It happened one Friday afternoon in March, in the reading room of the Joseph Cullman 3rd Library of Natural History. I was getting ready to terminate a week of intense investigation. But before storing my laptop, I asked permission to consult a final item. Daria Wingreen Mason, who in the past few weeks, together with Curator Leslie K. Overstreet, had made me acquainted with Smithsonian’s treasure house of natural history rare books, came out from the vault carrying a luxurious folio, which she placed on a lectern positioned in front of me. Having settled the paper work, she left me alone with a delicate work of art and science.

In the tranquility of the reading room I opened the pages of Flore d’Oware en de Bénin, en Afrique. This book contains a fascinating study of the flora discovered in the late 1780s by the Frenchman Ambrose-Marie-Joseph Palisot de Beauvois (1752-1820) in a region situated near the delta of the Niger – which is in itself remarkable, taking into account the fact that European explorers had not yet determined the location of the swamps where the waters of that mighty stream mingle with those of the Atlantic Ocean.

I carefully turned over the pages, admiring dozens of elegantly etched, color-printed plates of flowers and fruit, which were accompanied by the author’s comprehensive descriptions and observations. When arriving at plate number 78, a sudden cry must have disturbed the room’s sacred silence. From the look Daria gave me from behind the window separating the reading room from the library’s office, I understood she too had been surprised by a sound that can be considered as inappropriate in the scholarly environment of a research library. In fact this cry was nothing more but an uncontrolled expression of both joy and astonishment uttered by a historian who experienced that magical moment when a source not just offers him new historical facts, allowing a clear perception of the subject he is investigating, but also opens to him a panorama of actions from the past, seized in one powerful image that captures the essence of a whole story he wants to tell.

Plate number 78 is of impressive size. A color-printed engraving on a folio-sized folded sheet she is twice the size of the other plates in the book. She represents a species carrying the binominal name Napoleonaea imperialis. Palisot de Beauvois found the plant...
growing in the woods behind the residence of the King of “Oware” (Warri in modern-day Nigeria). This plant, with blue flowers, is of great beauty, and, in Palisot’s words “remarquable par son organisation qui non-seulement fait un genre particulier, mais un nouvel ordre intermédiaire…” / my translation: “remarkable for its organization which not only makes a particular genus, but also a new suborder…” But there is more to it. The plate incarnates decades of history and when we try to understand that history we discover a multitude of layers and storylines, spanning the Ages of Enlightenment, Revolution and the First Empire. Unfortunately time is too short here to give a full overview of events, but it is important to underline that many years separated the plant’s discovery in Africa – occurring in the years 1786-1788 – from its scientific representation on a highly refined printed plate in Paris – this happened in the year 1804.

This delay is due to the fact that Palisot’s journey in Africa had been distorted by military tensions between the leading powers of the time – France and Britain. Indeed, Palisot had been forced to escape the tense atmosphere in Africa when the British Navy had burned down the French coastal station where he had stored his specimens. Exhausted, he found refuge, first on the island of Saint-Domingue in the French West Indies, later in the United States. A new setback, however, prevented his return to France. The leaders of the Revolution thought Palisot de Beauvois was a runaway nobleman and wanted his head. Furthermore, the structures of Old France collapsed. Only around the turn of the century a New France arose from the ashes. For scholars and scientifically minded travellers alike, the consequences were far-reaching. The Old Regime systems of royal or ministerial patronage in a world dominated by the central authority of Versailles, which controlled institutions such as the Académie Royale des Sciences and the Jardin Royal des Plantes were replaced by new ones, which, in turn, were shaped by an alliance formed between the new leaders and the next generation of scholars who received the State’s blessing. The Académie was integrated in the prestigious Institut National. The Muséum National d’Histoire Naturelle became a mammoth institution for research in the natural sciences. The designer of this new imperial France was Napoleon Bonaparte.

Palisot de Beauvois won the support of the new elite, eager to enhance his career. And what was more convenient than using to that end the sketches saved from African drama? Palisot expressed his attachment to the regime by naming one of his “discoveries” after the person who could guarantee him a future: the Emperor. He made his proposal to Antoine-François de Fourcroy (1755-1809), Minister of Education. Then Jean-Etienne-Marie Portalis (1746-1807), Minister of the Interior, forwarded the proposal to Napoleon, who kindly accepted the honor. The plate of the Napoleonaea imperialis was published separately from the book on October 8, 1804. Less than one month later, on December 2, 1804, the Coronation of the Emperor took place in the Cathedral of Notre-Dame in Paris.

Based on the forgoing remarks, we can safely say that the plate of the Napoleonaea imperialis is more than just a piece of botanical illustration. She invites historians to reflect on a multitude of issues: the evolving relationship between science and politics; the concept of “imperial science”; the accumulation and transformation of knowledge through circulation; the role played by travel in knowledge production; the growing importance of Africa in the spatial context of late Enlightenment science.

I believe it is important that history of science rediscovers Africa and assigns to this part of the world a more relevant role in its search for the origins of Western science “going global”. Research devoted to the exploration of Africa in the eighteenth and nineteenth
centuries has often been limited to isolated studies, either biographies of famous travelers, either works about groundbreaking expeditions. Rarely do we find references to the evolutionary aspect of scientific programs or to reciprocal influences between science and policy. This shows the need to develop a more comprehensive approach, reinterpreting the ways in which exploration was organized, with attention to both State and individual actors in Europe as well as in Africa.

In recent years I mainly compared the colonial science policies of France and Great Britain. This program mobilized a variety of administrative sources, analyzed during source-finding missions to Paris, London and southern France. But what brought me here to the Smithsonian Institution Libraries in Washington DC is the presence of a unique collection of publications from voyages of exploration in Africa. Most are preserved at the aforementioned Joseph F. Cullman 3rd Library of Natural History. In particular the Russell E. Train Africana Collection was an unexpected goldmine for my research. It contains rare travel accounts, autograph letters, diaries, photographs and photo albums, scrapbooks, maps, drawings, paintings and ephemera such as Livingstone’s rifle. Additional material was found in the collections of the Dibner Library of History of Science and Technology and the Warren M. Robbins Library at the National Museum of African Art.

I was particularly interested in analyzing reports written by travellers who visited the inner regions of Africa between 1780 and 1885. In the short term I spent here, I consulted a total of 80 documents, mainly published travel accounts. Of course I had to read quickly, skipping many details and focusing on specific issues. I hoped to find arguments in support of claims regarding the spatial context of the evolution of knowledge production concerning Africa in that period.

My research is based on the premise that Africa has become a scientific object in its own right for Western administrations from the eighteenth century onwards. When the Enlightenment era came to a close African exploration was practiced by individuals driven by curiosity who used coastal stations – Cape Town, Saint-Louis, Guinea – as starting points for observational research. When the so-called African Association developed its program of expeditions along the Niger in the 1790s a coherent set of measures dealing with science in an African context came into being. Britain’s economy needed knowledge on useful products and started to focus on Africa. But it was Napoleon’s campaign in Egypt (1798-1801) that provoked a breakthrough of imperial science. From then on military actions on African soil had a complex scholarly component.

As an entente, the explorer, the soldier and the entrepreneur developed initiatives that preluded what historians call the “Scramble for Africa”. Many travel accounts give evidence of the fact that during the first part of this “imperial” epoch explorers helped constructing what one may call “corridors of knowledge” – arteries between coastal stations and Africa’s inner regions which served as conduits for intelligence which was predetermined by the prospect of conquest or commercial expansion. Explorers moved inland with fixed concepts that steered observation. If lucky they returned with firsthand information about aspects of the lands visited, thus answering questions that sprouted from scholarly, strategic or economic debates at home. The corridors where the exchange and transfer of knowledge took place were not chosen at random. They followed a grid that either had historical roots – caravan routes through the Sahara desert or pilgrimage trails to Mecca – or were the product of Western initiative – campaign trails through coastal hinterlands. Vectors of competition between Western powers crisscrossed the continent.
Let us now dwell on a number of interesting works from SIL Special Collections in which we find illustrations of the themes I just mentioned. I apologize for the fact that I have not been able to prepare a very structured discourse at this point. I need time to look in more detail at all the material in a later phase of my research. And I probably also have to take some distance from the sources. Nevertheless, I am pleased to share with you some elements that struck my eye in the course of the two months I had the fortune to work here, and which are related to what I just discussed in a more general way.

Explorers were often inspired by the work accomplished by their predecessors, but the last quarter of the eighteenth century certainly was a period in which attention turned to geographical regions never visited by others. The expression “Africa’s interior” was coined as a scientific challenge in its own right. The term remained deliberately vague, and included everything that lay beyond the shores familiar to Westerners. At the end of the eighteenth and in the course of the nineteenth century “Central Africa” – a term which is today often used as an indication for the Congo Basin and the region of the Great Lakes – could relate at the same time to the Sahara Desert north of the equator or to southern regions situated north of the Cape Province, depending on the author. Penetrating “Africa's interior” meant so much as to contribute to the progress of science and the advancement of humanity. Palisot de Beauvois for example had the intention to sail up the rivers and go deep in the interior, hoping to arrive at the coast of the Mediterranean. He too saw the “interior” as a “scientific” issue: “Ces voyageurs instruits nous ont fait connaître une partie des productions des pays qu’ils ont parcourus; mais combien n’en reste-t-il pas encore à découvrir? L’Afrique équinoxe sur-tout, soit par son étendue, soit par l’insalubrité de son climat et de sa position, est un des pays éloignés le moins connu et qui a été le moins visité. C’est une contrée toute neuve; à peine avons-nous une idée exacte des hommes qui habitent les bords de la mer, et des productions qui y croissent, et encore moins de ceux qui se trouvent dans l’intérieur des terres. La connaissance de leurs mœurs et de leurs usages contribuerait beaucoup à perfectionner l’histoire de l’homme.” / translation: “These educated travellers introduced us to some of the productions of the countries they have seen; but how much remains there yet to be discovered? Equinoctial Africa in particular, either by its size or its unhealthy climate and position, is of all distant countries the least known and has been the least visited. This is a brand new country; we don’t have an accurate idea of the people inhabiting the coastal regions, and of the productions that grow there, let alone of those in the interior. Knowledge of their habits and their use would greatly improve human history.”

A decisive moment was the year 1788 when a group of gentlemen founded in London the African Association – its official name was the Association for Promoting the Discovery of the Interior Parts of Africa. This organization aspired to transcend speculation about African geography by promoting an active exploration of the continent’s inner regions. In the years leading up to its foundation, Joseph Banks, one of the leading members, had already shown much interest for Africa, using his vast network of contacts in coastal stations for acquiring rare botanical specimens to complete his private collection, but now he too turned his attention to the “interior” – contributing to the organization of a long series of voyages, of which that of Mungo Park was the most famous. A systematic processing of the geographical data transmitted by the Association’s travellers and their local informants by the British cartographer Major James Rennell (1742-1830) led to the publication in 1790 of a map that improved the earlier cartographic representations of Africa’s interior – such as those made by Jean-Baptiste Bourguignon d’Anville (1697-1782) – in a considerable way.
French travellers too used the popular term “interior” in the title of their work, as demonstrated by this travelogue published by François Le Vaillant (1753-1824) in 1790. It is an account of three voyages made by Le Vaillant through the interior of southern Africa in the years 1780 to 1785, taking Cape Town as a starting point. Le Vaillant developed a genuine fascination for Africa’s “deep interior”, and gave free hand to his imagination. He called it, the “New Peru”. Le Vaillant collected all kinds of natural history specimens, and next to that he showed interest for the customs of local populations. When it came to geography, Le Vaillant followed trodden paths in the northern and eastern parts of the Cape Province, though it must be said that he occasionally mentioned unknown routes and mountain passes. Le Vaillant’s travel account still very much reflects the eclectic interests of an Enlightened naturalist, paying at least as much attention to his own heroism as to the description of African nature and geography. He was an avid hunter, and had a fascination for the giraffe. That animal was barely known in Europe, and few had seen a live specimen. This part of his account became so popular that he decided to publish in 1795-1796 a second book in which he focused more strongly on the hunting parties – including more detailed plates of the giraffe.

It is important to underline that Le Vaillant initially did not add a map to his first publication yielding some criticism from the side of African experts in France such as Joseph de Guignes (1721-1800) (Journal des Savans 1790). Eventually a map was published together with Le Vaillant’s second work in 1795, although on a separate sheet: the Carte de la Partie Méridionale de l’Afrique Pour servir d’intelligence aux deux Voyages de Levaillant. Se trouve chez H.J. Jansen et Perronneau. Imprimeurs – Libraires. A Paris, [s.d.]. Perrier Sculp.

Levaillant Delin. It is important to stress that this map nevertheless had a unique predecessor, namely a large map (2,67 x 1,83 m), currently preserved at the BNF in Paris, representing the southern part of Africa, and made on behalf of the French King Louis XVI. This huge work is a collective achievement, combining geographical sketches made by Perrier, five richly executed cartouches depicting camps of native populations by Van Leen, and drawings of animals by Reinold. The map’s complete title is the following: Partie Méridionale de l’Afrique depuis le Tropique du Capricorne jusqu’au Cap de Bonne Esperance contenant les pays des Hottentots, des Cafres, et de quelques autres Nations Dressée Pour le Roi sur les Observations de M. Levaillant Par M. de Laborde, ancien premier Valet de chambre du Roi, Gouverneur du Louvre, l’un des Fermiers généraux de Sa Majesté, 1790. La partie géographique dessinée par Perrier, Les cinq Tableaux, et les Quadrupèdes par Van Leen et les Oiseaux par Reinold. The map dates from 1790 and its fabrication was entrusted to Jean-Benjamin de Laborde (1734-1794), a figure close to the King who held numerous senior posts. Louis XVI apparently had been impressed by reading Le Vaillant’s book and probably ordered the map. The map shows the itinerary, includes references to Le Vaillant’s adventures, and also contains images of animals Le Vaillant described in their geographic context. On the published version from 1795 however, the representations of animals have been removed and replaced by references to passages – in particular the “heroic” hunting scenes – from the travelogue (“Grand Nid d’Autruches”, “Camp des deux lions”, “Mort de l’Hippopotame”, “Mort Chasse aux Giraffes”, “Plaine ou l’on trouve le plus de Giraffes”).

The map of Le Vaillant was a benchmark for many travellers after him. One of the strengths of the collection of travel accounts preserved at the Cullman Library is its completeness, allowing us to follow in detail how successive travellers visiting the same regions have either inspired or criticized each other’s work. With regard to southern Africa I was able to find an interesting case of continuous transmission as well as correction of
geographical and other kinds of knowledge in the successive accounts and maps produced by respectively John Barrow (1764-1848), Samuel Daniell (1775-1811), Martin Hinrich Carl Lichtenstein (1780-1857), William John Burchell (1781-1863) and the missionaries Christian Ignatius Latrobe (1758-1836) and John Campbell (1766-1840) in the tumultuous period between 1797 and 1822. The map progressively became more accurate and complete, even though much depended on the explorer’s ability to handle instruments correctly and perform measurements in a reliable way. Each of the above mentioned travel accounts also contains unique elements of knowledge that are worth an investigation in itself: Barrow’s discovery of petroglyphs, including the representation of a so-called “unicorn”; the representation of the quagga and other rare or by now extinct animals in the work of Samuel Daniell, which were so popular that they were even represented on unique Sévres vases on display in the residences of the Duke of Wellington or the French King Louis XVIII (now in the Louvre); or Burchell’s incomparable landscapes of Africa’s “interior”. At the same time this unique series of travelogues allows us to investigate the phenomenon of exploration against the background of ongoing political changes, military conflict and conquest, implicating Dutch, British and French administrators and military commanders to whom travel accounts were often dedicated as a sign of gratitude for the financial and logistical support travellers received from them. After 1802, when the British had to cede the Cape again temporarily to the Batavian Republic, which had close ties with France, Barrow would publish a sequel to his first work in which he enclosed “scientific” evidence of the Cape’s strategic importance, hoping to convince the British government it should again take possession of it.

The Cullman Library owns a second series of travel accounts, which offers illustrations of a continuous dialogue between Western travellers, scholars, military men and leading politicians about spatial, political and economic aspects of knowledge production in Africa. This time the field of action is Western Africa, and in particular large river systems formed by the Senegal, the Gambia, and the Niger. A book such as the one published by Mungo Park in 1799 about his successful mission to the Niger, should be read in parallel with the not so famous treatise published in 1802 by the Frenchman Sylvain Meinrad Xavier de Golbéry (1742-1822), who gave a detailed account of voyages undertaken in Senegal and other parts of West Africa during the years 1785 to 1787. The discourse on which Golbéry elaborates in this book is primarily a plea in favor of forceful and direct French action in West Africa. Golbéry was frustrated by the fact that the French were behind the English. With regard to Mungo Park’s discoveries he wrote they “awarded to the English the merit of having made the first successful advances in this path, which I had considered as peculiarly belonging to us”. He pleaded to explore the rivers and use them as natural corridors to the continent’s interior: “I have before mentioned a considerable number of rivers, which would be favourable to our proceeding into the countries of this continent, and which would give us opportunities of carrying our operations into the center of Africa.” It is important to add that for a British public this book left no doubt whatsoever with regard to the new imperialistic agenda the Napoleonic regime hoped to get implemented. Here, an influential scholar intervened in the course of affairs. Joseph Banks was so alarmed by what he read in Golbéry’s book that he warned his friends in high government positions about its explosive content.

In the following years we see at the British side that a transition was taking place: an increase in the number of expeditions that stood under the direct control of the British government and which were carried out by or with the support of either the Army or the Royal Navy – one of the main reasons for action, in addition to the competition with the
French, was the fact that the British were looking for new commercial opportunities in Africa after the abolition of the slave trade. A long series of successes and failures continuously inspired new expeditions. In all these undertakings geographical surveying was considered of the utmost importance. The maps published at the beginning or end of each travel account reflected the accumulated knowledge about the “inner regions’ geography”. The collections preserved at both the Cullman Library and the Warren M. Robbins Library allow us to follow in detail the mapping of West Africa as a result of the often ill-fated missions led by John Peddie, Thomas Campbell and William Cowdry (1816-1817), William Gray (1818-1821), Dixon Denham and Hugh Claperton (1822-1825), Hugh Clapperton and Richard Lander (1825-1827), or the brothers Richard and John Lander (1830-1832). The military-scientific expedition led by Captain James Kingston Tuckey (1776-1816) to the Congo in 1816-1817 might seem at first sight a deviation from this program. But in reality, this mission had to investigate whether or not there existed a connection between the Congo and the Niger. We must also underline that all these expeditions used as “corridors” not only the rivers, but also ancient caravan routes, on which detailed data had been collected by diplomatic agents situated in North Africa, for example James Grey Jackson (1768-1840), who was based in Morocco, or consul-general Hanmer George Warrington (ca. 1776-1847) in Tripoli. Also diplomatic missions sent to courts of local rulers provided new perceptions of the geography, natural history and ethnography of Africa’s inner regions. A good example is to be found in the account written by Thomas Edward Bowdich (1791-1824) about his embassy to the court of the King of the Ashanti, published in 1819.

The French for their part had been neither inactive nor passive. They contributed to the exploration and mapping of the Senegal and Gambia rivers, from their estuaries to their sources, as becomes apparent from the work accomplished by Gaspard Théodore Mollien (1796-1872), and published in 1820. It contained a wealth of information useful to the French authorities in Senegal, notably with regard to the presence of natural resources. But it was in Egypt that the French gave a completely new twist to scientific exploration. There exploration was the result of Napoleon’s invasion. It would be characterized by an increase of the scale of surveying operations, a mobilization of national scientific institutions such as the Institut National and the Ecole polytechnique, and close relations with the military and their specialized personnel (members of the topographical section of the Dépôt de la Guerre). The Cullman Library owns a copy of the Description de l’Egypte, the prestigious multi-volume report of the expedition. The work is well known for the beautiful pictures of ancient monuments. However, it also provides a view of the systematic work carried out in the fields of natural history and topography. However, the topographic map is not included in this series. Because of its strategic importance, Napoleon banned its publication until 1814. The map would be issued separately on 47 sheets. It was the result of large-scale and systematic measurements, for which a team composed of 15 engineers had been mobilized. Their methodology is explained in the section written by head-engineer Pierre Jacotin (1765-1827). The Egyptian expedition set the standard for other large-scale projects, particularly in Algeria, where a military invasion was also immediately followed by a large-scale topographic survey and other scientific operations, mobilizing large teams of experts both in Algeria and in France. The Cullman Library owns two copies of reports on the accomplishments in the field of natural history in Algeria. The Egyptian and Algerian examples – systematic field research carried out by scientists familiar with the country, followed by a prolonged processing of the results by expert committees at home – was imitated in parts of Africa where the French did not immediately planned an invasion but
nevertheless hoped to widen their sphere of interest. A good example can be found in the impressive albums in which were brought together the scientific results of a government-supported mission to Abyssinia in the years 1839-1843 under the leadership of Charlemagne Théophile Lefebvre (1811-1860/61), an artillery officer in the French Navy.

The 1850s marked the transition to the second Industrial Revolution where technical innovations (chemistry, steel, electricity, communications) promoted the exploitation of overseas resources more firmly. Western engineering expanded overseas with construction works in pro-Western Egypt – dams, draining works, the Suez Canal – implicating Western elites into expansionist initiatives. Utopian philosophies such as Saint-Simonism made science the basis of general human progress and offered inspiration for projects in Africa. Here knowledge produced by explorers was crucial. European readership got the image that inner Africa was a territory in need of economic development. Explorers reported on the “masses” living in the “heart” of Africa who could be turned into consumers of industrial products.

One of the explorer’s objectives was the collection of data necessary for constructing passageways to lucrative markets. In my view, the “corridors of knowledge” turned into “highways” for the introduction of Western technology. The earliest example of this new vocabulary can be found in the work of Heinrich Barth (1821-1858). Although a German, he headed a British government mission in a vast region between Timbuktu and the Sudan. In his popular five-volume travel account, published in 1857-1858, he included descriptions that aroused public interest for the economic potential of the African interior. In fact, Africa was not as dark and inaccessible as it seemed. And certainly not an arid plane from west to east: “After having traversed vast deserts of the most barren soil, and scenes of the most frightful desolation, I met with fertile lands irrigated by large navigable rivers and extensive central lakes, ornamented with the finest timber, and producing various species of grain, rice, sesame, ground-nuts, in unlimited abundance, the sugar-cane, &c, together with cotton and indigo, the most valuable commodities of trade. The whole of Central Africa, from Bagirmi to the east as far as Timbuktu to the west (as will be seen in my narrative), abounds in these products. The natives not only weave their own cotton, but dye their home-made shirts with their own indigo. The river, the far-famed Niger, which gives access to these regions by means of its eastern branch the Bénuwé, which I discovered, affords an uninterrupted navigable sheet of water for more than six hundred miles from the coast; but even at that point it is probably not impassable in the present state of navigation, while, higher up, the river opens an immense highroad for nearly one thousand miles into the very heart of Western Africa, so rich in every kind of produce.” (Barth 1857, I, pp. xx-xxi). I should perhaps add that this idea of the basins of the Niger and Bénué as a vast zone for the development of large-scale European trade, was already expressed in the work of the commercially minded William Allen (1792-1864), of which the Cullman Library owns a copy with beautiful panoramas of navigable “open rivers”.

The explorers became indispensable actors in the process of empire building. Some were at the origin of utopian projects such as an African inland sea or a trans-Sahara railway line in the early 1870s. Here the goal was to “create” new highways next to the existing hydrographic systems. Often explorers were at the base of bold, even utopian plans, based on surveys they had conducted themselves. The Frenchman François Elie Roudaire (1836-1885) for example wanted to create a sea in the Sahara by flooding the region of the Chotts in Tunisia. More important were perhaps the plans for the construction of trans-Sahara railway lines, which followed the itineraries of caravans or previous exploratory missions.
Paul Soleillet (1842-1886) and other French travellers proposed to connect Algerian coastal cities with the Niger. An international project proposed by the German traveller Friedrich Gerhard Rohlfs (1831-1896) suggested a more eastern trajectory, taking Tripoli as a starting point.

However, as exemplified by Henry Morton Stanley (1841-1904), other explorers were down to earth, introduced steam navigation on African rivers or planned the construction of railway lines towards mining districts. We are at the eve of the partition of Africa. In 1885 the process of the Scramble was set in motion at the Berlin Conference. In the run up to this crucial meeting, the leaders of the competing powers stimulated their map makers to draw new maps which reflected their respective strategic interests – as is shown by a map of the Congo Basin drawn by the Belgian Institut National de Géographie on behalf of King Leopold II in 1883, the investigation of which happily ended my residence at the Smithsonian Institution.