Pain beyond the confines of man: a preliminary introduction to the debate between Frances Power Cobbe and the Darwinists with respect to vivisection in Victorian England (1863-1904)

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Abstract

This article introduces a person who is little known and studied in the Brazilian and South-American academic communities. Frances Power Cobbe was a British woman in the Victorial period engaged in various social causes, among them the abolition of vivisection. In her later years, Cobbe criticized any use of live animals in laboratory experiments, with or without the use of anesthetics. Our initial focus is on the relationship between Cobbe and Charles Darwin and the conflict they both were involved in regarding the ethical legitimacy of using live animals in physiological experiments for the good (or not) of knowledge and mankind.

Keywords: vivisection; common descent; experimental physiology; Darwinism; Frances Power Cobbe.

The question of the moral status of animals is a subject that has received increasing attention in Brazil, as evidenced by the progressive increase in articles published in the press, including scientific journals (Alves, Colli, 2006), and the recent publication of new books on animal ethics – not just translations of important foreign authors (Regan, 2006; Singer, 2004), but also books by Brazilian scholars (Felipe, 2007; Lima, 2008; Paixão, 2008; Trèz, 2008). All of the authors are academics, which demonstrates, according to the ethicist Tom Regan (2006, p.13), that contrary to what many frequent media vehicles would lead us to believe, the interest in this subject is not restricted to moderate or radical activists, but involves researchers and institutions and, as a consequence, rational, scientific, and philosophical arguments.

Human ethical concerns about the legitimacy of different forms of animal exploitation interweave with the history of Western thought, in which England plays an important role. There is considerable foreign literature on this subject, with books and journal articles dedicated to the historiography of animal protection and the antivivisection movement (Ferguson, 1998; French, 1975; Guerrini, 2003; Kean, 1995, 1998; Mayer, 2008; Preece, 2003; Richards, 1992; Ritvo, 1987; Rupke, 1987; Ryder, 1989; Stevenson, 1956; Williamson, 2005). In Brazil, although we are already beginning to see academic community involvement in the area of animal ethics, there are no publications dedicated to the study of this question from a historical standpoint.[1] With the intention of contributing to this goal, this article focuses on Frances Power Cobbe, a woman engaged in various social crusades, among them the fight against vivisection. In her later years, beginning around the middle of the 1870s, Cobbe criticized any use of live animals in laboratory experiments, with or without the use of anesthetics. Our initial focus is on the relationship between Cobbe and Charles Darwin in the debate on the use of live animals in physiological experiments. Another objective of this paper is to describe the transformation in the relationship between Darwin and Cobbe, which gradually changed from cordial to bellicose, as they assumed opposing positions on this issue.

Pain in Bernard's laboratory

On February 1, 1875, the London newspaper *Morning Post* published a letter signed by Doctor George Hoggan, an English physician who had worked for some time in France, in the laboratory of Claude Bernard, the foremost figure in the field of experimental physiology in the world at that time and considered the founder of this science. In the letter, Doctor Hoggan (Feb. 1, 1875) stated that, of all the experiments conducted by the great physiologist that he witnessed, none had really been necessary. The physician declared that the cruelest scene that he had ever witnessed in his life was the appearance of the dogs who were taken to the laboratory to be sacrificed. Sniffing the air in the laboratory, they appeared, according to Doctor Hoggan, to be horrified, as if they knew what their lot would soon be, and made vain friendly advances towards the researchers present, who reacted with indifference or even cruelty to their advances. This open letter provoked reactions of horror and aversion in English readers, generating a wave of protests (Cobbe, 1894b, p.578).

On the other side of the English Channel, Claude Bernard was aware of these criticisms concerning vivisection and made no attempt to ignore them; in fact, he had already responded to critics ten years earlier. In his classic work *An introduction to the study of experimental medicine* (Bernard, 1957), there is a section in the second chapter devoted to the topic, in which the eminent physiologist asks: "Have we the right to make experiments on animals and vivisect them?" And he immediately responds: "As for me, I think we have this right, wholly and absolutely." Bernard argues that, actually, it would be strange to recognize the right of men to use animals at every stage of life for domestic use and for food, and prohibit their use for instruction in one of the sciences most useful to mankind: medicine. The scientist continues, stating that "No hesitation is possible; the science of life can be established only through experiment, and we can save living beings from death only after sacrificing others" (p.102). Bernard uses a metaphor to defend his position: "I consider hospitals only as the entrance to scientific medicine; they are the first field of observation which a physician enters; but the true sanctuary of medical science is a laboratory" (p.102).

Figure 1: Frances Power Cobbe (1822-1904) was a combination of some peculiar characteristics. On the one hand, she was a women's rights and animal rights activist; on the other, she was a fervent opponent of the process of secularization that had followed the Darwinist research program, and her ethical discourse was based on theology, with many references to sin

In contrast with this discourse, which justified vivisection as a type of necessary evil on behalf of humanity, Doctor Hoggan (Feb. 1, 1875) commented in his letter that, among the researchers in Bernard's group, the idea of the "good of humanity" was considered laughable and the primary objective there was professional self-affirmation, obtained in an environment of bloodthirsty competition with scientific colleagues, "even at the price of an incalculable amount of torture needlessly and iniquitously inflicted on the poor animals." On the eve of publication of his letter, Hoggan was introduced to Frances Power Cobbe (1894b, p.580), who since the beginning of the 1860s had included activism in defense of animals against the abusive practice of vivisection among her activities.[2] Having recently withdrawn from the Royal Society for the Prevention of Cruelty to Animals (RSPCA), at that time the largest animal protection society, because she disagreed with what she considered an overly tolerant policy on animal experimentation, Cobbe quickly realized that George Hoggan would be an important ally. For this reason, she did not hesitate to respond positively to a proposal he made, and in that same year Cobbe, Hoggan, and various other invitees founded the Victoria Street Society for

the Protection of Animals Liable to Vivisection, known by the shorter name Victoria Street Society (p.586). Doctor Hoggan would play an important role in this society. Due to his education and professional training, he would become a consultant on technical aspects and on adoption of vivisection policies. The effective leadership of the new society, however, would fall to Frances Cobbe, who, in addition to being a skilled writer, was an experienced social activist and organizer.

Here, we will describe the tactics Cobbe used to influence a sociocultural environment in which the biological sciences made great advances and their most vigorous promoters did not seem willing to let controversial ethical questions such as those surrounding the subject of vivisection slow them down. During this process, Cobbe met Darwin and a relationship was developed between them. It was initially friendly and involved a common interest in the mental capacities of non-human animals. This relationship, however, disintegrated into a type of moral war, in which Cobbe vehemently condemned vivisection, while Darwin defended it in the name of scientific progress and that of mankind.

Vivisection

The use of live animals in scientific experiments for physiological investigations dates to the beginning of the Western tradition of biological research, with the Roman physician Galeno (130-210), but the practice was not adopted linearly in history nor systematically in methodological terms until the nineteenth century (Guerrini, 2003, p.2). The first half of this century witnessed the dawn of a new scientific discipline, experimental physiology, under the pioneering leadership of François Magendie (1783-1855) in France and the participation of some British scientists such as Charles Bell (1774-1842), Marshall Hall (1790-1857), and William Sharpey (1802-1880) (Guerrini, 2003). It was during the second half of the nineteenth century, however, that experimental physiology took firmer and broader root on the Continent, in large part due to the endeavors and political actions of the Frenchman Claude Bernard (1813-1878), a former disciple of Magendie. However, on the other side of the channel, physiology had been imposing its agenda at full steam, and various men in Great Britain stood out, such as Michael Foster, Edward Albert Schaffer and John Burdon-Sanderson, among others (Richards, 1992, p.146).

The discipline did not flourish without conflict or resistance, however. On the contrary, civil society had been organizing in all corners, and many actors raised their voices in protest against the unbridled torture and killing of animals under the pretext of scientific advances and the good of humanity. In Victorian England, this debate became progressively more heated, and Frances Power Cobbe joined the dispute in the 1860s. A journalist and militant active in many different causes involving oppression or social injustice – the suffragist movement, the defense of battered women, the quest for better living conditions for the poor (Mitchell, 2004; Williamson, 2005) – Cobbe also supported the antivivisection crusade beginning in 1863, and this would, over time, take priority in her life (Cobbe, 1894b, p.556; Mitchell, 2004). Creating and mobilizing an increasingly larger, more complex, and more powerful network of allies, Frances Cobbe became one of the most visible, active, and detested adversaries of experimental physiologists, which earned her many political enemies.

In 1868, Frances Cobbe received Charles Darwin at her house for the first time. He had become more and more famous in his country due to the controversy generated by the work he had published nine years earlier, *The origin of species* (hereinafter *Origin*). This first meeting between Cobbe, Charles Darwin and his wife, Emma, led to very positive impressions on both parties and agreeable conversations on the intelligence and affability of dogs, an animal very much appreciated by both the naturalist and the journalist (Browne, 2003, p.297; Cobbe, 1894b, p.445).

During at least four years, Charles Darwin and Frances Cobbe exchanged letters and pleasantries. In addition to praising an article by Cobbe on the consciousness of dogs, which he referred to as the best analysis of the animal mind that he had read, Darwin sent the author recent copies of two of his important articles on the subject on the animal mind: *The descent of man* (Darwin, 1998a), published in 1871, and *The expression of the emotions in man and animals* (Darwin, 1998b), published in 1872.[3]

Just three years later, the situation was completely different. In a letter dated January 1875 to his daughter Henrietta, in response to a letter in which she had asked him to sign a petition against vivisection, Darwin explained his motives in refusing to do so and declared that "I certainly cannot sign a paper sent to me by Miss Cobbe, with her monstrous attack against [Rudolf] Virchow[4]" (Darwin, 1887, p.203). And in 1881 a series of letters

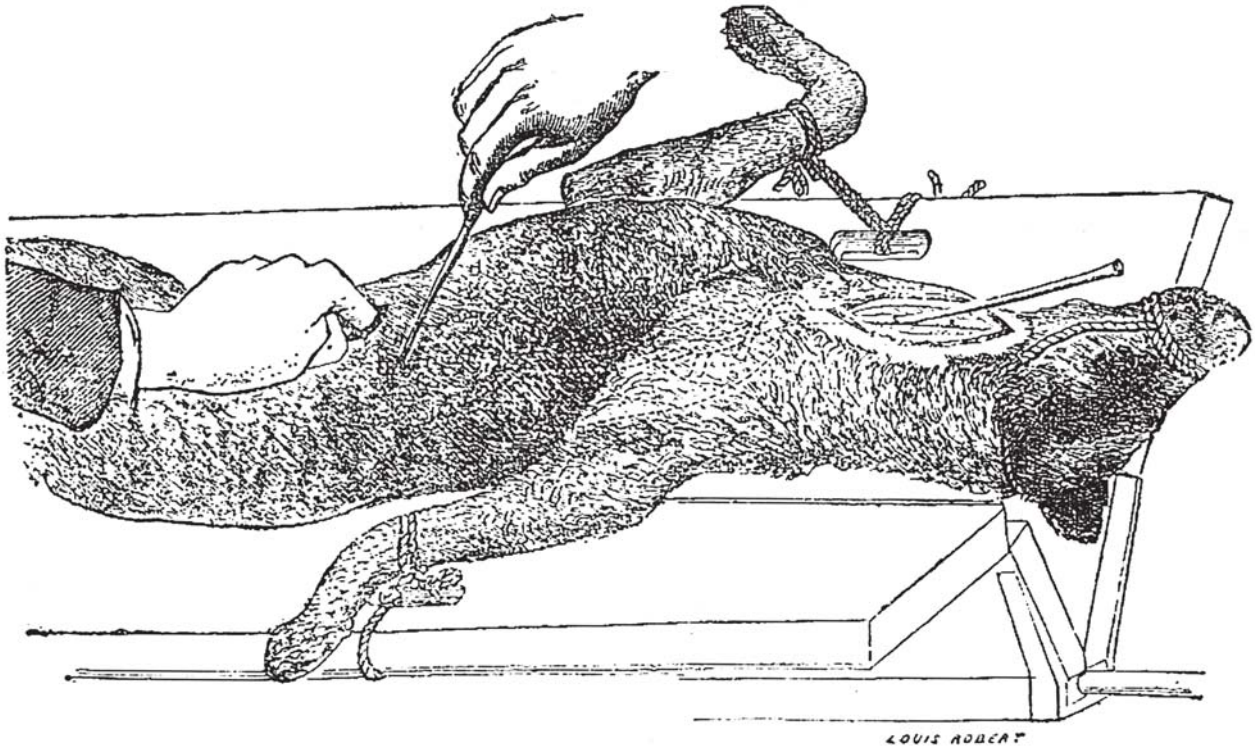

Figure 2: Dog immobilized on the vivisection table, while physiologists open his body with a knife. Cobbe extracted this image and various others from physiology manuals such as *Physiologie opératoire*, by Claude Bernard, a famous French scientist who was already considered the founder of experimental physiology. Cobbe exposed the general public to such images in a censorious article entitled "Light in dark places" (Cobbe, 1889)

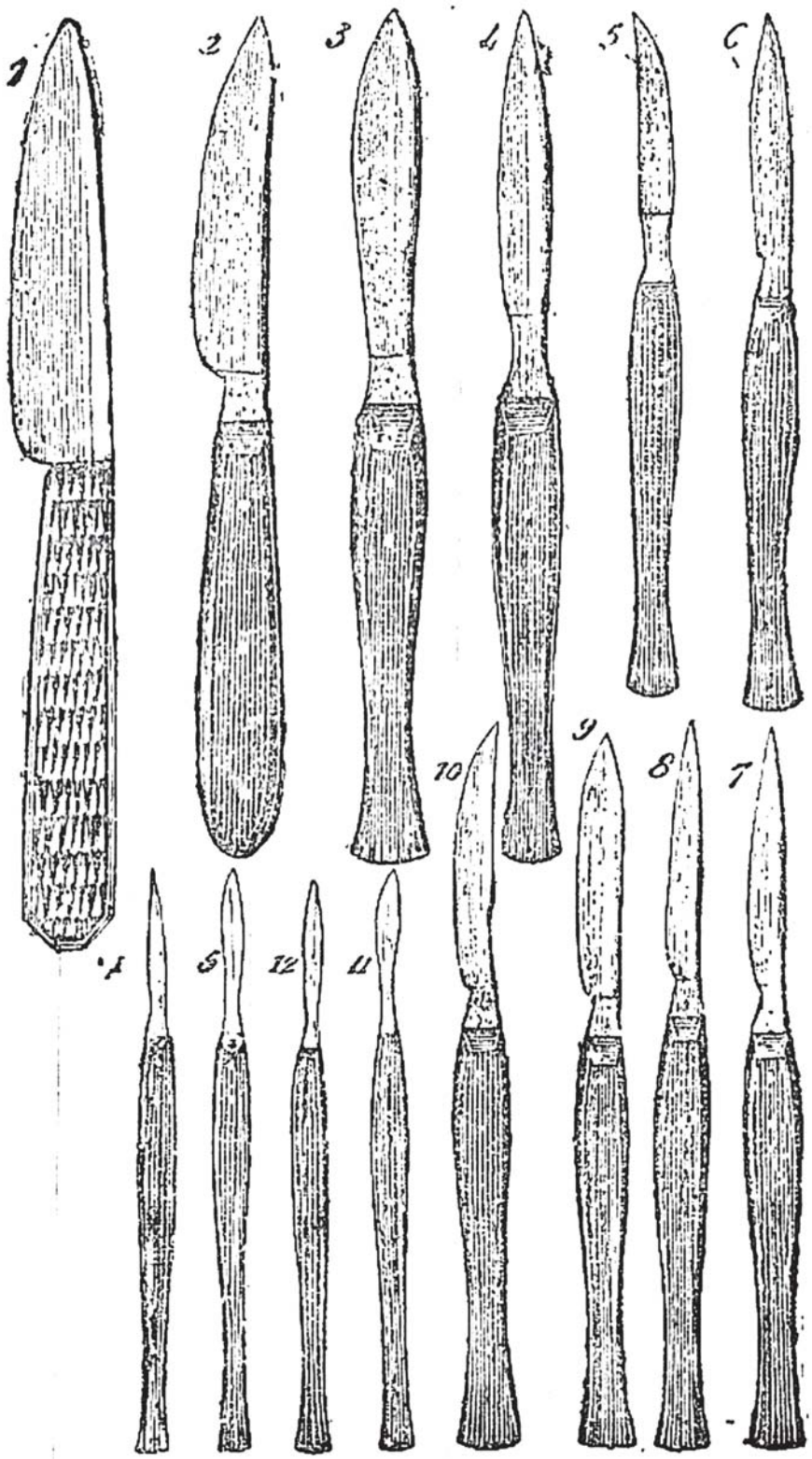

Figure 3: Knives and similar instruments used by physiologists in their experiments with animals (Cobbe, 1889)

published in the London newspaper *The Times* included attacks and counter-attacks by Darwin and Cobbe, in addition to various defenders and critics of vivisection, regarding the moral legitimacy of this practice.

What led Charles Darwin and Frances Cobbe to this falling out? After all, Darwin did not practice vivisection and Cobbe had begun to write texts criticizing this practice in 1863, five years before being introduced to the naturalist. The following are preliminary observations and reflections on the reasons which led to the rift between Darwin and Cobbe.

Frances Power Cobbe's trajectory

Frances Power Cobbe was born in Dublin on December 4, 1822, the year in which Martin's Act, the first British law regulating prohibitions and penalties for mistreating animals, was approved. The youngest of five in an Irish Protestant family, her ancestors included some bishops and archbishops (Cobbe, 1894a, p.5). In her youth, Cobbe studied in a traditional Irish girls' school, which she left in 1838 when she began to invest more ostensibly in her private studies, spending as much time as she wished in independent studies in the most diverse areas of learning, including philosophy, poetry, and religion (p.63). Her personal and intellectual development process led to extensive publication, including books, articles, and letters in many different periodicals, in addition to pamphlet texts for the societies in which she was an activist (Williamson, 2005). We can see a theological approach in her work, partly inspired by the thinking of the American transcendentalist Theodore Parker, who criticized the classic split between religion and daily life (Woodlief, n.d.). Cobbe's quill nib was consumed both by theological forays and at the service of social progress, and the sundry causes that she embraced as a journalist and activist since 1861 appear to have a unifying thread: the moral and social inclusion of historically exploited categories, victims of some abuse perpetrated by categories of oppressors. The latter includes animals used in scientific experiments.

Cobbe did not restrict herself to the written word, but also engaged in direct acts and organization on multiple fronts. Visiting hospitals and asylums, promoting campaigns, joining or even founding organizations, lobbying for bills in parliament, taking on a central role in the British suffragist movement at the time, she mobilized a broad network of allies who held high social positions or political power in the Victorian cultural universe, many of whom were members of the British aristocracy. With respect to the antivivisection cause, Frances Cobbe appears to have been – if the historiographic literature can be believed (Ferguson, 1998; French, 1975; Guerrini, 2003; Mitchell, 2004; Ryder, 1989; Turner, 1980; Williamson, 2005) – one of the most combative and effective individual actors on this battlefront in Great Britain during the second half of the nineteenth century.

According to her own narrative (Cobbe, 1894b, p.561), her involvement with vivisection began with the denunciations published in the British press in August 1863 with respect to the torture of horses at the Alfort Veterinary School, near Paris. The description of the bodies of these animals, "the mangled creatures, hoofless, eyeless, burned, gashed, eviscerated, skinned, mutilated in every conceivable way..." (p.562) shocked not only the

lay public, but also many veterinarians in the United Kingdom, generating a wave of indignation and protest that even involved part of the French press (Ryder, 1989, p.108). Revolted by the reports, Cobbe wrote, in 1863, "The rights of man and the claims of brutes," published originally in the November issue of *Fraser's Magazine* and three years later republished as part of the book *Studies new and old of ethical and social subjects* (Cobbe, 1866). This was the first of a profusion of texts by Cobbe questioning the practice of vivisection, and the event at Alfort was simply the last straw that convinced her to include this line of combat among her endeavors as a target for her transforming diligence.

In the beginning, the author did not question the legitimacy of the practice of vivisection per se, but rather its ethical limits and criteria. Over the years, however, her point of view became increasingly radical, and she decided to devote most of her time and energy to this front, as well as some of her most inspired texts, beginning in the mid-1870s. Among the social actions that she undertook, the vivisection battle would more directly affect the interests of a new social group, modern scientists, who, despite their heterogeneity, shared a range of priorities related to the advance of science and its role in the Victorian social fabric and the (new) world order. This conflict of interests would lead many antivivisectionists and scientists – particularly experimental physiologists – onto a collision course.[5] More than just political agendas, this disagreement was also based on values, worldviews, and the ethical frontiers of science and of human actions. On this tumultuous stage, Frances Cobbe confronted Charles Darwin and his allies in a bellicose duel involving words, acts, and a highly explosive charge of mental tension.

Towards a "science free of dogmas": experimental physiology and darwinism in the Victorian age

The 1860s and 1870s were times of great cultural and scientific excitement. Many of the new ideas that had been fermenting for some time began to come to the surface and new theses were declared and defended in many varied areas of Western knowledge. In the politico-economic field, the laissez-faire capitalist model prospered, supported by the Malthusian theory of population regulation (Bowler, 1989; Knight, 1981; Shapin, 1999). In the universe of natural history, an era of gradual and growing specialization and professionalization had begun, culminating in the emergence of biology as a science in the process of institutionalization (Caron, 1988). A demand arose for a new type of natural scientist, trained and engaged in a more inquisitive type of investigation, very different from the typical attitude of the amateur naturalist, restricted basically to collecting, describing, and classifying specimens of different species (p.190). This is because, while the first half of the nineteenth century was devoted to revealing the variety of nature, in the second half a collective effort to explain how and why this variety occurs emerged (Allen, 1978, p.179). Knight (1981, p.28) draws attention to the fact that, in the context of the great instability of social institutions, battles were the rule and, therefore, the idea of the "battle for survival" sounded like an obvious pattern for nature.[6] Even in theology, previously mined by enlightened materialism (Bowler, 1989), there was an atmosphere of flexibility and variety in the issues under debate, which challenged the status of the Anglican

Church (Browne, 2003). The model of a physical universe in evolution was already discussed in geology and cosmology. In these sciences, what were known as development theories now opposed the orthodox steady-state theories, more compatible with the fixist creationist perspective (Bowler, 1989, p.10). In the embryonic science of biology, the publication of *Origin* by Charles Darwin in 1859 represented a culmination of this process and would have revolutionary impact.

Although *Origin* was, so to speak, the inaugural work ,the structural pillar par excellence of the Darwinist program would come 12 years later – ergo at the dawn of the 1870s – with the publication of *The descent of man, and selection in relation to sex* (hereinafter *Descent*)[7], his first work openly and specifically dedicated to the topic that he considered "the highest and most interesting problem for the naturalist": the human species and its mental faculties (Burkhardt, Smith, 1990, p.515, cited in Browne, 2003, p.325). This question about the status of man with respect to the rest of the organic world was an especially sensitive point, as it threatened the concept of human singularity that then prevailed and was so important to the dogmatic framework of natural theology, which had dominated the scientific scene during the first half of the nineteenth century. This teleological model had been particularly threatened since the publication of *Origin*, which inaugurated the Darwinist research program in 1859. If, in *Origin*, Darwin had already established his theory of common descent, according to which all animals – current and extinct – originated from one single primeval ancestral form, in *Descent* he addressed the human mind in the context of the developments arising from natural evolutionary processes, a topic suggested only briefly and subtly in *Origin*. Although he recognized the immense differences between humans and other animals, Darwin (1998a, p.130), as a tenacious defender of what he called the 'principle of continuity' (summarized in a phrase attributed to Linnaeus, "nature does not make leaps"), insisted in affirming that this difference was not of essence or kind, but merely of degree.[8]

Darwin's evolutionary theory occupied an important role and was at the vanguard of Victorian science, and his research program availed itself of strong political and academic support for its expansion. At the beginning of the 1860s, some of Darwin's allies formed a select team, self-named the X-club, which included in its ranks men such as Thomas Huxley, John Tyndall, Herbert Spencer, Joseph Hooker, and John Lubbock. The members of this club met to debate evolutionary topics and define policies for disseminating and promoting a "science free of dogmas" and, particularly, to ensure the survival and scientific and institutional development of Darwinism (Browne, 2003, p.247). The group's activities were considerably successful, and without the X's Darwin's ideas would never have taken hold in British culture as rapidly as they did. For this reason, Darwin did everything possible to aid them, including deliberately allowing them to cite his name (p.249).

Additionally, involved with the nineteenth-century ideals of progress, Darwin was also a proponent of the advance of the natural sciences in general (Allen, 1978). In the program promoted by the supporters of a "science free of dogmas," however, vivisection – a practice that presented itself as vitally important to experimental physiology research – represented a significant, delicate, and thorny obstacle due to its visible ethical implications. Since the 1860s, British experimental physiologists, with their paradigmatically innovative laboratory

methods, had faced great hostility when attempting to implement their agendas. Practicing and clinical physicians, and directors of public hospital, universities, and Royal Colleges resisted the legitimization of physiology as a scientific discipline (Browne, 2003, p.419). Critiques of physiology as a science, however, came not only from the medical and academic universe. Attacks that were just as intense or more so came from the general public, mobilized by groups and societies formed to impede or at least restrict the advance of experiments involving the suffering of live animals (Browne, 2003, p.419; Turner, 1980). And these denunciations were not restricted to experiments in continental Europe.

Even though the first animal cries of pain had been heard in France, it was not long before the first denunciations against activities on the other side of the channel were heard. As early as the 1820s, Marshall Hall (1790-1857), a physician and contemporary of Magendie who had trained in Edinburgh, and one of the few English experimental physiologists, became the almost predictable target of attacks by animal rights defenders (Guerrini, 2003, p.77). However, a strong upswing in antivivisection protests really came beginning in the 1860s, with the actions of the RSPCA under the direction of John Colam; the intensive campaign by the newspaper *Spectator*, managed by Richard Hutton; and innumerous denunciations in the press and the proliferation of new societies against vivisection throughout the United Kingdom (Ryder, 1989). Physiological research was then going through a period of fervid effervescence in Victorian England, and while the name of Claude Bernard caused furor in many circles, at the same time he was admired and considered a model of scientific conduct in others (Ryder, 1989). There was no small contingent of physiologists struggling to affirm their individual reputations and the collective idea of an experimental science. In truth, this movement was an element of a wider one, namely, that of the advance of science as a whole along new lines, based on materialist and experimental epistemology, appreciation of specialization, and experimental methodology.

It was beginning in this decade, the 1860s, and even more intensely in the following decade, that antivivisection interests came into heated conflict with the Darwinist agenda. At the same time, Frances Cobbe began to write about and protest against the use of animals in painful experiments, on ethical grounds, and directly attacked those that favored vivisection, including Charles Darwin.

The number of British physiologists performing experiments with animals grew by leaps and bounds, and they were increasingly the principal targets of the protests of antivivisection associations. Since the Darwinists were committed to the advance of experimental science, the attacks by the antivivisectionists against the physiologists mobilized the Darwinists to defend the latter. Among the best-known names in British experimental physiology, Stewart Richards (1992, p.146) mentions a “great triumvirate” practicing during this period: Michael Foster, John Scott Burdon-Sanderson, and Edward Albert Schaffer. These men had strong ties with Charles Darwin and his allies. Michael Foster, for example, succeeded Thomas Huxley as Professor of Physiology and Histology at the Royal Institution in 1869, and also succeeded Sir John Lubbock in Parliament as representative of London University, from 1900 to 1906 (Michael Foster, 2008). He and Burdon-Sanderson headed a group of 19 physiologists that, in 1876, founded the

Physiological Society, created "with a view to their mutual benefit and support" (Sharpey-Schafer, 1927, p.73). The first honorary members of the Physiological Society were William Sharpey – a pioneer in British experimental physiology and a former mentor of Foster and Sanderson – and Charles Darwin (p.13). Because of the clear position adopted by Darwin and various of his evolutionist allies, the Darwinists as a group – and Darwinism as a world view – became the targets of antivivisectionist attacks, as exemplified by some of Cobbe's texts (see, for example, Cobbe, 1888).

It was, therefore, in this exhilarating environment resulting from the debate on the evolution of species, on mechanisms of change, and on man's place in the natural world – which implied an ancestral relationship between the minds of animals and those of man – that Frances Cobbe was active. Taking advantage of all resources, capacities, and opportunities available to her to mobilize social and editorial forces and call into question vivisection, she fought, above all, for well-defined ethical boundaries on the methods and philosophies of this new scientific model.

Pain, anesthesia, and the ethical boundaries of science in the Victorian era

But why was the practice of vivisection questioned and criticized? On what grounds? Almost all evidence points to the topic most dear to the Victorian ethos: the problem of pain. According to the historian James Turner (1980, p.80), in previous centuries pain was usually viewed, in the Christian world, as one of the misfortunes of life and as a manifestation of the mortality of men, and an indication of their sins. In the eighteenth century, the cultivation of benevolence began to introduce the first clear signs of questioning of this idea, but only in the nineteenth century was an attitude of profound disquiet with respect to pain consolidated, whether one's own pain, that of others, or even the abstract idea of pain. Turner observes that, for the Victorians, the rejection of pain was at the root of the definition of the ideal of a good life, which led this author to state that "Among the devils haunting the Victorians ... pain was an archdemon" (p.79). The definition of cruelty was based on the act of deliberately causing pain to others, and the problem of pain was a central aspect of the philosophy and moral conduct of the nineteenth century (p.79).

Sensitivity with respect to the pain of others was one of the reasons Charles Darwin abandoned a medical career. In a time when anesthetics were not yet available, the scientist could not stand to witness the horrendous manifestations of pain by patients undergoing surgery (Turner, 1980, p.81). Animal suffering was also a particularly important topic in Darwin's thinking and seems to have had a significant role in the gradual decline of his faith in the existence of a benevolent Creator. In addition to atonement for ones' sins, one of the most frequent theological arguments about pain and human suffering was based on the idea that moral edification could be gained through them. However, this argument did not justify the immense suffering of millions of animals, and this is not only domesticated animals, but also the boundless number of animals of all species that suffered all types of pain and deprivation in the wild, subject to "nature, red in tooth and claw," in the poetic words of Tennyson (Turner, 1980).

The idea that pain was something that humans shared with the rest of the animal world was not new, but it had been progressively reinforced by comparative anatomy studies, especially those on the anatomy of the nervous system. Herein lies a paradox: it was the similarities in their biological systems and functions that made animal bodies useful for studies of human physiology, and at the same time these same similarities indicated that animals were able to feel many sensations similar and homologous to those felt by humans, especially pain. The concern with animal pain and suffering in the Victorian world was such that many animal defenders ran shelters where hundreds of homeless cats and dogs were regularly sacrificed in the belief that death was preferable to a life of hunger and constant suffering (Turner, 1980, p.79).

In the British context, in which animals and their relationship with humans were held in high esteem by the aristocracy and the middle classes (Thomas, 2001), animal suffering had already acquired the status of an ethical question in the eighteenth century, as can be seen clearly in the words of the utilitarian Jeremy Bentham (1907, p.122; emphasis in the original): "The question [which should determine if animals have rights] is not, Can they *reason*? nor, Can they *talk?* but, Can they *suffer*?" In the nineteenth century, however, the question of pain was not exclusively a concern of a moral or religious nature, but was also a focus of medical science. In the middle of the century, the first anesthetics began to be produced, and research on these substances grew substantially during the Victorian era. Opium, in the liquid form laudanum, and alcohol were already used to sedate human patients or experimental animals, but their effects were far from satisfactory when the goal was to suppress pain. In the second half of the nineteenth century, anesthetics such as morphine, ether, nitrous oxide, and chloroform began to be produced and used more widely and routinely in hospitals (Guerrini, 2003, p.79; Richards, 1992, p.162). According to Guerrini (2003, p.78), the introduction of anesthesia had a profound impact on the perception of pain and changed the relationship between physicians and patients, as well as the relationship between experimenters and animals. All of these developments were in consonance with the concerns of Victorians in alleviating pain for sufferers.

In fact, most of the denunciations and criticism on physiologists by antivivisectionists was with respect to cases in which anesthetics were not administered to the animals used in experiments. This seems to have been the main point of this ethical battle. According to Stewart Richards (1992, p.162), with the introduction of anesthetics, many antivivisection society leaders stopped opposing experiments and began to defend greater control and verification of the use of anesthesia. This was the position, for example, of John W. Graham, Dean of Dalton Hall, and Stephen Coleridge, head of the National Antivivisection Society – then the largest society of its type in the world – and also Sir Guillum Scott and Sir Frederick Banburry, both leaders of the RSPCA. This was also Frances Cobbe's initial position.

In her first article on the subject, Cobbe (1866) defended the validity of experiments involving the sacrifice of live animals, as long as they were performed in the name of the "true interests of science." She believed that the physiologist, employing chloroform, was able to perform these experiments without inflicting any pain and stated "[with the exception of] a few prolonged experiments of doubtful value, he can test at will any

scientific truth at the cost, perhaps, of life, but never of torture." Coherent with her religious convictions, Cobbe defended that in the use of anesthetics, one could see "the line which Providence has drawn for us in these latter days as clear as daylight," and declared that they were "the most beneficent discovery of ages," because they "altered the whole condition of the case between the man of science and the brutes" (p.594).

Rudolf Virchow, a renowned German scientist who frequently resorted to vivisection, would later hold a similar position, and in an article published in the scientific journal *Nature* in 1881, he defended that the ethical line determining the moral legitimacy of animal experiments should be pain; experiments in which pain was inflicted should be considered torture and therefore would be immoral from the religious standpoint (Richards, 1992, p.161).

According to Cobbe (1866, p.598), these were the criteria that should be applied when judging those who employed vivisection. However, her position changed over her life. When commenting, in an autobiography, on her first article on the subject (Cobbe, 1894b, p.563), the writer claims to have become stronger in her defense of animals over time, to the point of defending the complete abolition of vivisection experiments. In effect, reading Cobbe's texts on the question in chronological order reveals a change in position: from a certain credulity in British physiologists (in this first article, Cobbe criticized French physiologists, but reproduced the idea, then promoted in England, that experiments performed without administration of anesthetics were "comparatively rare" in her country) to direct criticism of their agendas, with exacerbated mistrust and hostility. There was no lack of reasons, as denunciations of cruelty against animals in U.K. laboratories multiplied.

In 1873, the antivivisectionist clamor was inflamed by the publication of the *Handbook for the physiological laboratory*, edited by Burdon-Sanderson. Issued in two volumes, the work was intended to be a practical guide for students who wished to develop their laboratory skills. For this reason, it described the protocol for experiments on animals in rich detail. In most of the procedures described, there was no mention of the use of anesthetics (Richards, 1987, p.133). Obviously the antivivisectionists, always at the ready, could not let this fact pass unnoticed, and the quantity of denunciations led to an inquiry by the Royal Commission on the Practice of Subjecting Live Animals to Experiments for Scientific Purposes – popularly known as the Royal Commission on Vivisection – in 1875 in order to investigate accusations of abuse committed in physiological experiments. The minutes of this meeting record the evidence by a Professor Rolleston, from Oxford, that, when questioned by Richard Hutton if, in his opinion, Sanderson's manual should be considered "a dangerous book to society," responded: "I am sorry to have to say I do think that is so" (Parliamentary Papers, 2005a, p.68).

Charles Darwin himself was invited to testify before the Royal Commission. He declared he had "great interest" in the subject of legitimizing physiological research and admitted he had participated in the "preparatory stages", but not the final text, of a bill to regulate vivisection, presented to the House of Commons by Doctor Lyon Playfair, an experimental physiologist. Asked if he had, at some time in his life, been involved directly or indirectly with the practice of experimentation on live animals, his response was a peremptory: "Never." However, when the investigator asked him to declare, before the commission, his

position on the validity of this type of practice, the naturalist did not beat around the bush: "The first thing that I would say is, that I am fully convinced that physiology can progress only by the aid of experiments on living animals." And he reiterated his vision: "I cannot think of any one step which has been made in physiology without that aid," because even if a few, precarious alternatives exist in some cases, "certainty such as is required for the progress of any science can be arrived at in the case of physiology only by means of experiments on living animals." Asked, then, what his opinion was on the proposal of complete prohibition of these experiments, Darwin said he believed such a measure would be "very bad," since he had various reasons for "a full conviction that hereafter physiology cannot fail to confer the highest benefits on mankind" (Parliamentary Papers, 2005a, p.234).

Charles Darwin's last words in his evidence before the Commission are on the question of the use of anesthetics to suppress pain. When the interviewer asked him "Is it your opinion that most of the experiments can be performed while the animal is entirely insensible to pain?", Darwin responded that he believed so, with the reservation that, despite his relative familiarity with physiological literature, he was not a physiologist himself, and for this reason he should not be considered an authority on this subject. Anyway, he declared, experiments would rarely be conducted without anesthetizing the animals. Next, the interviewer asked the naturalist if the physiologist should hesitate when a duly-anesthetized animal was before him, to which Darwin responded "certainly not," declaring that he found it "incomprehensible, to me, how someone could object to such experiments" and concluded: "I can understand [this in the case of] a Hindoo, who would [also] object to an animal being slaughtered for food ... but it is absolutely unintelligible to me on what ground the objection is made in this country [where we commonly eat meat]." Finally, the interviewer asked Darwin's for his viewpoint "with regard to trying a painful experiment without [administering] anaesthetics, when the same experiment would be made with anaesthetics, or, in short, inflicting any pain that is not absolutely necessary." Darwin's answer was incisive: "It deserves detestation and abhorrence." Then, he left the room (Parliamentary Papers, 2005a, p.234).

A careful reading of Darwin's testimony shows, however, that neither he nor his interviewer condemned experiments without anesthetics absolutely. Any apparent definitive moral prohibition was skillfully relativized via the carefully chosen words "when the same experiment would be made with anaesthetics" and "any pain that is not absolutely necessary," allowing that painful experiments could continue to be practiced as long as they were "absolutely necessary."

Although the Royal Commission's final report admitted to the existence of cases of indifference and cruelty in animal experiments and the need for specific legislation and sensible measures to avoid them, the final result of the process was quite unsatisfactory for the antivivisectionists. Enacted on August 15, 1876, the Cruelty to Animals Act, or Vivisection Act, as it became known, was marinated in so many legal channels, political negotiations and consequent alterations that its definitive text had, in the interpretation of Cobbe and many of her allies, a character almost the opposite of the original proposal. In practice, this "[made] it a measure, no longer protecting vivisected animals from torture,

but [rather] vivisectors from prosecution under Martin's act," a more general law protecting animals (Cobbe, 1894b, p.595).

The first lines of the Vivisection Act defined its goal as prohibiting cruelty to animals submitted to "experiments calculated to inflict pain" (Parliamentary Papers, 2005b, p.1). The fourth sub-paragraph in the third paragraph states: "The animal must during the whole of the experiment be under the influence of some anaesthic of sufficient power to prevent the animal feeling pain" (p.2). In the next sub-paragraph, the experimenter is urged to kill the animal if the pain persists after the effect of the anesthetic wears off. (Note once again that death is considered preferable to intense or prolonged pain.) However, there are exceptions to these rules, as specified in indents 2 and 3 of sub-paragraph 7 of the same paragraph: an experiment may be performed without using anesthetics in cases in which "insensibility cannot be produced without necessarily frustrating the object of such experiments," and killing the animal may also not be required if doing so would frustrate the experimental objectives (p.2).

Full of these rhetorical maneuvers, the final tone of the text of the Cruelty to Animals Act appears to have been to the taste of the physiologists, even though this did not prevent criticism on their part of the restrictions under the new law (Guerrini, 2003). To Frances Cobbe, the innumerable exceptions allowed many types of abuse and absurdities, especially because many vivisection operations performed then were carried out to study the function of the nervous system, which required them to be performed without the use of anesthetics (Cobbe, 1894b, p.575). As per the precepts of the Vivisection Act, this was expected and legitimate, but in practice resulted in the performance of hundreds of experiments in which many types of animals were submitted to excruciating, prolonged pain – all under the protection of a law that should have protected animals in this very situation.

This state of affairs led Doctor George Hoggan, who noted the devastating proliferation of vivisection experiments, to comment in the letter published in the *Morning Post* in 1875 and mentioned above, that he was inclined to consider anesthetics the greatest curse for animals capable of undergoing vivisection, because they constituted yet another effective way to calm the sentiments of the public with respect to vivisectionists, rather than something really capable of eliminating the pain of the animals used (Hoggan, 1875, p.3).

Cobbe *versus* Darwin: radicalization of positions and exacerbation of the confrontation

The distance between prohibition of all painful experiments – defended by most antivivisectionists – and the prohibition of painful experiments considered 'unnecessary' is an important mark in the exacerbation of the battle between the antagonists. After all, who decides what is "absolutely necessary"? Which experiments fit this category? A letter from Darwin to his daughter Henrietta sheds light on the position of the evolutionist in this respect. Written on January 4, 1875 (the year of the Royal Commission investigation on vivisection) in response to one sent by his daughter, asking him to support a campaign

restricting vivisection, Darwin stated that he believed that the conclusions that he had arrived at on the subject would be "very unsatisfactory" to Henrietta. And he explains:

> I have long thought physiology one of the greatest of sciences, sure sooner, or more probably later, greatly to benefit mankind; but, judging from all other sciences, the benefits will accrue only indirectly in the search for abstract truth. It is certain that physiology can progress only by experiments on living animals. Therefore the proposal to limit research to points of which we can now see the bearings in regard to health, &c., I look at as puerile. I thought at first it would be good to limit vivisection to public laboratories; but I have heard only of those in London and Cambridge, and I think Oxford; but probably there may be a few others. Therefore only men living in a few great towns would carry on investigation, and this I should consider a great evil (cited in Darwin, 1887, p.203).

Note that Darwin was opposed to restricting the locations in which the practice of vivisection would be allowed, believing that this would impede the growth of innumerable young talents, and thus stunting the growth of experimental physiology in his country. But he also opposed much more:

> If private men were permitted to work in their own houses, and required a license, *I do not see who is to determine whether any particular man should receive one*. It is young unknown men who are most likely to do good work. I would gladly punish severely any one who operated on an animal not rendered insensible, if the experiment made this possible; but here again *I do not see that a magistrate or jury could possibly determine such a point*. Therefore I conclude, if (as is likely) some experiments have been tried too often, or *anæsthetics have not been used when they could have been*, the cure must be in the improvement of humanitarian feelings. Under this point of view I have rejoiced at the present agitation. If stringent laws are passed, and this is likely, seeing how unscientific the House of Commons is, and that the gentlemen of England are humane, as long as their sports are not considered, which entail a hundred or thousand-fold more suffering than the experiments of physiologists – if such laws are passed, the result will assuredly be that physiology, which has been until within the last few years at a standstill in England, will languish or quite cease. It will then be carried on solely on the Continent; and there will be so many the fewer workers on this grand subject, and this I should greatly regret. By the way, F. Balfour, who has worked for two or three years in the laboratory at Cambridge, declares to George that he has never seen an experiment, except with animals rendered insensible. No doubt the names of doctors will have great weight with the House of Commons; but very many practitioners neither know nor care anything about the progress of knowledge (cited in Darwin, 1887, p.203; emphasis added).

In this passage of the same letter he mentions the question of licenses to practice vivisection: who would grant them, who would have a right to them, and based on what criteria would they be granted or canceled? And Darwin's conclusion – implicit, but no less obvious for this reason – is that there should not be many restriction on vivisection. Note that he also questions the competence of magistrates to decide on such issues and criticizes the House of Commons, considering it "unscientific" in its decisions in favor of laws restricting animal experiments. Finally, it is worthwhile to point out the section in which the naturalist indicates the necessity to improve humanitarian sentiments, in the cases in which anesthetics were not employed "when they could have been." Based on all of these assertions, it is perhaps not an exaggeration to state that, despite his personal

aversion to painful experiments and animal cruelty, for practical purposes and in the name of science Darwin appeared to oppose, in principle, any and all legal restrictions on vivisection. He delegates the responsibility and authority for these choices to the physiologists:

> I cannot at present see my way to sign any petition, without hearing what physiologists thought would be its effect, and then judging for myself. I certainly could not sign the paper sent me by Miss Cobbe, with its monstrous (as it seems to me) attack on Virchow for experimenting on the *Trichinæ* (cited in Darwin, 1887, p.203).

The tone of Darwin's letter suggests that the friendly relationship with Cobbe had come to an end, and he condemned her defamatory campaigns and petitions vehemently. Note also that the naturalist makes clear who he feels tied to by a commitment of loyalty: to the physiologists, represented in this passage by Virchow. They determine which petitions he should sign; they decide when animal suffering is justifiable; they should have the last word.

At the start of her antivivisectionist trajectory, Cobbe did not unconditionally oppose animal experiments. In her first text on the subject, published in 1863, she sustained that humans had the right to take the lives of animals to satisfy "man's wants, even if those wants be ever so small, but not for his wantonness; nor may [the lives of animals] be taken in any case with needless infliction of pain" (Cobbe, 1866, p.593). Among the human necessities to which she referred, Cobbe included the claims of science, stating that this motive was even more legitimate than killing animals for food: the latter being to mitigate the hunger of the body, whereas the former was at the service of a much nobler purpose, namely, to placate the hunger of the spirit in its search for truth (p.593).

Thus, even though Cobbe had left the RSPCA because of their excessive tolerance of the physiologists' agenda, when founding the Victoria Street Society, she did not change her moderate position with respect to abuse committed in animal experiments. With the enactment of the Vivisection Act, however, her indignation led her to defend a much more radical stance for the society she led, namely, that of complete abolition of vivisection in physiological laboratories (Cobbe, 1894b, p.605). This decision was made official on August 7, 1878, and from then on the Victoria Street Society, renamed the Society for Protection of Animals from Vivisection, began to be more aggressive and included acts such as exhibition, in public streets, of posters with images of animals open and mutilated, published in books on physiology, with the intention of shocking the public (p.599).

In the confrontation between a sort of fervent bioethics and a burgeoning science, the political position of most Darwinist researchers in defense of the advance of physiological research and, consequently, the legitimization of experiments with live animals had, therefore, the effect of increasing the animosity between Darwinists and antivivisectionists, including mutual accusations in the press and political maneuvers at all levels. In this respect, Charles Darwin and Frances Power Cobbe were seen as two important authorities, each on one side of this political and ideological quarrel, and the public debate between them appears to have resourced to periodicals as the principal forum.

On April 18, 1881 a letter from Darwin addressed to Frithjof Holmgreen was published in *The Times*, with Darwin's permission, in response to a letter sent to him by this Swedish physiologist, and which the London newspaper entitled "Mr. Darwin on vivisection." In

the letter, Darwin states that he knows that "physiology cannot possibly progress except by means of experiments on living animals," and affirms that he has "the deepest conviction that he who retards the progress of physiology commits a crime against mankind." To reinforce his argument, he cites as advances obtained through physiology Louis Pasteur's studies with 'germs' and Virchow's studies with parasitic worms (Darwin, 1905, p.382). The following day, Frances Cobbe published, also in The Times, an article entitled "Mr. Darwin and vivisection." Refusing to discuss the alleged benefits of vivisection – an area in which she admitted her lack of qualifications – Cobbe (Jan. 18, 1881, p.8) focused her firepower on the debate of the "principles of the evolution philosophy" and stated that this philosophy overestimated the scientific advance of physiology, and did not take into account the disappearance of the sentiments of compassion and kindness implied in this process. She concluded her letter asking: "What shall it profit a man if he gain the whole world of knowledge and lose his own heart and his own consciousness?" (p.8). Other letters with accusations followed these two open letters, with arguments and counter-arguments by Darwin and Cobbe[9], revealing Cobbe's more radical position with respect to vivisection, and by extension to the modern science of the time, and to Darwinism as an icon of this new scientific model, which can be seen clearly, for example, in *Darwinism in morals* (Cobbe, 1872) and in *The scientific spirit of the age* (Cobbe, 1888).

The animal on the vivisection table and the construction of the social and collective identity

We have already mentioned that, in Darwin's evidence before the Royal Commission on his position with respect to vivisection, his interviewer asked him if, in his opinion, a physiologist should hesitate when a duly insensible animal was before him, and obtained from Darwin the response "certainly not." The question was probably related to the evidence by Burdon-Sanderson, one of the most respected physiologists of the time and a Darwin ally, who was asked about his opinion concerning the attitude of Robert Christion, who stopped an experiment because he could not stand the agony he was inflicting on the animal. The physiologist's answer was categorical: "I think that a man after devising a method which he believes to be the best method that can be used for the purpose [he has in mind], and having considered the pain that is likely to be inflicted, should not desist in the middle because pain is inflicted" (Parliamentary Papers, 2005b, p.145). Nine years later, on February 9, 1884, when commenting on Sanderson's position in an editorial, Richard Hutton, the editor of *Spectator*, observed that it was impossible to conceive of a more mortal blow against true humanity than the principle defended by this scientist, that a competent physiologist, in order to increase the scope of his science, is free to inflict on animals any amount of anguish he judges necessary to solve a physiological problem (The Oxford..., Feb. 9, 1884). Note that the position of each individual when faced with an animal suffering on the vivisection table functioned as a sort of dividing line: the physiologist who would abandon a scientific experiment, or even a promising career, because he could not stand the suffering inflicted on the animals was considered a hero by the antivivisectionists and a possible ally, but by professional colleagues he was considered weak and a probable adversary.

The August 22, 1863 issue of the *British Medical Journal* published a report of an eyewitness to an experiment carried out by Magendie, in which the physiologist operated on a "poor dog" that, "all bloody and mutilated," had twice escaped from "his implacable knife" and twice put his paws around Magendie's neck and licked his face. The witness concluded by saying "I confess – laugh, Messieurs les Vivisecteurs, if you please – that I could not bear the sight," which led him to leave the room (Vivisections..., Aug. 22, 1863). This moving report did not go unnoticed by Frances Cobbe, who mentioned the episode in her first article on vivisection, published in the same year:

> There is a story extant, so hideous that we hesitate to tell it, of a certain man of science who performed on his dog what he was pleased to term *une experience morale*. He tortured it for days in a peculiarly horrible manner, to try when the animal's affection would be overcome by his cruelty. The result proved that the dog died without ceasing to show his humble devotion to the man (or *monster,* we should say) who put him to such a test. The indignation which this fiendish act arouses in our minds is not solely a moral reprobation: it partakes also of the bitterness provoked by an outrage upon the affections (Cobbe, 1866, p.595, emphasis in the original).

Although Cobbe did not make explicit reference to this "certain man of science," the similarity between the episode she narrated and that described above, published a few months before – in addition to the allusion to the French origin of the protagonist – does not leave room to doubt that the situation mentioned was the same. Note that in Cobbe's text, the researcher – "or monster, we should say" – had in that case not only tortured the animal physically for an extended period, but also tortured it emotionally, and for this reason his act should be condemned not only as morally reproachable, but also "of the bitterness provoked by an outrage upon the affections," of the loyal and unconditional love of a dog for its owner until the last breath.

How did Darwin react to this narrative? We know that he was clearly not indifferent to animal suffering, and that the ethical implications of animal suffering were among his philosophical reflections. His sensitivity to the pain of others included a profound aversion to mistreatment of animals, an attitude known by those in his sphere. He criticized the methods for training circus dogs (Darwin, 1905); was co-author with his wife, Emma, of a manifesto she initiated to suspend the use of steel traps to capture and kill wild animals in order to sell their fur (Litchfield, 1915, p.178); and, as local magistrate, he interceded in cases of mistreatment of farm animals, and was unmerciful when imposing fines and punishment (Browne, 2003, p.420).

In a passage in *Descent*, in which he discusses the gradual evolution of morals in human civilizations, Darwin (1998a, p.126) states that one of the last moral acquisitions of humans would be "sympathy beyond the confines of man," which would include animals in the sphere of human moral considerations. Actually, the subject of vivisection bothered Darwin personally, and in his house this practice was not looked well upon, which led him to warn his friend George Romanes to not bring up the subject "in the presence of my ladies [his wife and daughters]" (Browne, 2003, p.421). Despite his revulsion towards vivisection, when faced with this dilemma, the evolutionist had to choose between two commitments and, regardless of family conflicts, his public position was clear: he supported the advance

of science and, if animal suffering was part of the price to be paid, that was acceptable. This position is clearly stated in a letter he wrote to Prof. Lankester in March of 1871, in which he stated that, although vivisection was a subject that left him "sick with horror," he admitted that the practice was justifiable, if "for real investigations on physiology; but not for mere damnable and detestable curiosity" (cited in Darwin, 1887, p.200).

With respect to the denunciation of Magendie's cruelty, commented upon caustically by Frances Cobbe, there is a section in *Descent* in which Darwin, without naming names, probably refers to the incident:

> In the agony of death a dog has been known to caress his master, and every one has heard of the dog suffering under vivisection, who licked the hand of the operator; this man, *unless the operation was fully justified by an increase of our knowledge*, or unless he had a heart of stone, must have felt remorse to the last hour of his life (Darwin, 1998a, p.71; emphasis added).

In this passage, in which the relationship between a scientist and his dog is put to the test, it is clear the value which Darwin attributed to the love of a dog for its master and the moral responsibility of the master to return this love. Darwin's moral condemnation of cruelty to an animal could very well serve an antivivisection campaign, were it not for the hedge: "unless the operation was fully justified by an increase of our knowledge." Through this statement, however, Darwin points out a conflict of values and interests, as well as a decision on priorities. A man who acts with such indifference to the affection of a dog "must have felt remorse to the last hour of his life," or he must be someone with "a heart of stone." There is, however, another possibility capable of redeeming this person, namely, that he may be acting in the name of a nobler cause: the advance of scientific knowledge. In this case, his action should no longer be considered cruel or inhumane, because it is on behalf of all humanity.

Frances Cobbe's position was quite different. Although, as we have seen, her initial position with respect to vivisection was for restrictions, and not complete prohibition of experiments, she became more radical over the years. The change appears to have been due to successive frustrations with the expansion of experimental physiology and the vivisectionist agenda, in addition to her (upset) perplexity concerning the gradual increase of the power of scientists in the social sphere. In the first essay in her book *The scientific spirit of the age*, with the same name, Cobbe (1888) refers to the autobiography of Darwin, then recent and published posthumously. She comments on a passage in which Darwin shows a gradual decrease of interest in the arts, poetry and religion as he began to immerse himself in scientific studies, becoming, in his own words, "a machine for grinding general laws out of large collections of facts" (p.6). Based on this argument, Cobbe (p.5) asks the reader:

> What shall it profit a man if he discover the origin of species and know exactly how earth-worms and sun-dews conduct themselves, if all the while he grow blind to the loveliness of nature, deaf to music, insensible to poetry, and as unable to lift his soul to the Divine and Eternal as was the primeval Ape from whom he has descended? Is this all that Science can do for her devotee?

The irony, alluding to the title of the great inaugural work of the Darwinist program and to some kinds of organisms studied by Darwin, seems to argue the priorities and limits on the search for knowledge, which is clear when Cobbe states: "the noblest [object of] study of mankind is Man, rather than rock or insect; and that, even at its best, Knowledge is immeasurably less precious than Goodness and Love" (Cobbe, 1888, p.6). Her criticism of what she called the "scientific spirit of the age" was already, at this point in the trajectory of Cobbean thought, completely explicit. So much so that on the first page of the essay the author openly declared: "We still in our time have War; but it is no longer the conflict of valiant soldiers, but the game of scientific strategists" (p.3). Cobbe stated that during most of her life her relationship with scientific knowledge was permeated by a "profound, though always distant, admiration," but that her viewpoint with respect to science changed as she aged and was made aware of the demands and consequences of the advance of the discourse and practices that characterized this "scientific spirit of the age" (p.6). Six years after Darwin's death, nothing had attenuated Cobbe's criticism of the Darwinist themes and agendas and of science as a whole, to which she attributed the effect of dulling of aesthetic and moral sensibilities. And with respect to vivisection, she warned her contemporaries of a sort of new disease spreading rapidly and lethally in civilized societies: "the vice of scientific cruelty" (Cobbe, 1894b, p.606), which she described thus:

> [This vice] is not like other human vices, [that are] hot and thoughtless. The man possessed by [this vice] is calm, cool, deliberate; perfectly cognizant of what he is doing ... It does not seize the ignorant or hunger-driven or brutalized classes; but the cultivated, the well-fed, the well-dressed, the civilized and (it is said) the otherwise kindly-disposed and genial men of science, forming part of the most intellectual circles in Europe ...; men addicted to high speculation on all the mysteries of the universe; men who hope to found the Religion of the Future, and to leave the impress of their minds upon their age, and upon generations yet to be born (p.607).

In this passage it is important to note that the author attributes greater seriousness, a greater moral weight to this "new vice." This is because one would expect from physiologists – as they proceed from the literate, upper classes – a higher moral consciousness and, therefore, greater social responsibility. They cannot claim innocence; they were not brutalized by oppressive social conditions; they act coldly, calmly and consciously. This hard-heartedness in dealing with a suffering animal, this "heart of stone" that Darwin attributed to the scientist who persisted in torturing the dog who licked his hand, are the target of Doctor Hoggan's analysis in his letter to the *Morning Post*. The physician states: "Were the feelings of the experimental physiologists not blunted, they could not long continue the practice of vivisection" (Hoggan, February 1, 1875). Or in other words, only through a process of progressive emotional numbness could a human with access to a rich cultural universe manage to turn himself insensitive enough to be able to torture hundreds of animals and witness their suffering with indifference.

Although Doctor Hoggan's letter referred to experiments performed in Claude Bernard's laboratory, denunciations of cruelty multiplied in England too. The words of W.A.B. Scott, a London physician and former student of Burdon-Sanderson, drew a picture of indifference towards animal suffering similar to that described by Hoggan. According to

the young physician, the animals were "certainly" not anesthetized during the entire duration of the experiments. Additionally, in the work environment, of doubtful moral status, the main motivation of the researchers was to obtain "prominence"; an atmosphere of "zealous students [doing] it in pursuit of medals and scholarships and to get mentioned favorably in periodicals" (Richards, 1992, p.167). It was with this argument that Cobbe, supported by the statements of Darwin himself in his autobiography, created doubt about science's ability to "to build up not theories, but men" (Cobbe, 1888, p.4).

Final considerations

Charles Darwin was, above all, a scientist. And Frances Cobbe was, above all, a moralist. This is, in a nutshell, the reason why their paths took such different directions. Charles Darwin built his personal and political identity based first and foremost on the image of a prestigious scientist. At the same time, Frances Cobbe presented herself to the world as a devoted social activist engaged in the discussion of the ethical foundations on which individual and social choices were based, and which should guide public policies. Darwin's main purpose in life was to advance science, scientific progress; that of Cobbe was moral progress. The purpose of her political efforts was to increase the human moral community to encompass, more justly, all socially and historically excluded categories, such as victims of all sorts of oppression or injustice, including women, the poor and animals.

The difference in social positions is directly related to the different viewpoints of the two authors on the status and frontiers of science. Cobbe adhered to a concept of morals based on theology and defended a classical humanist pedagogy, based on appreciation of ethics, aesthetics, poetry and art and the examples of the moral heroes of humankind. She sustained the idea that these were the supreme values that should guide and define limits on any and all human undertakings, including science. Thus, civil society would be responsible for establishing the frontiers of science, based on a religion-inspired moral framework, even if not orthodox Christianity. Darwin, however, despite corresponding in many aspects to the ideal decent and respectable Victorian gentleman, and despite personally being uncomfortable with respect to vivisection, believed that the responsibility and power to define the frontiers of science should be delegated to scientists, based on technical, more than humanitarian guidelines. And even though he had stated the opposite, evidence indicates that, in practice, the naturalist was opposed to any and all legal restrictions on vivisection. Strategic reasons may have been the cause, since he feared that any restrictions could create precedents for an increasingly large restriction on experimental physiology, with harmful effects on medical and scientific developments in Britain.

We can thus say that in a broader way the vivisection table represented the dividing line between two moral decision possibilities. It was in this space, in which animals suffered, that Darwin's paths split, forcing him to make a radical choice. On this table, the trajectories of Charles Darwin and Frances Cobbe pointed to diametrically opposite directions. If it was their love and admiration for dogs – their intelligence, playfulness, and immense affection for humans – that Darwin and Cobbe had in common, it was their choices when faced with this same dog – its cries, its pleading, the sacrifice of this affection – that

set them apart. While the humanist militant opted for what she considered a moral and religious commitment, to honor the ancestral pact of mutual affection between man and dog, the eminent naturalist also resorted to arguments with an ethical basis, regarding the benefits of this practice for human welfare. In the final analysis, perhaps one can say that the major differential between these two actors is related to the political and moral status of scientific knowledge in the social fabric and in the advance of the civilizing process, a theme that will be debated more profoundly in the doctoral dissertation, soon to be completed, from which this article was drawn. Nevertheless, at this time, in which the Western world celebrates the two hundred year birthday of Charles Darwin and the 150 years since the publication of his most important work, we feel it is relevant to introduce the Brazilian and South American academic community to Frances Power Cobbe, who was, in her time, a significant political and ideological adversary of Darwin's and of Darwinism, but only peripherally studied even in international literature.

NOTES

[1] The current publications by Brazilian authors on the ethical aspects of the relationship between humans and animals may have sections related to the history of the subject – such as in the book by Rita Paixão (2008) – but in them history serves to contextualize the subject for the reader and is not the focus of debate.

[2] The origin of the word vivisection is the combination of the two Latin terms *vivus* (alive) and *sectio* (cut, section), thus meaning "to cut a live body," while dissection refers to "cutting a dead body" (Paixão, 2008, p.21).

[3] Based on summaries of letters available on the Darwin's Correspondence Project site (http://www.darwinproject.ac.uk/darwin/search/advanced?query=addressee:"Cobbe%2C+F.+P.).

[4] A renowned German physician and microscopist, considered the father of modern pathology and one of the principal scientists responsible for the abandonment of the notion that diseases were a result of an imbalance between the humors, believed since the time of Hippocrates. In place of this idea and based on cellular theory, Virchow proposed the argument that every cell came from another cell (*omnis cellula e cellula*). Virchow employed vivisection regularly (Thain, Hickman, 2004, p.734).

[5] It is important to stress that, following Turner (1980, p.86), this article considers antivivisectionists to be all social actors that engaged in fighting the abuses committed against animals in physiological experiments. However, the word is used here to designate both those who defended the need for restrictions on the practice of vivisection and those who fought for its total prohibition, regardless of the conditions under which experiments were performed.

[6] According to Wilkins (2003), the idea of a battle for survival was already common in the nineteenth century, and it was by reading Charles Lyell that Darwin first saw this expression.

[7] Eight years earlier, in 1863, Darwinist authors published two works: *The antiquity of man* and *Man's place in nature*, by Charles Lyell and Thomas Henry Huxley, respectively, which directly addressed the question of man's place in nature. Lyell and Huxley were personal friends and collaborators of Darwin and were involved in supporting and promoting the Darwinist research program (Hull, 1985). We stress that classifying one author or another as Darwinist in this article does not imply unconditional intellectual submission to all Darwin's theses with respect to the evolution of biological species. Upon first contact with the texts of any of these authors – for example with those of Huxley and Lyell – one clearly sees that they were original, independent thinkers. Following Hull (1985), we consider Darwinists those who promoted the Darwinist program as a conceptual system in some way and were members of the social network committed to the Darwinist political and academic agendas.

[8] Actually, *Descent* is split into two parts. The first is dedicated to defending the Darwinist theory of sexual selection, a process through which females exercise a power of choice that affects the characteristics of males in most animal groups that have evident sexual dimorphism. Darwin suggested that males fight

for females either through physical combat or through their presentation of characteristics indicating their reproductive capacity. Defending the act of sexual selection in the evolution of the human species, he proposed that this selective mechanism would allow us to think about how the variation observable in different *Homo sapiens* populations arose.

[9] Actually, the publication of this open letter from Charles Darwin to Professor Holmgreen in the pages of *The Times* unleashed a true torrent of correspondence in the newspaper on the topic, most criticizing Darwin's position supporting vivisection, but there were some supporting him. These letters were from all kinds of contributors, from anonymous writers to well-known scientists such as George Romanes, an important evolutionist and one of Darwin's allies, and Richard Hutton, editor of *Spectator*. In this article, however, our focus will continue to be centered on Darwin and Cobbe.

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