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# Science and the “Civilizing Mission”: France and the Colonial Enterprise

Patrick Petitjean

REHSEIS (CNRS & Université Paris 7)

## Introduction

September 1994: ORSTOM celebrated its fiftieth birthday with a conference "20th Century Sciences: Beyond the Metropolis".<sup>1</sup> ORSTOM (Office de la Recherche Scientifique et Technique Outre-Mer) is the name given in 1953 to the former "*Office de la Recherche Scientifique Coloniale*," founded in 1943.<sup>2</sup> This conference showed an evident acceptance of the colonial heritage in science and technology. Such continuities raise questions about the part played by science in the so-called second wave of European expansion of the late nineteenth century, which led to the partitioning of the world by European powers.<sup>3</sup>

The aim of this essay is to outline the part played by science in the French mission of civilisation, this “civilizing mission” and to describe how it occupied such a central part

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<sup>1</sup> The proceedings have been published. See Roland Waast (ed): *Les Sciences hors d'Occident au XXe siècle* (Paris: Orstom Éditions, 1996) 7 volumes.

<sup>2</sup> The project to constitute such an office was conceived by French scientists of the Popular Front (1936), set up by the Vichy Regime in 1943, and strongly developed after the Liberation. The history of the origin and the early years of the Colonial Office for Scientific Research (ORSC) has been studied by Christophe Bonneuil and Patrick Petitjean, "Science and French Colonial Policy. Creation of the Orstom: from Popular Front to the Liberation via Vichy, 1936-1945", in Terry Shinn, Jack Spaapen and Venni Krishna (eds), *Science and Technology in a Developing World*. Sociology of Sciences, Yearbook 1995 (Dordrecht: Kluwer Academic Publishers, 1997), pp.129-178.

<sup>3</sup> In 1800, Europeans controlled 35% of the world's emerged lands. The proportion increased to 67% in 1878, and 84% in 1914. This second wave of European colonial expansion began with the spread of British control in the Indian sub-continent and the French conquest of Algeria (1830). Africa was shared following the Treaty of Berlin (1885).

in colonial ideology and policy from the 1880s. In this period, the interests of science were combined with those of national prestige.<sup>4</sup> Colonization was undertaken in the name of science. To civilize, in official French colonial ideology, was to bring the benefits of science, just as for other countries, it was to bring the benefits of religion or free trade. The “civilizing mission” thus managed to combine elements of Eurocentrism and scientism. It represented a cultural consensus from the 1880s until the 1930s, and conditioned many generations of French scientists in their training, in their scientific practices, and in their mentalities.

Lewis Pyenson has argued that the “civilizing mission” can be understood within the frame of cultural imperialism, insofar as the exact sciences are concerned.<sup>5</sup> However, it is necessary to have a less restrictive vision of the “civilizing mission”, when in fact, science was an organic part of the colonial enterprise. In the nineteenth century, it was inseparable from imperialism. Science and the philosophy of scientism formed a core of the French “civilizing mission”, with repercussions for colonial ideology as well as for colonial values. As such, science claimed to give a "rational" basis for hierarchies between civilizations, and, in fact, promoted contempt for non-European cultures. Western science was not spread from Europe into a scientific vacuum abroad: the context mattered. Colonial science was much more than a matter of gathering, exploring and

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<sup>4</sup> See Paul Leroy-Beaulieu, *De la colonisation chez les peuples modernes* (Paris: Guillaumin, 1874); Henri Brunschwig, *Mythes et réalités de l'impérialisme colonial français* (Paris: Librairie Armand Colin, 1960); Raoul Girardet, *L'Idée coloniale en France de 1871 à 1962* (Paris: La Table Ronde, 1972); Agnes Murphy, *The Ideology of French Imperialism* (Washington, DC: The Catholic University of America Press, 1948); Vincent Harlow, *The Founding of the Second British Empire* (London: Longmans, Green and Co, 1952).

<sup>5</sup> Lewis Pyenson, *Civilizing Mission. Exact Sciences and French Overseas Expansion, 1830-1940*. (Baltimore and London: The Johns Hopkins University Press, 1993). I have discussed elsewhere Pyenson's arguments : Patrick Petitjean, "Essay review on Science and Colonization in the French Empire", *Annals of Science*, 1995, 52: 187-192. See also the discussion in *Isis* : Paolo Palladino and Michael Worboys, "Science and Imperialism", *Isis*, 1993, 84: 91-102; and Lewis Pyenson, "Cultural Imperialism and Exact Sciences Revisited", *Isis*, 1993, 84: 103-108.

developing. Moreover, its role cannot be reduced solely to the pursuit of European scientific activities in the colonies themselves.

This perspective converges more with the analyses of Joseph Needham and Michael Adas than with George Basalla.<sup>6</sup> Daniel Headrick has produced a fruitful analysis of science and technology for imperialism, but science and technology were not only tools for conquest, control and development. To understand “civilizing mission”, it is necessary to describe the status of science, as constructed in the nineteenth century, and to describe the role that the ideology of science played in France, particularly during the Third Republic. This paper thus examines the combination of Eurocentrism and scientism: how science, with the help of racialist theory, became incorporated into colonial ideology. It highlights the intellectual and political debates about science and the “civilizing mission” in the metropolis and suggests that the marriage of science and imperialism did not disappear with decolonization.

### **Science and Eurocentrism in the Nineteenth Century**

At the turn of the nineteenth century, Western science included three features fundamental to the colonial enterprise: a universal and neutral model of science; the *grand partage* (the “big divide” between science and beliefs, between scientific and empirical or popular knowledge, between universal science and local knowledge); and a belief in science as the ultimate value to measure civilizations and their place in a

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<sup>6</sup> See George Basalla, “The Spread of Western Science”, *Science*, 1967, 156: 611-622. But see also Joseph Needham, “The Roles of Europe and China in the Evolution of Oecumenical Science”, first published in the *Journal of Asian History*, 1967, and reprinted in Joseph Needham, *Clerks and Craftsmen in China and the West* (Cambridge: Cambridge University Press, 1970), pp.396-418. Needham's oecumenical science has seen an important shift from Eurocentric conceptions of science and the narrow vision of universality; see the discussion by Aant Elzinga, “Revisiting the Needham Paradox” in S. Irfan Habib and Dhruv Raina (eds), *Situating the History of Science. Dialogues with Joseph Needham* (New Delhi: Oxford University Press, 1999), pp.73-113). See also Michael Adas: *Machines as the Measure of Men. Science, Technology, and Ideologies of Western Dominance* (Ithaca and London: Cornell University Press, 1989), which is a most stimulating and detailed study in scientism and colonialism.

hierarchical system.<sup>7</sup> According to this model, the achievements of modern science are based on its internal features: rationality, objectivity (science as a mirror-like reflection of reality and of its order), experimental method, and the mathematization of Nature's laws. The modern sciences are to be understood as unique, and this unity reflects the laws and the unity of Nature.

The universality of science proceeded from a movement that found universality (of humankind, of political systems, of moral values) in Nature and Reason, and not in religion. At the same time, this universality was dominated by hierarchies of power (typically white, European, bourgeois and male). In this fashion, science also claimed to represent a qualitative rupture with the beliefs and practices of non-Western peoples, which were rejected as superstitions. Given this conception of modern science, indigenous cultures could not contribute to different representations of nature, and the historiography of science would not have recognized them as precursors. The results of research, it was argued, were not culturally situated. Institutions and practices could provisionally delay or even forbid the progress of science, but they were unable to shape it. They were inessential to science. There were many traditional sciences, but only one modern science. This model is still largely dominant, though it has shown internal limits as well as an incapacity to represent the historical process.<sup>8</sup>

D'Alembert, Condorcet and most Enlightenment philosophers viewed the human history as a succession of steps towards a future ideal society.<sup>9</sup> Civilizations were ranked in

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<sup>7</sup> See Michael Adas, *Machines*. See also, among many others, John Gascoigne, *Science in the Service of Empire: Joseph Banks, The British State and the Uses of Science in the Age of Revolution* (Cambridge: Cambridge University Press, 1998); Michael Worboys, "Science and British Colonial Imperialism, 1895-1940" (unpublished Ph.D. thesis, University of Sussex, 1979).

<sup>8</sup> Sandra Harding, *Is Science Multicultural? Postcolonialisms, Feminisms, and Epistemologies* (Bloomington and Indianapolis: Indiana University Press, 1998), pp.1-22.

<sup>9</sup> See Condorcet, *Esquisse d'un tableau historique de l'esprit humain* (Paris: 1966) p. 201. Condorcet drew a step-by-step passage from barbarian times to the achievements of civilization in contemporary Europe.

hierarchies according to their position on these steps. "Progress" was the word used to qualify the advancement towards a scientific and moral society. But, unlike the standard account, Enlightenment *savants* fully recognized the non-European origins of classical and modern science. Science developed by integrating knowledge from different origins. Europeans travellers acknowledged natives for their participation in the scientific enterprise, and sometimes recognized their own dependency upon local "informers." For tropical diseases, "cures" would have been found in the Tropics and be known to natives. Europeans had no hesitation in integrating non-European learning.<sup>10</sup> European naturalists, visiting the tropic, for instance brought back not only specimens, collections of animals and plants, but also explanatory systems and nomenclatures.<sup>11</sup>

According to Roshdi Rashed, the progress of science in Europe was contingent, not essentialist.<sup>12</sup> At the beginning of the nineteenth century, however, this conception was affected by a complete change of nature and meaning: the "occidentality" of science

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Science marked the passage from the 8th to the 9th Epoch of the "Historical Tableau of the Progress of Human Mind". All civilizations were, by this argument, to follow the same steps.

<sup>10</sup> In the eighteenth century, non-European societies were often viewed positively. For example, the Société des Observateurs de l'Homme published for travellers a leaflet entitled "Considérations sur diverses méthodes à suivre dans l'observation des peuples sauvages", giving this advice: "these peoples are despised by our ignorant vanity but will appear to him (the traveller) as ancient and majestic monuments from the origin of times; these monument are a thousand times more valuable and worthy of respect than the famous pyramids which are the pride of Nile". And, "in order to establish the august links of an universal society" (...) "do present to them in its name (humankind) the pact of a fraternal alliance! Make them forget that savage adventurers visited their country only to submit and despoil them. Do meet them only to offer benefits". Quoted by Yves Benot, *La Démence coloniale sous Napoléon* (Paris: Éditions La Découverte, 1992)

<sup>11</sup> Jacques Barrau, in S. Arom, *La Science sauvage. Des savoirs populaires aux ethnosciences* (Paris: Éditions du Seuil, 1993), cites the case of Georg Everhard Rumpf's book, *Herbarium Amboiense*, published in the mid-eighteenth century, which explicitly imported taxonomic nomenclature from local knowledge (p.17).

<sup>12</sup> Roshdi Rashed, "Is Science a Western Phenomenon?", in *Fundamenta Scientiae*, 1980, 1: 7-21. See also Adas (1989), *Machines*, pp.95-107: non-European contributions to science were acknowledged, but their achievements were viewed as belonging to the past.

became based upon anthropological considerations. The origins of classical science, it was argued, were to be found in ancient Greece, and only in Greece. Thus, one referred to the "Greek miracle", which was followed by a scientific vacuum until the European "Renaissance".<sup>13</sup> This occidentality gave a higher status to science.<sup>14</sup>

The consequences of this social reconstruction were profound. The integration of non-European knowledge into science was masked by a process of disqualification: the part played by local informers was forgotten -- to be rediscovered only recently.<sup>15</sup> A qualitative difference of status emerged between European science and other knowledge systems, which became suspect. Beliefs and local knowledge were considered as static systems, unable to progress.<sup>16</sup> European scientists mainly studied problems determined by colonization, but inversely, some other problems were considered to be irrelevant to Western expansion and were ignored by Western science. Local knowledge systems were destroyed: the progress of science in a colonial context produced new knowledge but also acculturation and ignorance.

This nineteenth century divide between universal modern science and local knowledge reflected a wider division between societies viewed as an object for history, and societies viewed as an object for ethnography; between societies that make their own history, and "passive" societies to which history simply "arrives"; between progressive societies and

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<sup>13</sup> Against this historical reconstruction, Martin Bernal has shown how our idea of Greece is a nineteenth century production, with the minimization of Asiatic and African influences. This is clearly linked with the development of imperialism and the second wave of European colonial expansion. See Martin Bernal, *Black Athena, the Afroasiatic Roots of Classical Civilization* (London: Free Association Books, 1987), for a controversial thesis.

<sup>14</sup> The construction of Occident has been a general intellectual quest in this period. See Everett Mendelsohn, "Science and the Construction of the Idea of Europe", *Vest* (Göteborg), 1995, 8: 59-64.

<sup>15</sup> See Kapil Raj, "La Construction de l'empire de la géographie. L'Odyssée des arpenteurs de Sa Très Gracieuse Majesté la reine Victoria en Asie centrale", in *Annales HSS*, 1997, 5: 1153-1180.

<sup>16</sup> They have been progressively rediscovered in the twentieth century as actual systems. This is still an important issue for historians of science.

static societies.<sup>17</sup> Colonization deepened this asymmetry, and deprived conquered people of their history. This asymmetry included science, and the history of science in the French colonies became the history of colonial science and of colonial scientists, written by colonial historians.

Whether essentialist or contingent, these conceptions of science, its status and function, showed a common faith in the white man's superiority, and implied that European civilization was the model for all humankind. From the mid-nineteenth century, science became the measure of all progress. The progress of knowledge, as well as technical and social progress were directly assimilated to the progress of science.<sup>18</sup> Whether for cultural or physical reasons, Europeans were presumed to have scientific minds and inquisitiveness, even without scientific training. That is why they practiced science when travelling abroad.<sup>19</sup>

In the Third Republic, *scientisme*, promoting the superiority of an "objective" view of Nature and Reason, became the dominant ideology among French elites.<sup>20</sup> This idea was

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<sup>17</sup> See Michèle Duchet, *Le Partage des savoirs. Discours historique, discours ethnologique* (Paris: Éditions La Découverte, 1985)

<sup>18</sup> Adas, *Machines*, p.3, claims this process began prior to the industrial revolution.

<sup>19</sup> See George Basalla, "The Spread", for a traditional view.

<sup>20</sup> The establishment of the Third Republic followed the defeat of France in the Franco-Prussian war (1870-71), the failure of the socialist uprising (La Commune de Paris), and the rejection of the Monarchy. A strong State emerged, based upon an alliance between the peasantry, State bureaucracy and middle-classes. Science, education and progress were the flags under which the elites supported the Republic. See: P.-M. Bouju and H. Dubois, *La Troisième République* (Paris: Presses Universitaires de France, 1967); Raymond Aron, *Les Grandes heures de la Troisième République* (Paris: Librairie académique Perrin, 1968); J.-M. Gaillard, *Jules Ferry* (Paris: Fayard, 1989); Anne Petit, "Les Mouvements positivistes", in Isabelle Poutrin (dir.), *Le XIXe siècle: Science, politique, tradition* (Paris: Librairie Berger-Levrault, 1995), pp.473-491; and Christophe Charle, *La République des universitaires, 1870-1940* (Paris: Seuil, 1994). Jules Ferry, the prominent Prime Minister of the 1880s significantly promoted both scientism and colonialism. See Papa Amadou Gaye, "La diffusion institutionnelle du discours sur le microbe au Sénégal au cours de la 3e République française, 1870-1940" (Unpublished thesis, Université de Paris VII, 1997).



particularly developed by positivists, among whom were Ernest Renan, who spoke about the need "to scientifically organize humankind;"<sup>21</sup> and Auguste Comte, who conceived a theory for the European "civilizing mission" under French leadership. Comte even proposed a "Occidental positive committee," where the contributions of the various European countries were strictly ordered according to a precise hierarchy. Eventually, this committee would be opened to white women, then to colonial members, and "finally to delegates of various backward peoples. Each country would have to undertake a final regeneration which only the Occident could initiate, under French Presidency".<sup>22</sup> Comte ordered the list of these "backward peoples" to include:

other white men; Moslem, Turkish and Persian monotheists; and Indian polytheists. Latterly, the committee might be enlarged to representatives of yellow and black races: from now onwards, the Occident will carry on this wise and generous intervention towards our backward brothers, and thus open the most noble field to a dignified social Art rooted in real science.

After 1870, such racialist theories gained prominence in France,<sup>23</sup> and by the 1880s, scientism and Eurocentrism embodied elements of the contemporary model of science:

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<sup>21</sup> Ernest Renan, "Dialogues philosophiques", in *Oeuvres complètes*, (Paris: Calman-Lévy, 1947), tome 1, p.599: "If one wants to imagine something sound, one has to conceive a small number of wise men leading humankind by means they keep as their own secret; Common people will not be in a position to use such secrets, requiring too strong an amount of abstract science". Quoted by Jean-Marc Levy-Leblond, "En méconnaissance de cause", *Le Genre humain* (Paris), 1992, 26: 61-74. In the 1930s, neo-positivism, the most common ideology among leading French scientists, brought these ideas back to the intellectual scene.

<sup>22</sup> Auguste Comte, *Système de philosophie positive ou traité de sociologie*, tome 1 (Paris: Librairie scientifique et industrielle de L. Mathias, 1851). Quotations from p.372 and pp. 389-92.

<sup>23</sup> For racialist theories, see, among an abundant literature: Pierre-André Taguieff, *La Couleur et le sang. Doctrines racistes à la française* (Paris: Éditions des mille et une nuits, 1998); Mike Hawkins, *Social Darwinism in European and American Thought, 1860-1945. Nature as a Model and Nature as a Threat* (New York: Cambridge University Press, 1997); George W. Stocking Jr, *Race, Culture and Evolution* (Chicago: Chicago University Press, 1982); William B. Cohen, *The French Encounter with Africans* (Bloomington and Indianapolis: Indiana University Press, 1980); Nancy Stepan, *The Idea of Race in*

the negation of non-European contributions to science; the idea that the mastery of nature is the basis for social progress; and the idea that European "scientific" civilization was a model to be followed by others, the goal to be reached. Both became involved in the claim for a "vertical" universality, rooted in nature.<sup>24</sup> The "civilizing mission" became a joint product, in which Eurocentrism and scientism reinforced each other.

### **Science, the “Civilizing Mission” and Colonial Ideology**

This powerful mixture of scientism and Eurocentrism conferred a central role to science in the French colonial enterprise. During the first half of the nineteenth century, cultural hierarchies based upon the model of scientific progress were replaced by new hierarchies founded upon racialist theories. These presented no contradiction with the Enlightenment,<sup>25</sup> although they were not the only possible development. The concept of the "civilizing mission" had a long history. In Spain and Portugal before the eighteenth century, it was based upon religion. In nineteenth century France, science replaced religion as the motive for colonization, with a mission to conduct humankind to a higher stage of evolution. Along with economic aims,<sup>26</sup> the *mission civilisatrice*, with science at

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*Science: Great Britain 1800-1960* (Hamden: Connecticut University Press, 1982); Waltraud Ernst and Bernard Harris (eds), *Race, Science, and Medicine* (London: Routledge, 1999); Stephen Jay Gould, *The Mismeasure of Man* (New York: Norton, 1981). French theories were developed by Arthur de Gobineau, *Essai sur l'inégalité des races humaines* (Paris: Éditions Jean Boissel, 1853-1855); Gustave Le Bon, *Lois psychologiques de l'évolution des peuples* (Paris: Alcan, 1889); and Georges Vacher de Lapouge, *Race et milieu social. Essais d'anthroposociologie* (Paris: Marcel Rivière, 1909). Contemporary refutations can be found in Armand de Quatrefages, *Histoire générale des races humaines* (Paris: 1855); and Jacques Novicow, *L'Avenir de la race blanche. Critique du pessimisme contemporain* (Paris: Alcan, 1897). See finally Adas, *Machines*, pp.338-342.

<sup>24</sup> Harding, *Is Science Multicultural?* See also Aant Elzinga, "Traces of Eurocentrism in Current Representations of Science", *Vest* (Göteborg), 1995, 8: 85-95.

<sup>25</sup> Alain Ruscio, *Le Credo de l'homme blanc* (Bruxelles: Editions Complexe, 1996), with a preface by Albert Memmi, p.X.

<sup>26</sup> See Brunshwig, *Mythes et réalités* and Girardet, *L'Idée coloniale*, for opposite evaluations of French expansion after 1880. Brunshwig, following Leroy-Beaulieu, *De la colonisation* and the Saint-Simonians,

its core, became not only a powerful motive for imperialism and the ideology of colonization, but also a radically new way of looking at the world and organizing human society.<sup>27</sup> The “civilizing mission” became part of a new social order that spread - and, in a way, is still spreading - throughout the world.

Racism may be defined as the generalized, systematic and permanent valorization of real or imaginary differences among peoples. Colonialism gave a global dimension to racism, by transforming it into a collective attitude directed against societies whose conquest was to be legitimated.<sup>28</sup> Few disputed the classification of humankind into groups, according to "races", even if group definitions varies. The French naturalist Virey published a natural history of humankind (1801), in which he developed a theory of moral and physical differences. For him, such differences were not reduced to "superficial varieties" between human species. Although Virey was against slavery, he defended European colonization. Virey used the "facial line" as a classification factor: The smaller the facial angle, he reasoned, the more the brain is compressed and hindered in its development. This theory considered differences as insuperable by essence, whether physical or related to intellectual and moral capacities. In this, Virey represented a break from the Enlightenment idea of the perfectibility of all societies.

In the mid-nineteenth century, two major innovations further widened this separation. First, race was transformed into a permanent explanation for the evolution of human

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supported the idea of a harmony between economic and humanitarian aims, with the help of a progressive nationalism. For him, a space existed for progressive colonization. Girardet opposed Brunschwig and saw economical or humanitarian aims as only window-dressing to hide the quest for prestige and power. See also A. P. Thornton, *The Imperial Idea and its Enemies* (London: Macmillan and Co, 1959); John Roselli, *Lord William Bentinck: The Making of a Liberal Imperialist, 1814-1839* (London: 1974); and Eric Stokes, *The English Utilitarians and India* (Oxford: Oxford University Press, 1959).

<sup>27</sup> See Adas, *Machines*, p.209 onwards.

<sup>28</sup> I have borrowed some of these ideas from Ruscio, *Le Credo*; Taguieff, *La Couleur*; and Cohen *The French Encounter*.

societies: the superiority of the white race was scientifically asserted as the "most achieved form of humankind." Second, the superiority of the white "race" was not a cultural question, but rather a scientific question, to be demonstrated by measurements of the volume of the brain-pan and facial angles.<sup>29</sup>

Two opposed perspectives arose from this view. The first considered the inferiority of non-white races to be inalterable. Only some secondary aspects could be modified. This tenet had its origins in polygenism. Within colonial policy, it was generally linked with the policy of "associationism". The second tenet originated in monogenism, and viewed race inferiority to be contingent. "Backward" races could be guided towards civilization. Within colonial policy, it was generally linked with "assimilation": through education, natives could be guided and transformed into French citizens.<sup>30</sup> A.P. Thornton has explained that, with colonization, France followed her ideal, universalism, according to which black men could successfully be transformed into French citizens in a relatively short time. The aim of assimilation was to achieve French fraternity. But equality is more

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<sup>29</sup> For the Société d'Anthropologie de Paris (Broca) and the reference to Darwin, see Ruscio, *Le Credo*, pp.32-33. For Virey and the facial angle, see Yves Benot, *La Démence*; and Claude Blanckaert "Les Vicissitudes de l'angle facial et les débuts de la craniométrie, 1765-1875", *Revue de Synthèse*, 1997, 3/4: pp.417-453. See also Cohen *The French Encounter* for the use and abuse of physical anthropology, phrenology, craniology and physiognomy; and Taguieff, *La Couleur*, for the socio-anthropology of Vacher de Lapouge.

<sup>30</sup> Even the European has not reached the ideal of humankind, but he is the closest, so goes this theory. See Auguste Comte quoted by Ruscio, *Le Credo*, pp.95-99. See also the metaphor of malleable clay to define "backward" peoples in Albert Sarraut, *La Mise en valeur des colonies françaises* (Paris: Payot, 1923). For the debate between "assimilation" and "association", see Brunshwig, *Mythes et réalités*; Girardet, *L'Idée coloniale*; Hubert Deschamps, *Les Méthodes et doctrines coloniales de la France, du XVIe siècle à nos jours* (Paris: Armand Colin, 1953); Raymond Betts, *Assimilation and Association in French Colonial Theory, 1890-1914* (New York: 1961). See also A. P. Thornton, *Imperialism in the Twentieth Century* (London: Macmillan, 1978). For Thornton, the assimilation / association debate was stronger among politicians and intellectuals in Paris than among local colonial administrators, who were far more pragmatic.

than fraternity and, in the 1920s, France had in Africa millions of subjects, and only dozens of citizens.<sup>31</sup>

The different colonial ideologies and "civilizing missions" had a common value system, based upon the devaluation of other societies. The words themselves implied a denial of other civilizations.<sup>32</sup> The function of science was, in effect, to give a foundation to anthropological racism, whether physical or cultural. Without the help of science, racism would not have acquired such strength and persistency, either called upon the name of fixed differences between humans, or upon the name of progress, perfectibility and unity.

Jules Ferry, one of the most prominent French Prime Ministers of the 1880s, was the first leading politician to bring the phrase -- the "civilizing mission" -- into public debate in 1885, although the Saint-Simonian engineers had used it long before.<sup>33</sup> The identification of science with progress gave the connection social weight, and permitted a new and enlarged consensus on colonial values, which many scientists shared. Through the "civilizing mission", altruism became the ostensible moral basis for colonization.<sup>34</sup> Economic exploitation was excused by altruism. This idea reached a larger public after the First World War, where the part played by colonized peoples was widely acknowledged. Albert Sarraut noted:

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<sup>31</sup> See Cohen, *The French Encounter*: He argued that actual French attitudes towards Africans were very similar to those of America and Britain. Claims for equality were only superficial, and race prejudices were deeply rooted in French mentalities. In suggesting this, Cohen has opposed the prevailing view of French attitudes held by American and European historians.

<sup>32</sup> See Ruscio, *Le Credo*, p.325. See also Brunshwig, *Mythes et réalités*; and Adas, *Machines*, pp.199-270. (Chapter 4 is dedicated to "Attributes of the Dominant: Scientific and Technological Foundations of the Civilizing Mission").

<sup>33</sup> See Leroy-Beaulieu, *De la colonisation*; Jules Harmand, *Domination et colonisation* (Paris:1910); See Gaye, "La Diffusion institutionnelle".

<sup>34</sup> This word was introduced into Sociology by Auguste Comte. For him, altruism is opposed to Christian charity. See Yves Goudineau, "L'Altruisme et la science. De la bonté des sciences coloniales à l'excellence des sciences du développement", *Journées des sociologues de l'Orstom, 17-18 septembre 1991* (Paris: Orstom, 1991), pp.56-58.

who is speaking of civilization, actually means altruism (...). Originally, colonization was nothing but an undertaking for private profit; a selfish and unilateral enterprise carried out by the stronger against the weaker (...). Today, only one conception has the right to be maintained in this confrontation, facing the world of Law and remote undertakings. Its formula is: colonization, a charitable enterprise for human solidarity.<sup>35</sup>

According to him, colonization was a moral obligation among nations, and was undertaken for the benefit of all humankind:

Higher than all other rights, stands the total right for humankind to spend a better life on this planet, owing to a more plentiful use of material goods and spiritual wealth likely to be supplied to all the living beings.<sup>36</sup>

It is the nature of science to be altruistic, according to Yves Goudineau.<sup>37</sup> Colonial science showed kindness as much as rationality: "methodically, with the closeness of a mobilization plan, the big science crusade got organized." For the good of all humankind, for the good of the colonized, Europeans had to colonize "backward" societies and to exploit their natural resources, which the natives were unable to do. The argument was

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<sup>35</sup> Albert Sarraut had been twice the General Governor of Indochina, where he founded the Saigon Scientific Institute (1911) with Auguste Chevalier. Member of the Radical Party, he occupied the position of Minister for Colonies in many governments during the 1920s and the 1930s, including the Popular Front government. He published two books: *La Mise en valeur* and *Grandeurs et servitudes coloniales* (Paris: Editions du Sagittaire, 1931).

<sup>36</sup>Quoted by Yves Goudineau, "L'Altruisme", pp.55-56. Quotations are from Sarraut, *Grandeurs*, chapter on "l'obligation coloniale de la France". The quotation p.128 is from the chapter "le bienfait colonial".

<sup>37</sup> Goudineau, "L'Altruisme", p.58

built upon universalism ("the sun in the Indies does not only shine for the Indies"<sup>38</sup>) and racism (natives are lazy people: the colonial world is "inhabited by sleepy and languid peoples, or by tribes who are incoherent, devoid of any sense of progress, and unable to exploit the regions where destiny placed them").<sup>39</sup> Science being the highest form of altruism, one may understand why scientists and intellectuals were seduced by the "civilizing mission" to the extent of taking an important part in the French Colonial Party.

Unfortunately, whether common or elaborated, whether violent or paternalist, racism always took precedence over humanism: not only because of economic interests and chauvinistic nationalism; but because colonization was by itself rooted in violence, subordination and the contempt of other civilizations. The consequences of colonialism could not be represented by a so-called altruistic science. Notwithstanding its claims, the trilogy - science + altruism + the "civilizing mission" - did not change the aims or the methods of the colonial enterprise.

Aimé Césaire, a major poet and leading politician in Martinique, left the French Communist Party in 1956. He made then a radical critique of this "progressive" imperialism, for which he invented the word *fraternalisme*:

"for it is actually a brother, an elder brother, who, steeped in his superiority, and certain of his experience, takes your hand (a sometimes stiff hand, alas !) to guide you on the road where he knows you shall meet Reason and Progress".

Césaire strongly opposed such an attitude:

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<sup>38</sup> Quoted by Christophe Bonneuil, "Crafting and Disciplining the Tropics," in John Krige and Dominique Pestre (eds), *Science in the Twentieth Century* (Amsterdam: Harwood Academic Publishers, 1997), p.79; the quotation is from A. de Haulleville (1905).

<sup>39</sup> Bonneuil, "Crafting", p.80. Quotation from Leroy-Beaulieu, *De la colonisation*, p.1.

"Now, it is exactly what we do not want, what we do not want anymore. We want our societies to reach an upper degree of development, but by themselves, with their internal growth, with a necessity from the inside, with an organic progress, without any outsider intervention to warp this growth, to modify or even jeopardize it".<sup>40</sup>

These words were directed towards reformist and communist politicians who did not oppose independence on principle, but who delayed the process indefinitely, until such time as "elder brothers" (Europeans) could assist "backward peoples" to achieve maturity and wisdom.<sup>41</sup> Frantz Fanon and many other intellectuals denied the claim that European civilization is the universal model. For them, the "civilizing mission" had been no more than another definition of Eurocentrism, colonialism and exploitation.

### **Expeditions, Learned Societies and the Colonial Party**

The European acquisition of new knowledge has long been linked with overseas travel. Expeditions to collect data and specimens strongly developed in the eighteenth century, undertaken individually or by small groups and directly organized by scientific institutions or academies. Native knowledge was transformed into science by European travellers when they returned home.<sup>42</sup> Centralized networks of exchanges were activated

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<sup>40</sup> Quoted by Ruscio, *Le Credo*, p.323 and p.324. According to Alain Ruscio, the word *fraternalisme* may characterize the entire Left, the heiress of the Enlightenment, from Condorcet to Victor Schoelcher, and also the scientists of the Popular Front.

<sup>41</sup> The French Communist Party did not reject the "civilizing mission", following its *maître-à-penser* Joseph Stalin: "It is necessary (that) the victorious proletariat of advanced nations gives assistance to working masses from backward nations for their economical and cultural development, helping them to reach an upper degree of development" (1921). Quoted by Ruscio, *Le Credo*, pp.321-322.

<sup>42</sup> Bruno Latour, *La Science en action* (Paris: Éditions La Découverte, 1989), pp.345-347 and 350-354. See also Emma Spary, "L'Invention de l'expédition scientifique. L'Histoire naturelle, Bonaparte et l'Égypte", in Marie Noëlle Bourguet, Bernard Lepetit, Daniel Nordman and Maroula Sinarellis (eds), *L'Invention*



from metropolitan centers. These networks played an essential part in creating a fundamental asymmetry between Europe and other cultures. Another kind of travel arose when travelling scientists became interested in studying flora and fauna "in situ", in studying settings. The history of geobotany is typical of this process, which was opened at the turn of the nineteenth century by Alexander von Humboldt, its most representative figure.<sup>43</sup>

In France, the State played a decisive role in promoting science, through the joint participation of science and the military.<sup>44</sup> Expeditions fostered the direct inclusion of science in colonial enterprise. To know a territory is to possess it, it is said, but this can not be achieved without military help. Within such a frame, four French expeditions were especially important: Egypt (1798-1801), Morea (present Peloponesia, 1829-1831), Algeria (1839-1842),<sup>45</sup> and Mexico (1864-1867). Although undertaken in different political contexts, these expeditions shared State direct control, a combination between science and the military, a global perspective of colonization that implied the scientific

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*scientifique de la Méditerranée. Égypte, Morée, Algérie* (Paris: Éditions EHESS, 1998), pp.119-138; N. Jardine, J.A. Secord and E.C. Spary (eds), *Cultures of Natural History* (Cambridge, Cambridge University Press, 1996).

<sup>43</sup> See Marie Noëlle Bourguet and Christian Licoppe, "Voyages, mesures et instruments. Une nouvelle expérience du monde au siècle des Lumières", in *Annales HSS*, 1997, 5: 1115-1151.

<sup>44</sup> Obviously, scientists and the military had worked hand in hand for centuries. But the status of modern science and the colonization projects of nineteenth century France gave a new content and direction to their combination. It is now well known that the French Revolution was not a complete rupture in French history, but preserved continuities from the Ancien Regime. The strong state was not a revolutionary creation. And a marriage of interests between the state, the army, and the pursuit of science existed long before the Revolution. The maritime travels of La Pérouse, Bougainville and others to the Pacific, Indian, and southern oceans were typical of this alliance. But, these four scientific and military expeditions were qualitatively different. With them, science and the military came to be inseparable constituencies of nineteenth century imperialism.

<sup>45</sup> For these three expeditions, see the papers in Marie Noëlle Bourguet, *L'Invention scientifique*. See also Henry Laurens, *L'Expédition d'Égypte 1798-1801* (Paris: Armand Colin, 1989)

study of nature and society, and the pursuit of scientific aims previously defined by academic institutions.

These expeditions showed some continuity with Humboldt, as they relied on the necessity of long stays to study territories, and as they borrowed from the Enlightenment the conception of science as a tool for liberation of native peoples from ignorance and absolutism.

In Egypt, the French expedition claimed to be an enlightened mission with scientific goals, where the Army had only a supporting role. Actually, it was a military and colonial expedition, with specific political tasks - to open the road to India and to capture for Napoleon the heritage of ancient civilizations. The French expeditions to Morea and Algeria were similar in nature. Bory de Saint-Vincent, who spread botanical geography in France, was the head of both. In Morea, most of the military mission left before the scientists arrived, but in Algeria, the military occupation was at the center of the expedition. In Mexico, a scientific commission was supposed to support a military intervention whose aim was to instal and to crown Maximilian of Habsburg as Emperor. The political intervention (1864-1867) was a complete failure, but the French-Mexican scientific commission continued its studies regardless.

With the second wave of French military expansion in the nineteenth century, a new period opened for scientific expansion. The pursuit of science abroad gained a new political impulse given by the conquest and control of new territories. It was no longer possible to distinguish between science and empire. After 1870, an "exploratory" phase cannot be distinguished from a "colonial" phase of scientific expansion.<sup>46</sup> A strong

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<sup>46</sup> In his three-stage model, Basalla dramatically underestimated the weight of this imperial frame and its consequences. Symmetrically, his "colonial" stage neglected the "scientific resistance" and endogenous scientific development. See Basalla, "The Spread". For the case of colonial science in India, see V.V. Krishna, "The Colonial Model and the Emergence of National Science in India: 1876-1920", in Patrick

coupling between science and colonial enterprises is the common feature during this period. The various channels for the spread of Western science took a new direction and meaning from this coupling.

With this new function of science, the learned societies -- the *sociétés savantes*<sup>47</sup> --acquired a new role. Some were directly linked with colonial expansion, in such fields as natural sciences, medicine and ethnology. They assisted explorers to travel over lands already colonized or soon to be colonized. Geographical, botanical, zoological, geological, meteorological, sociological, ethnological and anthropological societies published travel narratives and organized public conferences; they showed the Western public the usefulness of overseas countries, seized the interest of politicians, and promoted colonial expansion. They published instructions for overseas travellers, now within the frame of racialist theories.<sup>48</sup> Geographical, zoological and anthropological societies became committed to the colonial enterprise.

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Petitjean, Catherine Jami and Anne-Marie Moulin (eds), *Science and Empires. Historical Studies about Scientific Development and European Expansion*, Boston Studies in the Philosophy of Science, n°136 (Dordrecht: Kluwer Academic Publishers, 1992); Deepak Kumar, *Science and the Raj, 1857-1905* (New Delhi: Oxford University Press, 1995).

<sup>47</sup> Learned societies (whether specialized or generalist) developed in all Western countries in the nineteenth century. The origins and precise forms of such groups were indeed manifold, but the global phenomenon reflected the growing place of science and technology in Western nations. For the French case, see Robert Fox, "The Savant Confronts his Peers: Scientific Societies in France, 1815-1914", in G. Weisz and R. Fox (eds), *The Organization of Science and Technology in France, 1810-1914* (Paris and Cambridge: Cambridge University Press and M.S.H., 1980), pp.241-282.

<sup>48</sup> See Claude Blanckaert, "Le Manuel opératoire de la raciologie. Les instructions aux voyageurs de la Société d'Anthropologie de Paris", in Claude Blanckaert (ed), *Le Terrain des sciences humaines. Instructions et enquêtes (XVIIIe-XXe siècle)* (Paris: L'Harmattan, 1996). See also Nélia Dias, *Le Musée d'ethnographie du Trocadéro 1878-1908* (Paris: Éditions du CNRS, 1991). Armand de Quatrefages wrote the instructions for the Société de Géographie in 1875. The Société de Sociologie and the Société d'Ethnographie published their own questionnaires for travellers in the late 1880s.

A particularly significant part was played by the geographical societies.<sup>49</sup> Founded in December 1821, the Société Géographique de Paris began as a "society of minds," with its origins in the Enlightenment. It supported travel for discovery, without explicit relation to colonization. However, in 1864, Chasseloup-Laubat, a former Minister of Navy and Colonies, was elected President, and the Société put geography at the service of colonization. The Société developed rapidly and became an influential lobby for French expansion overseas.<sup>50</sup> The French geographical societies had 9,500 members in 1881 and 18,700 in 1894. A similar phenomenon occurred in other Western countries. The Société was active in supporting explorers, but acted also as a scientific and political adviser to the Ministry of Colonies and participated in the choice of colonial projects. Its aims were clear:

Abstract science is not enough for humankind. Science is only fruitful when it serves progress and production. It is not only the inquisitiveness of mind which raised up explorations and geographical discoveries. The discovery of America, the steadfast explorations in the interior of Africa, the quest for a passage to the North pole, had, besides their scientific goals, political and mercantilist ends.<sup>51</sup>

The Société published travel narratives in which the political aims became explicit, and military exploits abundantly reported. Its journal was transformed into a justification of colonization: geographers prepared the advance of the colonial army and administration.

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<sup>49</sup> Dominique Lejeune, *Les Sociétés de Géographie en France et l'expansion coloniale au XIXe siècle* (Paris: Bibliothèque Albin Michel, Histoire, 1993). See also Daniel Dory, "Géographie et colonisation en France durant la 3ème République", in Petitjean, *Science and Empires*.

<sup>50</sup> Local geographical societies (Marseille, Lyon, Bordeaux) in which colonial merchants participated, were even more committed to colonization. They followed the same development. A new society, especially dedicated to colonization, was founded in 1876: the Société de géographie commerciale.

<sup>51</sup> La Roncière le Noury (1874), President of the Société géographique de Paris. Quoted by Brunshwig, *Mythes et réalités*, p.23. In opposition, the London Geographical Society chose the pursuit of pure science.

They helped to master colonized territories. In that, geographers were proud to be at the head of the “civilizing mission”.

The Société Zoologique d'Acclimatation was founded in 1854 in the Muséum National d'Histoire Naturelle and also played an important part in colonization, mainly in Algeria.<sup>52</sup> The Algerian branch was the largest acclimatization society outside Paris (135 members) and was distinguished by having the highest proportion of civil and military servants. The Société Zoologique established in Paris a permanent commission (with 19 members in 1860) to advise the Government of the Second Empire on agricultural matters in Algeria. The Société collaborated sometimes with the Muséum. But it managed to influence the colonization policy far more than the Muséum. The Société was also active in political debates about the necessity and the aims of colonization. As Michael Osborne has described elsewhere in this volume, the Société headed scientific missions and inspections in Algeria, developed agronomical experiments (such as attempts to acclimate the silk-worm), and supported agricultural co-operatives. It promoted new scientific institutions, including meteorological services and experimental gardens. For the Société, the acclimatization of men, plants and animals was the basis for colonization.

Another society, the Société d'Anthropologie de Paris, was founded by Paul Broca in 1859. It attracted many physicians and biologists, but only a few social scientists. With his *Manuel opératoire de la raciologie*, Broca tried to organize anthropological work in the field as rigorously as in a laboratory. The planet was the space of anthropology, and the Société published, in addition to the Manuel, instruction leaflets for travellers to many countries. Constructing a new profession, these instructions were qualitatively different from the Muséum's traditional ones. They bore the stigma of racism by giving priority to physical and anatomical criteria, unlike the Société Géographique de Paris whose more

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<sup>52</sup> Data are from Michael Osborne, *Nature, the Exotic and the Science of French Colonialism* (Bloomington and Indianapolis: Indiana University Press, 1994).

paternalist instructions gave priority to intellectual and moral qualities. Broca's instructions institutionalized the more radical racist approach, propagated racialist theories, and organized professional norms according to these theories.<sup>53</sup>

A racist perspective was the main contribution of the Société Anthropologique de Paris to the imperial enterprise. But European expansion was a chance for scientific study, and not the opposite. Instructions were published for scientists travelling to Senegal (1860), Mexico (1862), Algeria (1864), Cochin China (1872) as well as to Brazil (1860), Canada (1860), Sicily (1864) and the Rocky Mountains of the United States (1872). They remained used by explorers far into the twentieth century. The Société thus both prepared and accompanied the colonial expansion.

Learned societies kept a leading position in promoting science for colonization, far more than did the universities and academies in Paris. The Muséum National d'Histoire Naturelle had a long colonial tradition which contributed to its scientific fame. But, in the second half of the nineteenth century, it had to face the development of the Faculté des Sciences and other institutions.<sup>54</sup> To reclaim its lost position, the Muséum had to find a

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<sup>53</sup> See Blanckaert, "Les Vicissitudes", and Cohen, *The French Encounter*. According to William B. Cohen, nineteenth century France inherited three centuries of beliefs concerning the inferiority of black people, and transformed them into convictions. Biologists and anthropologists strengthened racialist theories by bringing to them the prestige of modern science. The consequences of climatic tropical conditions upon native peoples were inscribed in genes within the frame of Lamarck's theory of the inheritability of acquired features. The strength of Lamarckism in France also helped to spread racialist theories. By the end of the nineteenth century, such theories were widely accepted because they were supposed to be backed by science, and because science was the new religion: see Cohen, *The French Encounter* (French edition, p.294).

<sup>54</sup> See Camille Limoges, "The Development of the Muséum d'Histoire Naturelle of Paris, c.1800-1914", in Weisz and Fox (eds), *The Organization of Science*, pp.211-240. For the part played by museums in colonial expansion, see Susan Sheets-Pyenson, *Cathedrals of Science. The Development of Colonial Natural History Museums During the Late Nineteenth Century* (Montreal: McGill-Queens University Press, 1988); Maria Margaret Lopes, *O Brasil descobre a pesquisa científica. Os museus e as ciencias naturais no século XIX* (Sao Paulo: Hucitec, 1997); John MacKenzie ed., *Imperialism and the Natural World* (Manchester:

new strategy. Without being solicited by colonial groups, but responding to its own internal needs, the Muséum chose to renew its colonial functions,<sup>55</sup> and thereby to reinforce its institutional position in Paris. The Muséum established classes for the training of explorers (up to 200 people followed these lessons), a colonial garden in Nogent (a suburb of Paris) in 1893, and a colonial laboratory (1900), which became famous under the direction of Auguste Chevalier. The Muséum also joined in producing colonial propaganda.<sup>56</sup> It participated in colonial exhibitions and published edifying narratives of colonial travels in its journals extolling the benefits of colonization for humankind.

Through their learned societies and overseas missions, scientists emerged as chief actors for colonization,<sup>57</sup> and gained important institutional positions (including election to the

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Manchester University Press, 1990); Lucille H. Brockway, *Science and Colonial Expansion. The Role of the Royal British Botanic Garden* (London: Academic Press, 1979).

<sup>55</sup> Camille Limoges characterized this attempt as a failure. Ten years later, the Ministry of Colonies took direct control over the colonial garden. The idea of “failure” has been challenged by Christophe Bonneuil, “Mettre en ordre et discipliner les tropiques : les sciences du végétal dans l'empire français (1870-1945)” (thesis, Université de Paris VII, 1997, to be published by Éditions des Archives contemporaines). See also Christophe Bonneuil, “Le Muséum National d'Histoire Naturelle et l'expansion coloniale de la Troisième République (1870-1914)”, *Revue Française d'Outre-Mer*, 1999, 86: pp.143-168.

<sup>56</sup> See Muséum National d'Histoire Naturelle, *Nos richesses coloniales* (Paris: Augustin Challamel, 1918). These lectures were given in 1917 by Muséum professors, mostly Academicians, including Alfred Lacroix, who was already Secrétaire perpétuel of the Academy of Science and a colonial geologist who travelled many times to French colonies from the beginning of the twentieth century. His *Figures de savants. L'Académie des Sciences et l'étude de la France d'Outre-mer de la fin du 17e au début du 19e siècle* (Paris:) is a good example of pro-colonial propaganda.

<sup>57</sup> See de Martonne, *Le Savant colonial* (Paris: Éditions Larose, 1931), for a tentative typology of French colonial scientists. Murphy, *The Ideology*, (1948), pp.41-102 quoted Francis Garnier who explored Tonkin in the 1860s. His conceptions were typical of scientists fighting for a new French expansion and a civilizing mission based upon science: “Nothing durable can be founded on force. Today, the true, legitimate conqueror is science. Only those populations which one has initiated to civilization, whose well-being or intellectual joys one has augmented, can without anger or shame recognize conquerors. On this ground, France can from this day take brilliant revenge. The victories which she will score thereon will, if she can

Académie des Sciences) after the First World War. In France, a "colonial party" developed after the Franco-Prussian War (1870-1871) as a lobby for colonial expansion,<sup>58</sup> especially in the Parliament. This immediately included members of the learned societies. Of the 200 principal colonial personalities, 108 were members of the Société géographique de Paris. Though their interests might differ, traders, bankers, businessman, military men, M.P.s from all political parties, colonial civil servants, geographers, naturalists, technicians, were found side by side within this nebula.

By the 1920s, the colonial party had an active scientific wing. The Académie des Sciences Coloniales was established in 1922 and in January 1925, prominent scientists from the Muséum National d'Histoire Naturelle (Achalme, Chevalier, Perrot) and from the Institut Pasteur (Calmette) constituted a new Association Colonies-Sciences (ACS).<sup>59</sup> Auguste Chevalier was elected General Secretary and remained the leading scientist of ACS until the War.<sup>60</sup> Colonial scientists formed the great majority of ACS members. Some colonial administrators also joined ACS, among whom a Senator, General Messimy, a

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remember and desire, enrich humanity and cost her not a drop of blood or a tear". From Francis Garnier, *Voyages d'exploration en Indochine* (Paris: Hachette, 1873), p.550.

<sup>58</sup> Rather than a formal, well-organized body, the colonial party was more a nebula of interlinked organisations: The French Alliance (1883), the French Society for Settlement and Colonial Agriculture, the Committee for French Africa (1890), the Colonial Parliamentary Groups (1892 for the Assembly and 1898 for the Senate), the French Colonial Union (1893), the Committee for Madagascar (1895), the Maritime and Colonial League (1899), the Committee for French Asia (1901), the Colonial Cotton Association (1903), the Committee for Morocco (1905). According to Brunshwig, the first mention of a Colonial Party occurs in 1894. See Brunshwig, *Mythes et réalités*, pp.111-138; Girardet, *L'Idée coloniale*, pp.110-119. See also: S.-M. Persell, *The French Colonial Lobby* (Hoover Press Publications, 1983)

<sup>59</sup> Christophe Bonneuil, *Des savants pour l'Empire* (Paris: Orstom éditions, 1991). Christophe Bonneuil and Patrick Petitjean, "Science and French Colonial Policy".

<sup>60</sup> Auguste Chevalier worked many years in French Africa and Indochina before becoming the colonial agronomical adviser to the Ministry of Colonies and the head of the colonial laboratory in the Museum. No systematic study of him has been undertaken. For a first approach, see Christophe Bonneuil, "Entre science et empire, entre botanique et agronomie : Auguste Chevalier, savant colonial", in Waast (ed), *Les Sciences hors d'Occident*, vol.2; and (Patrick Petitjean (ed), *Les Sciences coloniales, figures et institutions*, pp.16-35).



former Ministry of Colonies, was elected President. For fifteen years, ACS fought for the coordination, funding, and organisation of colonial sciences. It also fought for the professional recognition and training of colonial scientists. The issues of science and colonization were broadly discussed in the ACS journal (*Actes et Comptes Rendus de l'ACS*), published monthly until 1940. To promote colonial agronomy, ACS published a more scientific journal, the *Revue de Botanique Appliquée et d'Agriculture Coloniale*, edited by Auguste Chevalier.<sup>61</sup> The ACS also organized two influential colonial scientific congresses in Paris in 1931 and in 1937.<sup>62</sup> A new generation of young colonial scientists participated in the second of these, which directly preceded the establishment of ORSC (later renamed ORSTOM) and was supported by such leading French scientists as Jean Perrin, Henri Laugier, Frédéric Joliot, and Paul Rivet. This heritage remains.

Yves Goudineau has argued that "France had a state and national policy for scientific cooperation, when most big industrialized nations are satisfied by funding specialized agencies, specific projects, or grants."<sup>63</sup> In this, he sees continuity with the idea of a "civilizing mission" rooted in science and with the constitution of the "universal duty of scientific solidarity" as a national mission. For him, science is a paradigm of French colonialism. This perception is shared by the Canadian historian Edwige Lefebvre in her studies of *Tiers-Mondisme* in France,<sup>64</sup> and of the Health Department of ORSTOM.<sup>65</sup>

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<sup>61</sup> This journal is still published by the Muséum under the name *Revue d'Ethnobotanique et d'Ethnozoologie*.

<sup>62</sup> The 1931 congress was organized during the Colonial Exhibition, which was the high point of public approval for colonization. See Michel Pierre and Catherine Hodeir, *L'Exposition coloniale de 1931* (Paris: Éditions Complexes, 1991). Various disciplinary scientific congresses took place during the exhibition; while hundreds of participants, including Alfred Lacroix (Secrétaire Perpétuel de l'Académie des Sciences), attended the colonial science congress. An important editorial activity accompanied the Exhibition. Among the books published were de Martonne's, *Le Savant* (de Martonne was a military geographer); and Sarraut's, *Grandeurs*, previously referenced.

<sup>63</sup> Goudineau, "L'Altruisme", pp.53-64. The quotation is from p.63.

<sup>64</sup> Edwige Liliane Lefebvre, "French Ethnocentricity. The Epistemological Circumstances of the Third World Concept", in Shinn, Spaapen and Krishna (eds), *Science and technology*, pp.99-126.

She shows that, in its Marxist as in its revolutionary Christian components, French *Tiers-Mondisme* developed just after independence, in the 1960s and in the 1970s, when the international vocation of France was reaffirmed 'to surmount the traumatism of decolonization' and to 'perpetuate the memory of the "civilizing mission".' This time, the specificities of Third-World countries were respected in partnerships for development. The Ministry of Colonies was transformed into a Ministry for Cooperation, still acting in the same geographical zone. Cooperation became the logical continuation of colonization. *Tiers-Mondistes* scientists, almost all anticolonialist, gently and massively joined ORSTOM, the former colonial institution, in the 1980s.

### **Conclusion**

Science played a major part in European expansion and in colonial ideology during the nineteenth century. Far from being strictly instrumental or specifically cultural, Eurocentrism and science were twin sources of colonial ideology and practice. Moreover, in the second half of the century, the "naturalization" of the social and human sciences contributed to racialist theories which durably marked the colonial enterprise.

For France, the interdependence between colonization and science was particularly visible in the concept of the "civilizing mission". Science was deemed altruistic, and put at the core of this mission. The "civilizing mission" endorsed and sustained racial hierarchies among colonized and colonizers. Science was seen as bringing the virtues of progress to colonized peoples, the permanent national mission of France under the flag of universalism. Scientism and Eurocentrism sailed in the same boat.

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<sup>65</sup> Edwige Liliane Lefebvre, "L'Orstom au sein du mouvement tiers-mondiste. Convergence, rupture et persistance", in Waast (ed), "Les Sciences hors d'Occident", vol.3; Anne Marie Moulin (ed.), *Médecines et Santé*, pp.119-142). Quotations are from p.120.

The "civilizing mission" called progressive scientists and social improvers to the colonial enterprise. The white man believed in his mission to civilize the world, and white scientists did so even more.<sup>66</sup> In the fanciful tales eulogizing colonization, colonial scientists became central characters: they embodied to the public the "civilizing mission" and the altruism of colonization. In the nineteenth century, the "patient work of modest and silent scientists" tended to be hidden behind the "brilliant achievements of conquerors."<sup>67</sup> This changed in the 1920s, when the "civilizing mission" became official governmental ideology.<sup>68</sup> Long after decolonization, the colonial scientist kept this emblematic position. He still has a positive image. In fact, colonial science and scientists are often considered the only positive side of the colonial experience. To colonize was both to civilize and to advance science. However, Aimé Césaire's warning remains: the continuity between colonial science and modern scientific cooperation recalls the common colonial origins of the "civilizing mission" and the theory of development. Today "globalization" has followed imperialism and neocolonialism. Perhaps European scientists still believe in their altruistic and scientific "civilizing mission" ?

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<sup>66</sup> Ruscio, *Le Credo*, pp.93-99 and pp.317-324.

<sup>67</sup> Alfred Lacroix, *Figures de savants*, vol. III, p.3. After visiting the Paris Colonial Exhibition of 1931, Alfred Lacroix published two volumes about French colonial scientists whose biographies he presented to the Academy. His conclusion (vol. IV) carried an appeal for the development of colonial science.

<sup>68</sup> Sarraut, *La Mise en valeur*. Sarraut's programme was adopted in 1921 by the French Parliament.