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Woman's Brain, Man's Brain: feminism and anthropology in late nineteenth-century France^[1]

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ABSTRACT This article deals with the tangled web of late nineteenth-century French arguments for the biological inferiority of women and of non-whites. These arguments were largely based on an anthropological paradigm: the brain was materialist in its function and brain size was therefore linked to intelligence. The article demonstrates that these arguments were linked to progressive, anticlerical, masculinist Republican views by analysing the anthropological work of a woman anthropologist, feminist and socialist, Dr Madeleine Pelletier, work in which she struggled to subvert the paradigm in its application to women.

'In general, the brain is larger in mature adults than in the elderly, in men than in women, in eminent men than in men of mediocre talent, in superior races than in inferior races.' Paul Broca, the founder of French anthropology, went on to explain the significance of this pattern: 'There is a remarkable relationship between the development of intelligence and the volume of the brain'.^[2] Broca's statement went largely unchallenged in nineteenth-century science. Indeed, I shall argue that the assumption of a relationship between intelligence and brain size constituted a fundamental paradigm not only for science but also for the Republican world-view in France.

Since women are generally smaller than men, their brains are smaller. The paradigm thus posed a problem for feminists. How did a feminist anthropologist face it? Dr Madeleine Pelletier (1874-1939) ^[3], a radical feminist and socialist most active in the decade after 1900, trained as an anthropologist at the turn of the century. In 1900, she was on her way to becoming a leading feminist and socialist activist. She became Secretary of La Solidarité des femmes (Women's Solidarity) in 1906 and made of it the most radical feminist organisation of the time. She represented this group in

the famous 1908 Hyde Park demonstrations for women's suffrage. She was a founding member of the unified French Socialist Party (the Section Française de l'Internationale Ouvrière) in 1905, sat on its national council until the War and represented the party at most international socialist congresses before the War.

Pelletier was a powerful and, indeed, original thinker, as a succession of books was to prove.[4] Her scientific background put her in a good position to challenge the paradigm. She managed to subvert the paradigm and to demonstrate that brain size was irrelevant to sexual differences in intelligence, but difficulties and ambiguities persisted, especially in her application of the paradigm to racial differences in intelligence, and she accepted the materialist base of Broca's paradigm. Instead of challenging it frontally as an anthropologist, however, she ultimately abandoned anthropology for psychology, becoming in 1906 the first woman to sit the competitive examination to become an alienist (or psychiatrist).

Pelletier's paradoxical relation to Broca's paradigm demonstrates its centrality to nineteenth-century progressive thought, in which it was profoundly embedded. That the brain was a machine reinforced the secular, materialist view of the world. That women's brains were smaller than men's justified the male domination of the Republic. That measurements based on preconceived notions showed - wrongly - non-white brains to be smaller than white brains legitimated European domination of the world. Each of these claims strengthened the others. This is the context in which we must place Pelletier's struggle against Broca's paradigm.

Paul Broca's Paradigm, the Republican World-view and Madeleine Pelletier

Brain size is in itself irrelevant to intelligence.[5] For nineteenth-century science, however, the correlation of brain size with intelligence was not only self-evident, but also essential to the materialist cosmology (in opposition to the religious notion of the soul) which underpinned the Republic, nowhere more than in progressive, Republican circles in France. 'A biomedical discourse ... constructed by medical scientists in this era', as Robert Nye puts it, inscribed on the body both male superiority and white supremacy.[6] 'This morphological evidence had a powerfully naturalizing effect on the whole argument', as Joan Scott points out.[7] It was embedded in mainstream Republican thought, even among humane conservatives like Emile Durkheim, who in 1893 cited approvingly Gustave Le Bon's formulation: 'the volume of the skull of a man or woman, ... presents considerable differences in favour of the man'.[8] Other anthropologists would contest this result, as we shall see, but not the paradigm within which they all operated.

Pelletier's world-view was that of these scientific circles in which she trained. She was a committed Republican and, more unusually for a woman, a committed Freemason. She remained a Mason all her life and narrowly missed persuading the main French Masonic Order (or 'Obedience') to admit 'mixed' Masonic Lodges, which existed on its fringes.[9] In the early 1930s she encouraged a friend to found a 'mixed' lodge in Yugoslavia![10]

Pelletier's mindset was that of progressive Republicans of her epoch. Her feminism, like that of her sisters, was based on Republicanism, for it was an extension of the logic of equality in the Republican view.[11] It involved flattening physiological differences between men and women.[12] It was an assertion of the Republican citizen, not as embodied, but as disembodied. For Republicans, anticlerical materialism was essential. Pelletier shared with other Republicans the prevailing materialist paradigm. She did not accept that women's smaller brains proved their inferiority, but as an anthropologist she accepted that the relation between brain size and 'intellectual development is no longer doubted today'.[13] She could not completely resolve the problem posed by the reigning anthropological paradigm, much less reject it en bloc, until she abandoned anthropology altogether.

The Republican World-view and the Nineteenth-century Gender Order

Was this only because the anthropological paradigm was so important to the materialist epistemology embedded in the Republican world-view? Carole Pateman and other scholars have suggested that the process of articulating and formulating equality of rank in the eighteenth century was based on the exclusion of women, involving as it did the transition from a society formally based on subordination to the king (all are children of the king) to one formally based on equality of (male) citizens (all men are brothers). There is no doubt that the logic of equality, embedded in the French Revolution, was a powerful tool that women like Pelletier turned against male domination. But the process through which that logic emerged, its original context, involved a powerful and inherent male domination. The struggle between the two has been the feminist struggle.

From this perspective, the subordination of women in the writings of the *philosophes* and their formal exclusion from the new polity were not accidental, but intrinsic in and essential to its construction. In the new society, women were initially assigned the subordinate, domestic and nurturing gender roles articulated so well in Rousseau's writings.[14] 'The male is only a male now and again, the female is always a female'.[15]

The new gender order was also linked to anticlericalism throughout the nineteenth century. A fundamental text of Republicanism was Jules

Michelet's celebrated essay, *Du prêtre, de la femme et de la famille* (Priest, Woman and Family - 1845). Michelet's essay remained popular well into the next century.[16] Bourgeois families often recognised the Church's hold implicitly by sending girls to Catholic schools (for reasons of 'morality'), while sending boys to state schools. Thus, Michelet argued, bourgeois women were under the thrall of the priest, the ideological enemy: 'Our [*sic*] wives and our daughters are raised, governed, *by our enemies*. ... *Enemies of the modern world-view* [original italics]'.[17]

Above all, the priest was the enemy sexually. He was 'the husband's rival [literally "the envious one"] and his secret enemy'.[18] Michelet's preoccupation with male sexual inadequacy might seem pathological today, but it reveals the depths of the anticlerical struggle and its link to male domination. Michelet reported on numerous manuals of confession. They suggested, he concluded, that priests interrogate women about their sexual habits. (There was some basis for this, since the Church was seeking increasingly to repress non-reproductive sex.) Having learned a woman's sexual secrets, the priest had an advantage. The husband, Michelet argued, was 'widower of the soul':

What humiliation, to obtain nothing of that which was yours except by authorisation and by indulgence, to be pursued in the most intimate intimacy [*sic*] by an invisible witness who rules you [the husband; the book was addressed only to men] and apports your part, to meet in the street a man who knows better than you your secret weaknesses.[19]

Michelet was also totally materialist. In another work, he reported that he had wished to understand 'the spirit of little children'. He decided that anatomy held the key and so arranged to be present when a doctor friend 'dissected several [bodies of] children'.[20]

Emile Zola carried this conviction to the point of paranoia in his novel, *La Conquête de Plassans* (A Priest in the House - 1874), in which a priest uses his influence with the women of a provincial town to sap the Republican convictions of the men. In Roger Martin du Gard's *Jean Barois* (1913), the protagonist's marriage breaks down because his wife maintains her Catholicism against rationalist Dreyfusard convictions.

Anthropology, Materialism and Anticlericalism

Nineteenth-century science, inherently anticlerical and materialist, reflected the new gender order and sought to inscribe it on the body, thus, in Nye's words, 'giving the appearance of *naturalness* [original italics] to the political arrangements of post-revolutionary society'.[21] Broca and the Paris School of Anthropology were at the forefront of this effort.

They were also at the forefront of the effort to establish materialism and atheism as fundamental tenets of Republican science. A majority of the population still professed allegiance to the Roman Catholic Church, which remained the established religion until 1904. The Church's support for the monarchy after 1848 set it against Republicans. The Church assumed that the real world was spiritual, not material, and that faith, not reason, was required to know its truths. Republicans assumed that the world that mattered, indeed the only world, was material and that human reason could fully comprehend that world. If the soul were something transcendent, the Church was right. If the brain were a machine that contained all the psychic part of humanity, then the Republicans were right.

Broca began the understanding of the brain from a materialist perspective. Broca was (and is) most famous for his discovery of the part of the brain which controls articulate speech and which is still called Broca's area. This discovery 'was one of the first indications that specific brain functions exist in particular locales in the brain, that there is a connection between the anatomy of the brain and what the brain does, an activity sometimes described as "mind" [22] or soul. The soul was the last refuge of the Church. Broca's discovery led to the expectation that the rest of the brain would soon be understood in the same way and that the human psyche - what believers called the soul - would ultimately be reduced to a material base. In that expectation, Broca left his brain to the Musée de l'Homme, a museum of anthropology, where Carl Sagan found it a century later.[23]

Anthropology, which Broca founded in France, was based on the paradigmatic assumption that the brain was a material entity, a machine. If the brain was indeed a machine, then, logically, brain size and intelligence were related. And if women's brains were smaller than men's, as those of 'inferior races' were smaller than whites' and those of the 'lower orders' were smaller than those of the bourgeoisie', then the gender, racial and class orders at the heart of the Republic were natural.

This paradigm was widely accepted throughout the European scientific community. It replicated and reinforced the hegemonic assumptions of nineteenth-century Republicans and indeed, by the end of the century, of French society as a whole. Opposition came only from the extreme right, from those who dissented from the Republican settlement. Broca and his disciples were neither racist nor misogynist by the standards of their time. They were freethinking Republicans. It was precisely their progressive social and political views, based on materialism and anticlericalism, which attracted them to this kind of approach. A material explanation of brain activity did away with superstitious notions of the soul and permitted scientific, objective measurement. These anthropologists, and indeed medical scientists in general, were progressive Republicans, not despite their belief in the

paradigm but because of it. It enabled them to undertake their objective, scientific studies, and it justified the Republic's conquest of colonies and its exclusion of women as well as its anticlericalism.

Because brain size and intelligence were assumed to be related, the study of skulls - craniology - was expected to provide an objective base for anthropology. So important to anthropology was the perceived link between this aspect of anatomy and the understanding of peoples that the University of Paris chair of anthropology was created (in 1855) by merging chairs of anatomy and natural history.[24] Founded in 1859 by Broca, the School of Anthropology of Paris also reflected these assumptions. Broca himself was a leading expert in craniology. Early in the history of the Society, he emphasised its importance:

Among the questions heretofore discussed within the Anthropological Society, none is equal in interest and importance to the question before us now. ... The great importance of craniology has struck anthropologists with such force that many among us have neglected the other parts of our science in order to devote ourselves almost exclusively to the study of skulls. ... In such data, we hoped to find some information relevant to the intellectual value of the various human races.

...

Other things equal, there is a remarkable relationship between the development of intelligence and the volume of the brain.[25]

Women's brains were smaller than men's. Broca and his disciples therefore assumed that women were less intelligent than men. A materialist, Republican feminist aspiring to honors in the Society of Anthropology faced obvious difficulties with this paradigm.

Madeleine Pelletier's Training as an Anthropologist

Pelletier studied with Broca's disciples. She shared their materialism and anticlericalism. She struggled against the assumption of women's inferiority, but she never succeeded in revising the anthropological paradigm to suit her needs. Instead, she ultimately found in psychology another paradigm. Until then, however, she measured skulls like other anthropologists, while seeking to remove the stigma of inferiority from women. Her anthropological work thus betrays a tension between her craniometrical studies and her ripening feminism. But both derived from the same materialist, anticlerical progressive base.

When Pelletier began her anthropological studies, the School of Anthropology, like the Society, was in the hands of two disciples of Broca: Charles Letourneau, who was secretary of the society from 1887 until his

death in 1902, and Léonce Manouvrier, who took his place in 1902.[26] Pelletier studied with both. These men were progressive in both the scientific and political contexts of their day. Indeed, the whole school was imbued with a Republican, anticlerical, positivist and materialist ambience. Upon Letourneau's death in 1902, Manouvrier gave the customary eulogy at a meeting of the Society and praised the deceased for his materialistic outlook and above all his anticlericalism:

From his adolescence ... it took little time for religious ideas to give way in the face of the logical force of positive [i.e. positivist] notions.

The struggle was not long, for this force is particularly efficacious in superior brains.[27]

All the ideas at the base of the Society are contained here: anticlericalism, materialism, positivism, and faith in 'superior brains'. This ensemble of ideas was central to Pelletier's adult personality and was more profoundly rooted than her feminism or socialism; she clung tenaciously to these ideas all her life.

Charles Letourneau was Broca's successor as leader of the progressive wing of anthropological thought, although he was a vulgariser rather than an initiator. He published many books and articles whose common theme was that religion, property, morality, indeed all human institutions, evolved through history and were not eternal and unchanging, as conservatives believed. He was one of the rare Parisian intellectuals of the time familiar with the work of Marx and Engels. Progressive, anticlerical, and open to socialism, he was just the man to inspire Pelletier. He took her under his wing and Pelletier responded warmly, even, she recalled, rejecting the advances (apparently intellectual) of the well-known feminist and scientific populariser, Céline Renooz.[28] Letourneau guided her intellectual development - he got her to read Marx's *Capital* [29] - and helped her through moral and financial crises.

Léonce Manouvrier was also progressive in his context. He was an anthropologist of distinction.[30] Robert Nye points out that Manouvrier was instrumental in the refutation of Cesare Lombroso's theories.[31] Lombroso argued that criminals were evolutionary throwbacks and that craniology could determine inherent criminality. (Craniology was the study of skulls to determine the nature of the mind; craniometry was the study of skulls to determine brain size.) Lombroso's *L'Uomo delinquente* had been translated into French in 1887.[32]

Like Letourneau, Manouvrier regarded law as a product of social evolution. He reminded his readers that many 'honest men' 'from the top to the bottom of the social scale', committed an 'innumerable multitude of acts of violence and of willful violations of common law'. But Manouvrier's success in refuting Lombroso derived from his outdoing him in the very field

of craniometry, to which Manouvrier devoted himself, building on Broca's methods.[33]

Manouvrier had, as Mary Lynn Stewart points out, suggested in 1885 that the ratio of brain size to overall size was more important than sex, but he never resiled from the conviction that brain size was the key to intelligence, nor indeed from the certainty that women were less intelligent than men.[34] In an article published in 1903, Manouvrier summarised his conclusions on the issue. He recognised that 'there are prejudices of sex, of race ... which are an unconscious part of one's mentality, even of that of a scientist'. Anti-feminist scientists showed signs of 'irritated prejudices'. But as a scientist, he felt constrained to acknowledge brain size as an unfortunate but unavoidable fact. He thus concluded that feminism was a symptom of a social ill, of the fact that women were often forced to work! Once women returned to their 'natural calling', feminism would disappear.[35]

Letourneau took a less anti-feminist position, but this was possible only because he did not practise craniology. He devoted one of his fourteen anthropological studies to 'The Evolution of Marriage and the Family' and another to 'The Evolution of Property'. Both owed much to Engels's *Origin of the Family, Private Property and the State*. Letourneau's last work, published posthumously in 1903, studied women's positions in various societies. Letourneau believed that 'our contemporary type of woman is intermediary between man and child'. Letourneau, however, followed J-B. de Monet Lamarck (1744-1829), who had argued that acquired characteristics could be transmitted by inheritance, and he suggested that women's inferiority was such an acquired characteristic. Women's return to public life would lead to their regaining energy and vitality. They would pass these characteristics on to their descendants. Their brains would grow in size and their descendants would become equal to men.[36] Conservatives like Durkheim and Le Bon, on the contrary, argued that, in the latter's words, 'this disparity [between male and female skulls] likewise increases with the advance of civilisation'.[37]

Madeleine Pelletier's Anthropological Studies: the struggle with Broca's paradigm

Letourneau's argument for potential could hardly satisfy Pelletier more than Manouvrier's frankly anti-feminist position. She believed herself equal in intelligence to men, indeed superior, already. She did not intend to wait for future women to be deemed equal. But she published anthropological studies that reflected the power of the paradigm. In a dense piece entitled 'Investigations on the Weight Indices of the Skull and of the Principal Bones of a Series of Japanese Skeletons' [38], Pelletier came closest to

challenging Broca's paradigm. It was buried in the *Bulletin of the Anthropology Society* in 1900. Mary Lynn Stewart asserts that, in this article, Pelletier 'rejected the whole exercise of relating intelligence ... to an organic mass'.[39]

Looking at the problem in context, however, shows that things were more complicated. Pelletier did not reject 'the whole exercise'. She did subvert, or at least circumvent, the paradigm in its application to women. 'Investigations on the Weight Indices of the Skull' developed two strategies to subvert the paradigm. The first and more important of the two was to reject its application to women. Pelletier pointed out that women had a larger cranial capacity than men, in proportion to their height and weight. She agreed that men's skulls were heavier than women's, but pointed out that the indices related not to sex but to 'the active mass of the organism'.[40] Here, she avoided, as Joan Scott points out, the trap of claiming 'superior female intelligence as a consequence'.[41] She argued against correlating such measures with sex: 'if woman has a heavier skull than her femur it is not as [*en tant que*] woman; but as a slighter being'.[42] This is a crucial distinction. It shifted the terrain from sex to size and enabled Pelletier to circumvent the arguments anti-feminists derived from women's smaller brain size. This strategy did not, however, constitute a frontal attack on the paradigm.

Pelletier's second strategy was to attack the correlation between brain size and intelligence by redefining intelligence: 'to consider intelligence as a bloc of which one could thus have more or less, would be anti-psychological. Intelligence is all the states of our conscience: perceptions[,] memories, sentiments, general ideas'.[43] This strategy would have challenged Broca's paradigm, but Pelletier did not sustain the attack. She concluded the article ambiguously: 'Finally, intelligence is also, perhaps above all, that linkage between the states of conscience which enables one to perceive the relations among things; that sort of mental chemistry whose reactions are still unknown to us, perhaps it is to that which corresponds the constant quantity of the brain?'[44]

Moreover, in subsequent work, Pelletier continued to maintain that brain size mattered, affirming in 1901:

Anthropometry [*sic* - measurement of the human body] is becoming more and more important in anthropology. The measures of the head, especially, whose relation with intellectual development is no longer doubted today, are most interesting for comparing, for example, distinguished men, idiots, criminals, etc., with ordinary men.[45]

Even when she cast doubt on the direct correlation of intelligence to various measures, she maintained the correlation between such measures and evolutionary development. While Pelletier subverted Broca's paradigm in 'Investigations on the Weight Indices of the Skull', she affirmed the

widespread racialist view derived from the same paradigm. 'Notre Maître', Dr Manouvrier, had found that, 'since the skull increases while the mandible diminishes with evolutionary [*phylogénique*] development, it follows that the cranio-mandibular index must diminish with it'.[46] The index was 'much higher in the black race than in the white race' and males had a higher (i.e. less developed) index than females.[47] Parisian women had an average 'cranio-mandibular' index of 12.8, 'European' men 13.7, Negroes 15.8, and gorillas 39.9. (Manouvrier had attributed the higher intelligence of Parisian women to national rather than sexual virtue.) Pelletier's work on Japanese skeletons confirmed Manouvrier's findings. She, however, refused the application of the paradigm to sexual differences, as we have seen, but she accepted the application of the paradigm to racial differences: 'One notes first that in both sexes, the index is higher than that of Europeans'.[48]

In 1901, Pelletier published a study refining Broca's system of calculating skull capacity. Again, she sought to reject the application of the paradigm to sex-based distinctions while maintaining it in general. In this piece, she argued that the greater capacity attributed to men's skulls by Broca's external measurements was irrelevant since women's skulls were thinner than men's.[49]

In racial theory, she accepted the paradigm unquestioningly (as did virtually all anthropologists). In her third scientific article, published in 1902, she proved the accepted position to her satisfaction by measuring jawbones: 'The inferior races ... have more developed jawbones than the white race'.[50] When the position of molars proved not to correspond to this assumption, Pelletier redefined the concept of race more loosely:

For this characteristic as for all others, there exists no hermetic barrier between the races, no race is superior or inferior in all its characteristics and when one says that a race is superior one seeks to express only the fact that, on average, the individuals who belong to it have more characteristics of evolutionary superiority than the examples of the other races.[51]

In this manner Pelletier accommodated inconvenient data without having to doubt assumptions about race which were so widespread, so hegemonic as to be beyond questioning. Her three articles demonstrate unease about the materialist base of the paradigm, subverting or avoiding its application to women, but ultimately reaffirming it in general terms.

Working with a Master: the power of Broca's paradigm

In 1901, the Academy of Sciences published a summary of a study Pelletier was undertaking with Nicholas Vaschide, a leading member of the Society of Anthropology and Director of the 'Laboratory of Experimental Psychology at the Asylum of Villejuif'. The study, entitled 'The Physical Signs of

Intelligence', attempted to ascertain if mental intelligence could in fact be measured by 'exterior signs', but the authors put their conclusion at the start: 'on average the individuals of superior intelligence have larger heads than those of inferior intelligence'.[52] To be sure, this notion was commonplace at the time, as we have seen, and a humble student was not going to alter the senior author's thinking.[53] But Pelletier did sign it.

An alternative view of the brain was emerging, but it involved rejecting all the work Vaschide and Pelletier were trained to do. In 1895, Alfred Binet had founded *L'Année psychologique* (The Psychological Yearbook), which began modern psychology in France. Binet rejected materialism and instead sought to measure intelligence through interactive methods.[54] Vaschide had worked with Binet but returned to craniology.[55] Pelletier put her name to an explicit statement of the basic paradigm of traditional craniology at a time when some thinkers were beginning to challenge it. Indeed, as Felicia Gordon has shown, Karl Pearson and his team at University College, London, cited the preliminary report of Vaschide and Pelletier's study in their demolition of craniology, published in 1902, before the French team had completed its work.[56]

Pelletier and Vaschide completed their study and published it in 1903. It opens with a reaffirmation of the traditional paradigm: whites' brains are bigger than blacks', and those of 'distinguished men' weigh on average 100 grams more than those of 'ordinary men'. 'That there exists between psychic phenomena and the brain a causal relationship, is now a certain fact. ... The more these phenomena grow in complexity, the more the brain is voluminous'.[57] No mention is made of the corollary that women's brains were smaller than men's. At one point the authors appear on the verge of abandoning the paradigm, offering a psychological definition of intelligence, echoing Pelletier's in 'Investigations on the Weight Indices of the Skull:' 'What constitutes strictly intelligence is the power, not to acquire facts, but to perceive a relationship between them'.[58]

This observation, however, did not prevent the authors from going on to present their findings as if intelligence were indeed a 'bloc' directly correlated to skull size. 'All these intellectual qualities, powers of complexity, of precision, psychic energy, appear to be, for the larger part, at least, innate, and what proves this is that some men never exceed mediocrity despite the most extensive education and the most favourable milieu'.[59] The authors were certain of the objectivity of their work because they believed that, while an individual's brain weight varies with subjective factors, the size of the skull could be measured objectively.[60]

The authors recognised the possibility 'that our project is based on a vicious circle. Given that, in fact, one cannot measure intelligence, on what does one base oneself to say that the brain increases with intelligence and to take intelligence as a criterion?'[61] They pulled themselves out with a

remarkably feeble argument: 'It is true, but, in science, when one cannot have precise data, one must be content with vague, intuitive data'.[62] These 'intuitive data' we have because we can form a rough idea of intelligence in others. 'There are therefore intelligent people, and it has been noted that they have bigger brains and consequently bigger heads; one will thus be able in a certain degree to measure intelligence by measuring the head'.[63] Such measurement is useful in order to 'direct superior intelligences toward the difficult modes of activity and inferior intelligences toward the easier tasks'.[64]

The authors protest against a 'triage' based on their work: they want only to identify superior intelligence for pedagogic reasons. But here again they accept the basic paradigm. Indeed, they accept numerous earlier studies which set out various hierarchies of intelligence, all corresponding to the accepted norms of the day, even Gustave Le Bon's infamous correlation of hat sizes to social status and (hence) intelligence: '1° Les savants; 2° Les bourgeois; 3° Les nobles; 4° Les domestiques'.[65] Pelletier the socialist and feminist militant could have been embarrassed, to say the least, had any of her comrades read this piece!

Pelletier and Vaschide measured the heads, shoulders, feet, height, and strength of one hundred and forty schoolchildren, eighty boys and sixty girls. From each class they took twenty children, ten classified by their teachers as 'intelligent' and ten classified as 'unintelligent'. Worried at leaving the classification to the teachers, the authors checked by testing the students on how many random series of numbers they could remember: the 'intelligent' students averaged seven, the 'unintelligent' six. While admitting that the difference was 'small', the authors nonetheless reassured themselves that their methods were thereby proved sound.[66] Several further tests with equally uncertain results did not discourage them.

The children's heads were measured following 'the technique of the Laboratory of Anthropology where MM Manouvrier and Papillault taught it to us'.[67] An index of height to skull size was compiled and, bringing the indications of 'intelligence' to bear, the authors compiled many tables and concluded as they had begun, with the circularity which always distinguished craniometry: 'That on average the individuals of superior intelligence have bigger heads than those of inferior intelligence'.[68] They avoided the problem of differences between the sexes by making separate correlations for girls and boys.

Madeleine Pelletier's Break with Anthropology

Only when Pelletier had abandoned anthropology and could use her scientific knowledge from outside, as a feminist, did she mount a frontal assault on Broca's paradigm. In her first feminist article, published in 1904,

when she had abandoned anthropology for psychiatry, she attacked ‘certain anthropologists’ for their erroneous pretension that ‘the woman’s skull recalls, by its morphology, the simian skull, whereas, on the contrary, it is the masculine skull which, much more than the feminine skull, recalls that of the ape’.[69] In a book published in 1913, she accused anthropologists like Le Bon and Lombroso of following the ruling classes rather than science:

Circumstances have placed the criminal on the very last rung of the social ladder. He is neither an ape nor a lunatic, as an anthropology whose fantasy is guided by the interests of the ruling classes would have us believe.[70]

As an anthropologist, however, Pelletier did not challenge Broca’s paradigm directly, though she struggled against it when it impinged on her as a woman. Even after she gave up anthropology, she remained committed to a materialist view of the world and of the brain. She continued to make correlations between brain size and intelligence on the basis of race and class, though not of sex, and she continued to assume the materialist view of the brain. In 1924, writing as a feminist, she argued, ‘Localised cerebral areas are too crude to provide on their own an explanation for intelligence[,] which must be a very complicated mechanism. In these facts one can only see part of the truth’.[71] The struggle continued.

In this struggle we can see the ways in which Broca’s paradigm grew from and reinforced fundamental tenets of Republican cosmology: materialism, anticlericalism, the superiority of men and the superiority of whites. These elements were linked in a complex dynamic. To reject one weakened the whole. Thus, even Pelletier found it difficult to reject the paradigm altogether. In her difficulties we can see the power of the paradigm.

Pelletier later developed fully a theory of the psychological construction of sexual identity. In this she was a pioneer.[72] Her confrontation with psychology and with her patients enabled her to take on a new and entirely different paradigm, but even then she could not reject entirely the old one, for she, like other Republicans and indeed feminists of her generation, shared too many of its basic assumptions.

As an anthropologist, even Pelletier, gifted as she was, could not work her way completely out of the anthropological paradigm because it shared a common base with other progressive notions of her time. She never ceased in her admiration for Letourneau and for Broca. If she could accept their work despite its anti-feminist potential (explicit in Broca’s case), we confront a paradigm whose roots went deep into European Republican culture.

Notes

- [1] I wish to thank Alice Garner for her superb research, and Susan Foley and Joan Scott for their helpful readings and insightful suggestions. They have given the piece whatever depth it now has.
- [2] Quoted in Stephen Jay Gould (1981) *The Mismeasure of Man*, p. 83 (New York: W.W. Norton). For a superb introduction to Broca, see Carl Sagan (1979) 'Broca's Brain', in his *Broca's Brain: reflections on the romance of science*, pp. 3-12 (New York: Random House).
- [3] For Pelletier, see, inter alia, Charles Sowerwine & Claude Maignien (1992) *Madeleine Pelletier, une féministe dans l'arène politique* (Paris: Editions ouvrières); Felicia Gordon (1990) *The Integral Feminist – Madeleine Pelletier, 1874-1939: feminism, socialism, and medicine* (Cambridge: Polity Press); Joan Wallach Scott (1996) *Only Paradoxes to Offer: French feminists and the rights of man*, ch. 5 (Cambridge, MA: Harvard University Press); Christine Bard & Jean-Christophe Coffin (Eds) (1992) *Madeleine Pelletier: logique et infortunes d'un combat pour l'égalité* (Paris: Côté-femmes).
- [4] Two of Pelletier's books have been reprinted: her autobiographical novel (1996) *La femme vierge* (Paris: Indigo & Côté-femmes éditions), and several works from before 1914: (1978) *L'éducation féministe des filles, suivi de Le droit à l'avortement; La femme en lutte pour ses droits, la tactique féministe; Le droit au travail pour la femme* (Paris: Syros). *L'Emancipation sexuelle de la femme* is discussed below. She also produced a powerful statement for gender equality, (1908) *La Femme en lutte pour ses droits* (Paris: Giard et Brière), and two radical visions of class equality: (1913) *Justice sociale?* (Paris: Giard et Brière) and (1912) *Philosophie sociale* (Paris: Giard et Brière).
- [5] See Gould, *The Mismeasure of Man*, pp. 83-107.
- [6] Robert A. Nye (1993) *Masculinity and Male Codes of Honor in Modern France*, p. 47 (New York: Oxford University Press).
- [7] Scott, *Only Paradoxes to Offer*, p. 97.
- [8] Ibid. Cf. Emile Durkheim (1984) *The Division of Labour in Society*, p. 60 (Basingstoke: Macmillan [De la division du travail social, 1893]).
- [9] Sowerwine & Maignien, *Madeleine Pelletier*, ch. 3.
- [10] Madeleine Pelletier, Letter to Arria Ly (Bibliothèque Historique de la Ville de Paris [BHVP], Paris), 7 May 1932.
- [11] See Pelletier, *L'Education féministe des filles* and *La Femme en lutte pour ses droits*.
- [12] Madeleine Pelletier (1911) *L'Emancipation sexuelle de la femme?* (Paris: Giard et Brière).
- [13] 'Le rapport avec le développement intellectuel n'est plus mis en doute aujourd'hui'. Madeleine Pelletier (1901) Sur un nouveau procédé pour

obtenir l'indice cubique du crâne, *Bulletins et Mémoires de la Société d'Anthropologie de Paris* II, p. 191.

- [14] Carole Pateman (1988) *The Sexual Contract* (Stanford: Stanford University Press); Genevieve Fraisse (1994) *Reason's Muse: sexual difference and the birth of democracy* (tr. Jane Marie Todd; Chicago: University of Chicago Press); Joan B. Landes (1988) *Women and the Public Sphere in the Age of the French Revolution* (Ithaca, NY: Cornell University Press); Christine Faure (1991) *Democracy without Women: feminism and the rise of liberal individualism in France* (tr. Claudia Gorbman & John Berks; Bloomington: Indiana University Press); Lynn A. Hunt (1992) *The Family Romance of the French Revolution* (Berkeley: University of California Press). For the development of domesticity, see Jacques Donzelot (1980) *The Policing of Families* (London: Hutchinson); David Landes (1976) Religion and Enterprise, in *Enterprise and Entrepreneurs in Nineteenth- and Twentieth-century France*, edited with an introduction by Edward C. Carter II, Robert Forster & Joseph N. Moody, pp. 41-86 (Baltimore: Johns Hopkins University Press); and Bonnie G. Smith (1981) *Ladies of the Leisure Class: the bourgeois of northern France in the nineteenth century* (Princeton: Princeton University Press).
- [15] Rousseau, *Emile*, quoted by Moira Gatens (1991) *Feminism and Philosophy: perspectives on difference and equality*, p. 10 (Cambridge: Polity Press).
- [16] Jules Michelet (1845, 3rd edn) *Du prêtre, de la femme et de la famille* (Paris: Hachette, Paulin). The work remained in print for the rest of the century under the title, *Le prêtre, la femme et la famille*. Cf. Scott, *Only Paradoxes to Offer*, p. 102.
- [17] 'Nos femmes et nos filles sont élevées, gouvernées, par nos ennemis ... *Ennemis de l'esprit moderne ...*' (original italics). Jules Michelet (1890) *Le prêtre, la femme et la famille*, p. 2 (nouvelle édition; Paris: Calmann-Lévy).
- [18] 'L'envieux du mari, et son ennemi secret.' *Ibid.*, pp. 208-209.
- [19] 'Le mari, veuf de l'âme.' 'Chose humiliante, de n'obtenir rien de ce qui fut à vous que sur autorisation et par indulgence, d'être vu, suivi dans l'intimité la plus intime par un témoin invisible qui vous règle et vous fait votre part, de rencontrer dans la rue un homme qui connaît mieux que vous vos plus secrètes faiblesses.' *Ibid.*
- [20] Jules Michelet (1918?; first edition 1859) *La femme*, pp. 53-54 (Paris: Calmann-Levy).
- [21] Nye, *Masculinity*, p. 48.
- [22] Sagan, 'Broca's Brain', p. 8.
- [23] *Ibid.*, p. 6.
- [24] Charles Coury (1970) The Teaching of Medicine in France from the Beginning of the Seventeenth Century, in C.D. O'Malley (Ed.) *The History of Medical Education*, p. 141 (Berkeley: University of California Press).
- [25] Quoted in Gould, *The Mismeasure of Man*, p. 83.

- [26] *Bulletins et Mémoires de la Société d'Anthropologie de Paris*, 5e série, III (1902), p. 371. For Manouvrier, see 'Nécrologie', *Bulletins et Mémoires de la Société d'Anthropologie de Paris* (1927), pp. 2-13; Paul Lester (1957) L'Anthropologie, in *Histoire de la Science (Encyclopédie de la Pléiade)*, sous la direction de Maurice Daumas, p. 1379 (Paris: Gallimard).
- [27] *Ibid.*, pp. 172-173.
- [28] Pelletier, 'Mémoires d'une féministe', Ms, BHVP, Fonds Bouglé, pp. 8-9. Renooz was a member of the 'mixed' Freemasons' lodge, 'Diderot', at the same time as Pelletier (*Bulletin hebdomadaire des travaux de maçonnerie*, 29 April 1904, p. 13).
- [29] Pelletier, 'Mémoires d'une féministe', p. 30.
- [30] See 'Nécrologie', *Bulletins et Mémoires de la Société d'Anthropologie de Paris* (1927), pp. 2-13; Lester, 'L'Anthropologie', p. 1379.
- [31] Nye, *Crime, Madness, and Politics*, pp. 106, 116 and note.
- [32] Cesare Lombroso (1887) *L'Homme criminel* (Paris: F. Alcan).
- [33] Léonce Manouvrier (1885) *Sur l'interprétation de la quantité dans l'encéphale et du poids du cerveau en particulier* (Paris); Mary Lynn Stewart (2000) *For Health and Beauty: physical culture for Frenchwomen, 1880s-1930s*, p. 32 (Baltimore: Johns Hopkins University Press).
- [34] Stewart, *For Health and Beauty*, p. 32.
- [35] Léonce Manouvrier (1903) Conclusions générales sur l'anthropologie des sexes et applications sociales, *Revue de l'Ecole d'Anthropologie*, 13, pp. 405-423.
- [36] Gould, pp. 105-106; Charles Letourneau (1903) *La condition de la femme dans les diverses races et civilisations* (Paris: Giard et Brière).
- [37] Durkheim, *The Division of Labour*, p. 19.
- [38] Madeleine Pelletier (1900) Recherches sur les indices pondéraux du crâne et des principaux os longs d'une série de squelettes japonais, *Bulletins et Mémoires de la Société d'Anthropologie de Paris*, 5e série, I, pp. 514-529.
- [39] Stewart, *For Health and Beauty*, p. 32.
- [40] 'La masse active de l'organisme.' Pelletier, 'Recherches sur les indices pondéraux', p. 520.
- [41] Scott, *Only Paradoxes to Offer*, p. 135.
- [42] 'Si la femme a un crâne plus lourd que son fémur ce n'est pas en tant que femme; mais en tant qu'être plus grêle.' Pelletier, 'Recherches sur les indices pondéraux', p. 519. Cf. Scott, *Only Paradoxes to Offer*, p. 135. My translation is more literal than Scott's.
- [43] 'Considérer l'intelligence comme un bloc dont on pourrait ainsi avoir plus ou moins, serait anti-psychologique. L'intelligence, c'est tous nos états de conscience: perceptions[,] souvenirs, sentiments, idées générales.' Pelletier, 'Recherches sur les indices pondéraux', p. 524.

- [44] 'Enfin, l'intelligence est aussi, surtout peut-être, cette agrégation entre les états de conscience qui fait que l'on perçoit les rapports des choses; cette sorte de chimie mentale dont les réactions nous sont encore inconnues, peut-être est-ce à cela que correspondrait la quantité constante du cerveau?' Pelletier, 'Recherches sur les indices pondéraux', p. 524.
- [45] 'L'anthropométrie prend en anthropologie une importance de plus en plus grande. Les mesures de la tête surtout, dont le rapport avec le développement intellectuel n'est plus mis en doute aujourd'hui, sont des plus intéressantes pour comparer par exemple les hommes distingués, les idiots, les criminels, etc., aux hommes ordinaires.' Madeleine Pelletier (1901) 'Sur un nouveau procédé pour obtenir l'indice cubique du crâne', *Bulletins et Mémoires de la Société d'Anthropologie de Paris*, II, p. 191.
- [46] 'Puisque le crâne augmente tandis que la mandibule diminue avec le développement phylogénique, il s'en suit que l'indice crânio mandibulaire doit décroître avec lui.' Pelletier, 'Recherches sur les indices pondéraux', p. 521.
- [47] 'Il est beaucoup plus fort dans la race noire que dans la race blanche.' Pelletier, 'Recherches sur les indices pondéraux', pp. 514, 521.
- [48] 'On voit d'abord que, dans l'un et l'autre sexe, l'indice est plus élevé que celui des Européens.' Pelletier, 'Recherches sur les indices pondéraux', p. 522.
- [49] Pelletier, 'Sur un nouveau procédé', p. 192.
- [50]. 'Les races inférieures ... ont le maxillaire plus développé que la race blanche.' Madeleine Pelletier (1902) Contribution à l'Etude de la Phylogénèse du Maxillaire Inférieur, *Bulletins et Mémoires de la Société d'Anthropologie de Paris*, 1 May, p. 541.
- [51] 'Pour ce caractère comme pour tous les autres, il n'existe pas entre les races des barrières étanches, aucune n'est supérieure ou inférieure par tous ses caractères et quand on dit qu'une race est supérieure on veut exprimer seulement ce fait que, en moyenne, les individus qui lui appartiennent ont plus de caractères de supériorité évolutive que les exemplaires des autres races.' Pelletier, 'Contribution à l'Etude de la Phylogénèse du Maxillaire Inférieur', p. 544.
- [52] 'Qu'en moyenne les individus d'intelligence supérieure ont la tête plus grosse que ceux d'intelligence inférieure.' N[icholas] Vaschide et Madelaine (sic) Pelletier (1903) 'Recherches expérimentales sur les signes physiques de l'intelligence', *Revue de philosophie*, 1 October, p. 1. A summary of work in progress preceded the full version: (1901) 'Contribution expérimentale à l'étude des signes physiques de l'intelligence', *Compte rendus de l'Académie des sciences*, 7 October, pp. 551-553. The full text was subsequently published as a sixty-three page pamphlet: N[icholas] Vaschide et Madelaine (sic) Pelletier (1904) *Recherches Expérimentales sur les Signes Physiques de l'Intelligence* (Travail du Laboratoire de Psychologie Expérimentale de l'Ecole des Hautes Etudes [Asile de Villejuif]; La Chapelle-

Montligeon (Orne): Imprimerie-Librairie de Montligeon). Citations hereafter are from this edition.

- [53] Vaschide, a Rumanian by birth, died of tuberculosis in 1907. He collaborated with Binet and with Edouard Toulouse (his director at Villejuif). He joined the Society in 1898 (see 'Personnel', *Bulletins et Mémoires de la Société d'Anthropologie de Paris*, 1 [1900], p. xxvii, and Obituary, *ibid.*, 8 [1907], p. 443 [I thank Felicia Gordon for this reference]); cf. Gordon, *The Integral Feminist*, p. 38. He published a diverse range of studies, including: 'Le Rêve prophétique dans la croyance et la philosophie des Arabes' (with H. Piéron; *Bulletins* 3 [1902], pp. 229-244); (1911) *Le Sommeil et les rêves* (Paris: Flammarion); (1902) *La Psychologie du rêve au point de vue médical* (with H. Piéron; Baillière); and even an (1909) *Essai sur la psychologie de la main* (Paris: Rivière).
- [54] Gould, *Mismeasure of Man*, p. 148.
- [55] A. Binet & N. Vaschide (1899) Céphalométrie, *Année psychologique*, V; (1897) 'Influence des différents processus psychiques sur la pression du sang chez l'homme', *Comptes Rendus de l'Académie des Sciences, Paris*, 124, pp. 44-46; 'Sur un ergonographe à ressort', *ibid.*, pp. 1161-1163.
- [56] Gordon, *The Integral Feminist*, pp. 39-40.
- [57] 'Qu'il existe entre les phénomènes psychiques et le cerveau un rapport de causalité, est maintenant un fait certain. ... Plus ces phénomènes croissent en complexité, plus le cerveau est volumineux.' Vaschide et Pelletier, *Recherches Expérimentales*, p. 2.
- [58] 'Ce qui constitue proprement l'intelligence c'est le pouvoir, non d'acquérir des connaissances, mais de percevoir un rapport entre elles.' *Ibid.*, p. 3.
- [59] 'Toutes ces qualités intellectuelles, pouvoirs de complexité, de précision, énergie psychique, paraissent être, pour une grande part, au moins, innées, et ce qui le prouve c'est que des hommes peuvent ne jamais dépasser la médiocrité malgré l'éducation la plus soignée et le milieu le plus favorable.' *Ibid.*, p. 4.
- [60] *Ibid.*, p. 17.
- [61] 'Que notre projet renferme un cercle vicieux. Puisqu'en effet on ne peut pas mesurer l'intelligence, sur quoi se base-t-on pour dire que le cerveau augmente avec elle et pour prendre celui-ci comme critérium?' *Ibid.*, p. 6.
- [62] 'Il est vrai, mais, en science, lorsqu'on ne peut avoir de données précises, il faut se contenter de données vagues intuitives.' *Ibid.*, p. 6.
- [63] 'Il y a donc des gens intelligents, et on a observé qu'ils avaient le cerveau et la tête par conséquent plus grosse; on pourra donc jusqu'à un certain point mesurer l'intelligence en mesurant la tête.' *Ibid.* p. 6.
- [64] 'Diriger les intelligences supérieures vers les modes d'activité difficiles et les intelligences inférieures vers les travaux plus faciles.' *Ibid.*, p. 11.
- [65] *Ibid.*, p. 14.
- [66] *Ibid.*, pp. 31-33.

- [67] Ibid., p. 37.
- [68] Ibid., p. 63.
- [69] Madeleine Pelletier (1904) La prétendue infériorité psycho-physiologique des femmes, *La Vie normale*, II, no. 10, p. 5. Cf. Gordon, *The Integral Feminist*, pp. 71-72.
- [70] Madeleine Pelletier, *Justice sociale?* p. 27.
- [71] 'Les localisations cérébrales sont des faits trop grossiers pour qu'elles puissent expliquer à elle seules l'intelligence[,] qui doit être un mécanisme très compliqué. Il ne faut voir en elles qu'une partie de la vérité.' Madeleine Pelletier (1924) *L'Âme existe-t-elle?* (Paris: La Brochure mensuelle, December), p. 4.
- [72] Cf. Pelletier, *L'éducation féministe des filles* and *La femme en lutte*. Cf. Scott, *Only Paradoxes to Offer*, pp. 136-139.

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