

Scientific Travels and the Wealth of Nations

Giovanni Pinna

Viale Cassiodoro 1, 20145, Milano, Italy; Email: giovanni@pinna.info

Even if I am not an expert on scientific travels — apart from those of Ulysses — that have explored and exploited all seas and oceans, I would like to take this opportunity to touch upon some of the political and economic implications of scientific exploration throughout the course of history that will allow me to connect the history of scientific travel and exploration to the history of museums, a topic that has interested me for quite some time. In this essay, I emphasize two points, neither of which is new. First, scientific discoveries, irrespective of whether they are true or false, arise from or are accelerated by political and economic conflict. And second, museums, including those devoted to natural history, and the collections that they house, simultaneously create and represent the wealth of nations.

SCIENCE AND CONFLICT

A recent book by Jacob Darwin Hamblin² makes it clear that the birth of plate tectonics in the 1960s had its roots in the discovery of ocean floor spreading, the discovery of which was, in turn, the result of geological surveys carried out for military purposes by the United States Navy. In a book on the decline and fall of the dinosaurs, published in 1980, and, therefore, some nine years before the fall of the Berlin Wall, I highlighted the point, which had been evident to others as well, that the success of the meteor theory of the extinction of the dinosaurs together with many other species was due to the end phases of the cold war.³ Therefore, we should attribute to the cold war both the extraordinary theory of plate tectonics, and all that succeeded it, and the hare-brained idea that a meteor could have caused the extinction of the dinosaurs (and of many other living species), an idea that was supported by the American government establishment, including NASA, in order to justify the “star wars” policy of Ronald Regan.

The correlation between conflict and acceleration of scientific research is an historical constant, one that embraces the burning glass of Archimedes, the studies by Fritz Haber on gas for military use during the First World War, and the nuclear research carried out during the Second World War. Leaving aside the ethical issue of whether science should or should not be held to account for the undesirable consequences of its results, the motivation for much research may be found in the subjection of science to economic and political interests. The same appears to hold true with respect to those investigations of nature that were carried out during the 17th to 19th centuries that greatly broadened our knowledge of the earth's geology and biology, as well as giving rise to astounding theories capable of altering Man's conception of himself.

The travelers and expeditions that criss-crossed the earth, most especially all of the seas, from the 17th through the 19th centuries, were nearly always the product of competition among the European nations. In addition to confronting one another on both land and sea, these nations struggled for the acquisition of new territories, the opening of new markets, and the affirmation of their own supremacy. These conflicts, not always bloodless, though in appearance they may have seemed so, made it necessary to explore, survey, and acquire knowledge of the seas, to create maps of the

world, and to raise flags upon on lands until then unknown. After the defeat of Spain's *Invincible Armada* in August 1588, an event that severely diminished the country's capacity as a naval power, the routes of the world were opened to England, France, and Holland. Beginning in the 17th century, these nations began to assemble their colonial empires. Not infrequently, they came to blows over both smaller and larger strips of land in the Americas, the West Indies, South America, southern Asia, and the Pacific. The voyages of the Frenchmen La Pérouse and Bougainville and the Englishmen Cook and Fitz-Roy — just for mentioning the most famous — were aimed at the construction of empires.

The study of fauna and flora were not the main aims of these expeditions, which were carried out mainly by ships-of-the-line of the respective countries. Nonetheless, such study became customary, for shrewd politicians recognized in them a new and unexplored source of power. Therefore, there were naturalists and draftsmen on board the exploring vessels of the Marine Royale and the Royal Navy, sometimes supported at their own expense, but charged with describing plants and animals and making collections that would enrich the national museums in the empires' capitals. By comparison with the exploration carried out by the Spanish and Portuguese during previous centuries, this practice amounted to an important intellectual revolution, one that laid the foundations of natural science, furthered an interest in its development, and led to the establishment of ever more numerous natural science museums and scientific societies.⁴

This custom continued throughout most of the 19th century. For instance, the voyages around the world of the Austrian frigate *Novara* (1857–1859) and the Italian Frigate *Magenta* (1865–1868) had as their primary aim the training of naval officers and cadets, but they were not neglectful of bringing their national flags to the most remote parts of the globe. Indeed, the very names *Novara* and *Magenta* symbolized the longstanding rivalry between Austria and Italy, for each was a reminder of a victory in battle over the rival nation. Likewise, the British *Challenger* expedition (1872–1876) was not motivated by the interests of pure science. Its most important task was to survey the depths of the oceans in support of submarine telegraph cables. Likewise, after the Second World War, the U.S. Navy explored the deep sea with the needs of the military in mind.

Naval efforts to increase knowledge of the natural world were enriched by those of others. Physicians, employed by commercial firms, government administrators, and naval and army officers sent to the colonies often dedicated themselves to the study of exotic flora and fauna. They did so partly out of intellectual curiosity, partly to overcome the sense of isolation and, perhaps, boredom that goes with living in a remote situation. Many assembled collections that have made some museums famous. Like the naturalists on board ships, their artists provided volumes that illustrated exotic worlds, thus providing a basis for research by scientists as well as treasures for wealthy bibliophiles. Hans Sloane (1660–1753), for example, studied and described the natural history of Jamaica while he was physician to the governor of that island, the Duke of Albemarle.⁵ In the years following, he became quite wealthy. The discovery of cacao and, above all, the way of preparing chocolate (the celebrated Sir Hans Sloane's Milk Chocolate) may have had something to do with it. He amassed a personal collection that became the basis for the British Museum, the most prestigious museum in the world. Likewise, Paul Hermann, to whom we owe the first study of the flora of Ceylon, was physician to the Western Company of the Dutch Indies. Joan Gideon Loten, employed by the same company and later by the Dutch Governor of Ceylon from 1752 to 1757, commissioned a series of 154 watercolors, now preserved in the British Museum, on the natural history of that island. The service of such explorers in commercial companies and colonial administrations illustrates how much of their science was, directly or indirectly, the product of political or commercial rivalry. This is true even though there were also independent travelers motivated by a love of science, such as Alexander von Humboldt, who lived off his rich patrimony, and Alfred



The Natural History Museum, London (formerly British Museum [Natural History])
by Architect Alfred Waterhouse (1880). Photo by Giovanni Pinna

Russel Wallace and Henry Walter Bates, who covered their expenses by the sale of specimens. A combination of politics, scientific progress, development of knowledge on the one hand, and search for national cultural and economic authority on the other, is to be found in most exploratory travel. Particularly toward the close of the 17th century, the concept of cultural authority began to infiltrate and ultimately become part of state policy. Many governments began to realize that such authority could be a resource that had a positive influence on commercial relationships with other nations.⁶

THE WEALTH OF NATIONS

In the history of nations, there has always been a close link between economic and military power on the one hand and the capacity for scientific production on the other; thus, powerful cultural machines have always been accompanied by a strong productive capacity and a robust military apparatus. Gordon Childe⁷ claims that science, and art as well, developed when the Neolithic revolution created a surplus of resources that could be used to liberate some individuals, including artists and scientists, from the labor of food production. According to Childe, the initial propellant for art and science was productive capacity and, therefore, the economy. Although I agree with him, it seems to me that the relationship between economic productivity and scientific and artistic production was reversed almost immediately with the development of the first complex societies and the birth of the first nation-states. In Sumer, Assur, Memphis, and Thebes, art and science were no longer secondary byproducts of economic and military power. Rather they were themselves elements of this power, and they played a role in promoting the growth of the authority of kings and Pharaohs. In the modern world, the relationship between cultural development and economic power is tipped in favor of the latter. Cultural policies in the majority of European countries have served and continue to serve for the development of commercial exchange and the conquest of new markets because it is understood that cultural authority is stronger than armies.

This has been known for some time, as the words of Adam Smith demonstrate: "Noble palaces, magnificent villas, great collections of books, statues, pictures and other curiosities, are frequently both an ornament and an honour, not only to the neighbourhood, but to the whole country to which they belong. Versailles is an ornament and an honour to France, Stowe and Wilton to England. Italy still continues to command some sort of veneration by the number of monuments of this kind which it possesses, though the wealth which produced them has decayed, and though the genius which planned them seems to be extinguished, perhaps from not having the same employment."⁸

The point he was making in 1776, a little more than twenty years after the British Museum was established and one year after Cook completed his second voyage, was that the cultural authority of a country was essential for its economic development and that the cultural institutions, palaces, and works of art, were tools for constructing that authority.

Museums are the institutions that, thanks to the accumulation and intellectual reworking of scientific, artistic and historical objects, preserve and communicate the memory, identity and the history of nations, of companies, of ethnic groups, and of religious organizations. They communicate along two lines, i.e., internally and externally to the nation, the company or the group that expressed them. They function simultaneously as tools for affirming the identity and as the means of expression of the authority of nations, companies, and groups. Their activity, therefore, plays a political role. Internally it reinforces the legitimacy of government (in the case of nations) or of property (in the case of companies). Externally it imposes, or attempts to impose, the authority of the nation, the company or some other groups. Thus, as Adam Smith would have suggested, by imposing cultural authority museums play an important role in the national economy and in the

subjects of which the museum are expressions. It would be myopic indeed for nations to consider museums only as a source of direct income through tourism, gadgets, and illustrated postcards.

Thus, I am convinced that it is no longer completely true that the rich countries possess the best and the largest museums. Rather, the museums that are more authoritative, both culturally and scientifically, enrich the nations that possess them. Caught up in this network of economic and political use of museums, nations both great and small are now involved in a sort of “war” with ever more powerful, more beautiful, and more dazzling museums used as weapons in the hope of winning a victory over the competition.

During past centuries museums played analogous roles. They were established to house and preserve the collections that represented the memory of the nation and thus serve, together with an increase in cultural production and the enlargement of the capacity for communication, as a means for legitimizing the power and authority of the nation. The development of museums always corresponded to the development of empires. Museums had the purpose of representing the imperial power, first domestically and then to foreign peoples. There are no empires that did not construct a museum, or fail to enlarge it, while the empire flourished. In Europe, the French, English, Spanish, Austrian, Russian, and Ottoman empires all had their imperial museums. In the United States, although social, economic, and political conditions were somewhat different, its museums, just as powerful, have played a similar role in representing the economic power and expansionist proclivities of the “New Empire”. In all of these museums one will find assembled the collections that naturalists brought back from the field. Each collection constituted another increase in the authority of the nation, demonstrating its ability to explore the world in the name of mankind while at the same time gaining physical and intellectual possession of distant lands.

Similarly, the colonial museums expressed the alliance between scientific travel, political power, and economic development. Like the Great Exhibition held in London in 1851, metropolitan colonial museums were simultaneously historical testimonials, expressions of national identity, and ties between the mother country and the colonies. Once again, the theme was the economic expansion of the nation.⁹ Referring to the colonial museum in Haarlem, Susan Legêne writes: “Le Musée Colonial peut être considéré comme l'expression directe des intérêts économiques et sociaux des élites hollandaises, à une époque où le colonialisme était très largement accepté comme une partie intégrante de l'identité nationale hollandaise.”¹⁰ With the transformation of colonies from territories of pure exploitation to new markets, and pressure from middle-class immigrants from the home country, part of the scientific and artistic products had to be left *sur place*. Thus, the overseas colonial museums came into being. In the major cities of Australia, New Zealand, Canada, India, Indochina, and the Dutch Indies, museums that had dual functions were established. First, they represented the local ruling class, which started to acquire more autonomy. Second, they demonstrated the power of the empire to the colonials.¹¹ Initially, at least, these museums could only be facsimiles of the major ones, not only in terms of architecture and organization, but also in the specialized staff, which was largely recruited from the homeland, as Susan Sheets-Pyneson has suggested.¹²

The decline of colonialism after the Second World War provides decisive proof of the political and economic value of museums. The abandonment of colonies by the European nations brought an end to the majority of metropolitan colonial museums, which had arisen as “war trophies,” such as the Italian Museo Coloniale del Ministero dell'Africa and the Musée National des Arts d'Afrique et d'Océanie in Paris. On the other hands, the overseas museums were freed from their former dependency, and upon being converted into national museums took on a new role in the service of the authority, credibility, and economy of the newly independent nations.¹³ Nevertheless, cultural colonialism, with its economic repercussions, was not completely eliminated by



Evocative frescoes of Pierre-Henry Ducos de La Haille in the building erected for the Exposition Coloniale de Paris (1931), as Musée Permanent de Colonies. The museum changed several times: in 1935 became Musée de la France d'Outre-mer, in 1960 Musée des Arts Africains et Océaniens, in 1990 Musée National des Arts d'Afrique et d'Océanie, and in 2007 Cité Nationale de l'Histoire de l'Immigration.

Photo by Giovanni Pinna



For explanation see figure legend p. 210



For explanation see figure legend p. 210

Western museums but rather took on a new form. By reaffirming the Eurocentric view of “other” cultures by emphasizing aesthetics, as in the new Musée du Quai Branly¹⁴, or by cultural cooperation, the power of the European museums and, therefore, the wealth of the nations to which they belong was similarly reaffirmed.¹⁵

THE FLAG ON THE SHORE

In 1972, an Italian scientific expedition to the Gadoufaouà site in Nigeria in search of dinosaurs, an expedition in which I participated, was blocked by France, which at the time was an important advisor to the government of that country, known for its important uranium mines.¹⁶ The intermediary in this maneuver was the Muséum National d’Histoire Naturelle of Paris. Its paleontologists had been exploring Gadoufaouà for quite some time and sought to maintain their monopoly. Apart from possible political repercussions — France was then developing its own nuclear power industry — it was surprising that the heirs of the Enlightenment should arrogate to themselves total and exclusive control over an immense paleontological site, thus perpetuating the colonial view of raising the flag that had guided the European nations in the conquest of empires.

«Suffira-t-il de mettre le pied sur un terrain commun pour s’en prétendre aussitôt le maître ? Suffira-t-il d’avoir la force d’en écarter un moment les autres hommes pour leur ôter le droit d’y jamais revenir? Comment un homme ou un peuple peut-il s’emparer d’un territoire immense et en priver tout le genre humain autrement que par une usurpation punissable, puisqu’elle ôte au reste



Hyderabad State Museum, Hyderabad, India

Photo by Giovanni Pinna



Raffles Museum ca. 1900, now National Museum of Singapore
Courtesy A. Leviton, California Academy of Sciences

des hommes le séjour et les aliments que la nature leur donne en commun? Quand Nuñez Balbao prenait, sur le rivage, possession de la mer du Sud et de toute l'Amérique méridionale au nom de la couronne de Castille. était-ce assez pour en déposséder tous les habitants et en exclure tous les princes du monde? Sur ce pied-là, ces cérémonies se multipliaient assez vainement; et le roi catholique n'avait tout d'un coup qu'à prendre possession de tout l'univers, sauf à retrancher ensuite de son empire ce qui était auparavant possédé par les autres princes.»¹⁷

NOTES

¹ Former Director of the Natural History Museum of Milan; President of the Italian Association for Studies on Museology.

² Jacob Darwin Hamblim. 2005. *Oceanographers and the Cold War: Disciples of Marine Science*. University of Washington Press, Seattle, Washington, USA.

³ Giovanni Pinna. 2000. *Declino e caduta dell'impero dei dinosauri*. Il Saggiatore, Milano, Italy.

⁴ Gillian Beer. 1996. *Travelling the other way*. Pages 322–337 in N. Jardine, J.A. Secord, and E.C. Spary, eds., *Cultures of Natural History*. Cambridge University Press, Cambridge, UK.

⁵ *A voyage to the Islands Madera, Barbados, Nieves, S.Christophers and Jamaica with the Natural History of the Herbs and Trees, Four-footed Beasts, Fishes, Birds, Insects, Reptiles, &c. Of the last of those Islands*. By Hans Sloanes, London 1707-1725.

⁶ Janet Browne. 1996. *Biogeography and empire*. Pages 305–321 in N. Jardine, J.A. Secord, E.C. Spary, eds., *Cultures of Natural History*. Cambridge University Press, Cambridge, UK..

⁷ V. Gordon Childe. 1942. *What Happened in History*. Penguin Books. Harmondsworth, UK.

⁸ Adam Smith. 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations*. W. Strahan and T. Cadell, London, UK. Vol. I, p. 423.

⁹ Sabine Cornelis. 2000. *Le musée du Congo belge, vitrine de l'action coloniale (1910–1930)*. Pages 71–86 in Dominique Taffin, ed., *Du musée colonial au musée de cultures du monde*. Musée national des Arts d'Afrique et d'Océanie, Paris, France.

¹⁰ Susan Legêne. 2000. *Identité nationale et "culture autres": le Musée colonial comme monde à part aux Pays-Bas*. Pages 87–101 in Dominique Taffin, ed., *Du musée colonial au musée de cultures du monde*. Musée national des Arts d'Afrique et d'Océanie, Paris, France.

¹¹ Regarding this point refer to the chapter "Il museo" in the book by Benedict Anderson *Comunità Immaginate. Origine e diffusione dei nazionalismi*. Manifestolibri, Roma, pp.179–186 (original title *Imagined Communities*, Versom, London 1991).

¹² Susan Sheets-Pyneson. 1988. *Cathedrals of Science*. McGill-Queen's University Press, Kingston and Montreal, Canada.

¹³ Nélia Dias. 2000. *Musées et colonialism: entre passé et présent*. Pages 13–33 in Dominique Taffin, ed., *Du musée colonial au musée de cultures du monde*. Musée national des Arts d'Afrique et d'Océanie, Paris, France. Completely new national museums arose during the 1960s and 1970s in many newly independent countries lacking colonial museums, such as Niger (Giovanni Pinna. 1974. Il Museo Nazionale del Niger a Niamey. *Natura* 65(3-4):238-246).

¹⁴ Valentina Lusini. 2004. *Gli oggetti etnografici tra arte e storia. L'immaginario postcoloniale e il progetto del Musée du quai Branly a Parigi*. L'Harmattan Italia, Torino, Italy.

¹⁵ Who really holds the power in international organizations such as the International Council of Museums?

¹⁶ Giancarlo Ligabue, Giovanni Pinna, Augusto Azzaroli, Philippe Taquet. 1972. *I dinosauri del Teneré*. Longanesi, Milano, Italy.

¹⁷ Jean-Jacques Rousseau. 1762. *Du contrat social, ou principes du droit politique*. Marc Michel Rey, Amsterdam, Netherlands.