

SEXUAL SELECTION AND THE BROTHERHOOD OF HUMANS: DOES THE ARGUMENT OF *THE DESCENT OF MAN* CONFIRM *THE SACRED CAUSE* THESIS?

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Abstract. Desmond and Moore point out that the key to understanding Darwin’s *The Descent of Man* is his abolitionist motivation and his advocacy that races constitute subspecies. Roberta Millstein raises some doubts about the importance of this motivation. She points out that the inclusion of the extensive section devoted to non-human animals is not justified by Darwin’s treatment of humans *per se*, because his explanation of the origin of races is peculiar. In this sense, she argues that Darwin’s specific explanation of the origin of races does not confirm the central importance that Desmond and Moore give to Darwin’s abolitionism. In this paper I have two different aims. On the one hand, to show that the human case actually is based on the treatment of nonhuman animals, and consequently, Darwin’s argument is not as poor as Millstein believes. My second goal, taking Millstein’s challenge seriously, is to show that Darwin’s explanation of the origin of races does confirm the Desmond and Moore thesis in a deeper sense than the one they propose themselves. For the anti-slavery motivation could not only explain the fact that Darwin sees all humans as forming the same species, but the specific explanation he gives for the origin of races.

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External racial differences between humans are thus mainly the result of the infinitely varying and capricious aesthetic preferences of various peoples. . . , this is one of the strangest ideas ever developed by Darwin, at least with respect to the generality that he gave to it.

Gayon 2010, pp.138–9



1. Introduction

“I have just finished 2 papers on the fertilization of plants, & have now begun a small book on the Descent of Man & on sexual selection, which will appear to you an incongruous union” (To Ernst Haeckel, 6 February [1868])¹ said Charles Darwin to Ernst Haeckel revealing full awareness of an enigma that continues to puzzle those who attempt to understand his thinking (Dawkins 2003, p.61; Desmond and Moore 2009, p.xvii; Eiseley 1972, p.1). Why did Darwin include his extensive treatise on sexual selection in the middle of his treatise on the evolutionary origin of humans? Perhaps paying attention to the number of pages in the different parts of the two volumes of *The Descent of Man, and Selection in Relation to Sex* (Darwin 1871, from now on *Descent*) may be illustrative. Although the two volumes have about the same number of pages, Part 2 called “Sexual Selection” begins in the first volume. So, Part 1, called “The Origin of Man” has 250 pages, while Part 2 has 554 — as Jean Gayon (2010, p.135) points out, this part alone is longer than *The Origin of Species* (Darwin 1859, from now on *Origin*). In the second part, 486 pages are dedicated to sexual selection in non-human animals, 68 pages to sexual selection applied to humans and finally, 20 pages to conclusions. In other words, 60 percent of *Descent* is devoted to the application of sexual selection to non-human animals!

Of course, the reason why Darwin introduces sexual selection in his book on the origin of humans is explicit. For, in his view, racial differences are explained by sexual selection. And that’s what *Descent* is about from chapters 7 to 20.

So, we can laser in on three different enigmas concerning this book. First, why does dealing with the issue of the origin of races matter (in the discussion of the origin of humans)? Second, why does Darwin think that racial differences are mainly secondary sexual characteristics (as expressed in the epigraph of this paper)? And finally, why does he dedicate so much space to sexual selection in non-human animals in his argument?

The first of these questions is addressed in Adrian Desmond and James Moore’s illuminating book, *Darwin’s Sacred Cause* (2009). Through their historiographic work, these authors show the influence of Darwin’s anti-slavery ideas on his evolutionary ideas. The argument that humans form a species and share the same mental capacities is the *raison d’être* of *Descent*. I will briefly present their ideas in part 2. However, it is not so clear whether Darwin’s ideological motivations — that allow us to understand his moral concern about the origin of human races — could also shed light on Darwin’s decision to explain them through sexual selection and the long space devoted to sexual selection in non-human animals — i.e., the other two enigmas raised. In an interesting article, which inspired me to write this paper, Roberta Millstein (2012), who does not intend to dispute the importance of the work conducted by Desmond and Moore, raises some doubts about these issues. I will present her

view extensively in part 3, but here let me summarize her point. Millstein doubts that Darwin's anti-slavery goal is as important as Desmond and Moore believe it to be. She points out that, if explaining the origin of human races was the main reason for introducing sexual selection and if sexual selection is a centerpiece of Darwin's antislavery arguments, then Desmond and Moore's view does not solve the puzzle of why Darwin spent so much time discussing cases that do not serve as evidence for the origin of human races or why the argument for human races is atypically poor (by Darwin's standards). Both claims are based, on the one hand, on the fact that Darwin's treatment of secondary characters in humans is peculiar and unsupported, Millstein claims, by his treatment of non-human animals. The conclusion Millstein draws from this discussion is that anti-slavery is not the primary goal Darwin was pursuing in incorporating the discussion of sexual selection into the explanation of the origin of races.

In part 4, I will focus on Millstein's claims. I will discuss whether the extensive treatment of non-human animals is irrelevant and whether the Darwinian argument can be said to be wrong and lacking evidence. I do not intend to discuss the claim of the relative importance of the different goals Darwin might have had in mind (I leave that task to those who navigate the tempestuous and fascinating sea of Darwin's letters and personal notes). I am rather interested in presenting and discussing the interesting puzzle posed by Roberta Millstein: can we find evidence for Desmond and Moore's position, which as she says is based primarily on Darwin's work and the discussion of the political and social context, in a detailed reading of the specific argument of the origin of the races provided in *Descent*?

In this sense, I will present, in part 5, three characteristics of the explanation of the origin of human races through sexual selection by an aesthetic choice of mates, to which Darwin gave preponderance, that are consistent with Darwin's ideal of human brotherhood: racial differences are superficial and ornamental; the explanation given by Darwin implies equal mental capacities in all humans without renouncing to a naturalistic explanation, and the explanation is extremely contingent: racial divergences do not follow a prefixed evolutionary path towards perfection. As we shall see, some of these ideas are briefly suggested in the texts of Desmond and Moore (it is not true that they do not focus at all on the specific argument of the origin of races in *Descent*). I intend to develop and deepen these ideas to make clear that the anti-slavery ideal may have influenced not only the idea that humans form a single species, but also the specific explanation given for the origin of races.

The path followed in this work will allow me to sustain two theses as corollaries. On the one hand, concerning the question of Darwin's antislavery, the question of polygenism and monogenism does not seem as important as the fact that the new framework proposed by Darwin implies the abandonment of frameworks on which the defenders of slavery relied. On the other hand, and related to what has just been

said, it does not seem so fruitful to see Darwin's texts only through the prism of argumentative quality, discussing whether the desired conclusions can be inferred from the premises. This is a privilege one has when dealing with normal science — in the Kuhnian sense of the expression. Darwinian texts inaugurate a new worldview that implies not only the discussion of how to explain particular phenomena, but also the modification of previous conceptual frameworks — as we shall see what happens with notions such as Beauty.

2. The sacred cause

Darwin has always been the favorite example for studies that aspire to point out the influence of social context, non-cognitive values, and biases of different types on scientific research. In some cases, such influences assume naive versions of Darwinian thinking and simplified versions of the social context in which he lived. This is not the case in Desmond and Moore's book. Specialists in Darwinian thought and his life, in *Darwin's Sacred Cause*, find a motivation that illuminates the Darwinian work, basing their approach on a thorough reading of sources and always presenting the positions with which his ideas conversed (Desmond and Moore 2009, see also Moore and Desmond 2004). The motivation at issue consists of his anti-slavery position and his belief, with respect to that position, that all human races had a common origin. Needless to say that there is no direct inference between the status of human races and moral positions towards slavery. In this particular story, science turned out to be contingently progressive, for enslaved races turned out to be subspecies as Darwin believed — what would have happened if the subject of discussion had been the enslavement of Neanderthals? However, the naturalistic fallacy is not what is at issue in Desmond and Moore's book, and Darwin never argues against slavery in his scientific publications.

At the time of Darwin's publication, the discussion about the status of races was mixed with political positions about slavery. In the religious/creationist version, the dispute was about whether races were created separately, or whether they descended from a common ancestor. In a systematic secular context, the discussion was about whether the different races are species or subspecies (these are the terms of the discussion in Darwin's evolutionary texts). Those who defended that the human races were distinct species were called "pluralists" or "polygenists", and those who defended that the different races were subspecies were called "monists" or "monogenists". Just as not everyone who defended polygenism supported slavery, not everyone who opposed slavery was a monogenist. But it is a tendency that serves an explanatory purpose in Darwin's case.

It is not my intention to summarize Desmond and Moore's book, the charm of

which is in the detail, but to point out what I believe to be its two main theses. First, Darwin's monogenistic beliefs led him to the idea of branching evolution, in which one species gives rise to other species. The common ancestry (which allows for the explanation of homologies) of large groups of living organisms follows, according to Desmond and Moore, from his consideration of the common ancestry of human races. For example, Desmond and Moore show how in his notebooks Darwin moves from asking about the conformation of the "father of mankind" to asking about the conformation of the "father of Mammalia" (Desmond and Moore 2009, p.112).

The second main thesis put forward in the book relates to the importance of Darwin's anti-slavery position in the writing of *Descent*. Desmond and Moore go into details about how it was written and how it conversed with positions about slavery. In addition, they suggest that their approach explains the reason why *Descent* brings together two books on different subjects (Desmond and Moore 2009, p.xvii). For the book that explicitly argues that human races have a common origin (as with all other animals) and are actually subspecies modified by sexual selection, is implicitly subordinated to the anti-slavery ideal of the brotherhood of mankind. "He felt not only scientific curiosity but a moral imperative to explain how racial differences arose naturally within one human species". (Moore and Desmond 2004, p.xiii). In this case, the thesis is that *Descent* has an unspoken objective, and making it explicit allows for a better understanding of its structure.

3. Roberta Milstein's puzzles

Moore and Desmond pose a contrast between Darwin's published and unpublished texts. It is only when attention is paid to the letters, personal notebooks, and marginalia, they say, that the image of Darwin guided by anti-slavery ideals and the consequent vision of the brotherhood of mankind emerges (Desmond and Moore 2009, p.xvii; Moore and Desmond 2004, p.xvi). Millstein raises the question of whether a detailed reading of the specific argument of the origin of the races provided in *Descent* would confirm or disconfirm the hypothesis of the relevance of anti-slavery positions as the implicit main objective behind the writing of the book (Millstein 2012, p.629). In her view, the examination of the argument about the origin of the human races in *Descent* follows a somewhat enigmatic path if the anti-slavery motivation alone is considered. She argues that while Desmond and Moore show that Darwin's anti-slavery motivations play an indisputable role in his approaches in general, such motivation is neither the only nor the main one to account for the extensive treatment of sexual selection in nonhuman animals nor to account for Darwin's specific explanation of the origin of races.

Millstein's strategy consists of pointing out that Darwin's sexual selection-based

argument for the origin of human races is not very good (by Darwin's standards), since the evidence collected in the pages devoted to sexual selection in non-human animals is not then used in the application of sexual selection in humans. How Darwin applies sexual selection to humans, in the explanation of the origin of races, is peculiar in two ways:

- 1- The traits that differentiate races (which Darwin attempts to show as secondary sexual traits) are not dimorphic, although almost all the cases discussed in the part on sexual selection in non-human animals are. Darwin outlines certain procedures that would allow the detection of sexual characteristics shared by males and females in non-human animals, but these procedures are not used in the detection of shared secondary sexual characteristics in humans.
- 2- Regarding sexual selection in non-human animals — with a few exceptions — females are the ones that choose. In the case of traits in humans, the choice falls to males. Darwin points out certain behavioral peculiarities that could lead to role reversal in sexual selection in the case of non-human animals, but these are not mentioned in the case of humans.

So in Millstein's view, the argument is weak because the extensive treatment of sexual selection in non-human animals does not serve as a model for subsequent treatment in humans. This would imply that the motivation for the inclusion of the extensive part devoted to non-human animals cannot be reduced to the treatment of the origin of races, and consequently to Darwin's anti-slavery motivation.

My intention in this paper is to take up the challenge posed by Millstein and try to solve her puzzle, that is to say, to establish from the specific argument of the origin of the races provided in *Descent*, whether Desmond and Moore's thesis is confirmed or not. But first I want to make explicit some general points of agreement and disagreement with Millstein's assertions.

Of course, anti-slavery is not the only motivation Darwin had either in *Descent* or in its extensive treatment of non-human animals. Leaving aside the issue of how to weigh the importance of different motivations in Darwin's mind, there is a web of implicit and explicit goals behind each of his writings. To mention a few, explaining beauty (Gayon 2010; Kottler 1980) — in line with his writings on cross-fertilization, bearing in mind that in natural theology beauty was an intrinsic feature of creation (Ginnobili 2014, 2022a) —, explaining the existence of useless traits — if only non-sexual natural selection is considered — (Gayon 2010, Veuille 2010), giving a naturalistic explanation of the origin of humans and the human mind — in discussion with Alfred Russel Wallace and Charles Lyell — (Cronin 1991, Dawkins 2003, Gayon 2010, Gould 1982, Schwartz 1984), showing that certain traits not explainable by design could be subsumed by his approach (Ghiselin 1969, Chapter 9), and of course,

to include humans in the same evolutionary tree as the rest of the animals (Millstein 2012, p.633). I think she is also right in that anti-slavery motivation taken in isolation could not illuminate the totality of aspects of Darwin's texts. However, I do not agree with many of the steps Millstein takes to reach that conclusion.

First of all, the peculiar way in which Darwin applies sexual selection to humans may be indicative that the extensive treatment of sexual selection in non-human animals responds to other motivations. But the lack of evidence of Darwin's thesis that races arose by sexual selection based on male aesthetic preferences may confirm Desmond and Moore's approach, since Darwin's abolitionist motivation could have encouraged him to make a weak inference from his premises to the conclusion he arrives at. I will not discuss this point further, as I do not believe that Darwin's argument is as poor as Millstein thinks it is, for several reasons that I will unfold in the next part.

Finally, I believe that, although Darwin's abolitionist motivation is not explicit in *Descent*, a strong link can be traced between Darwin's specific explanation of the origin of races and his anti-slavery motivations. Thus, unlike Millstein, I believe that a detailed reading or arguments provided in *Descent* confirm Desmond and Moore's approach, as I will try to show in the last part of the paper.

4. How inadequate is the *Descent* argument?

In this section, I will discuss two points on which Millstein relies when claiming that Darwin's argument about the origin of races is poor by Darwin's own standards. As we saw, this has to do with the fact that the cases dealt with in the part dedicated to sexual selection in non-human animals are not analogous in several senses with the human case. I will divide this section into two different parts. First, I will defend in what sense the extensive treatment devoted to non-human animals is relevant even if the application of sexual selection to the case of humans were peculiar. Second, I will discuss whether the case of humans is indeed treated as peculiarly as Millstein argues. This discussion will allow me to delve into the details of the Darwinian argument.

Of course, my analysis of *Descent* will not consider all those aspects in which Darwin is wrong simply because he lacked adequate evidence, or because he was not a Darwinian like we are — he accepts the inheritance of acquired characters, as the most obvious example. But that is not the point made by Millstein either.

4.1. Why so long?

Broadly speaking, we could divide the books written by Darwin into two types. Those in which he defends general frameworks of a more speculative or philosophical char-

acter, on the one hand, and those and those in that, in a minute way, he studies a specific empirical problem in detail: *Origin* representing the former and the book on orchids, the latter (Darwin 1877a). What about *Descent*? Well, perhaps the fact that it does not fit exclusively into either group is the cause of its strangeness — more so than the number of pages devoted to each part as mentioned in my introduction. For, the part dedicated to non-human animals seems to belong to the group of specific and detailed publications, and the first part and the chapters dedicated to sexual selection in humans seem to belong to the group of more speculative publications. After the impressive treatment of non-human animal secondary sexual characters, the speculative chapters dedicated to sexual selection in humans may cause some frustration to the reader of *Descent*. And therein may lie, in part, the idea that the argument is somewhat flawed. I would like to make two different comments on this point.

Darwin is quite explicit about the speculative character of his explanation of secondary sexual characteristics in humans. For example, he states in the conclusion that “The views here advanced, on the part which sexual selection has played in the history of man, want scientific precision” (Darwin 1871, p.383) — something that Millstein makes explicit in footnote 6 (Millstein 2012, p.629). It is interesting to note that in many cases the mere presentation of a possible naturalistic explanation, even if it lacks sufficient evidence, plays a role in the Darwinian argument. Something that also occurs in *Origin*, for natural theologians started from the impossibility of formulating a naturalistic explanation of adaptive complexity to argue for divine intervention. And the same happens in the case of the human mind; only in this case Darwin was not arguing with natural theologians but with his allies Wallace and Lyell, who did not believe that it was possible to explain the origin of the human’s mind without divine intervention (Cronin 1991, Gayon 2010, Gould 1982, Schwartz 1984). Of course, in any case, this would imply understanding the chapters devoted to sexual selection in humans under the objective of providing a naturalistic explanation of the current state of the human races, and not under the abolitionist objective. Which is what Milstein wants to defend.

Regardless of this sort of change of register in the chapters on sexual selection in humans, would the introduction of the long part dedicated to non-human animals be unjustified if the treatment of humans were peculiar? This view would imply that the treatment of cases not analogous to humans is irrelevant — a point that is central to Millstein’s argument. And I believe it is not.

Take into account the long discussion with Wallace about sexual selection (Cronin 1991, Dawkins 2003, Richards 2017, Schwartz 1984). The strengthening of the principle of sexual selection and its power to shape traits in nature was a condition for the possibility of its application to human races. What does Darwin do to convince the reader of the power and explanatory capacity of sexual selection? The same thing

he does with each one of his ideas (non-sexual natural selection, common origin, the importance of cross-fertilization, etc.): show its unifying force (Blanco; Ginnobili; Lorenzano 2019, Ginnobili 2010, 2016, Kitcher 1981, 1993). Darwin does that by showing the different ways in which sexual selection can be applied to heterogeneous cases throughout the animal kingdom. There are no cases that are not relevant, in this sense, to the later treatment of human races. This is not an anachronistic assumption about Darwin's actions. As has already been extensively discussed on several occasions, Darwin took from William Whewell the idea of "consilience of induction", according to which, the more classes of mutually independent cases a hypothesis explains, the more acceptable it is (Darwin 1872a, p.421; Gayon 2010, p.138; Ruse 1975).

In more Kuhnian terms, these are not texts that follow normal scientific argumentation, where one tries to defend a point through the acceptance of certain relevant premises. Darwin's are revolutionary texts. Their goal, rather than arguing for a specific explanation, is to illustrate how to think in a new way, incommensurable to some extent and different from that of the time (I will return to this point later, in part 5). And, following this Kuhnian layout of the issue, this is achieved through the construction of the paradigmatic exemplars of the theory presented (Kuhn 1970). In *Descent*, Darwin is teaching his contemporaries, and more importantly, the naturalists of the future, how to think in Darwinian terms. The chapters devoted to non-human animals introduce us to the paradigm of sexual selection. Darwin then outlines an explanation of how such a paradigm might apply to the case of humans. Nothing in the chapters on non-human animals is irrelevant, and its length seems to adequately accomplish the task. That would be true even if the human case were not based, as Millstein claims, on the specific treatment of non-human animal cases. As I will point out in the next section, I believe that this assessment by Millstein is inadequate.

4.2. Is the treatment of human secondary sexual traits peculiar?

Darwin presents sexual selection as the competition between organisms of one sex to obtain mates of the other sex. There are two types of sexual selection. In the first type, the competition is between organisms of the same sex and involves some kind of interaction between them in which the winners access the mate. In the second type, there is competition, but to attract organisms of the other sex. For Darwin, this second type of competition assumes an aesthetic criterion and a more or less deliberate choice on the part of the other sex.² Darwin proposes sexual selection to explain the secondary sexual traits of organisms, which are traits indirectly related to the act of reproduction. His characterization of "secondary character", as he points out, is vague and quite unclear (Darwin 1871, pp.253–4), but it is simply a first approximation. The long part of his book devoted to exemplary applications of the

notions involved is those that, as we saw in the previous part, provide the empirical semantics of all the concepts involved.

We now find ourselves at a junction between two points that are fundamental for the work under discussion. First, sexual traits, whether primary or secondary, are generally dimorphic — i.e., sexes differ in their possession. Secondly, in both types of sexual selection, males are the ones that compete for females (in the case of sexual selection based on aesthetic criteria, females are the ones that choose). There are exceptions to both issues, which Darwin addresses and discusses. Precisely, Darwin's explanation of the origin of human races, which appeals to sexual selection based on aesthetic criteria, constitutes indeed an exception to both issues. The traits in question are not dimorphic and males are the ones that choose. It is crucial to discuss this in detail because it fuels Millstein's idea that Darwin's treatment of the origin of races in humans is not based on the cases discussed in the part of *Descent* devoted to sexual selection in non-human animals. For, as she claims, the considerations made by Darwin in the treatment of exceptions are not used in the case of humans.

I will begin by pointing out that the principles at issue are of different types. That competition is between males or that females are the ones who usually choose is presented by Darwin as “a general rule in the animal kingdom” (Darwin 1874, p.318). The cases in which this does not occur are presented as “a few exceptional cases” (Darwin 1871, vol. 1, p.276). There is, however, no principle that implies that secondary sexual traits must be dimorphic. Darwin does not object to their existence and explains them, rejecting the idea of mutual sexual selection, by appealing to the operation of sexual selection on one of the genders and the transmission of the trait to both genders (Darwin 1871, vol. 1, pp.276–7). The reason why Darwin focuses mostly on dimorphic traits in the part dedicated to non-human animals has nothing to do with their exceptionality.³

To understand this point, it is important to distinguish between those traits that are part of the overall *explanandum* of the theory of sexual selection and those traits that are strong indications that sexual selection has worked. Perhaps an analogous case with natural selection, in general, can serve as an example. Leaving aside the intelligent design of artifacts, natural selection is the only theory that succeeds in explaining traits that are adaptive (optimal or nearly optimal) in their environment. Therefore, optimality has been used as a diagnostic that natural selection has worked. However, the overall *explanandum* of the theory of natural selection does not only consist of optimally designed traits. In the present case, the traits that are clear cases of sexual selection and that therefore play a special role in the chapters where Darwin wants to convince us of the importance of sexual selection, are dimorphic, disconnected from usefulness for survival (or even cause disadvantages) and unrelated to differences in the lifestyles of males and females. But the cases that do not fall into these are not exceptional at all. They are simply cases in which the operation

of sexual selection is not so obvious. The global *explanandum* of a theory is always much broader than the cases that allow us to infer abductively that the theory has worked, because they can only be explained by that theory. This is interesting because it is often overlooked by commentators in two ways. Some of them present secondary characters in Darwin as exclusively dimorphic⁴ and others claim that they are disconnected of survival value.⁵ Although Darwin is very explicit in affirming the existence of non-dimorphic secondary sexual traits, he never explicitly states that secondary sexual traits with survival value can exist. So, I cannot provide direct textual evidence that he accepted the existence of the latter. But I can point out that Darwin was well aware that traits could pursue more than one function and, moreover, that in evolution there could be changes of function, and that therefore the present utility should not necessarily match the reason why the trait was selected in the past — see, e.g., the reply to George Jackson Mivart on what the baleen of whales could have been for when they were not yet developed (Darwin 1872a, p.183). The latter implies that a trait could have survival value in the present and although it could have developed by sexual selection. And of course, it is possible that both functions, the one related to survival and the one related to mate attraction, coexist in a specific trait. Just as a flower petal can evolve to serve as an insect landing strip in an orchid while retaining its former function of attracting insects (Darwin 1877, pp.246, 282), it is possible to imagine that a trait that allows attracting mates could acquire survival value, or that a trait that has survival value could also play a role in securing reproductive mates. And just as it is conceivable that there could be a tradeoff between sexual and natural selection, in which they act as opposing forces (lengthening and shortening the peacock's tail, for example) it is possible to think that a trait that has survival value (such as skin color) could be intensified by sexual selection. The latter possibility is considered by Darwin, e.g., in the case of mammals (Darwin 1871, vol.2, p.299),⁶ showing that lack of survival value is not a necessary condition for a trait to be a secondary sexual characteristic.

In any case, Millstein's claim that Darwin does not base his approach to sexual selection in humans on the treatment of non-human animals (and her consequent assessment of Darwin's argument as a "poor" one) does not lie in the exceptionality of humans. What she says is that the treatment of exceptionality is not based on the treatment of exceptionality in non-human animals. Let's see both points in the matter.

According to Darwin the typical or usual characteristics of secondary sexual traits, by which we can recognize them as such (and consequently, recognize that they have probably evolved by sexual selection) are:

- a- The trait is dimorphic and does not correspond to differences in life habits between the sexes (Darwin 1871, vol.1, p.322).
- b- The trait develops at sexual maturity (Darwin 1871, vol.2, pp.233, 297).

- c- The trait is exhibited during courtship — specifically, taking into account the case of sexual selection that interests us, by attraction concerning the aesthetic criterion of the partner (Darwin 1871, vol.1, p.322, vol.2, pp.123, 296).
- d- There is an esthetic preference in the sex that makes the choice — also specifically for sexual selection by mate attraction (Darwin 1871, vol.2, pp.122, 270).
- e- The trait is extremely variable (Darwin 1871, vol.1, p.371).
- f- The trait is extremely pronounced (in an analogous sense to cases of secondary traits in other animals) (Darwin 1871, vol.1, p.371, vol.2, p.297).
- g- The trait has no survival value (Darwin 1871, vol.1, pp.322, 371, vol.2, p.267).

In addition, there are some criteria Darwin gives, that appeal to relationships with other species of the same group to which the species belongs.

- h- When there is no dimorphism, but the trait resembles secondary sexual traits of other species of the same group in which dimorphism does exist (Darwin 1871, vol.1, p.322).
- i- When females of species of the same genus or family resemble each other more in the trait at issue than males (Darwin 1871, vol.1, p.410).

This list, which may not be complete, functions as a set of symptoms (since, as used by Darwin, they provide neither necessary nor sufficient conditions, not even disjunctively). They are characteristics that one can expect to find in secondary characters and that allow us to recognize them as such.⁷ Except for the first and the last criteria, which imply some degree of dimorphism, all the other criteria can be used in cases of non-dimorphic sexual characteristics. However, Millstein points out only the last three (Millstein 2012, p.132). And she only points out the inapplicability of the last two (*h* and *i*) to argue that Darwin does not use the same criteria for non-dimorphic characters as in the cases of non-human animals. Indeed, the last two criteria do not seem to apply.

It is important to note that Darwin maintains that there are some dimorphic secondary characters in humans. In that case, the application usually follows the standards outlined in the previous chapters. The reason why Millstein focuses on non-dimorphic sexual characters is that she is evaluating the role of sexual selection in the formation of human races, and she assumes that the differences between races appear to be non-dimorphic. This seems not to be strictly the case. For example, according to Darwin the amount of hair (Darwin 1871, vol.2, pp.320, 376) and body size (Darwin 1871, vol.2, p.318) are characteristics in which races differ, and they are dimorphic. In cases such as these, the first requirement for detecting sexual characteristics (*a* in the list provided) applies. However, in cases, such as skin color, where there are no dimorphisms, I believe that it can be shown that Darwin does use evidence presented in the above list.

The first criterion used to point out that non-dimorphic characters are secondary sexual characters is one mentioned by Millstein, that they lack survival value (g in my list), which is precisely what Darwin states (adequately or inadequately, this is not the place to discuss it) at the end of the first part of *Descent*:

[...] as far as we are enabled to judge (although always liable to error on this head) not one of the external differences between the races of man are of any direct or special service to him (Darwin 1871, vol.1, pp.248–9).

This is the first reason given for considering them as secondary traits. But, of course, the mere lack of survival value is not enough by itself to establish the point. Therefore, it appeals to other reasons. The key to the Darwinian explanation of the origin of the traits that differentiate human races lies in the fact that different populations had different aesthetic criteria, and these aesthetic criteria modified the different populations. For this reason, the criteria regarding the exhibition of features and the possession of different aesthetic criteria are particularly important. As a starting point Darwin assumes that the only way to get an idea of what happened in primitive times, before the races were formed, “is to study the habits of existing semi-civilized and savage nations” (Darwin 1871, vol.2, p.338). He then argues that different breeds have different aesthetic criteria that are suited to the traits that characterize them, and that females enhance and exhibit such traits (Darwin 1871, vol. 2, pp.338–54, 371–2, 380, 381). I insist, here Darwin is not changing the rules of the game, he is still applying the same criteria that he applied in non-human animals to determine secondary sexual characteristics (criteria c and d of the list provided). Finally, he also appeals to the extreme variability of the trait and to the fact that they emerge at maturity (b and e) (Darwin 1871, vol.2, pp.320, 321, 380, 381). So, it is not accurate to state that the evidence used by Darwin for the identification of dimorphic or non-dimorphic sexual traits is different in the case of human and non-human animals.

Let us now review the second alleged peculiarity of the explanation of the origin of races: the choice by males. Although, as I said, Darwin argues that part of the explanation of the origin of races could be due to the choice of females, especially in primitive times, Darwin appeals mainly to the choice of males, and as we have seen, this falls within the framework of the exceptions to the rule that females are the ones that choose. Darwin shows a lot of exceptions to this rule among different non-human animals. What Millstein argues is that the reasons given by Darwin to explain the exceptions in non-human animals are not used in humans. The main reason why Darwin considers that male choice has been dominant in humans is that in the “savage tribes” on which he relies to study the primitive stages of humanity women are enslaved (Darwin 1871, vol.2, p.371).

Although Darwin tries to temper this assertion by showing that females might still retain some freedom of choice (Darwin 1871, vol.2, p.374), male choice is still

preponderant.

The characteristics that Darwin points out to explain the exceptional cases to the rule that the female chooses, in cases of non-human animals, are the following:

- a- When males collaborate with females in breeding and when they defend females (Darwin 1871, vol.1, p.271).
- b- When they are in charge of the incubation task (reversed roles) (Darwin 1871, vol.2, pp.22, 200–2).
- c- When females outnumber males (Darwin 1871, vol.1, p.263, vol.2, p.207).

Darwin does not explicitly state that these criteria are met in humans, but it is reasonable to assume that the human male collaborates with breeding and protects the females. But above all, he argues that polygamy has the same effect as the disparity in the number of males and females, “for if each male secures two or more females, many males will not be able to pair” (Darwin 1871, vol.1, pp.265–6). And polygamy is a central part of the explanation of the origin of the races, since the more powerful male would have access to more females (Darwin 1871, vol.2, pp.367, 384). Consequently, again, it does not seem true that the treatment of the exceptionality of humans is not based on the cases of non-human animals.

5. Paying attention to the content of *The Descent of Man*

While I disagree with Millstein that the human case is not grounded in the treatment of non-human animals in *Descent*, I think it raises the interesting question of whether a reading of the specific argument of the origin of the races provided in *Descent* confirms or not Desmond and Moore’s thesis.

I have tried to show that Darwin gives good reasons. The kind of reasons that can be given in revolutionary texts where not only the acceptance of a conclusion based on certain premises is sought, but where there an attempt is also made to modify the previous conceptual framework and the dominant evaluative standards. In this sense, I have tried to show that the thesis of the importance of abolitionist motivation in Darwin’s work is not disconfirmed by a detailed reading of the arguments provided in *Descent* in the way Millstein suggested it was. But in this section, I will try to show that it is possible to double the stakes and argue not only that the specific explanation of the origin of races given by Darwin does not disconfirm the importance of Darwin’s abolitionist motivation, but rather confirms it.

At this point, we can express more clearly the sort of enigma that surrounds *Descent*, perfectly expressed in the epigraph with which this paper opens. Why did Darwin come up with this strange idea that the origin of races is to be found in the capricious aesthetic preferences of males? Especially considering that evolution, to

Darwin, is gradual and that such aesthetic preferences are contingent, as we shall later see. Thus, they do not seem to establish constant selective pressures so as to imprint a stable direction (Cronin 1991, p.174).

As I said, we can remain in the context of justification and argue that he had good reasons for his explanation of the origin of races (as I tried to show in the previous section). Or we can take a step further to the discovery context, and see how he came up with the idea. I will try something else. Desmond and Moore seem to suggest that abolitionist motivation led Darwin to worry about the origin of races and to argue that all humans form a single species. But they do not develop as much the relationship between the specific explanation of the origin of races and the motivation in question. I will try to develop the sense in which Darwin's specific explanation of the origin of races is completely aligned with the abolitionist objective, in a deeper sense than that pointed out by Desmond and Moore.

I will make no speculation about what Darwin had in mind. Instead, I will try to show how the specific explanation proposed by Darwin was suitable for his position against slavery, for it implies that differences are superficial and that all races have the same mental capacities. Moreover, this explanation is highly sensitive to contingencies in the specific sense that the acceptance of this Darwinian explanation implies the dissolution of a worldview in which there are essential, fixed and insuperable absolute differences between the different races of humans. Of course, this is not to say that Darwin was not a racist by today's standards (that is not the point), nor that he did not believe that there were important differences between civilized and savage peoples (negatively valuing the latter). Nevertheless, it does allow me to relate Darwin's specific explanation of the origin of races to his anti-slavery motivations.

5.1. Superficial and ornamental differences

Authors who have devoted themselves to studying how Darwin was conceiving his ideas have found very interesting relationships between unconscious artificial selection (the modification of domestic species due to the care of the most interesting varieties without having the objective of modifying them) and sexual selection by choice of mates based on aesthetic criteria, and specifically with the explanation through this type of sexual selection of the origin of races (Alter 2007b; Desmond and Moore 2009, p.283; Gayon 2010, Richards 2017). Ultimately, just as the aesthetic preferences of breeders are imprinted on the bodies of domestic breeds, such preferences could modify human populations. The analogy between artificial and sexual selection seems to have played a fundamental role in the context of Darwinian discovery.

But here I am interested in how this analogy relates to the answer to a question that Darwin raises somewhat glancingly at the beginning of *Descent*, and never addresses again in the book, at least, explicitly.

The sole object of this work is to consider, firstly, whether man, like every other species, is descended from some pre-existing form; secondly, the manner of his development; and thirdly, *the value of the differences* between the so-called races of man. (Darwin 1871, vol.1, p.3, italics mine)

What does it mean to “establish the value of differences between human races”? The most straightforward answer is to interpret the question in the context of the discussion of whether races are species or subspecies. I believe that this is correct, but that more can be said, and that the specific explanation of how the races diverged, beyond the fact that the races are subspecies, allows us to evaluate that value.

Once and again throughout *Descent* Darwin draws the analogy between sexual selection based on aesthetic preferences in the choice of mates and methodical artificial selection, or unconscious artificial selection based on aesthetic preferences. For example:

In the same manner as man can give beauty, according to his standard of taste, to his male poultry... so it appears that in a state of nature female birds, by having long selected the more attractive males, have added to their beauty. (Darwin 1871, vol.1, p.259)

Another point Darwin often insists on is the difference between the effect of natural selection and artificial selection. For example:

As man can produce and certainly has produced a great result by his methodical and unconscious means of selection, what may not nature effect? Man can act only on external and visible characters: nature cares nothing for appearances, except in so far as they may be useful to any being. She can act on every internal organ, on every shade of constitutional difference, on the whole machinery of life. (Darwin 1859, p.83)

Artificial selection, as opposed to natural selection, acts only superficially. Someone might object that artificial selection, especially considering unconscious selection, does not always imply ornamental differences between varieties (it can act on deeper differences such as resistance to disease, to different climates, etc.). But considering that Darwin usually thinks of artificial selection as modifying the shape of varieties, we can make a direct and relevant inference for what concerns us. Especially considering that the deliberate aesthetic preference by which breeders choose breeding partners, in methodical selection, is the same type of delivered preference presupposed in the choice of sexual partners (Mayr 1972, p.90). The analogy put forward by Darwin is strong in this regard. We will return later to discuss the status of preferences.

Because artificial selection (especially that which relates to aesthetic criteria) acts superficially, and sexual selection based on aesthetic criteria in the choice of mates

is like artificial selection in that respect, and moreover because the races arose from differences caused by this type of sexual selection, the differences between the races are ostentatious — to the point that they could lead the “imaginary naturalist” that Darwin proposes when discussing polygenism to classify the races as different species (Darwin 1882, p.217) —, but ornamental and superficial. This implies a change in the very conception of races, since their characterization does not imply essential or “blood” differences, but rather the appeal to population-level traits (Perez Sheldon 2021).⁸ I do not think Darwin has ever explicitly stated that what distinguishes the races is purely ornamental, but this is inferred quite directly from his explanation. I do not know if Darwin was aware of this (I find it hard to believe that he was not) but it is enough to establish the compatibility of his solution to the issue of the origin of races and his abolitionist ideology.

A particularly relevant point regarding the superficial way in which sexual selection works has to do with Darwin’s assertion that all races have the same mental capacities. I will address this issue in the next section.

5.2. Mental capacities

Darwin presents the controversy between monogenists and polygenists in Chapter VII of *Descent*, referring only to the systematic question of whether the races are different species or subspecies. Darwin examines the different arguments in favor of each point of view, considering that the evidence, under his point of view, favors monogenism and concluding, in a famous sentence, that in any case, once the evolutionist views had been accepted, the controversy would fade away (Darwin 1871, vol.1, pp.228–35).

Finally, we may conclude that when the principles of evolution are generally accepted, as they surely will be before long, the dispute between the monogenists and the polygenists will die a silent and unobserved death. (Darwin 1871, vol.1, p.235)

Beyond the systematic discussion and whether or not it makes sense to refer to the common origin of all humans as “human”, after making it clear that the distinction between species and subspecies is somewhat arbitrary, Darwin does make a strong case for the following:

Although the existing races of man differ in many respects, as in colour, hair, shape of skull, proportions of the body, &c., yet if their whole organisation be taken into consideration they are found to resemble each other closely in a multitude of points. Many of these points are of so unimportant or of so singular a nature, that it is extremely improbable that they should have been independently acquired by aboriginally distinct species or races. The same

remark holds good with equal or greater force with respect to the numerous points of mental similarity between the most distinct races of man. The American aborigines, Negroes and Europeans differ as much from each other in mind as any three races that can be named; yet I was incessantly struck, whilst living with the Fuegians on board the “Beagle”, with the many little traits of character, shewing how similar their minds were to ours; and so it was with a full-blooded negro with whom I happened once to be intimate. (Darwin 1871, vol.1, pp.231–2)⁹

Among the monogenist arguments, Darwin appeals to the idea that coincidences between details, such as making arrows, burying dead bodies, etc. are indicative of similar mental capacities, and that mental capacities are the homologous trait whose possession is explained by being inherited from a common ancestor who possessed the trait. That is, whether the races are species or subspecies (which is somewhat arbitrary for Darwin) they evolved from an ancestor that had mental capacities similar to ours (Darwin 1871, vol.1, pp.231–4; Alter 2007a).¹⁰

As Desmond and Moore recount, polygenism was used by some to justify slavery. But the issue under discussion did not reduce to the systematic question. The main idea was that “savagery” was the natural and fixed state of the enslaved races, and that mentally, they were incapable of progress (Desmond and Moore 2009, pp.94–5). The point is interesting because ultimately, common origin in Darwinism is assured and the distinction between species and subspecies is somewhat arbitrary. More important than the systematic question is that Darwin makes it an essential feature of his explanation that mental capacities do not differ between races and do not differ from the common ancestor. This could be seen as entirely related to his abolitionist motivation. Especially if compared with positions such as that of Louis Agassiz, defender of polygenism, but also, that there were differences between mental capacities among the different races, and that they were irreversible (Caponi 2020, pp.528–9; Desmond and Moore 2009, pp.228–66; Gould 1996a, pp.74–82, Richards 2017, pp.303–12).

The issue can be emphasized if we compare the theory proposed by Darwin with that of Wallace. Wallace also proposes a way out of the debate between polygenism and monogenism, but in other terms (Wallace 1864). According to his explanation, once the mental capacities of humans reached their current level, evolution by natural selection stopped, because we began to palliate its results by defending the less fit. Therefore, mental capacities should have been acquired once the bodily differences between races had been established. In this sense, physically we would come from a common ancestor, as monogenists say, but if you are willing to call “human” only those who have developed certain mental capacities, racial differences were already there when humans emerged (as polygenists say). Wallace also defends similar mental capacities between races, but such capacities would have arisen at the same time

in the different races. How could this strange convergence (which Darwin explicitly denies, as we saw) occur? In later texts, Wallace argues that in the development of the human mind there had to be divine participation, since the human brain exceeds in capacity the usefulness given to it by its first primitive users, and according to the strict principle of utility that Wallace accepted, it couldn't have arisen by natural selection (Wallace 1869).

In opposition, Darwin's explanation uses the unlikely convergence on the same mental capacities as part of the argument for common origin, but his ultimate effort seems to be accounting for racial differences, without compromising the idea that mental capacities are fundamentally the same, in a naturalistic way — thus, although the issue of treating races as varieties or species did not seem to be relevant to Darwin, the fact that the human group was monophyletic was relevant to his explanation (Caponi 2020, pp.544–5). Again, abolitionist motivation may be at work behind this effort. Sexual selection by aesthetic preferences in the choice of mates seems to have provided the key to solving this problem. The specific explanation that appeals to sexual selection for aesthetic preferences is a naturalistic explanation (unlike Wallace's) that assumes that mental capacities are the same (which was at the core of the idea that “savagery” is not a fixed state).

However, I believe that Darwin's explanation fits his abolitionist ideals not only because it is naturalistic and assumes the same mental capacities in the different races, but also, for deeper reasons: it implies the dissolution of many of the central ideas on which the opposite worldview was based, in a sense that I will specify next.

5.3. Contingency

What is most intriguing about the Darwinian explanation of the origin of races probably has to do with the way he conceived the aesthetic preferences on which the choice of mates was based. Two aspects are surprising. On the one hand, according to Darwin, they require developed cognitive abilities, on the other hand, and contrary to what many evolutionary biologists now think, they are completely disconnected from any survival value. But the two aspects are related, Darwin considers that high mental capacities and developed senses are necessary “to appreciate each other's beauty or other attractions” (Darwin 1871, vol.1, p.321) precisely because he is interested in taste being fluctuating and arbitrary (Darwin 1871, vol.2, p.230). And he is concerned about defending the capriciousness of taste precisely because its interest is to be able to explain exaggerated and extravagant secondary sexual characters that seem completely disconnected from utility (Cronin 1991, pp.179–80; Gayon 2010, pp.138–41).

As we saw before, this could be problematic for his approach, since, given the graduality and slowness of evolution, selective pressures should be stable to generate

a directional change (Cronin 1991, p.174). And yet, Darwin insists on characterizing aesthetic preference as “capricious” (Darwin 1871, vol.1, p.230) or, even more interestingly, pursuing “beautiful for beauty’s sake” (Darwin 1872a, p.161). To understand this point, I believe it is important to bear in mind that Darwin’s treatment of beauty in nature, precisely, can be considered within the Darwinian attempt to modify previous frameworks. In particular, those in which there were absolute standards of perfection and beauty, and in which certain features of living organisms were explained from certain characteristics of creation. For example, Paley explained the iris of our eyes, flowers (Paley 1809, pp.199–200) and bird feathers (Paley 1809, pp.198–9) by appealing to the beauty of creation (Cronin 1991, pp.174–81; Ginnobili 2014, 2022a).

Of course, this idea does not make sense in the Darwinian framework, a matter of which Darwin is fully aware (Darwin 1872a, pp.159-164). Darwin dedicated much of his writings to showing that the end pursued by flowers involves not beautifying creation but promoting cross-fertilization (Darwin 1876, 1877a, 1877b), and he dedicated a large part of *Descent* to showing that many other traits that seem merely ornamental arose by sexual selection. Interestingly, this does not imply that beauty has no explanatory role. Quite the contrary, as we have been seeing. But it does imply a conceptual modification of the concept of beauty (like what Kuhn claims happens with “planet” in the Copernican revolution). Darwin devotes considerable space in *Descent* to the defense that there are no absolute standards of beauty. Because part of the explanation of the origin of races requires that each race has its own standards of beauty, but also because absolute notions of beauty or perfection are not compatible with his framework. Explicitly, in *Origin* the differences in taste between different races are used to undermine the idea that there are objective standards of beauty (Darwin 1872a, p.160).¹¹

Focusing on the issue of beauty allows me to reformulate the question at issue: is there any relationship between these approaches and the Darwinian abolitionist motivation? My answer is: Of course! How could it not be? I think that Desmond and Moore’s approach also shed light on both the non-existence of absolute standards of beauty and perfection, and the extreme contingency in the explanation of the origin of races.

As I said before concerning the defense of equality in mental capacities among different races, the systematic question of polygenism vs. monogenism is not as relevant to the abolitionist question as other aspects related to pre-Darwinian approaches. In particular, with the chain of being in its classical fixist version, or in evolutionist versions, such as the Lamarckian, where evolution follows a path towards perfection. Both positions presuppose objective ideals of perfection. This idea of a chain of being was presupposed, of course, behind the order that made it possible to state objectively that certain races were essentially (or biologically) less perfect than others (Gould

1996a, pp.62–104). For example, the polygenist Charles White, in his book *An Account of the Regular Gradation in Man* (White 1799) — that Darwin apparently had read and characterized in his notebooks as “poor trash” (Desmond and Moore 2009) — not only argued for the independent creation of different races but also believed that it was possible to establish a natural scale between them. Interestingly, part of his framework involved absolute aesthetic judgments about the beauty of the higher ranks of the hierarchy (White 1799, pp.134–5).

Although Darwin retains much of the language of the chain of beings in his writings, he explicitly contrasts this vision (in either its fixist or evolutionist version) with an idea of evolution that does not imply progress, that has no direction and that is extremely contingent.¹² In Myrna Perez Sheldon’s words:

He imagined a history for life that was not shaped by iterative instances of God’s divine hand, but instead through a series of contingent survival moments that determined which traits survived and spread through a population. (Perez Sheldon 2021, p.21).

This is not an anachronistic reading of his ideas.¹³ Darwin explicitly presents the idea of contingency, in ways similar to those used by Stephen Jay Gould (1989):

The world, it has often been remarked, appears as if it had long been preparing for the advent of man; and this, in one sense is strictly true, for he owes his birth to a long line of progenitors. If any single link in this chain had never existed, man would not have been exactly what he now is. (Darwin 1871, vol.1, p.213)

And he explicitly seems to contrast his contingent vision with the planned one. As can be seen in this curious fragment removed in the second edition of *Descent*.

It would even appear that mere novelty, or change for the sake of change, has sometimes acted like a charm on female birds, in the same manner as changes of fashion with us. The Duke of Argyll says. . . “I am more and more convinced that variety, mere variety, must be admitted to be an object and an aim in Nature”. I wish the Duke had explained what he here means by Nature. Is it meant that the Creator of the universe ordained diversified results for His own satisfaction, or for that of man? The former notion seems to me as much wanting in due reverence as the latter in probability. Capriciousness of taste in the birds themselves appears a more fitting explanation. (Darwin 1871, vol.2, p.230)

Desmond and Moore explicitly argue that the theme of beauty was at the heart of slave literature.

In reacting to the racist books Darwin now gained a greater insight into the role that ‘beauty’ played in leading the races along their divergent paths.

‘Beauty’ was integral to the rival literature. Types of Mankind was a hymn to the ‘manly beauty’ of noble Caucasian faces, ‘the perfection of the beauty of which is justly admired’. It praised the ‘faultless’ phrenological vault, whether in ancient Greece or modern Britain, whose Apollo features contrasted with the ‘coarse and ugly’ Negro physiognomy. (Desmond and Moore 2009, p.281)

They also clearly point out that the Darwinian explanation of the origin of races involves rejecting this view. What I want to remark is that sexual selection not only provided an alternative explanation of the origin of beauty and races but also implied a substantial and revolutionary modification of the pre-Darwinian order, where the very idea that there are races more perfect than others or more beautiful than others is meaningless. I do not know whether this was the main objective pursued by Darwin in the elaboration of his evolutionary theory, but it is possible to establish a strong link between the specific explanation provided by Darwin and anti-slavery motivations, since such an explanation is not only compatible with such motivations, but also incompatible with some of the assumptions of the opposing ideology.

On the other hand, this point reinforces what I argued in part 4.1 of this paper. To determine the relevance of what has been discussed in the part of *Descent* devoted to sexual selection in non-human animals, it must be understood that we are dealing with a revolutionary text, which not only provides arguments in favor of a specific thesis but, rather, is trying to modify dominant conceptual frameworks and standards, teaching us to think in a new way, which implies not only giving new answers but also abandoning old problems. I believe that this idea is what gives full meaning to Darwin’s statement that the old polemic between polygenists and monogenists, with all that surrounds it, will vanish with the acceptance of his new approach.

Of course, this does not imply that Darwin did not consider that there are differences between “civilized” and “savage” humans. We can find many fragments of *Descent* (which today would make us uncomfortable) that show what Gould kindly calls Darwin’s “paternalism” (Gould 1996b). The fact that there are no absolute standards of perfection and beauty does not imply that Darwin does not make value judgments based on his own standards. He makes them continually throughout the book. The abolitionist issue, as Desmond and Moore present it, is whether the state of savagery is essentially unchangeable because they are mentally or physically inferior. But the 19th-century picture regarding the nature of races was complex. Not everyone who believed in the inferiority of certain races was an advocate of slavery, not everyone who was anti-slavery believed in the equality of races (Caponi 2020), and finally, Darwin’s position on race was in some cases quite ambiguous. The point I have tried to defend here is that the specific explanation of the origin of races could be related to Darwin’s abolitionist ideas, since it is an explanation incompatible with the opposing ideas with which he was arguing and comfortable with his own ideology. And it is in this sense that it can be argued that the specific explanation of

the origin of races given by Darwin in *Descent* is confirmatory of the importance of Darwin's abolitionist motivation in his ideas.

6. Conclusion

In this work, I am interested in understanding how the Darwinian revolution affected our worldview, and how those revolutionary texts succeeded in inaugurating a new way of thinking about the world. In this sense, rather than focusing on Darwin's specific views on the differences between men and women or the differences between races, it is more interesting to ask what the Darwinian revolution made possible concerning these issues. What Darwin's texts actually do is to inaugurate a new way of thinking, that ultimately affected biology, science and our worldview in general.

Millstein argues that the focus on the complex Darwinian argument of the origin of races in detail raises some puzzles for Desmond and Moore's view that the primary goal of the book is to uphold the ideal of human brotherhood associated with Darwin's anti-slavery positions. Millstein does not doubt that this was one of the goals, but if it was the main goal, one would not understand why the long section on nonhuman animals was included, since it does not serve as a model for the peculiar treatment that the origin of human races later receives. In this regard, Millstein characterizes the Darwinian argument as "poor". In the first part of the paper, I tried to show that the argument is better than Millstein acknowledges, so the specific way in which Millstein presents the puzzle doesn't hold up. Anyway, and beyond agreeing with her on the general idea that *Descent* pursues many different goals and not all of them related to Darwin's anti-slavery motivation, I took seriously the question she poses of whether a detailed reading of arguments in the published material could confirm the importance that Desmond and Moore's tenet attaches to the anti-slavery motivation. I then tried to show that, even if Darwin has good scientific reasons to sustain the specific explanation of the origin of races that he proposes, it is both compatible with such a motivation and incompatible with contrary positions. For that purpose, I had to focus, not on the specific argument, but on how such an argument would imply a change of approach in which the constitutive notions of the opposite worldview (chain of being, fixed essences, ideal of perfection and beauty) become meaningless. Human races would have arisen from capricious and fluctuating aesthetic preferences in the choice of mates. The change would only ornamentally affect the races, which would possess the same mental capacities from the beginning. That the history of racial differentiation is extremely contingent also makes light of the beautiful sentence at the end of *Descent*:

Man may be excused for feeling some pride at having risen, *though not through his own exertions*, to the very summit of the organic scale. (Darwin)

1871, vol.2, p.405, italics mine)

Wallace characterized his own rejection of sexual selection as more Darwinian than Darwin himself (Wallace 1889, p.viii). As Cronin (1991) recounts, his utilitarian and adaptationist views (but not his renunciation of naturalism) had a great influence on future evolutionary biology. It seems to me that Wallace lacked the perspective that only time can give. 150 years later, from the point of view of a philosopher, writing during the most terrible pandemic of recent times, with racial conflict emerging everywhere, nothing seems more beautifully Darwinian than different human populations differing only by the impression of their contingent aesthetic preferences on the surface of their bodies.

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Notes

¹<https://www.darwinproject.ac.uk/letter/?docId=letters/DCP-LETT-5841.xml>

²Gayon (2010, p.137) argues that there are actually three types of sexual selection, but here I will stick to the more usual distinction into two types.

³The non-exceptionality of non-dimorphic sexual characters can be found throughout *Descent*. Darwin presents them in a general way (Darwin 1871, vol.1, p.282), and treats them specifically in fish (Darwin 1871, vol.2, p.16), birds (Darwin 1871, vol.2, pp.226, 236), mammals (Darwin 1871, vol.2, p.297), and of course in humans. Moreover, inheritance to both sexes is the usual form of inheritance, and Darwin goes to great lengths to argue that inheritance to only one of the sexes is possible (Darwin 1871, vol.1, p.282).

⁴See the discussion between Padian and Horner (2014), Borkovic and Russell (2014) in this regard. It is often claimed that sexual selection is proposed to explain dimorphism that cannot be explained by non-sexual natural selection (Crook 1972, p.232; Mayr 1972, p.88).

⁵For example, Mayr (1972, p.88) and Millstein (2012, p.630).

⁶“...when we see a similar difference between the sexes of the curiously-ornamented *Tragelaphus scriptus* ... we may conclude that these colours and various marks have been at least intensified through sexual selection”. (Darwin 1871, vol.2, p.299).

⁷The disjunctive character of the list provided, as well as the fact that they are not treated by Darwin as either necessary or sufficient conditions, is clear in the cases in which Darwin appeals to some requirements in the absence of the others. For example, when he appeals to the lack of survival value in case of non-dimorphic traits, or when he appeals to the conspicuousness of the trait although it could have survival value (Darwin 1871, vol.2, p.299).

⁸The idea that differences are superficial is easier to present today than in Darwin's texts. It is now possible to state that ostentatious and ornamental differences, however pronounced, are not indicative of overall differences between the so call "races" at the genetic level. This is precisely how Richard Dawkins presents the importance of the appeal of sexual selection in the origin of races in *Descent*: "Our species really does seem to have unusually conspicuous, even ostentatious, superficial differences between local populations, coupled with unusually low levels of overall genetic variation. This double circumstance carries, to my mind, the stamp of sexual selection". (Dawkins 2003, p.77).

⁹The end of the quote mentions "John" who in Edinburgh taught Darwin how to prepare birds (Desmond and Moore 2009, p.18).

¹⁰Darwin's statements about the mental capacities of the different races are somewhat ambiguous (Alter 2007a) so the reader may not find my reading of the quoted paragraph so convincing. The point can be strengthened by appealing to the arguments provided by Darwin in *The Expression of the Emotions* (1972b), originally intended as a chapter in *Descent*. Specifically, his explanation of the origin of blushing. According to Darwin, blushing is a homologous expression in all human races, which, because it implies emotions related to what others think one thinks, presupposes elevated mental capacities that we only find at present, in humans. These capacities would be found in all races and in their common ancestor (Darwin, 1872b, p.361). This argument can be thought of as a development of what was said in the paragraph quoted above (Ginnobili 2022b).

¹¹Evelleen Richards (2017) makes a detailed historiographical study about the construction of Darwin's conception of beauty throughout his own history and contextualized in dialogue with Victorian notions of beauty showing the complexity of the treatment of how Darwin elaborated his ideas.

¹²The concept of contingency is much discussed in philosophy of biology (see e.g. Beatty, 2006). I do not have space here to give an account of the sophistication and complexity of such a discussion. I will use it only to refer to the fact that Darwinian evolution implies the dissolution of the idea of chain of being and that it is not directed toward any pre-established goal.

¹³Marianne Sommer (2021) argues that the defense of the contingent origin of races may explain why Darwin does not include in *Descent* a tree diagram to represent the relationships between primates or the relationships between human races.

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