The issue of race in the work of Domingos Guedes Cabral

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Abstract

In 1875 Bahia, medicine and evolutionism were used by the physician, journalist, and republican militant Domingos Guedes Cabral as ideological weapons to propose a radical program of social reforms in Brazil in the areas of education, marriage control, medical care to the alienated, changes in the penal system, etc., all of which were based on the scientific knowledge of that time. Among the social ideas of Guedes Cabral, the question of race will be the main focus of this analysis. In this sense, Domingos Guedes Cabral is a particularly significant example for understanding the initial steps in the peculiar alliance between evolutionism, medicine, and scientific racism in Brazil since the 1870s, when Darwinism first arrived in the country.

Keywords: scientific racism; evolutionism; social medicine; Bahia School of Medicine; Domingos Guedes Cabral (1852-1883).

During the 1870s, imperial Bahia was the scene of one of the first scientific defenses of Darwinism in Brazil, by the Bahian doctor Domingos Guedes Cabral (1852-1883).[1] When he published his only book, *Funções do cérebro* (Functions of the brain), in the city of Salvador in 1876, he presented the public with a work that had been rejected by the Bahia School of Medicine (Faculdade de Medicina da Bahia) for a number of reasons, including its evolutionary, materialist, and atheist ideas, but particularly for its criticism of the monarchist state, the Catholic religion, law graduates, and the School of Medicine itself (Almeida, El-Hani, 2007, 2010). Another attention-worthy fact is that three years earlier, Guedes Cabral was involved with the republican newspaper *O Horizonte*, in which some of these controversial ideas also could be found.

Appearing only shortly after the trailblazing public defense of Darwinism in 1875 by the Rio physician Augusto Cesar de Miranda Azevedo (Colicchio, 1988; Carula, 2009; Waizbort, 2012), Cabral's text presented evolutionist ideas and their social implications within the still-nascent Brazilian scientific community that was forming in institutions like the two medical schools extant in the country at that time, in Salvador and Rio de Janeiro. The decision to reject the dissertation Cabral had submitted to obtain his degree as a doctor from the Bahia School of Medicine was an exceptional one; in fact, this is the only known case of a doctoral thesis[2] being rejected at that college during the entire nineteenth century (Almeida, El-Hani, 2010).

Despite the rejection of the thesis in 1875, the text finally appeared in book form a year later, thanks to the support from a number of students at the Bahia School who pooled their efforts until sufficient funds were gathered to cover the costs of publication. Even those students who did not agree with the ideas contained in the thesis refused to accept the institution's intrusion into Guedes Cabral's intellectual work, which they considered abusive. The exceptional circumstances of its rejection by the Congregation of the School of Medicine, allied with its pioneering work in defense of evolutionism in Brazil, suffice to attest to the significance of the author and the book we discuss herein to the history of science and culture. However, in addition to these factors we also have the fact that this was Brazil's first evolutionary defense of polygenism, which suggested the distinction of the human races as truly separate biological species from their origin. Cabral's text exemplifies the assimilation of polygenist anthropology by Brazilian evolutionism, and does so in a pioneering manner. As far as we know, this is the first Brazilian scientific text in which polygenism, the thesis of biological separation of whites, Indians, and blacks as different zoological species, was defended using evolutionary arguments under the direct influence of some of the major European polygenists of the time, such as Ernst Haeckel, Paul Broca, Karl Vogt, and Ludwig Büchner.

In *Funções do cérebro*, Cabral tried to connect polygenist convictions about the evolutionary origin of humanity with a plausible scientific explanation for the differences that he maintained were based on brain function and the intellectual capacity of the races that comprised the Brazilian population. Although Darwin (1871, p.224-229) had declared himself a monogenist, defending the existence of a single human race and placing the races within the taxonomic category of subspecies, the polygenist evolutionists considered the large human racial groups as zoological species. According to this theory, the different races evolved independently over thousands of years to become separate species, derived from a remote common ancestor.

The polygenist thinking of the evolutionist anthropology that Cabral embraced dominated the anthropological societies of many western countries at the end of the nineteenth century (Arteaga 2007a, 2007b, 2008), particularly because of the enormous influence of Paul Broca and the Parisian Société d'anthropologie he founded in 1859 (Petrucelli, 1996; Faria, 1952; Santos, 2012). Besides French polygenism, represented by some of the works that most influenced Brazilian physical anthropology (for example, Broca, 1877; Topinard, 1884; Hovelacque, 1878; Le Bon, 1878),[3] polygenist anthropological thinking also dominated German evolutionary anthropology, with very influential authors (even in Brazil) such as Haeckel (1877), Vogt (1878), and Büchner (1872). In the United States, polygenism was also extremely influential and dominant, especially starting with the works of Morton (1839, 1844), Agassiz (1850), and Nott Gliddon (1857). Similarly, polygenism inserted itself into the anthropological societies of Italy via Sergi (1893) and Mantegazza (1876), and Spain, with Rafael Ariza (1874). In Argentina, the debate between monogenism and polygenism was strongly influenced by the theories held by Ameghino (1879, 1880) about the autochtonous origin of mankind in America (Novoa, Levine, 2010).[4] Polygenism also gained significant ground in England, to the point of being the dominant train of thought in the Anthropological Society of London, which was founded in 1863 by the radical polygenist James Hunt (1864), although its final triumph was the evolutionary monogenism of Darwin, Wallace, and Huxley.

In Brazil, besides the pioneering case of Guedes Cabral himself, our focus of interest in this article, evolutionary polygenism came to rely on prominent defenders among Brazilian scientists and doctors throughout the late nineteenth century (Arteaga 2016, 2009). Examples include the works of important figures in Brazilian science and literature such as Sílvio Romero (1888b, p.28-34, 87-90, 100, 105, 112), Justo Jansen Ferreira (1887), João B. de Sá Oliveira (1895), or the Haeckelian physician Pedro Américo Corrêa Filho (1895); the work of this last author may be the most radical of all these examples (although it is also the least known) in its insistence that blacks, Indians, and whites had evolved as distinct zoological species. Notably, Corrêa Filho's work was dedicated to Domingos Guedes Cabral. In summary, for evolutionist anthropology at the end of the nineteenth century, polygenism was an internationally recognized vanguard theory. In imperial Bahia of 1875, Cabral accepted polygenist doctrine as a theoretical tool offered by science to support what he considered a necessary and urgent political reform of Brazilian society. For Cabral, polygenist doctrine offered the proper understanding of the origin of racial differences and the biological limits that evolution had granted to each race, and without this positive knowledge it would not be possible to clarify what social boundaries policies could fairly guarantee or impose.

The arrival of evolutionism in Brazil and the war between Catholic monogenists and evolutionary polygenists in medical schools

In the 1870s, evolutionary ideas were emerging in different contexts in Brazil, and were defended by authors such as Miranda Azevedo, Guedes Cabral, Sílvio Romero, and José de Araújo Ribeiro (the viscount of Rio Grande) (Collichio, 1988; Domingues, Sá, 2003). The intellectual environment strongly resisted acceptance of this new scientific perspective on the origin of species. Brazil was still officially a Catholic country, according to the 1824

constitution, and the Brazilian church had an extremely strong influence in all spheres of power, including academia and the medical schools. Even so, it was a time of great conflicts in the area of relations between politics and religion (Almeida, 2005; Almeida, El-Hani, 2010). Tensions between the Catholic church and the State were exacerbated in the years prior to the rejection of Cabral's thesis, particularly after the 1872 event known as the Religious Question, a political conflict between the Catholic bishops and the government of the viscount of Rio Branco, eventually leading to its downfall (Carula, 2009, p.55). These tensions not only affected nascent Brazilian science, but more generally impacted the political organization of the Empire, involved in a general crisis that would destroy it sooner rather than later. In the context of the arrival of Darwinism, these tensions profoundly marked Brazilian science. At the time that Guedes Cabral defended his Darwinist thesis, the most influential Catholic circles of the country were trying to prevent the spread of evolutionism in Brazilian education by all the means at their disposal.

Darwinism, as the Catholic newspaper *O Apóstolo* of Rio de Janeiro explained in 1875, could not be legally introduced in Brazil. In fact, according to this newspaper, the dissemination of Darwinian thought was a crime under the Penal Code (Carula, 2009, p.95). Doctor Miranda Azevedo was accused by the newspaper of violating article 278 of the code, after his popular conferences on Darwinism which took place in the Glória neighborhood of Rio de Janeiro (Fonseca, 1996). The accusation also noted that Catholicism was the official religion in Brazil according to the constitution, and consequently the Catholic church and its dogmas should be followed and respected (Carula, 2009, p.92). Similarly in Bahia, Guedes Cabral faced similar difficulties in attempting to defend his ideas concerning the origin and nature of the human species without resorting to God. But in Cabral's case, the main threat to the spread of his ideas did not come from Catholic circles unrelated to science, but from the Congregation of the Bahia School of Medicine itself.

When Cabral's thesis was rejected, the dominant scientific view among the doctors at the college advocated "concordism" between medical science and the Christian religion. All means were utilized in an attempt to reconcile scientific ideas with the tenets of faith (Almeida, 2005; Almeida, El-Hani, 2010). As a result, in relation to the nature and origin of humans, the scientific thinking at the medical school in the year 1875 was decidedly creationist, and could even be called orthodox and acceptable. In no way did it question that species – including the human species – had been created directly by God. This is one of the elements of the strong controversy aroused by *Funções do cérebro*, in which Guedes Cabral (1876, p.218) fearlessly stated that man was "just a perfected monkey."[5] He was also unwavering in proclaiming the inexistence of the human soul, describing it as a concept that was absurd to science: "Senses, movement, thought, feeling, we find them as properties of the elements of the brain: but not the soul, we find no traces of it there" (p.30). In addition, in his thesis he proposed nothing less than eradicating belief in the existence of divine creation as well as the unique Adamic origin of all mankind: "Adam is a myth. The [idea of the] first man is absurd. The story of Moses is a lie, like all the spiritual cosmogonies" (p.221). As we know, denial of the unity of the association of all races went hand in hand with the defense of polygenist evolution.

All these statements made in the name of science were expressed in an openly demanding tone, from a political point of view. After the rejection of his thesis, when Cabral published *Funções do cérebro* as a book, the author added to the list of social demands contained in his work an energetic protest against the lack of freedom of thought imposed on students by the professors at the medical school. Guedes Cabral spoke of a situation in which two radically contrasting ways of understanding science faced off in the medical college: on one side was a group of scholars and monogenist Catholics who were, along with their young disciples, faithful to conservative ideals and the idea that all humans descended from Adam.[6] The enemies of materialism and evolution ruled the academic scene in Bahia, occupying positions of influence in academia and the college of medicine. For them, questioning the truth revealed in the Bible had no place within true science. On the other side was a new generation of young doctors and students who, along with Darwinism and other ideas taken from what they considered cutting-edge science, debated plans for political reform based on a range of progressive social ideas (republicanism, positivism, abolitionism). Showing his position within this conflict, Guedes Cabral (1876, p.IX) did not hesitate to denounce the intellectual tyranny of the dominant vision, decrying the "narrowing of freedom of thought that you see between us, where freedom is limited even in the statutes of the School of Medicine." Not content with a mere protest, Cabral (1876, p.X) encouraged his professional colleagues to actively react against the "intellectual tyranny" of the creationists: "You are right, my colleagues, to protest and protest vigorously against the narrowing of the right to think, against this intellectual tyranny, against this license imposed on thought and without which it is not even permitted to cross into the landmarks of science."

Just a few months before the publication of Domingos Guedes Cabral's book, the academic barriers against the spread of evolutionary doctrine had already been a reason for complaints beyond Bahia. Another young doctor trained in the medical college in Rio de Janeiro had publicly defended Darwinism before the emperor Pedro II, and included a critique of the lack of freedom to teach this knowledge in Brazil. The physician Augusto Cesar de Miranda Azevedo, a republican who was also very close to the Masons, protested at popular conferences against the censorship exerted against Darwinism in Brazil. Miranda Azevedo (1876, p.46) even spoke of a "hijacking of this scientific doctrine ... in the official teaching of our academies," and directly accused official representatives of the academic world and religious prejudice as "the main impediments to the propaganda of this scientific doctrine" (Carula, 2009, p.83). But unlike Guedes Cabral, Miranda Azevedo made efforts to present Darwinism only as a scientific theory, something completely unrelated to the intellectual territory of faith, and as a result Darwinian evolution was unable to conflict with belief. For Miranda Azevedo (1876, p.46), Darwinism was simply a respectable "theory that currently occupies the attention of all the learned people of old Europe and the United States, and which unfortunately is almost unknown among us." Compared with the anti-religious impetus contained in Cabral's scientific argumentation, Miranda Azevedo (1876, p.46) acted much more prudently in his defense of Darwinism as opposed to Catholicism: "gentlemen, the study of Darwinian theory has nothing to do with religion." Furthermore, Miranda Azevedo had the support of some of the professors at the Rio de Janeiro Medical College, such as the physician and botanist

Joaquim Monteiro Caminhoá, who also favored evolution (Carula, 2009). Partially as a result of this, Miranda Azevedo's Darwinist thesis was approved by the college with few difficulties.

Far from such a favorable intellectual environment, the college of medicine in Bahia even proclaimed in its official publication, the scientific journal *Norte Acadêmico*, which defined itself as the "interpreter of the interests of the School of Bahia," that the only science that could be pursued there was that which accepted the "great architect of the universe" as the author of creation (Almeida, 2005, p.155). Cabral (1876, p.XV) expressed his astonishment "that medicine should, between us, wear Roman garb and always carry a Bible in hand to be recognized." There was no other option but to accept a provisional defeat against the powerful representatives of a science that he considered aged and orthodox, but which in his opinion would soon be overtaken by new evolutionary ideas: "I didn't know there was an official science, a completely different one, distinct from all this science that sprouted powerful and luminous from the outpourings of the wise; a special, united science, made there at the whim of civil and ecclesiastic laws; where you can't take a step without consulting the *Syllabus* and the Statutes of the College" (p.XVI). Considering Cabral's controversial spirit, it is not surprising that he was disposed to condemn the professors at the college of Bahia.

The myth of Adam and the influence of polygenism on Brazilian evolutionism

For Cabral, it was not just a question of refuting creationism as an unscientific doctrine. His radical denunciation of the biblical story of creation as a myth was associated in the field of anthropology with a polygenist theory about the evolutionary origin of the human races. For Cabral, the rejection of the "myth of Adam" was associated with the scientific denial of the single origin of all mankind. These ideas were completely unacceptable to the Catholic professors who defended the heritage of mankind stretching back to Adam and Eve, and who still dominated the Bahia School of Medicine during the last days of the Empire.

During the 1870s, race was one of the crucial political issues that affected the organization of the Empire (Schwarcz, 1993; Arteaga, 2009, 2016). In the field of race relations, when the first Brazilian evolutionist texts such as Guedes Cabral's thesis appeared, the intellectual environment of the nation was still moved by the recent adoption of the Law of Free Birth in 1871.[7] This law brought to light the imminent abolition of slavery, which would effectively occur in 1888 when Princess Isabel of Braganza signed the Lei Áurea. Consequently, when Guedes Cabral published his book in 1876, the new approach that evolutionary polygenism provided for the to the issue of race was very relevant to the political debates that the Law of Free Birth and the imminent abolition of slavery had given rise to in Brazilian society years before.

In the field of anthropology, polygenism had already penetrated Brazil far before the introduction of Darwinism, but with a creationist perspective. It should be remembered that some of the essential figures of polygenist thought in the mid-nineteenth century, such as the Swiss naturalist Louis Agassiz or even the Count de Gobineau, had resided in the imperial Brazil of Dom Pedro II for a time. Agassiz even conducted anthropological research in Brazil in an attempt to find evidence of the superiority of the "pure breeds" over "hybrids" (Agassiz, Agassiz, 1938; Balanta, 2012; Machado, Huber, 2010). The famous count, in turn, author of

the *Ensaio sobre a desigualdade das raças* (The inequality of human races) (Gobineau, 1967), established a close friendship with the emperor himself (Raeders, 1988), who even entrusted him to draft a text to promote northern European immigration to Brazil.

After this direct and decisive influence by Agassiz and Gobineau, the polygenist debate was reopened in Brazil in the 1870s. Those responsible were some of the doctors and scientists who, like Guedes Cabral, for the first time intended to introduce the doctrine of evolution in the country. For some of these young doctors like Cabral, the great "races" that comprised the Brazilian population – white, black and Indian – had evolved independently, like true species with essentially different biological and mental characteristics. In this context, the new polygenist theories reformulated through evolutionism at the end of the century by authors such as Broca, Haeckel, Vogt, Büchner, and Topinard, among others, germinated in the Brazilian slave society of the 1870s in intellectual ground marked by several ideological tensions. In Brazil in 1875, evolution had to be defended or attacked not only in the context of a conflict between science and religion, which was common in many other countries, but also amid a fiery debate on the biological status of the various "human races" that made up the racially-mixed Brazilian population (Arteaga, 2009). Thus, the freedom of blacks in Brazil coincided with the emergence of a scientific discourse that subjected them to a new form of inferiority, in a metamorphosis from "labor machine" to "scientific object," as Sílvio Romero wrote (Corrêa, 1998, p.64). In this context, Brazilian physicians assumed the task of outlining the biological underpinnings that over the following decades would serve to legitimize many of the plans related to eugenics and discriminatory immigration laws which would soon begin to be applied in the country and would last into the first decades of the twentieth century (Stepan, 1991). Given the immense prestige of the natural sciences, it seemed that only physicians and physical anthropologists would be able to deny or affirm "equal rights" between the different groups of the Brazilian population, given that it would first be necessary to clarify whether there was "equality in evolution" (Schwarcz, 1993, p.216). The Brazilian doctors approached the issue of race with a mixture of pessimism about the future of the country and hope that they would at least be able to find scientific solutions to the problem comprised by the coexistence and mixture of races that were supposedly as distant as those which constituted the Brazilian melting pot. Since before the abolition of slavery (1888) and the arrival of the Republic (1889), a large part of the country's elites (starting with Emperor Dom Pedro II) would receive this evolutionary polygenism with open arms, despite their own demonstrated Catholicism. At the very time when relations between the Church and state were being reshaped, members of the Catholic elite were co-opted by polygenist evolutionism, which to them seemed like a scientific base that legitimized the maintenance of white supremacy (Glick, 2003, p. 23).

The "scientific problem" presented by interracial coexistence was discussed with particular strength in the country's two medical colleges throughout the nineteenth century (Schwarcz, 1993). In general, and across a range of tones, the physicians of the period advocated the need for a "whitening" of Brazilian society in the coming generations. In general terms, we can agree with Skidmore (1976, p.42) that in the final years of the nineteenth century, the assumption that Brazil should improve eugenically was taken as a starting point. It put into play "the characterization of Brazil as a civilized country, or at least a country able to

overcome backwardness and contradictions so it could catch up with civilizations in the northern hemisphere" (Monteiro, 2001, p.174). This meant facing the problems of indigenous populations, contingents of black slaves, and particularly racial mixing.

In this context, the new "intellectual cocktail" created by the combination of polygenism and evolutionism also began to be warmly received in the law schools in São Paulo and Recife, as the basis for a series of legal and political measures that were starkly related to race. It was the time when an intellectual with the stature of Sílvio Romero (1888a) – the first in Brazil to embrace polygenist and evolutionist doctrine in the area of law – took up the question with his famous aphorism, simultaneously demonstrating a sharp and cynical talent: "The negro is not just an economic machine; more than anything, despite his own ignorance, he is an object of science" (p.10).[8] The scientific dictates of doctors and anthropologists on the existence of essential differences between the different "races" in the field of biological evolution were applied by Brazilian jurists in the fields of migration policy (Yankelevich, 2009; Hall, 1969) or criminal studies (Correa, 1998) for decades.

Within these political debates, Brazilian physicians took an active role as protagonists, clamoring for the right to intervene politically, and contributing with scientific solutions to the "problem" of racial mixing. At the Bahia School of Medicine at the end of the century, Nina Rodrigues (1934) proposed the simultaneous application of distinct legal codes for each race, the result of the essential differences that racial factors imposed on mental ability (and, therefore, in application of the legal concept of responsibility). During the following decades, it was not difficult to find texts published in journals such as *Brasil Médico* featuring proposals to "close the doors [of the country] [to the] dregs, to those mediocre in body and intelligence. In a new country like ours ... only the physician, through the knowledge he has of mankind, can influence this decision" (Schwarcz, 1993, p.232). At various times, accepting as a fact the impossibility of regeneration or assimilation of part of a mixed-race society, it was eventually proposed, even in medical publications, that the "inferior mongrels," as well as blacks and Indians should be abandoned to their own extinction, given their demonstrated biological inability to evolve and progress (Arteaga, El-Hani, 2010). This idea was also defended within the Bahia School of Medicine by the evolutionist and polygenist Sá Oliveira (1895, p.91): "Evolution does not stop in time ... The Africans, the Indians, sooner or later they will disappear, and after them, more slowly, the lesser mixed-race people, while the others will be balancing on the path of metamorphoses." Until the first decades of the twentieth century, the *Gazeta Médica da Bahia* published medical texts that concerned the extinction of the deeply degenerate, some advocating total abandonment of those wretched classes until they disappeared from sterility and premature mortality resulting from their progressive decay (Schwarcz, 1993, p.216).

The social medicine of a sick empire

In the 1870s, the Darwinism introduced in imperial Brazil carried a clearly social component that did not escape any of its early defenders. At the time, the Darwinist position reflected the common intention of evolutionists to overthrow a political regime that they believed represented ideas and institutions which were unsustainable, considering the

progress of science (Collichio, 1988, p.21). With regard to Cabral, his political ideas had developed from very early, even in his youth (Almeida, El-Hani, 2007). The son of a republican journalist, Cabral worked as the editor in chief of the anti-clerical and republican propaganda newspaper *O Horizonte*, which was founded in the capital of Bahia in 1872 (Freire, 1982, p.223). From the pages of the newspaper, all of Brazilian society was urged to face down the social tyranny imposed by the Catholic clergy, government ministers, and even the emperor Dom Pedro II himself. Thus, the need for a radical reform in the way evolutionism proposed understanding science was accompanied in Guedes Cabral by a parallel defense of the need for social reforms: the end of the Empire, the abolition of slavery, radical educational reform, and comprehensive restructuring of the Penal Code. In this sense, Guedes Cabral is a clear antecedent of the medical and legal school founded in Bahia by Doctor Raimundo Nina Rodrigues. This can be seen in the provocative attacks and criticisms of Cabral (1876, p.208) in the scope of legal intervention in medicine, when it came to defining the question of criminal responsibility: "Who has established the point where medicine and jurisprudence meet? Who has specified exactly how far the territorial domains of the one reach and to what extent the rights of the other should retreat?" For Guedes Cabral, the insane and the criminal were only ill, affected by a particular physiological impairment in brain function. Accordingly, they should leave the prisons (or the terrible insane asylums directed by the church) to access health care in a medical institution that would be governed by the scientific principles of the new psychiatric medicine:

> An offense is the effect of an incomplete or vicious thought, which in turn is the product of an addicted brain. Philosophical evil is just an illness. Morality, and with it the law, should have some leeway for pathology. What society calls perverse, what the penal codes call a criminal, science one day will only call an ill patient ... science will see one day that it is no more than an anatomical misarrangement or a misguided physiological action. Exorcisms, penitentiaries, the gallows will give way to the wise hand of the doctor and pharmaceutical drugs ... fortunately for humanity, these legal monstrosities, these appalling social scandals – dungeons, shackles, gallows – will be replaced by nursing homes, charity hospices, the loving, solicitous, wise, scrutinizing and humanitarian care of science (Cabral, 1876, p.313).

Their strong concern for social issues and the future of the nation led doctors at the end of the Empire to practice a kind of "Darwinism for the good of the fatherland" (Carula, 2009, p.81). The young evolutionists frequently proposed social reform projects that were grounded in the new Darwinian biology. Miranda Azevedo, for example, defended the prohibition of marriage between persons with some type of disability in order to improve the biological composition of the population. Guedes Cabral, in turn, defended the use of artificial selection techniques to produce more intelligent families. They believed in the possibility of overcoming what they understood to be the delay and intellectual degeneration of the country through a eugenic process that would raise the intellectual potential of the Brazilian people. In this way, they believed that the future of the country could be outlined through purely scientific means. And in this sense, Cabral (1876, p.152) provided a clear antecedent of Brazilian eugenic thinking:

> Some people even think ... it is possible to assist nature in its intimate process, to obtain a family fully endowed with great intelligence, applying it through means similar to those used on the lower animals to obtain a certain useful property that is specific to certain races. Will science reach this point? We do not see it as impossible.

Paradoxically, Guedes Cabral stands out among his contemporaries as an example of overcoming biological determinism by assigning a key role to education as the main means of recovering the country's health. For Cabral, who here is a predecessor of common ways of thinking in the Brazilian hygienist and sanitarian movements that appeared in the first decades of the twentieth century, the educational issue should be seen as a medical issue involving public health. The health of the country should be treated as that of a sick organism. Cabral argued that, because of the lack of appropriate educational stimuli that developed the brain functionality of Brazilians when they were children, the people were deprived of satisfactory development of the functions of this organ. In his eyes, ignorance was the result of a physiological impairment in terms of brain development. Consequently, educational reform was presented as a moral imperative for Brazilian physicians, who should urge the government to make the changes necessary for the public health of the country. For him, the state of degeneration that was observed in the lower classes of the nation did not only derive from interracial mixing, which was commonly thought at the time. To Cabral, the physical and intellectual degeneration of the people was largely the result of a lack of education, which was only effective remedy against decay, like a precious medicine that the Empire refused to provide. According to him, the moral paralysis of much of the Brazilian people was a pathological condition caused mainly by the lack of education for the masses:

> The ignorant individual, like a child in which the brain does not develop from education, is an irresponsible being, a man with a brain that is unable to function. And a being in these conditions is undoubtedly sick ... perhaps an intellectual hemiplegic, a wretch suffering from what one could call, and perhaps one day will be called, moral paralysis (Cabral, 1876, p.203).

Cabral thus demanded a space for political intervention by physicians in educational reform, claiming their role as specialists able to scientifically intervene where public policies were decided. In his book, he tried to show the political leaders the disastrous physiological effects that a lack of education had on the brains of the masses, considering the current situation as a crime against public health, and in the face of which physicians were fully justified in intervening and demanding justice from the government:

> It is up to the modern physician-philosophers to open the eyes of the governments to this other humanitarian need, which one day will be called 'intellectual treatment.' We must all convince ourselves that education is not a pure social adornment but a real physiological need ... [Acting] otherwise is to condemn to death that which has the right to live, which is a flagrant assault on nature. And nature cannot be violated with impunity. Think about it, and then look at the crime figures (Cabral, 1876, p.203; emphasis in the original).

Brain and race: evolution and the biological limits of racial equality

The issue of the human races was specifically addressed in the final section of Cabral's book. In this last section, the Bahian doctor summarized the main points of the racial issue in a series of sentences known as "propositions," which were used to close doctoral theses during that era. Cabral intended to address the topic of race in a later work, which never came to light. He stated he was committed to developing the thorny issue of the human races "in a book I have been working for some time on, which I hope will not stray far from the publicity and will be called *The question of man*" (Cabral, 1876, p.20). To date, there is no sign of the manuscript; if it were to come to light it would undoubtedly be an event of major importance for the history of Brazilian science. In any case, we can provide sufficient information to understand Cabral's analysis of race based on the contents of *Funções do cérebro*. Here the racial issue, like many of the major social problems of the time, was understood by Cabral from a medical point of view and an evolutionary perspective. It should also be remembered that evolutionism at that time was still heavily influenced by a Lamarckian, linear, and progressive vision of the evolution of species and races (which were grouped into a hierarchical line of biological improvement), showing the strong influence of the idea of progress and gradual ascent in the great chain of beings (Bowler, 1992, p.58). Each "natural group" occupied a clearly defined position in the hierarchy of nature, ordered according to an evolutionary scale of perfection moving from mineral to man, which in turn was gradually differentiated in all of the races. This was precisely the position taken by Guedes Cabral (1876, p.106) when he stated, for example, that "creation is a scale; but creation is also a chain ... Nothing is alone. Each being is a link." In this evolutionary chain, each link connects to the one before it, and according to Cabral (1876, p.111), man was no exception from this law. "There is therefore, in everything, the great and irresistible law of chaining – in the organic, as in the inorganic, in life and in animality." But this stance contradicted the dominant view among Catholic doctors of the time, who with the support of authorities such as Blumenbach and Owen considered it necessary to classify human beings in a separate realm, the "hominal kingdom," separated by an absolute qualitative division from the rest of the animals in creation. This idea was completely absurd to Guedes Cabral. Influenced mainly by the work of Huxley (1863), who opposed Owen's claims to have found the essential differences between the human brain and the brain of primates, Cabral (1876, p.2) stated: "The differences that may exist between the catarrhine brain and the brain of man are so insignificant as to make them almost touch."

With regard to the human races, the biological scale of evolutionary perfection followed a progressive sequence that spanned from monkeys to the "inferior races" and from these to the whites, who were established as the kings of evolution: "We see the crania improve, along with the brains, from the anthropoids through the 'inferior races' to 'us'" (Cabral, 1876, p.7). According to Guedes Cabral, the intermediate link between the higher forms of humanity and the higher animals in Brazil was mainly represented by the non-European races. Their close proximity to anthropomorphic simians became even clearer when the brain was studied. According to the author, evolution could explain the enormous intellectual differences observed between white Brazilians and the rest of the Indian, black, and

mixed-race populations: "The higher it ascends in the series of animals, the more the brain develops, development that corresponds or, in other words, measures, intellectual progression" (Cabral, 1876, p.57).

To justify this intellectual gradation of the races in biological terms, Cabral (1876, p.64) started from the idea (which is now completely rejected by science) that the volume of the skull has a direct relationship with intelligence: "Skull volume in the various races, giving us the measure of brain development, also gives us the measure of the intellectual capacity of each one ... the skull is more developed in Caucasians than in the Mongols, more in the Mongols than in the blacks, and more in the blacks than in the Australians. It is precisely this degree of development that has affected humanity in the endless spiral of civilization."

We must take into account that at the time there was no lack of quantitative data provided by the best specialists, such as the French polygenist Paul Broca, which served to support the ideas maintained by Cabral (1876, p.87; highlights in the original): "We can get an 'experimental confirmation' from Dr. Broca. According to this author, the cranial capacity of Europeans is from 1460 to 1580cm^3; for inhabitants of Oceania, it decreases to 1253; for Australians, to 1228!" This type of argument was also defended by the German polygenist Karl Vogt (1878) in one of the first historical monographs dedicated to the biological study of human evolution: his famous *Lectures on man*. Guedes Cabral welcomed the German, along with Broca, as one of his main sources on this point. In his *Lectures*, Vogt sought to identify the differences between the nervous systems of the "German" and "Negro," which caused the supposed insensitivity to pain in the latter. According to the German thinker, this made blacks more suitable for physical labor, particularly more intense work. Cabral (1876, p.35), in briefly summarizing Vogt's argument without going into details (possibly because he was in favor of the abolition of the slave system), simply asserted that "greater brain power corresponds with better sensitive fitness." Citing Vogt directly, Cabral (1876, p.61) proclaimed that "between individuals of the same species, in families and races with the successive development of the hemispheres, the various intellectual faculties develop imperceptibly."

As we saw in the previous section, Guedes Cabral considered the education of the masses a matter of public health, in which physicians had much to say and decide in the political sphere. In this sense, he proposed development of a true national project for cerebral enhancement based on education. However, this progressive project would find its natural limits in the innate differences existing between the human races. For Cabral, while improvements to the intelligence of the indigenous, black, and mixed-race populations in Brazil was possible, this development could never bring them up to the superior intellectual state that, in his opinion, the "Caucasian race" would achieve throughout its evolution. To explain these ideas, and again influenced by Haeckel, Broca and Vogt,[9] Cabral (1876, p.64) believed that the sutures between the bones of the skull in white children merged later, thus preventing any possibility of equality in the development of brain function among the races:

> Dr. Broca confirmed that the skull sutures in the superior races do not merge as quickly as in the lesser races – which on its own explains the fact of the relative inability, or delay, where these races are from the former ones ... intellectual exercise promotes greater brain development. But this fact is indisputable, and emerges especially among

> individuals of the same race, proof only here that to some extent education can push against this wall that was built and closed early by nature.

Thus, the inferior races could never reach the same degree of intelligence as white Europeans, never equaling their intellectual capabilities, and as a result of this situation, the existing social abyss between the white population and the rest of the Brazilian population would remain intact, basically due to the impossibility of achieving the same intellectual development in the brains of both groups. To further reinforce this idea, Cabral (1876, p.65) invoked the authority of Ludwig Büchner, another major supporter of polygenism of his time:

> Who has not seen, exclaims Dr. Büchner, in images or in nature, the more voluminous skull of the Caucasian race? What a difference between this noble form and this skull with its low forehead, narrow, this small head so similar to that of a monkey! Who ignores the intellectual inferiority of the Ethiopian race and its state of infancy compared to the white race? 'Inferiority that will last forever!' The brain of the Negro is much smaller than that of the European, and above all more similar that of animals; the anfractuosities are less numerous (emphasis in the original).

The racial superiority of European descendants in Brazil would last forever because it would be the result of an unchangeable natural fact. The relative possibility of progress for supposedly inferior people would be limited by their organic constitution. In this way, neither politics nor science, striving to improve them and purify them through eugenic processes, nor the philanthropic efforts of the "superior races" to educate and civilize their "inferior brothers" would be able to match the intellectual and moral capacities at the level achieved by the "white man:"

> Moving from the blacks to the other races, how can the observer not be shocked to see that miserable state to which they are eternally doomed – a cruel and unforgiving sentence that is only imposed on them by their own organic dispositions! Who ever civilized a native of New Holland? Who could possibly make fruitful the seeds that have so often been thrown among the hordes of the Caribbean? When the patient courage of English genius faints, helpless, before these humans, discouraged of bringing them to civilization ... there is no longer enough time for the full light of progress to penetrate there ... These miserable creatures are not only condemned to ignorance, pariahs of civilization, spurious progress, but also – condemned in the body, 'pariahs of nature,' unconscious bastards of 'matter.' 'These aborigines are almost deprived of the upper layers of the cerebral hemispheres!' (Cabral, 1876, p.65; emphasis ours).

Final considerations

Like many Brazilian physicians and intellectuals of his time, Guedes Cabral sought to emphasize the social responsibility of the scientist in the political task of building a modern Brazilian State, which for him unequivocally meant a republican state based on free labor. Even with Brazil relying on a largely mixed population – a fact considered at that time to be an *a priori* obstacle to the progress of Brazilian civilization – the desired changes seemed possible to the young doctor. In *Funções do cérebro*, the pioneering ideological incorporation of the new evolutionist paradigm coincided with a central concern to present "scientific"

solutions to the problems posed by the "races" and their mixing in the population. As a physician and a republican activist who was concerned with the problems that affected society at that time, Cabral used the theory of evolution as a theoretical tool to understand the biological differences between whites, blacks, Indians, and mixed-race people at the level of brain function by establishing an unyielding biological border between the mental worlds of each other, in line with a polygenist anthropological perspective. Welcoming the legacy left in the country by creationist authors such as Gobineau and Agassiz, he made the first explicit defense of polygenism within evolutionary principles. In this sense, Cabral's work attempted to define a set of innate differences between the races in their brain organization. Despite the proposal that it was necessary to improve education in the country, designed to further intellectual development of the population, in the eyes of the Bahian physician, the cerebral disposition granted to each race by nature would turn any egalitarian social attempt in the field of interracial relations between European descendants and the rest of the population into only a dream. Consequently, the work of Domingos Guedes Cabral is a pioneering example of the alliance between science and racism, from the moment that Darwinist theories entered Brazilian soil hand in hand with polygenist thinking.

NOTES

[1] Few details of Cabral's life are known. The main biographical sources about him are found in Blake (1893). Later, Almeida (2005, p.69) summarized this information in his master's dissertation. Further biographical data about Guedes Cabral can be found in previous articles published by the authors (Almeida, El-Hani, 2007, 2010). More recently, Pereira Filho and Waizbort (2013) and Waizbort and Carvalho (2014) analyzed the Darwinism of the book *Funções do cérebro*, but these interesting works do not add new contributions to Cabral's biography.

[2] According to the legislation of that era, in order to be granted the title of doctor of medicine, graduates of the course were required to present and publicly defend what were called "doctoral or inaugural theses" on one of the themes defined in the first annual meeting of the congregations of the colleges of medicine. The objectives were to promote the creation of a national body of medical literature and to allow students to demonstrate the knowledge acquired during the course in medicine (Abreu Jr., Miranda, 2014). In addition to the dissertation itself, the thesis also included three simple "propositions," statements of their thoughts about the various chairs of the medical, surgical, and accessory sections, and six medical aphorisms from the works of Hippocrates or some classic treatise. Students submitted their theses by August in order to defend it by the end of the year. The thesis was evaluated by a professor at the college and two adjuncts appointed by the congregation, who were responsible for checking that the work was in line with the statutes and was free of any inconvenient or disrespectful content. Once this prior approval was issued, the thesis was printed at the expense of the author, in a format predetermined by the college, which received 36 copies (Abreu Jr., Miranda, 2014). Students defended their theses before a commission of five professors, who were nominated by the director and approved through a symbolic vote by the Congregation. This commission conducted inquiries about the works and gave its opinion on them. If a thesis was not accepted, the student could only perform new defense after a period of three months to a year, as defined by the congregation. If approved, before the degree was granted, the doctoral candidate was required to deliver 100 printed copies of the thesis to the college for distribution among the professors, and to be sent to the government and to the other medical school. Any remaining copies were archived in the library (Abreu Jr., Miranda, 2014). These theses were very different from the current understanding of a "doctoral thesis." The nature of these works can be glimpsed from a severe criticism from 1893, in the context of the Bahia School of Medicine. In the *Memória Histórica da Faculdade* published in that year, Luiz Anselmo da Fonseca (1893) stated with regard to the year 1891 that the vast majority of theses had no scientific value, and simply gathered the opinions of others. They were sometimes hastily written documents, copied from each other, or they were no more than summaries of foreign works, devoid of originality. In fact, when examining doctoral theses in the archives of the Bahia School of Medicine, we can see that more in-depth works like that of Guedes Cabral are infrequent. It is even possible to find theses that do not exceed four or five pages. Yet there are

theses, like Cabral's, that are notable for the contemporaneity of the chosen topics and for the authors and works cited, as noted by Rocha, Tranquili, Lepikson (2004). In principle, the theses were not produced to be broadly disseminated or to circulate in society. For the most part, they were abandoned in the libraries of the medical colleges. In some cases, they gained wider circulation and visibility after their authors published them as books. The case of Cabral's thesis is also peculiar in this sense because after being rejected by the college it had wide repercussions when published as a book, with the support of the young doctor's colleagues. Cabral then had to engage in the public debates that took place in the newspapers at the time, such as the *Crônica Religiosa*, a Catholic newspaper that published more than thirty articles against the ideas he defended (Blake, 1893).

[3] These polygenists were opposed in France by monogenist anthropologists such as Armand de Quatrefages and Ernest Théodore Hamy (Quatrefages, Hamy, 1882; Quatrefages, 1861).

[4] For a general discussion on the connections between science and racism in Latin America and in Brazil, see Arteaga (2016), Graham (1990), Stepan (1991), Skidmore (1976), and Rodrigues (2011).

[5] In this and other citations of texts from Portuguese, a free translation has been provided.

[6] We highlight the case of João Ferreira de Campos (1876), author of a creationist doctoral thesis addressing the same topic as Guedes Cabral, the brain, and also included a section pertaining to "the human races." Notably, Campos's thesis was accepted without problems by the congregation of the college just a year after the thesis by our author was rejected (Almeida, 2005).

[7] On September 28th, 1871, the Regent Imperial Princess Isabel, on behalf of his father, the Emperor D. Pedro II, decreed a law that sanctioned that all children of a slave woman born in the Empire from the date of this law, shall be deemed free condition.

[8] The quote cited above is related to Romero's request that black Africans be studied before they disappeared and only mixed-race people remained.

[9] On the theory of early closure of the cranial sutures in the non-European races, see Gould (1981, p.114-140).

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