was not different than natural selection, but Darwin conceded in *Descent* a fundamental role to the battles among males for females and the importance of ornaments and colors in organisms, an idea that he extended from "lower" forms, like birds and mammals, to humans:

> The strongest and most vigorous men—those who could best defend and hunt for their families, who were provided with the best weapons and possessed the most property, such as a large number of dogs or other animals—would succeed in rearing a greater average number of offspring than the weaker and poorer members of the same tribes (Darwin, 1882: 595).

Importantly from the natural selection perspective espoused in writings such as Darwin's *Descent* and Wallace's *The Origin of Human Races*, it is clearly argued that selection guaranteed the extinction of primitive groups which had contact with Europeans. This allowed

groups which included a greater proportion of individuals with superior intellectual qualities such as sympathy, altruism, moral values, fidelity and obedience to increase in number and eventually displace other groups. But for both there were some aspects of human nature that natural selection cannot explain, and each took different paths. Darwin mixed different explanations (natural selection, sexual selection, Lamarckian mechanisms) in order to maintain a naturalistic and materialistic explanation. Furthermore he did not have as much evidence to appeal to as he had in the *Origin*. Wallace, although a "hyper-selectionist," was also a committed utilitarian thanks to influences such as Jeremy Bentham and John Stuart Mill. Hence his main reason for looking for alternatives to natural selection for human characteristics such as mind emerged from his utilitarian comparative efforts, for instance the musical and mathematical capacities of Amazonian Indians surpassing the best London pianist (see Brotman, 2001).

CONCLUSION

Darwin and Wallace were interested in explaining human nature and its origins from the beginning of their respective careers as naturalists. Their expeditions gave them vast amounts of evidence, especially from coming into contact with Indians and slaves, and, among their crucial readings found in natural selection the most appropriate way to explain it. But after some years, both looked for other possible explanations: Darwin always on a naturalistic path and Wallace always open to practically any kind of explanation, even those out of the scientific realm. In the end, the difference between these two naturalists was in their approach to which mechanisms can be most appropriate in order to explain evolutionary characteristics. Ultimately it is clear how important humans were for Darwin and Wallace in their respective search of evolutionary processes.

For many years they were dedicated to the study of different kinds of organisms from the point of view of natural selection. In general they always continued to emphasise the relevance and importance of the study of human beings in the same manner as with other animals. During their first years as naturalists, both agreed on the importance of explaining the human case from a naturalistic perspective, and they

also agreed that humans were the result of a long and gradual process in which characteristics such as the brain, and therefore emotions, musical and mathematical capacities or religious feelings were present as much in animals as in humans. However they disagreed as to how these human characteristics arose. Darwin maintained a naturalistic discourse, as we can see in *The Descent of Man*, especially chapters III to V (a point to be noted is that these naturalistic explanations were more dependent on the application of Lamarckian mechanisms than of natural selection). Wallace was convinced of the natural selection approach, at least until 1869, but after this date he prefer to explain the evolution of the human mind through alternative explanations, such as its sudden appearance due to the action of a "Supreme Intelligence," as can be found in works including *Contributions* (1870) and *Darwinism* (1889).

Despite their personal relationship the ways had intellectual differences. Among their main differences were at which level natural selection was causally efficacious, the development of the isolation of reproductive mechanisms, how many evolutionary mechanisms there are, the human mind and its nature and sexual selection. But above all these differences, they maintained a common interest in human beings, and we can see the great importance of the human case for Darwin and Wallace in the construction of natural selection theory, both found in their experiences and observations of human populations clues to support their scientific views. Scientific views which were as much science as social and political perspectives. Human nature defined natural selection for Darwin and Wallace.

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